

The Big
Logic Puzzle
Extravaganza

for
Gifted & Talented
Children

Ages 9 and up

Liz Judge

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INTRODUCTION

In working with gifted children, it is important that they have a variety of challenging learning exercises to help them improve logical thinking and problem solving. The purpose of this book is to provide both verbal- and non-verbal reasoning practice for children by using a diverse set of exercises.

Verbal reasoning not only tests the child's knowledge of vocabulary, but also the ability to process information, follow patterns and rules, and draw conclusions.

Non-verbal reasoning questions are designed to evaluate how well a child can process visual information, and use logical reasoning. These types of questions usually involve looking at a combination of shapes, symbols, and sometimes letters. Non-verbal reasoning also frequently requires a good level of mathematical reasoning.

The Big Logic Puzzle Extravaganza is designed to compliment study of both verbal and non-verbal reasoning. By using a challenging variety of puzzles, riddles, exercises, and non-verbal reasoning questions, children will be able to practise critical thinking and improve skills in analysis and deduction.

The Answer Key provides not only the answers but also (in most cases) how the problems are solved.

Liz Judge

April 2020

Which One Doesn't Belong?

These exercises require logical reasoning to determine common characteristics of each picture, shape, or set of numbers. Be prepared to explain your reasoning for each.

1 Choose the one below that does not belong to the group. Why?



a



b



c



d

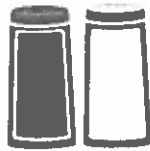


e

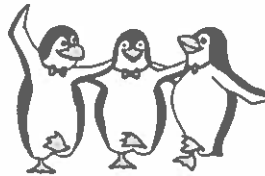
2 Choose the one below that does not belong to the group. Why?



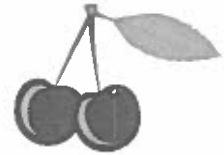
a



b



c

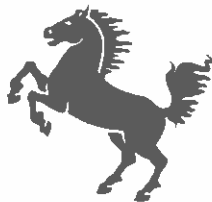


d

3 Choose the one below that does not belong to the group. Why?



a



b



c



d

4 Choose the answer below that does not belong to the group. Why?

$$8 - 2$$

a

$$6 + 2$$

b

$$4 + 1$$

c

$$20 \div 2$$

d

TIPS for identifying what doesn't belong:

- 1) Usually there is one common factor – don't assume it is something obvious
- 2) Use your non-verbal and mathematical reasoning – what are the *types* of things, what are the *numbers*, what are the *shape* differences, is the *orientation* or *direction* important?

5 Choose the one below that does not belong to the group. Why?



a



b



c



d

6 Choose the one below that does not belong to the group. Why?



a



b



c



d

7 Choose the one below that does not belong to the group. Why?

15

a

17

b

33

c

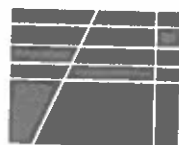
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d

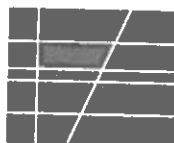
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e

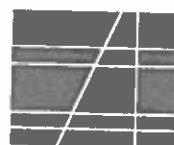
8 Choose the one below that does not belong to the group. Why?



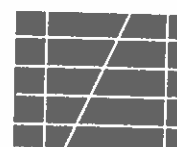
a



b



c



d

9 Choose the one below that does not belong to the group. Why?



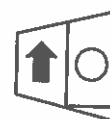
a



b



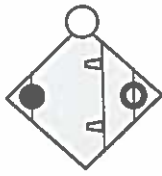
c



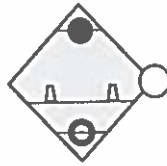
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10

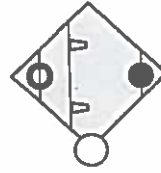
Choose the one below that does not belong to the group. Why?



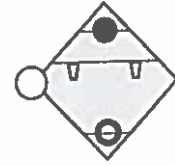
a



b



c



d

11

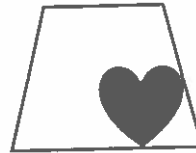
Choose the one below that does not belong to the group. Why?



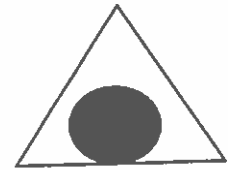
a



b



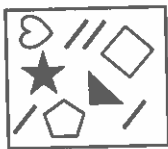
c



d

12

Choose the one below that does not belong to the group. Why?



a



b



c



d



e

13

Choose the one below that does not belong to the group. Why?



a



b



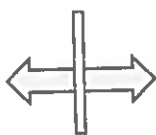
c



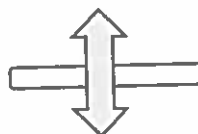
d

14

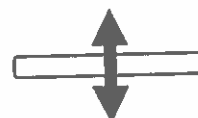
Choose the answer below that does not belong to the group. Why?



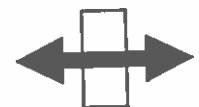
a



b



c



d

15

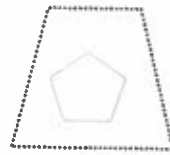
Choose the one below that does not belong to the group. Why?



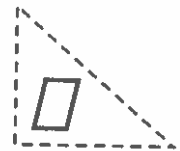
a



b



c



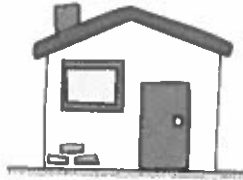
d

16

Choose the one below that does not belong to the group. Why?



a



b



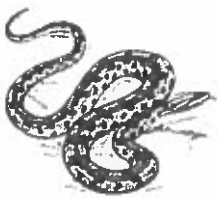
c



d

17

Choose the one below that does not belong to the group. Why?



a



b



c



d

18

Choose the one below that does not belong to the group. Why?



a



b



c



d

19

Choose the one below that does not belong to the group. Why?

3

a

5

b

15

c

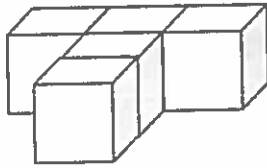
19

d

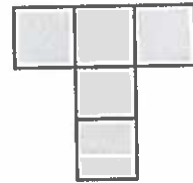
What's the Plan?

In these exercises you will be shown a three-dimensional shape, and then asked to identify how that shape looks from an overhead (or 'bird's eye') view, or plan. These types of questions will further challenge your ability to rationalize shapes, and observe relationships.

Example: What is the plan for the following 3-D model?

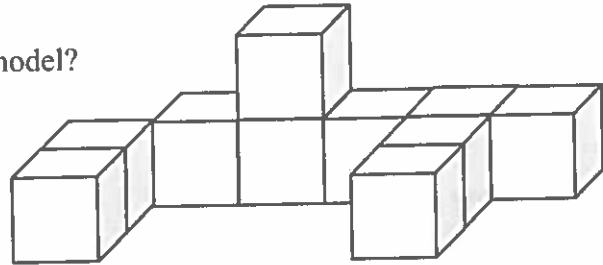


Answer:



1

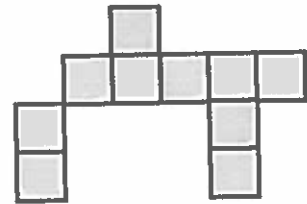
What is the plan for the following 3-D model?



a.



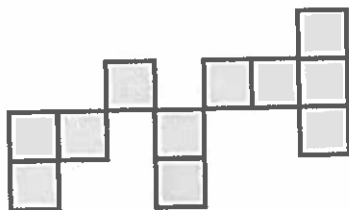
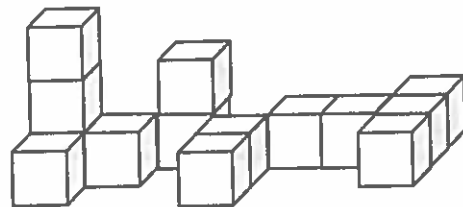
b.



c.

2

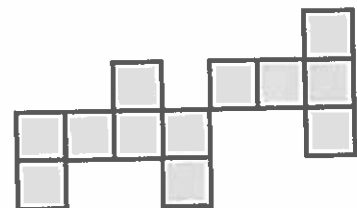
What is the plan for the following 3-D model?



a.

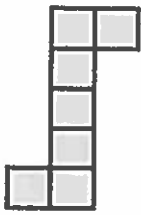
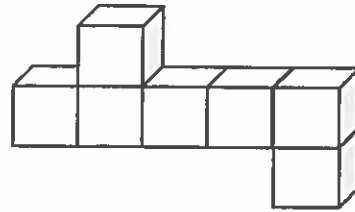


b.

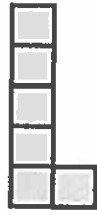


c.

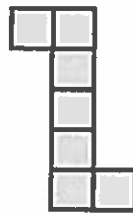
3 What is the plan for the following 3-D model?



a.



b.

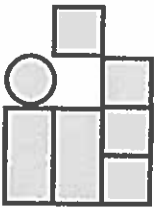
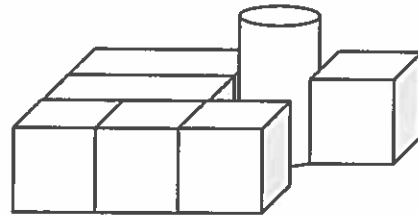


c.



d.

4 What is the plan for the following 3-D model?



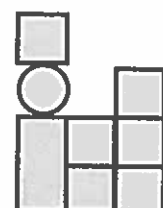
a.



b.

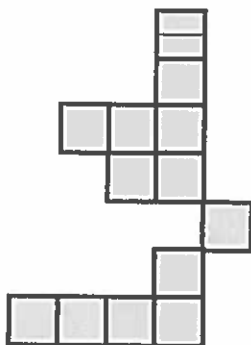
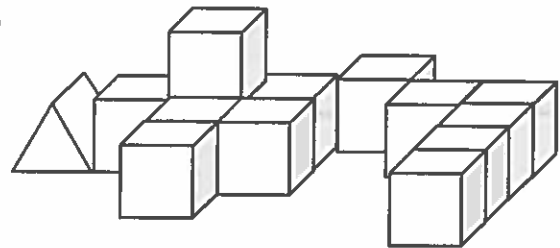


c.

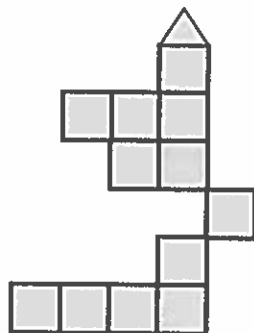


d.

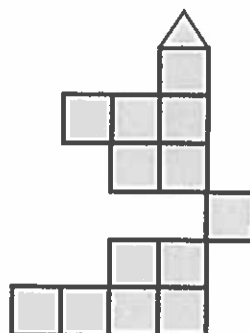
5 What is the plan for the following 3-D model?



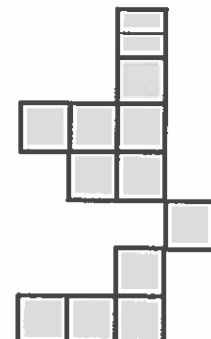
a.



b.



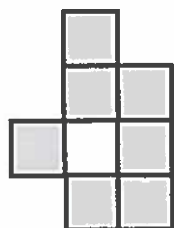
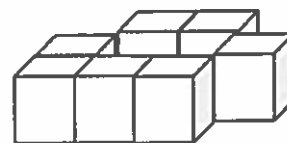
c.



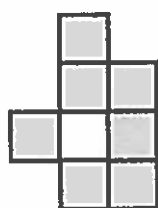
d.

6

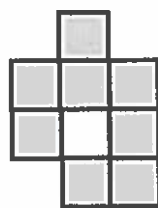
What is the plan for the following 3-D model?



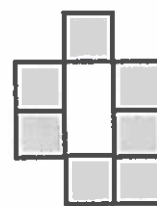
a.



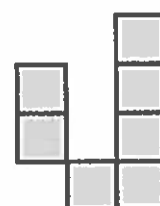
b.



c.



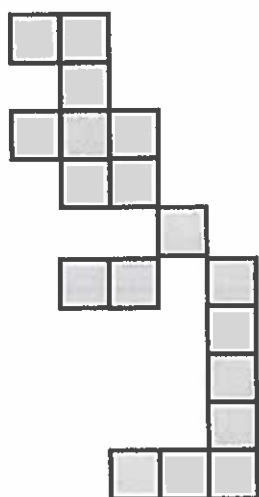
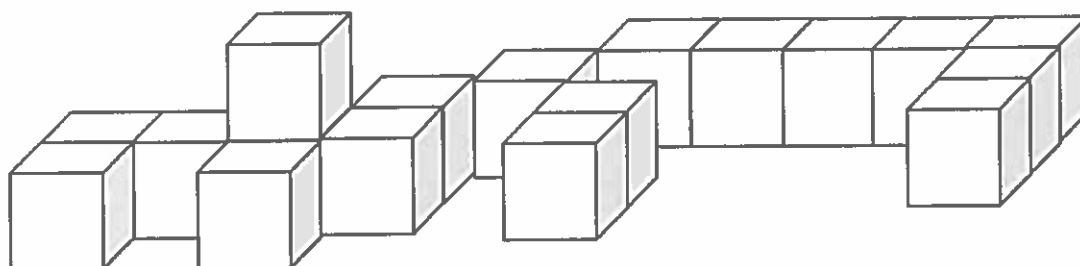
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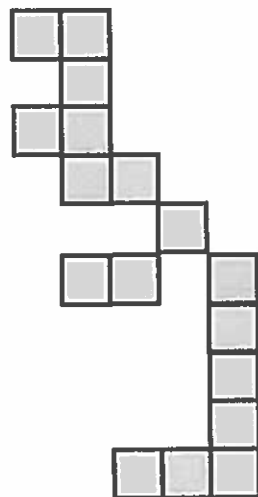
e.

7

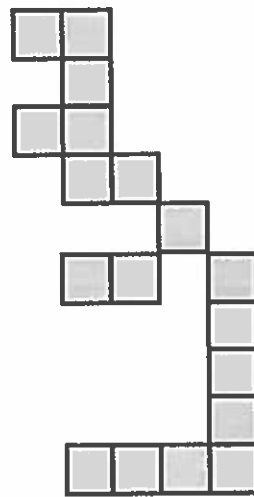
What is the plan for the following 3-D model?



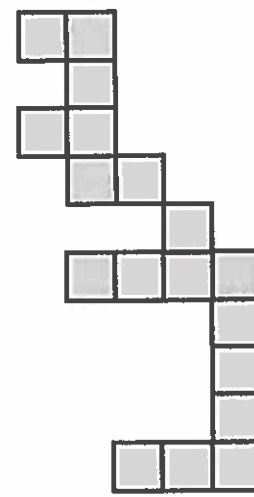
a.



b.



c.



d.

Riddles

These types of questions are not only fun, but help to reinforce logical analysis – challenging assumptions and learning the importance of inference. This is helpful for improving reading comprehension.

1. Two boys are born to the same mother, in the same hospital, on the same date, in the same year. However, they are not twins. Why not?

2. What is it that gets wetter as it dries?

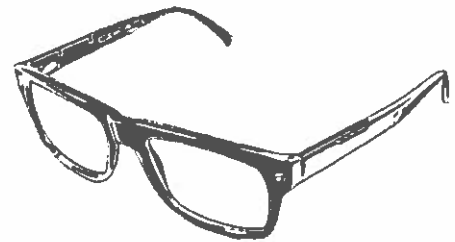
3. What comes once in a minute, twice in a moment, but not once in a hundred years?

4. A worker at a coffee shop weighs a paper coffee cup at ten grams. She then puts something in the cup, but the cup now weighs less than ten grams. What did she put in the cup?

5. What allows you to see through a wall?

6. What has two hands, but no fingers or thumbs?

7. How much dirt is there in a hole that measures two feet wide, by two feet across, by two feet deep?



8. Dylan's mother had three children. The first was called April. The second child was called May. What was the name of the third child?

9. What always increases, but never decreases?

10. What starts with an e, ends with an e, and contains only one letter?

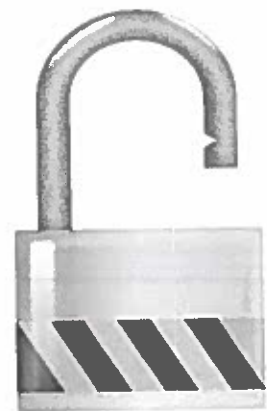


11. Two fathers, and two sons drove to the store. Yet there were only three people in the car. How could this be?

12. What belongs to you, but others use much more than you do?

13. David walked for thirty minutes in the rain, without an umbrella or a hood on his jacket. Yet not a single hair on his head was wet. How is this possible?

14. I have many keys, but no ceiling, no rooms and usually only one lock. You can enter or escape. What am I?



15. What word, consisting of six letters, turns into twelve if you remove one of the letters?

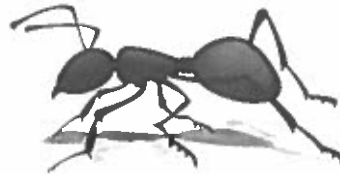
16. I have towns and cities, but no houses. I have mountains and water, but no trees or fish. What am I?

17. Which word in the dictionary is always spelled incorrectly?

18. A boy has as many sisters as brothers, but each sister has only half as many sisters as brothers. How many brothers and sisters are there in the family?

19. How can you be standing behind your mother, when she is standing behind you?

20. Two ants are marching in front of two other ants. There are two ants behind two other ants. Two ants are marching beside two other ants. What is the smallest amount of ants being described?



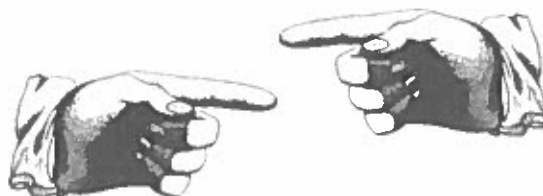
21. Three contractors built ten houses between them, but no man built more than three houses. How is this possible?

22. Ava bought a new coat and hat that cost \$110 together. If the hat was \$100 less than the cost of the coat, how much did the hat cost?



23. What month of the year has 28 days?

24. What can you hold in your left hand, but not in your right?



25. Mrs. Johnson baked some chocolate chip cookies and left them in the kitchen to cool. When she came back a half an hour later, she found her four children standing in front of the plate, with all of the cookies missing.

“All right,” she announced. “Who took the cookies?”

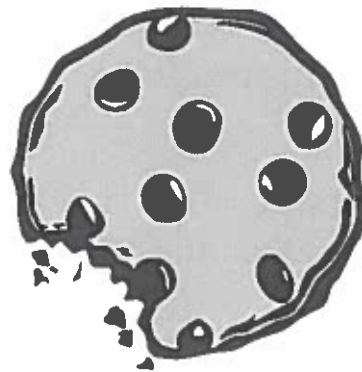
Jamie answered first. “I know who took the cookies,” he said.

Then his brother Alfie spoke up and said, “It wasn’t Julie or Paige.”

Paige piped in quickly, “Alfie ate them!”

But then Julie confessed, “I stole the cookies.”

Mrs. Johnson knew all of the children were lying. If she is right, who took the cookies?

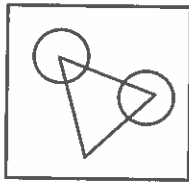
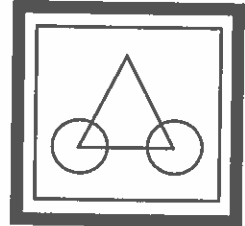


Pattern Detective

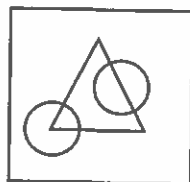
These exercises help practise non-verbal reasoning skills by challenging you to carefully look at the properties of each box in terms of shape types, numbers, sizes, shading, and locations.

1

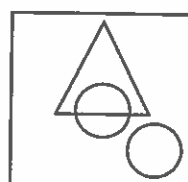
Pick one of the boxes below that has the most in common with the box to the right.



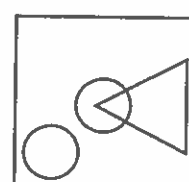
a



b



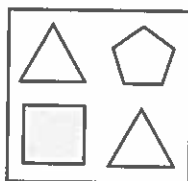
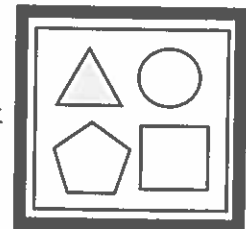
c



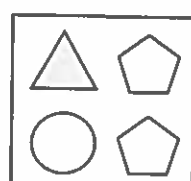
d

2

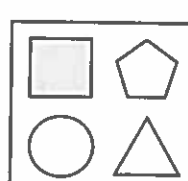
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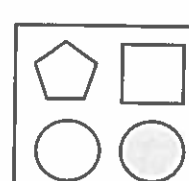
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b



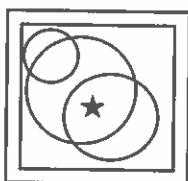
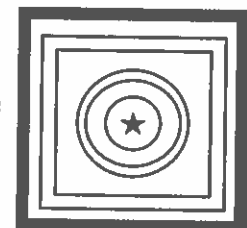
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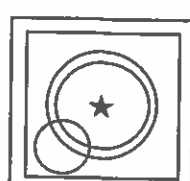
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3

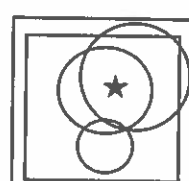
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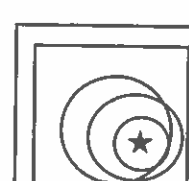
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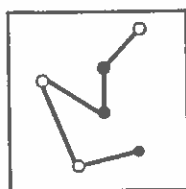
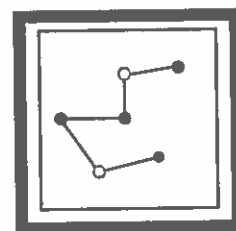
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TIPS for looking at patterns:

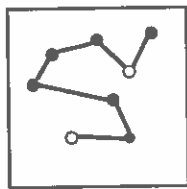
- 1) Look at the different *types* of shapes – is this a significant factor?
- 2) Look at the *number* of shapes, the *number* of the sides – do these make a difference?
- 3) Look at the *position* and *direction* of the shapes
- 4) Look at the *shading* or *color* of the shapes
- 5) Observe the *relationship* of the shapes to each other – is there a pattern?

4

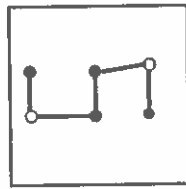
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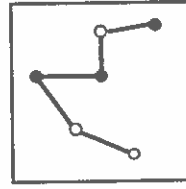
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b



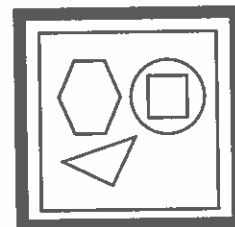
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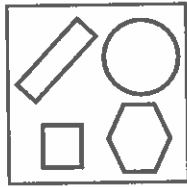
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5

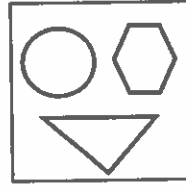
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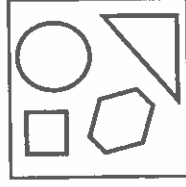
a



b



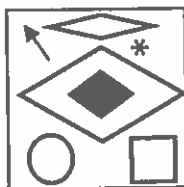
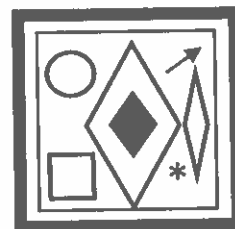
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6

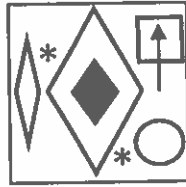
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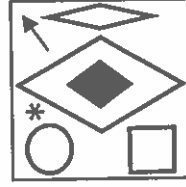
a



b



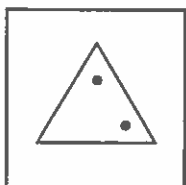
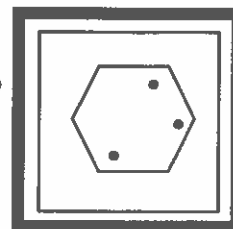
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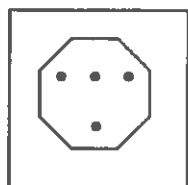
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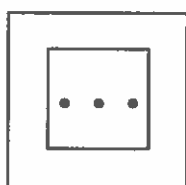
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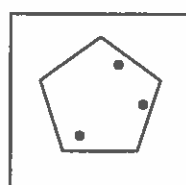
a



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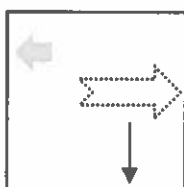
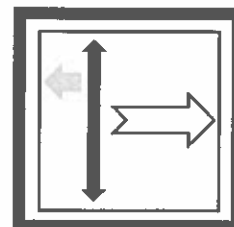
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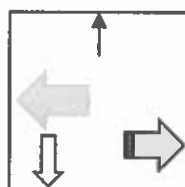
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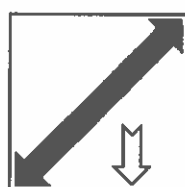
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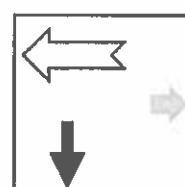
a



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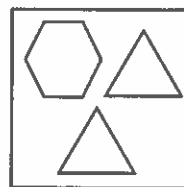
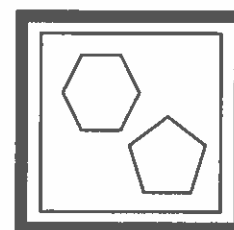
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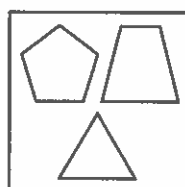
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9

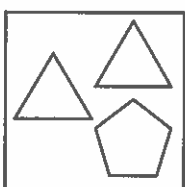
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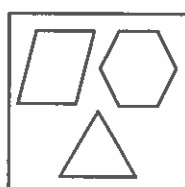
a



b



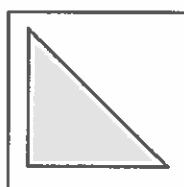
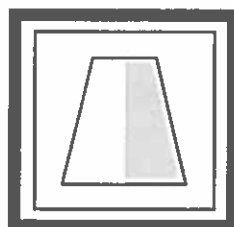
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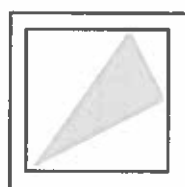
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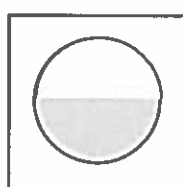
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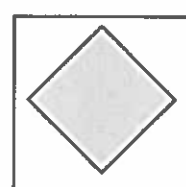
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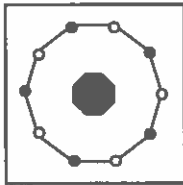
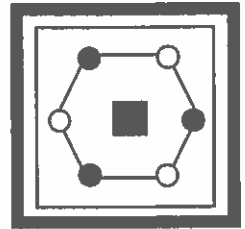
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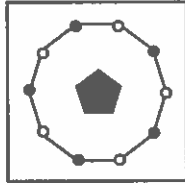
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11

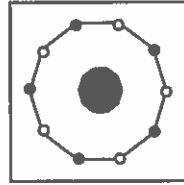
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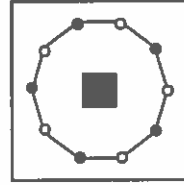
a



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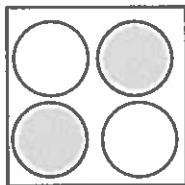
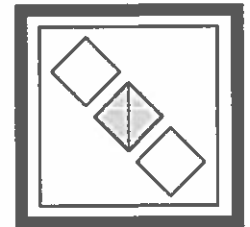
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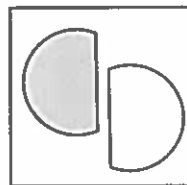
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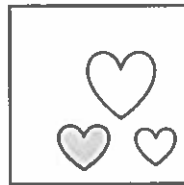
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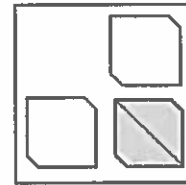
a



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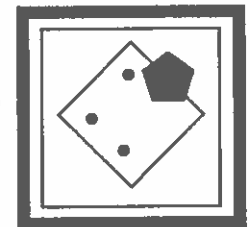
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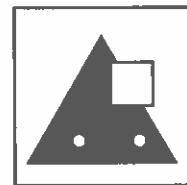
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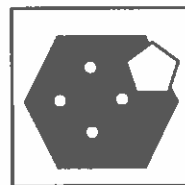
Pick one of the boxes below that has the most in common with the box to the right.



a



b



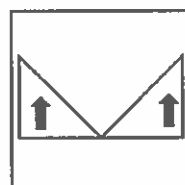
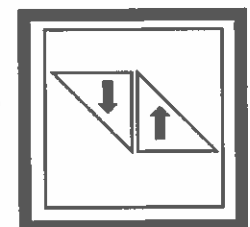
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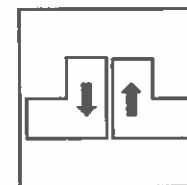
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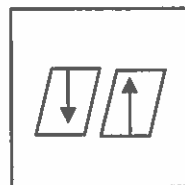
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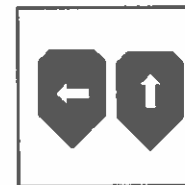
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b



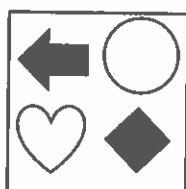
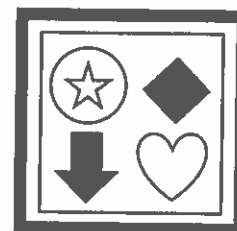
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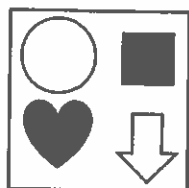
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15

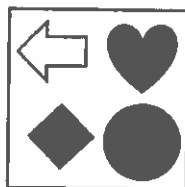
Pick one of the boxes below that, if a star is added, will have the most in common with the shapes on the right.



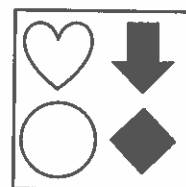
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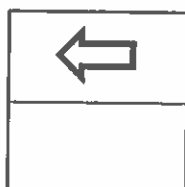
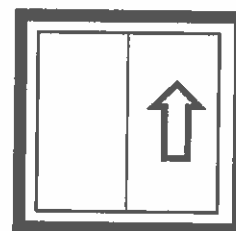
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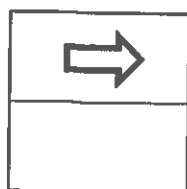
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16

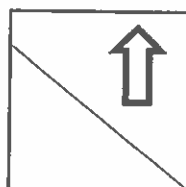
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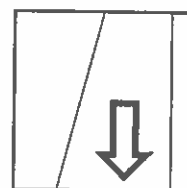
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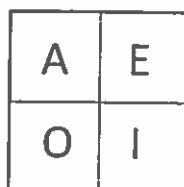
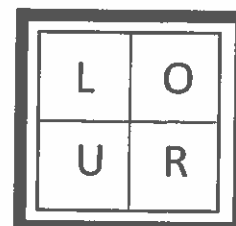
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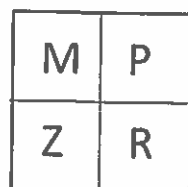
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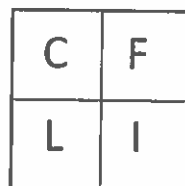
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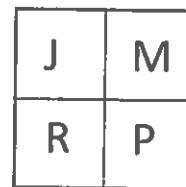
a



b



c



d

18

Pick one of the boxes below that has the most in common with the shapes on the right.



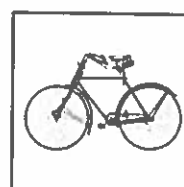
a



b



c



d

Logic Grids

Logic Grids are excellent in improving deductive reasoning. A grid must be filled in based on clues given. Place an "X" in the grid if the two facts are not true. Place a check mark in the square if the facts are true. When you have the grid complete, fill in the table below the grid with the complete answers. The first question has been filled in as an example.

My parent's car

Chad, Naomi, and Ben are discussing their parent's cars. Can you identify the color, type of car, and year each was made?

- 1) Ben's mom's favorite color is red, which was very popular in 2015 when they bought it.

This means Chad & Naomi's cars will be either blue or silver; also either from 2017 or 2019

- 2) Chad's parents have always owned station wagons.

This means Ben & Naomi's cars will be either a minivan or a truck

- 3) Naomi's parents use their car to haul large appliances for their business.

This implies that Naomi's parents own a truck, although it may be a minivan

- 4) Chad wishes their car was silver, but that color wasn't available when they bought it.

This means Chad's car is blue (Ben has already said their car is red) and Naomi's is silver

- 5) Ben says his parents bought their car because it was easier to fit the entire family of seven people inside, than in a truck

This implies Ben's parents own a minivan (we already know it's not a station wagon) and that Naomi's parents own a truck

- 6) Chad's parents' car is the newest

Chad's is from 2019, which is the latest year in the grid below. Therefore Naomi's is from 2017

	Blue	Red	Silver	Minivan	Station Wagon	Truck	2015	2017	2019
Ben	X		X		X	X		X	X
Chad		X	X	X		X	X	X	
Naomi	X	X		X	X		X		X
Minivan	X		X						
Station Wagon		X	X						
Truck	X	X							

Name	Color	Type	Year
Ben	Red	Minivan	2015
Chad	Blue	Station Wagon	2019
Naomi	Silver	Truck	2017

1

Summer Activities

Mia, Noah, and Olivia have all scheduled different summer camps in different cities. The camps are focused on specific themes (Drama, Technology, or Tennis). Can you figure out who is going to which camp, when they are starting, and where they will take place?

1. Olivia is going on a camp in Minneapolis where she can improve her computer skills.
2. Noah will be in Chicago on August 1st for the start of his camp.
3. Mia is going to a camp in California in July
4. Noah is looking forward to being in a play at his camp.

	Drama	Technology	Tennis	Los Angeles	Chicago	Minneapolis	July 21st	August 1st	August 14th
Mia									
Noah									
Olivia									
Los Angeles									
Chicago									
Minneapolis									

Name	Activity	Location	Date
Mia			
Noah			
Olivia			

2

Birthdays and Presents

Use the clues and the table below to figure out who has what birthday, and which present they received.

1. Although Daniel is the oldest, he has the latest birthday.
2. James received a guitar.
3. Claire has a birthday in the spring.
4. Daniel did not get any clothing for his birthday.
5. George was really happy with his present, which he will wear every day.
6. James has never owned a computer.
7. Claire is going to use her present to ride to school.
8. James has a birthday that occurs between Claire's and Daniel's birthday.
9. George has the earliest birthday.
10. Claire was not born in November

	Guitar	Jacket	Bicycle	Computer	February 14	May 6	November 7	November 18
Daniel								
Claire								
George								
James								
February 14								
May 6								
November 7								
November 18								

Name	Birthday	Present
Daniel		
Claire		
George		
James		

3

Dogs' Dinner

Mabel is taking care of four dogs, and wants to feed them their favorite dinners. Can you use the clues to determine each dog's name, breed, preferred meal, and age?

1. Pearl and Alfie are the oldest, the Labrador is the youngest.
2. The second oldest likes lamb, but Alfie (the oldest) likes salmon.
3. Nemo is two years younger than the Bulldog.
4. The Bulldog likes chicken.
5. The Golden Retriever is a year older than the Bulldog.
6. Trixie is the Bulldog
7. The Schnauzer is ten years old.
8. Nemo is the Labrador Retriever.

	Bulldog	Golden Retriever	Labrador Retriever	Schnauzer	3	5	6	10	Beef	Chicken	Lamb	Salmon
Alfie												
Nemo												
Pearl												
Trixie												
Beef												
Chicken												
Lamb												
Salmon												
3												
5												
6												
10												

Name	Breed	Food	Age
Alfie			
Nemo			
Pearl			
Trixie			

4

Famous Explorers

Read the following facts and use the table below to try and determine each explorer's nationality, what they did, and when they did it.

1. The Spanish explorer Ponce de Leon went exploring a future southern US state to find the "Fountain of Youth."
2. Although he died before the end of his journey, Ferdinand Magellan led the first successful round-the-world exploration starting in 1522.
3. The earliest explorer in this group, Marco Polo explored China, India, Japan, and other Asian countries between 1271-1295, before returning to Europe.
4. Jacques Cartier made three separate trips to Canada, the first in 1534.
5. Emilia Earhart was a famous American aviation pioneer.
6. Magellan was neither French nor Italian.

	American	French	Italian	Portugese	Spanish	1271	1513	1522	1534	1932	First around the world	Explored China	Explored Florida	Explored Canada for France	First woman to fly across the Atlantic
Jacques Cartier															
Juan Ponce de Leon															
Amelia Earhart															
Ferdinand Magellan															
Marco Polo															
First to go around the world															
Explored China															
First European to explore Florida															
Explored and claimed Canada for France															
First woman to fly solo across the Atlantic															
1271															
1513															
1522															
1534															
1932															

Explorer	Nationality	What	When
Jacques Cartier			
Juan Ponce De Leon			
Amelia Earhart			
Ferdinand Magellan			
Marco Polo			

Number-Letter Equations

These exercises will focus on your ability to associate common number and letter combinations. The first answer has been given as an example.

1) 52 W I A Y

52 Weeks in a Year

2) 365 D I A Y

3) 26 L O T A

4) 100 Y I A C

5) 60 S I A M

6) 90 D I A R A

7) 24 H I A D

8) 60 M I A H

9) 14 D I A F

10) 1000 Y I A M

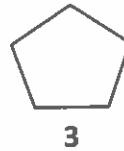
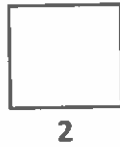
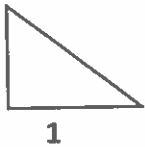
11) 7 C O T R

12) 29 D I F I A L Y

What Comes Next?

These exercises help practice non-verbal reasoning, as well as mathematical reasoning, by challenging you to carefully look at the properties of the series and make a reasonable deduction about what will come next in the series.

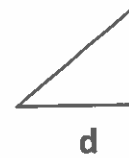
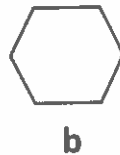
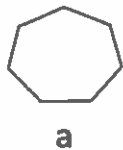
1



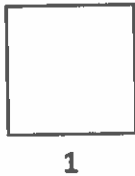
?

4

Choose the shape below that will come next in the group above



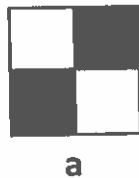
2



?

4

Choose the shape below that will come next in the group above



3



?

5

Choose the shape below that will come next in the group above



4

O, T, T, F, F, S, S, ...

Choose the letters below that will come next in the sequence above

J, J, Q, Q

a.

H, H, Y, Y

b.

Z, Z, T, O

c.

E, N, T, E

d.

5

7, 5, 8, 6, 9, 7, 10, ...

Choose the numbers below that will come next in the sequence above

8, 11

a.

7, 12

b.

8, 12

c.

6, 10

d.

6



1



2



3

?

4

Choose the image below that will come next in the sequence above



a.



b.



c.



d.

7

2, 4, 8, 16, 32, ...

Choose the numbers below that will come next in the sequence above

64, 126

a.

48, 64

b.

64, 128

c.

64, 132

d.

8 agenda, suburb, tonic, acid, _____

Choose the word below that will come next in the sequence above

green

a.

orange

b.

elephant

c.

red

d.

9 $\frac{1}{5}$, $\frac{4}{10}$, $\frac{9}{15}$, $\frac{16}{20}$, _____

Choose the number below that will come next in the sequence above

$\frac{19}{25}$

a.

$\frac{25}{30}$

b.

$\frac{24}{25}$

c.

1

d.

10 81, 75, 71, 65, _____

Choose the number below that will come next in the series above

61

a.

60

b.

57

c.

54

d.

11 2008, 2012, 2016, _____

Choose the year below that will come next in the series above

2018

a.

2019

b.

2020

c.

2024

d.

12 59, 18, 62, 15, 65, 12, 68, _____

Choose the number below that will come next in the series above

11

a.

9

b.

10

c.

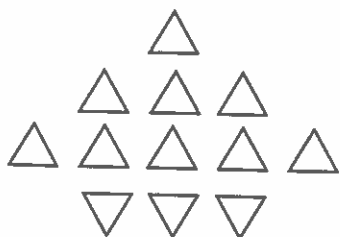
45

d.

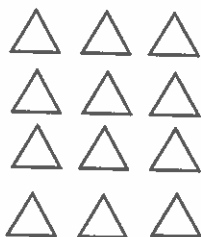
13



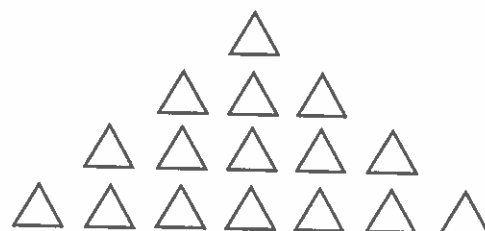
Choose the group below that will come next in the series above



a.



b.



c.

14

10, 60, 12, 58, 16, 54, 24, 46, ____

Choose the number below that will come next in the series above

40

a.

38

b.

36

c.

42

d.

15

7, 17, 10, 20, 13, ____

Choose the number below that will come next in the series above

10

a.

16

b.

20

c.

23

d.

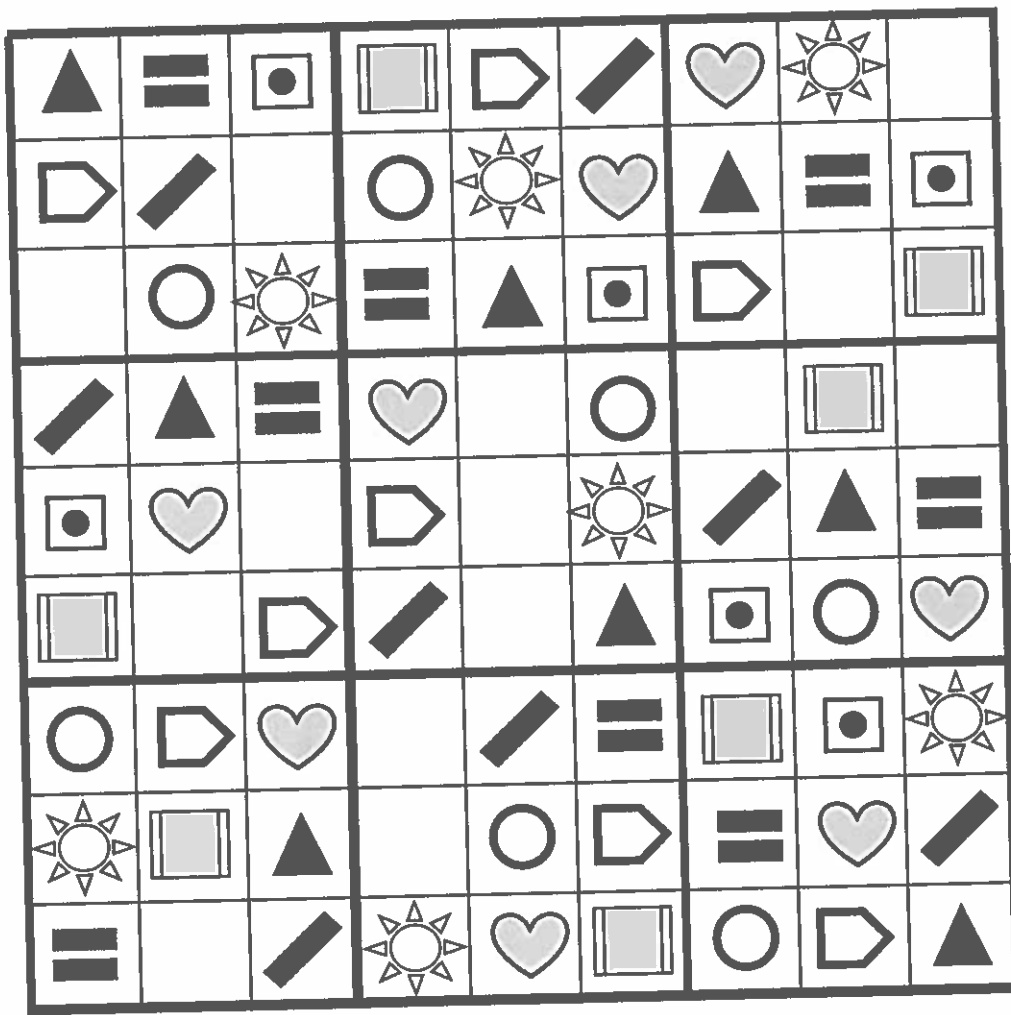
Symbol Sudoku

Sudoku is a popular game of logic where you place the numbers 1 through 9 in a grid, so that each column, each row, and each of the nine 3×3 boxes that compose the grid contain all of the digits from 1 to 9.

In this exercise, fill in the tables below, we replace the numbers and use 9 different symbols. Make sure that you use only one of each of the nine different symbols in each of the 3×3 boxes.

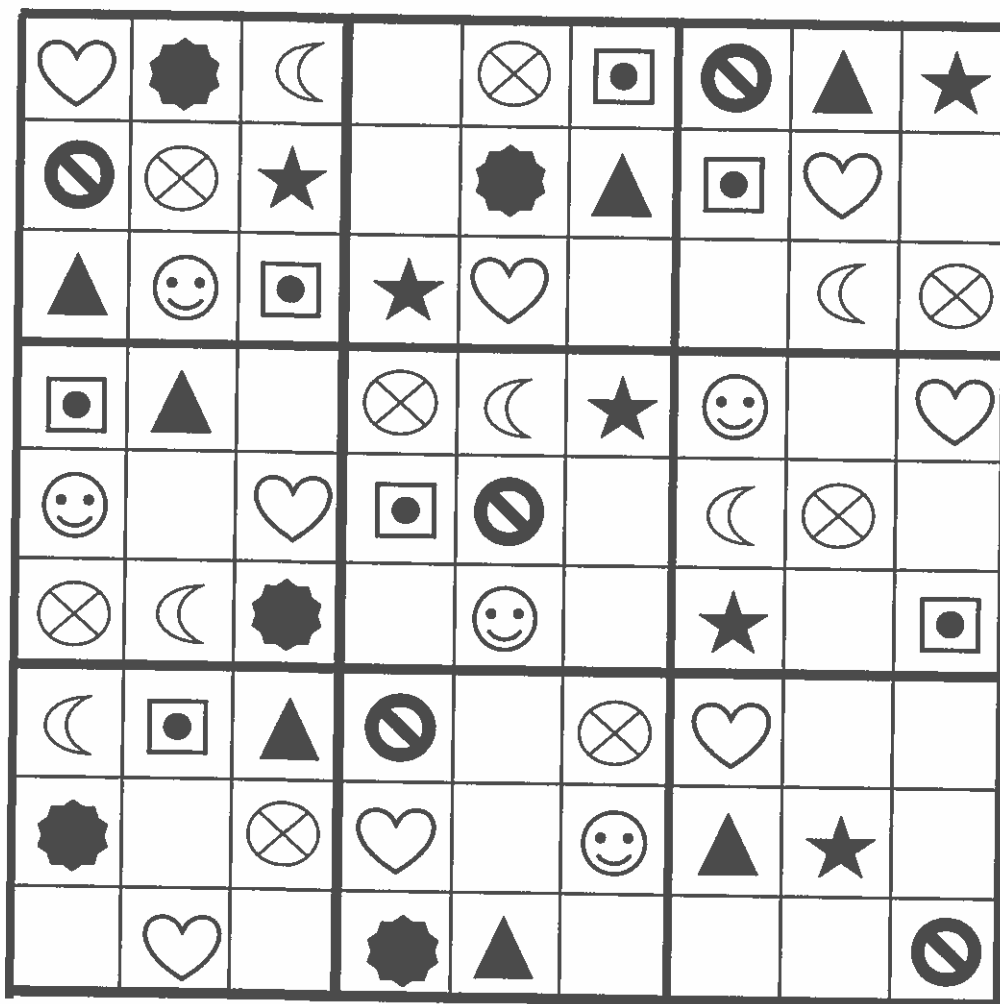
1

Level 1. Beginner (14 shapes missing)



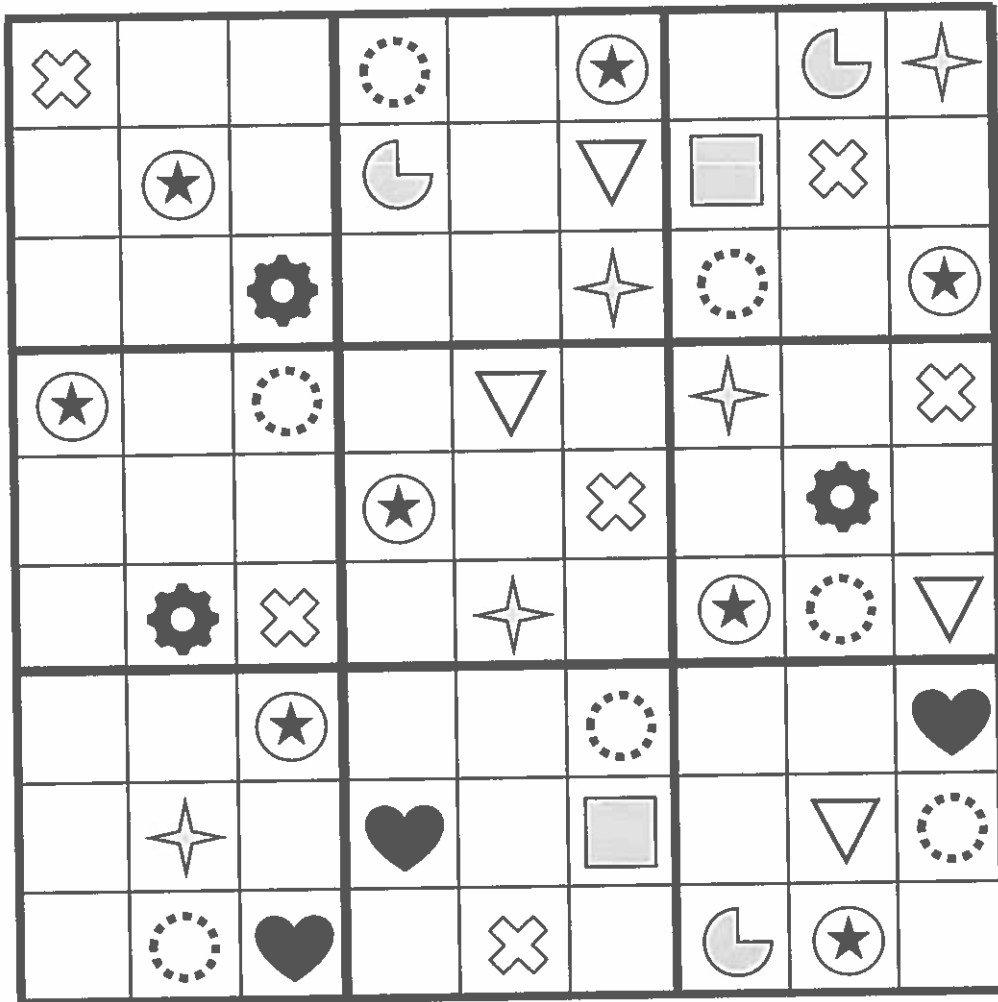
TIPS for Symbol Sudoku:

- 1) Remember that a shape can only appear once in each row, once in each column, and once in each 3x3 section (marked by the dark lines). Use this to help reduce the number of possible answers.
- 2) If you are having trouble with the shapes, then assign them numbers, 1 through 9, and use the numbers, putting in the shape after you determine the answer as a number.



3

Level 3. Advanced (40 shapes missing)



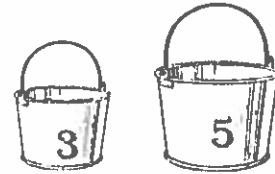
Conundrums

These types of questions challenge your ability to carefully read and understand the context, use critical reasoning, and make logical deductions. Some might take more thought and consideration than others!

1. Careful Measures

Evan was tasked with providing four litres of water for a school science experiment. The teacher gave him only two containers – a three gallon bucket, and a five gallon bucket. The teacher insists that he only bring *exactly* four gallons, as the experiment will not work with any more or less than that amount.

How will he get the measurement right?



2. See the Light

Charlotte gave Mike a challenge. She put him in a room that had three light switches. The challenge was to figure out what light each of the switches controlled. All of the lights, however, were in the room next door.

The three switches in the room were off. Mike was only allowed to turn any of the switches on or off when the door was closed. The door blocked all of the light coming in from the other room. Once he opened the door, he was no longer allowed to turn on or off any of the light switches.

Assuming all of the lights were working, how did he figure it out?



3. Traveling Salesman

One day, a traveling salesman found himself returning from a conference with a cat, a mouse, and a bag of delicious candy. On the way home, his car broke down, and he had to return by foot, as no one would give him a lift with such strange cargo!

He decided to take a shortcut through a field, but eventually came upon a river that he had to cross. He saw there is a small boat, however, it was so small that he can only take one of the things (cat, mouse, or candy) with him at a time across the river.

If he leaves the cat alone with the mouse, the cat will definitely catch and eat the mouse. If he leaves the mouse alone with the candy, the mouse will surely get into the bag and eat it.

How did he get everything across the river safely?

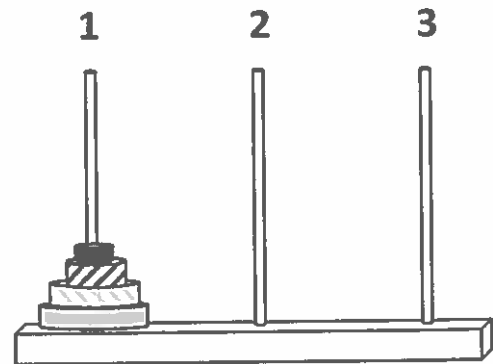


4. Take It Down a Peg

You are given a challenge with a peg toy as shown. The challenge is to move all four of the discs from the first peg to the third peg, by only moving one disc at a time.

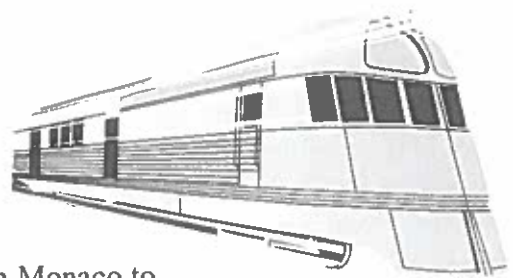
You are allowed to stack the discs on top of each other, but the catch is, you can only stack a smaller disc on top of a larger disc. Never a larger disc on top of a smaller one.

How can this be done – and how many moves will it take?



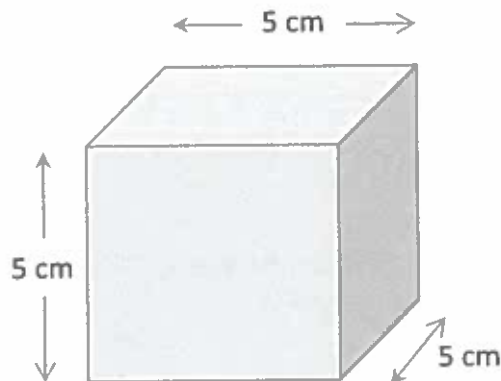
5. Slow Train to Paris

During her vacation in France, Emma took a slow regional train from Marseille to Paris. The train travels at 50 miles per hour and makes 15 minute stops in Avignon, Mont  limar, Valence and Lyon.



Her friend Annette was traveling on a fast InterCity train from Monaco to Paris. The non-stop train travels at 100 miles per hour.

If they both leave at the same time, which train will be closest to Paris when they meet?



6. Cube Tracer

You are given you a wooden cube that has sides that measure 5cm long.

With a pen, you must trace a path along the edges of the cube, going as far as you can without retracing over any edge.

How many edges can you trace, and what is the total distance covered?

7. Poison Pill

You are going on a trip to South America to see the Amazon. Before leaving, you decide to purchase an antidote that will save you from any poison, which consists of one green tablet, and one blue tablet.

The pharmacist warns you that you can take the pills in any order. However, taking two green or two blue pills will not have any effect against the poison. It must be one green and one blue tablet. You decide to get two sets of pills in separate bottles to keep them safe.

Later on during the trip, you are in the jungle on a hike with your guide. You are enjoying the scenery, and have seen many interesting plants and exotic flowers. As night falls, the guide suggests that you return to camp.

Suddenly a snake falls from a tree and bites you on the arm. Your guide helps remove the snake, but it also bites him as well.

"We are in trouble now," says the guide. "That was a very poisonous snake."

"Don't worry," you say, "I have an antidote for both of us." Feeling dizzy, you sit down and start to get one of the bottles from your backpack. To your dismay, both of the bottles are empty, as the caps have come off!

You find the four tablets in the bottom of the bag, but unfortunately can't tell what color they are, as it is now too dark, and your flashlight was broken during the incident.

How will you save yourself and the guide?



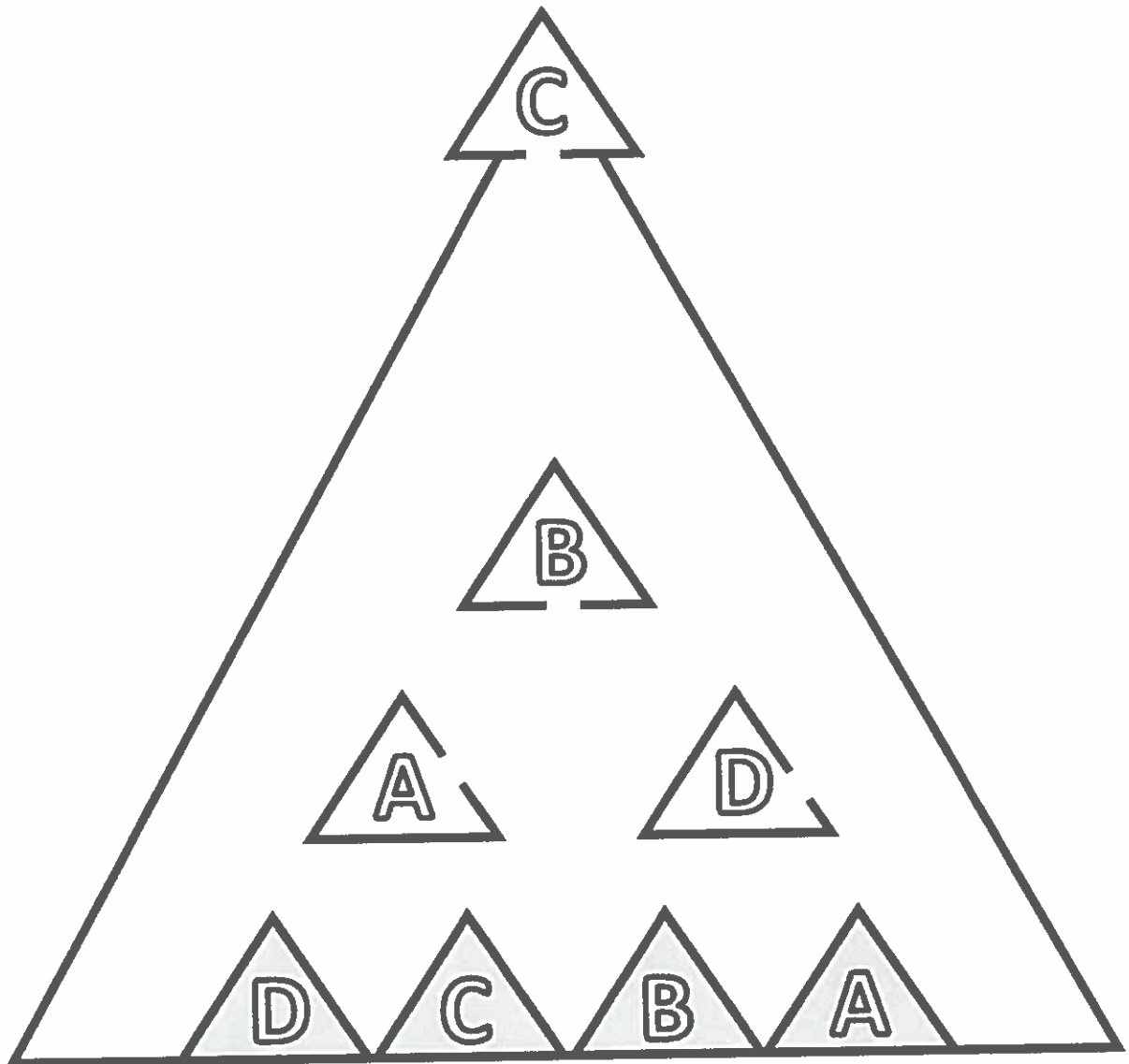
Mazes

Mazes require focus on spatial awareness, and navigational skills that can be useful in improvement of non-verbal reasoning.

1. The Triangle Tree

In the figure below, draw a single line from each of the letters at the bottom (shaded grey) to the openings in the triangles with matching letters above them in the tree (A to A, B to B, C to C, D to D).

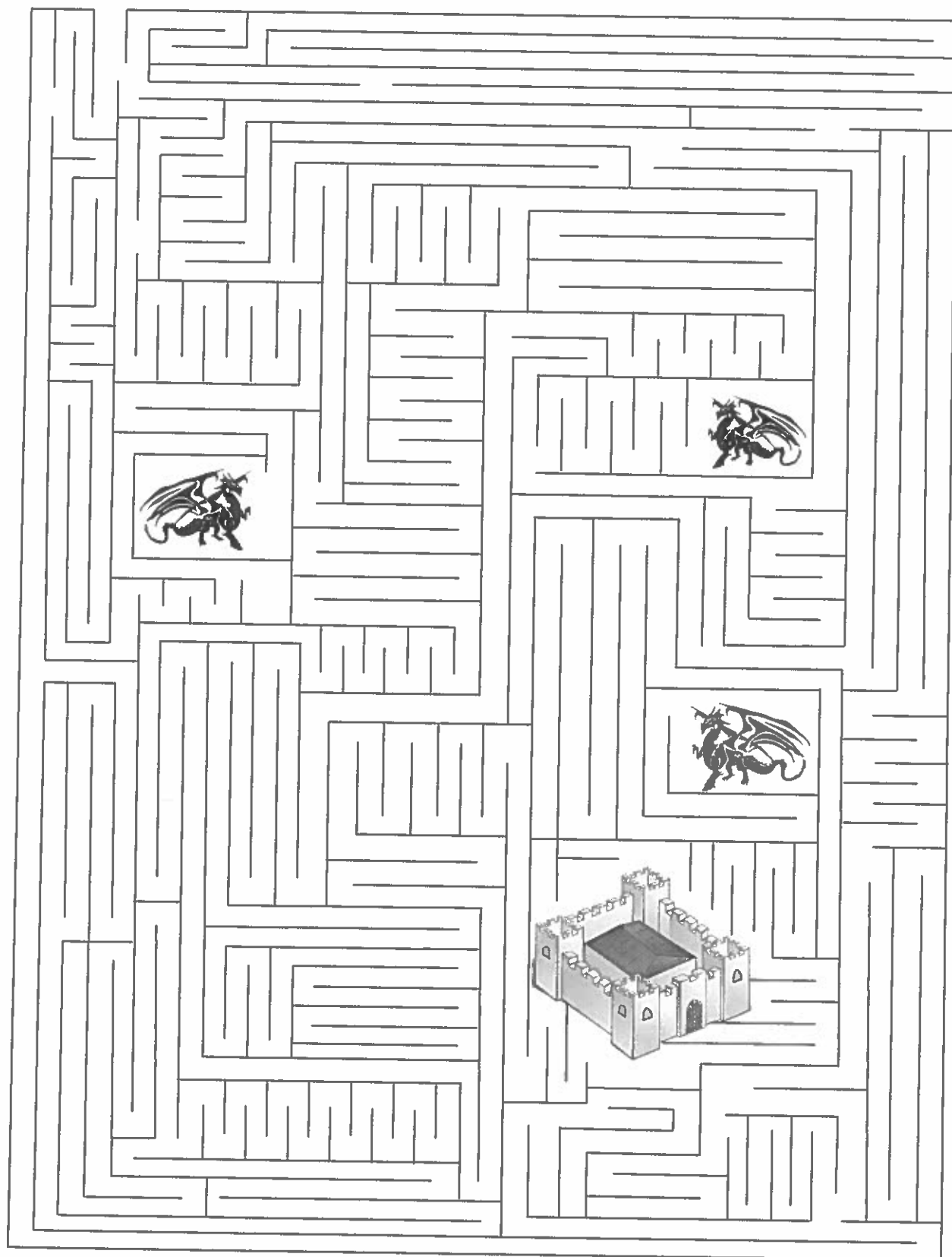
The lines must not cross!



2. Castle Maze

Can you find your way to the castle? Make sure to avoid the dragons. TIP: Use a pencil in case you go the wrong way!

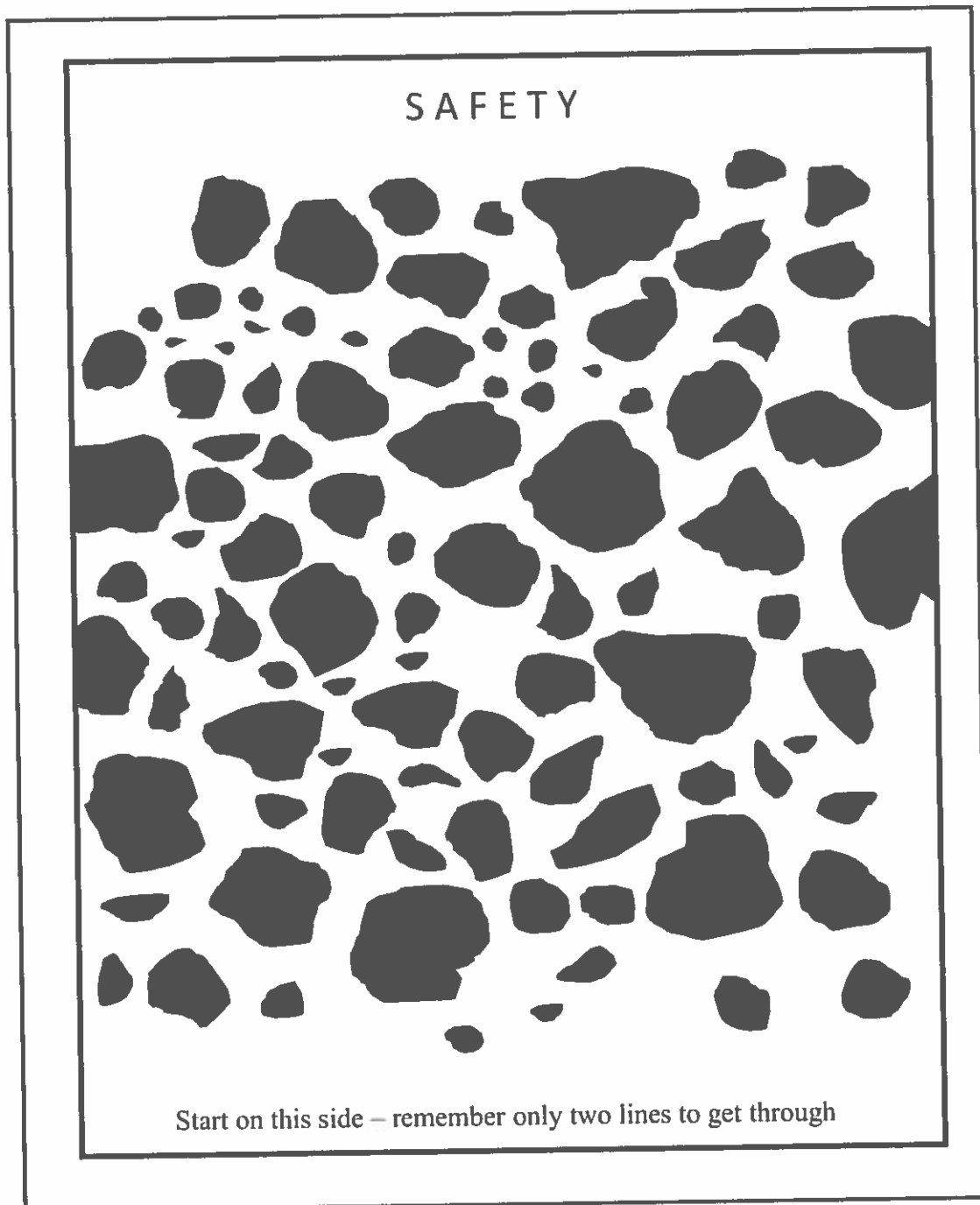
 start



3. Avoid the Asteroids

You are the captain of the spaceship *Quantum Leap*, trying to pass through an asteroid belt. Although the spaceship is very fast, it can only fly in a straight line, and has limited ability to make sharp turns.

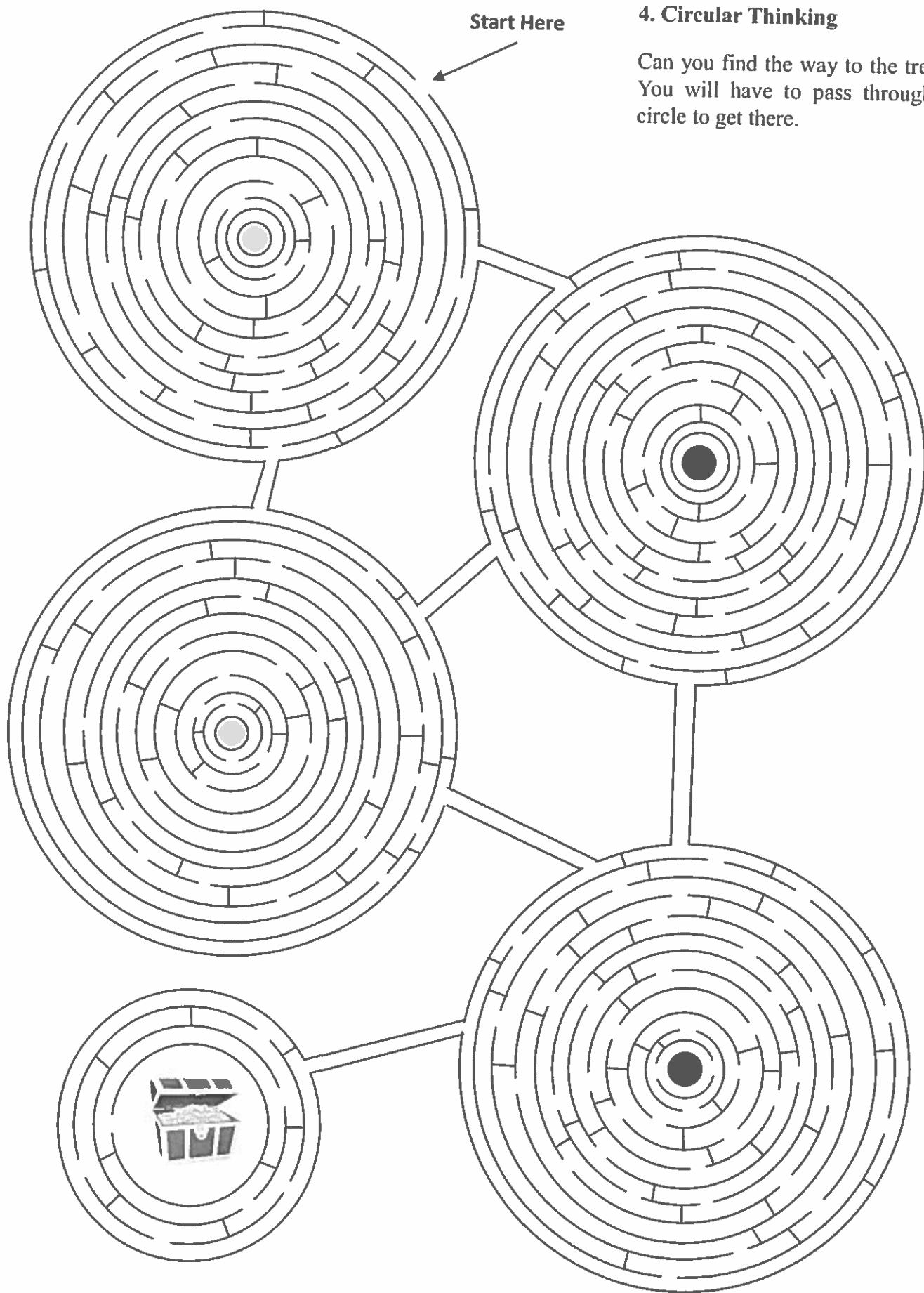
Your mission, should you accept it, is to pass through the asteroids without touching them, going in a straight line, turning only once.



4. Circular Thinking

Can you find the way to the treasure?
You will have to pass through each
circle to get there.

Start Here

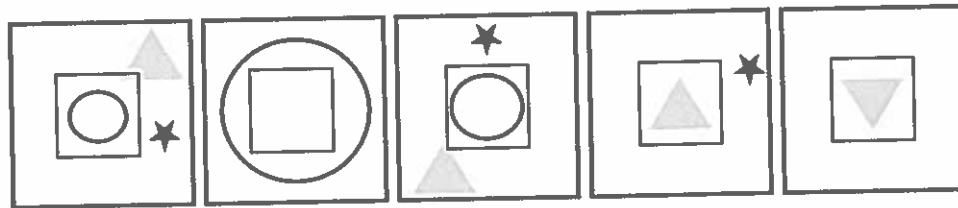
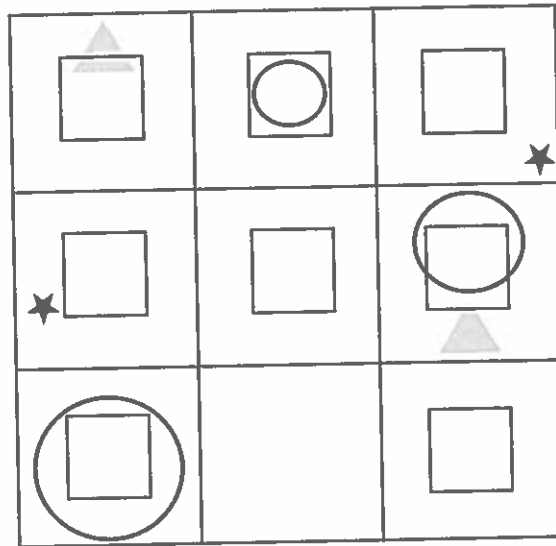


Fill In The Blanks

These exercises help practice non-verbal reasoning skills by challenging the student to carefully look at the properties of each box in terms of shape types, numbers, sizes, shading, and locations.

Complete the 3x3 grids by choosing one of the five choices that best fits the given pattern.

1



a.

b.

c.

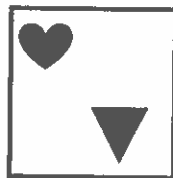
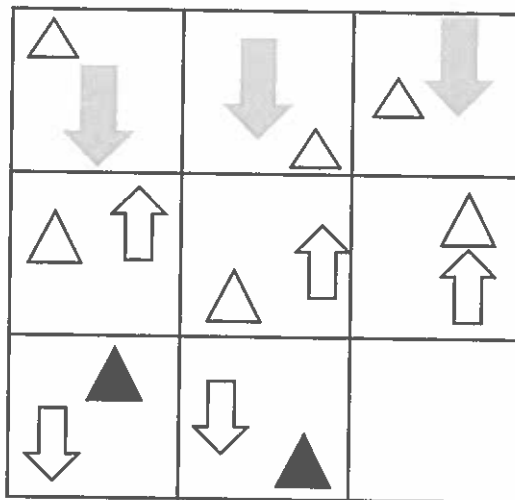
d.

e.

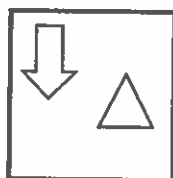
TIPS for looking at these types of puzzles:

- 1) Look at the different **types** of shapes in each of the rows and columns. Look for any patterns
- 2) Look at the **number** of shapes and the **number** of the sides
- 3) Look at the **position** and **direction** of the shapes in the boxes.
- 4) Look at the **shading** or **color** of the shapes
- 5) Observe the **relationship** of the shapes to each other – is there a pattern?
- 6) Watch out for shapes that do not fit a pattern – they can be there just to throw you off!

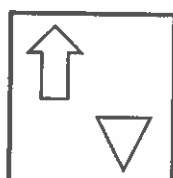
2



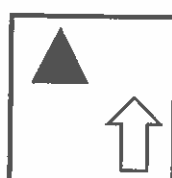
a.



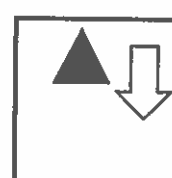
b.



c.

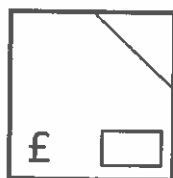
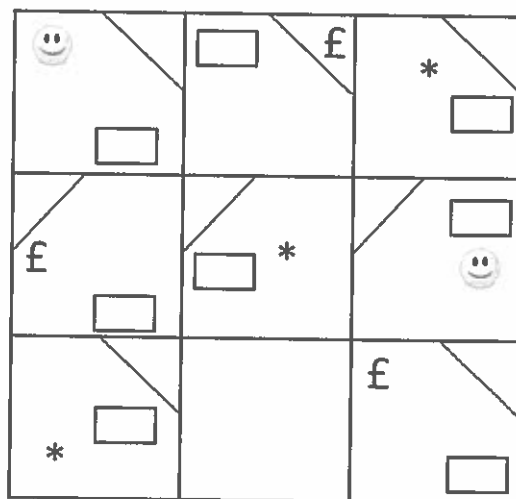


d.

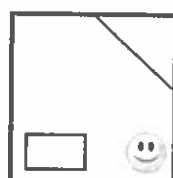


e.

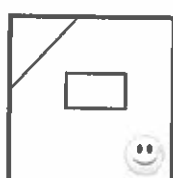
3



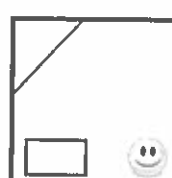
a.



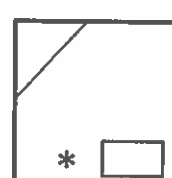
b.



c.

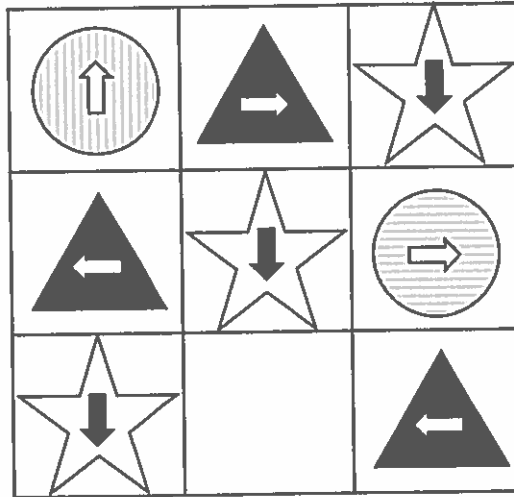


d.

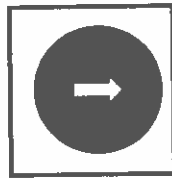


e.

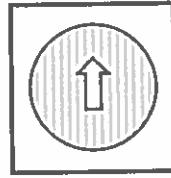
4



a.



b.



c.

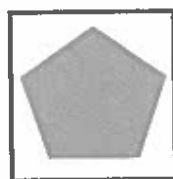
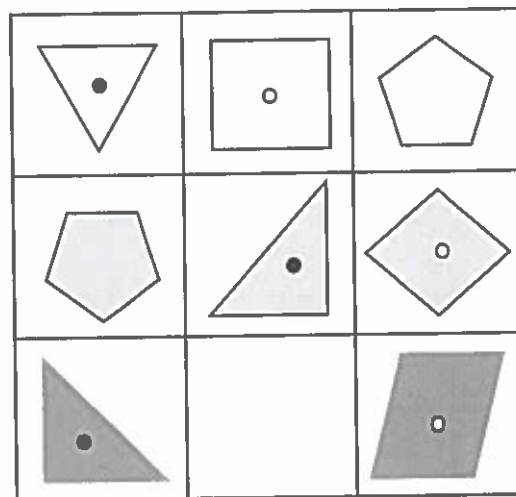


d.

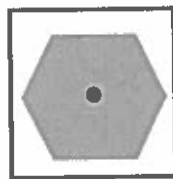


e.

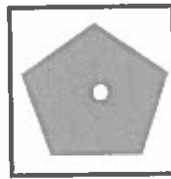
5



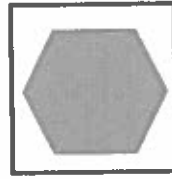
a.



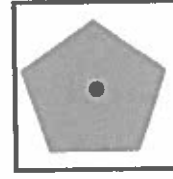
b.



c.

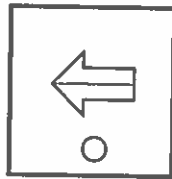
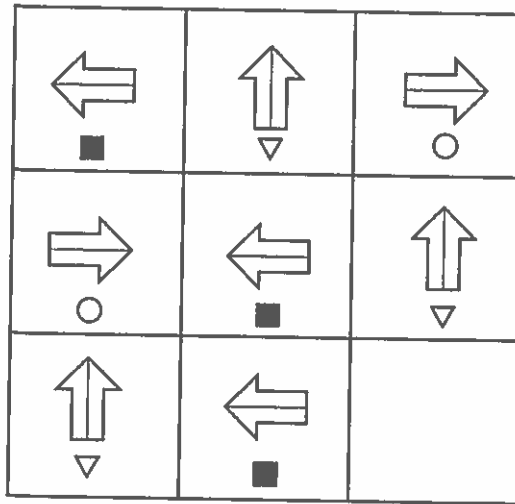


d.



e.

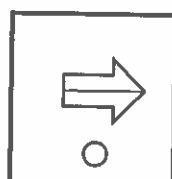
6



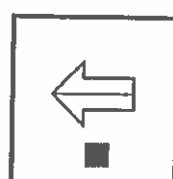
a.



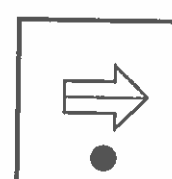
b.



c.

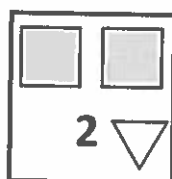
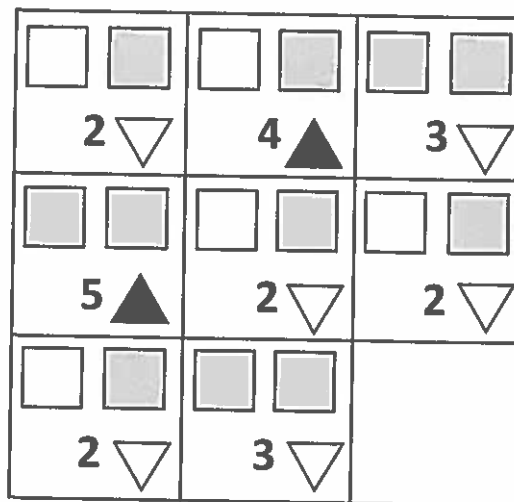


d.

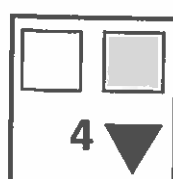


e.

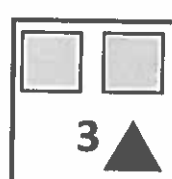
7



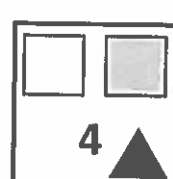
a.



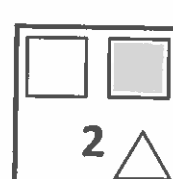
b.



c.



d.



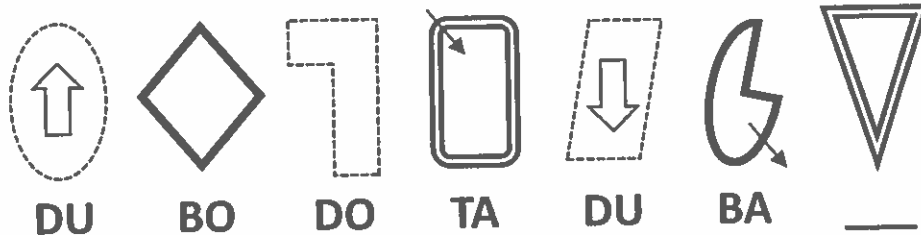
e.

Code Breaker

These exercises focus on improving non-verbal reasoning skills by requiring careful analysis of each box in terms of shape types, numbers, sizes, shading, and locations.

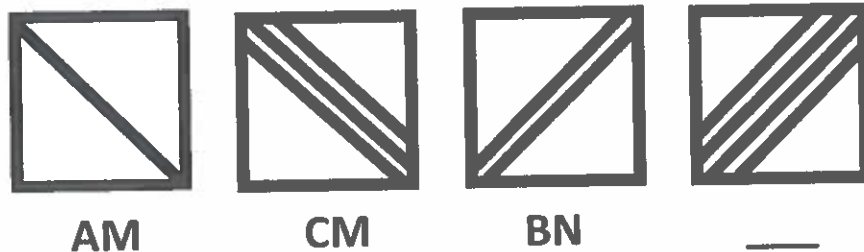
1

Look at the examples below and determine the code for the final shape.



2

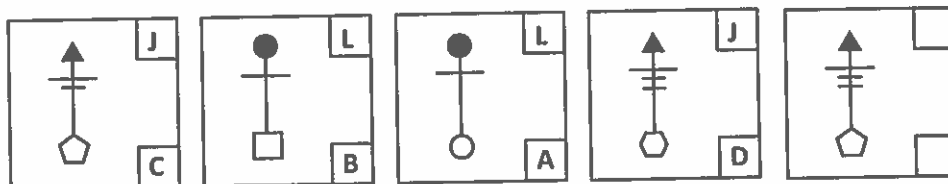
Look at the examples below and determine the code for the final shape.



- a. **DM** b. **CN** c. **BM** d. **DN**

3

Look at the examples below and determine the two letter code for the final box.



TIPS for solving codes:

- 1) Look at the shapes that have the same first letter – what features do they have in common?
- 2) Look at the second letter and match those features.
- 3) Keep in mind all of the factors to look for that you have learned so far – shape, size, line types, number of sides, orientation/relationships, direction, etc.
- 4) Remember some shapes or symbols may not always be part of the code

4

Look at the examples below and determine the number code for the final word.

TRIP

CRAB

SCAR

PAST

1875

2849

3246

— — — —

5

Look at the examples below and determine the missing letter-number code.

A3

E6

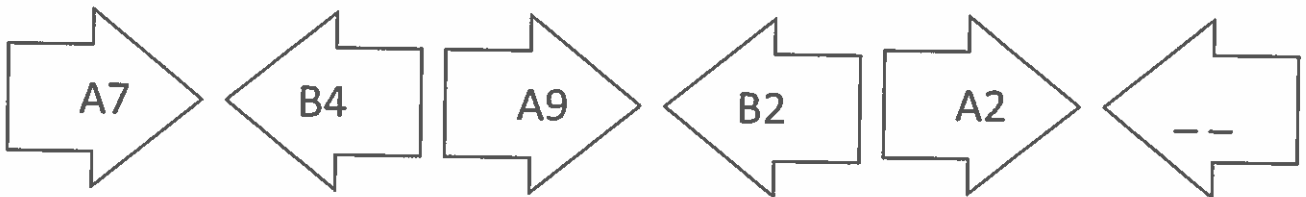
— —

O24

U48

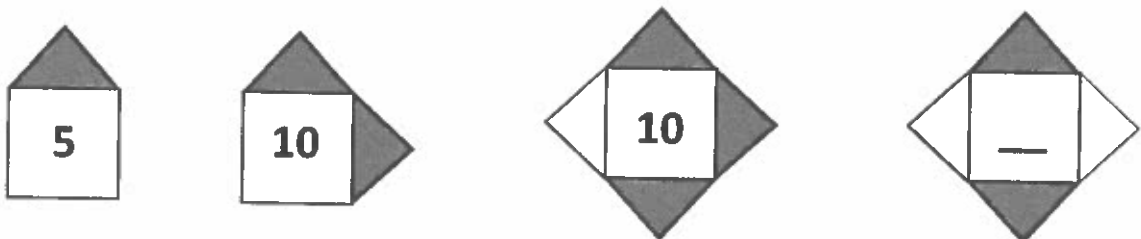
6

Look at the examples below and determine the missing letter-number code.



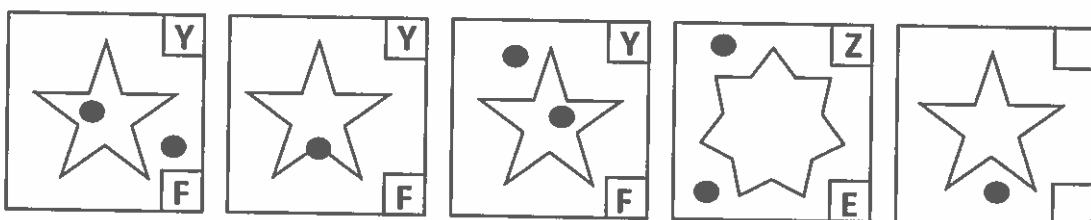
7

Look at the examples below and determine the value for the final box.



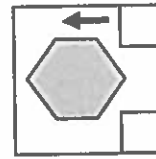
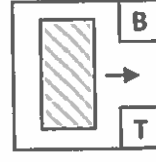
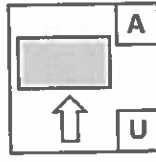
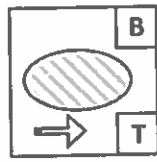
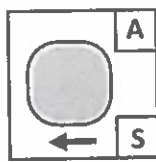
8

Look at the examples below and determine the two letter code for the final box.



9

Look at the examples below and determine the two letter code for the final box.



A
U

a.

B
T

b.

A
S

c.

A
T

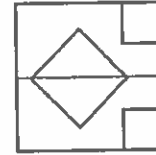
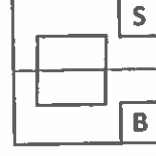
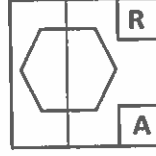
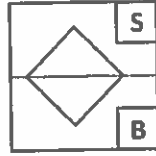
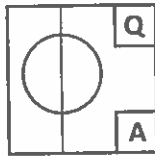
d.

B
S

e.

10

Look at the examples below and determine the two letter code for the final box.



R
A

a.

R
B

b.

S
A

c.

Q
B

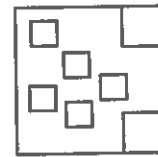
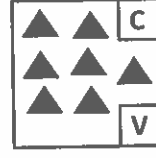
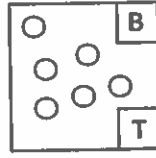
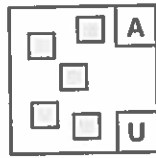
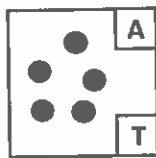
d.

S
B

e.

11

Look at the examples below and determine the two letter code for the final box.



C
T

a.

B
V

b.

A
T

c.

A
U

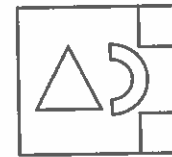
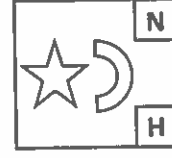
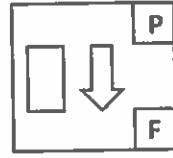
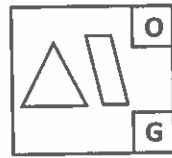
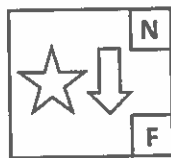
d.

A
V

e.

12

Look at the examples below and determine the two letter code for the final box.



N
H

a.

O
H

b.

P
F

c.

O
F

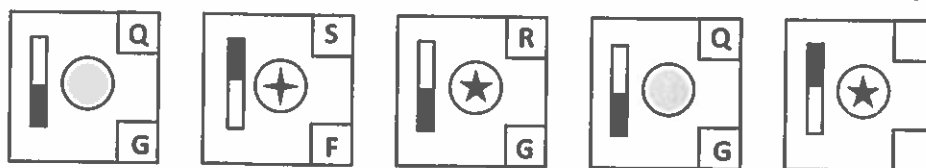
d.

O
G

e.

13

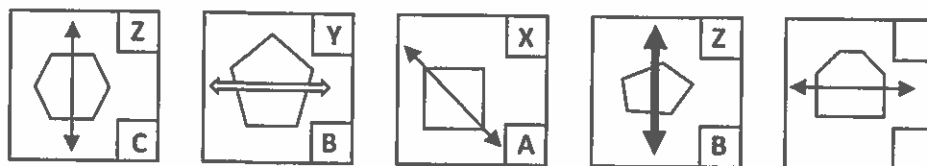
Look at the examples below and determine the two letter code for the final box.



- a.
b.
c.
d.
e.

14

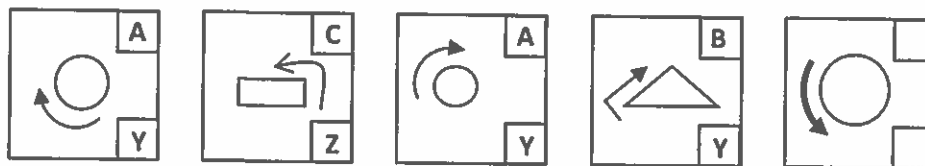
Look at the examples below and determine the two letter code for the final box.



- a.
b.
c.
d.
e.

15

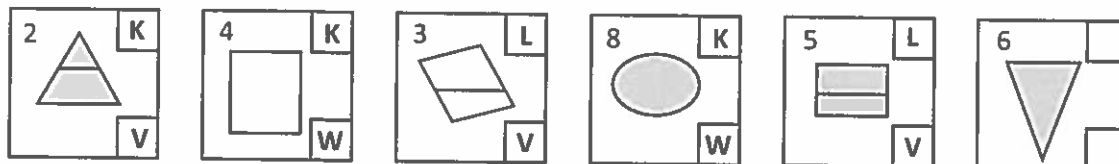
Look at the examples below and determine the two letter code for the final box.



- a.
b.
c.
d.

16

Look at the examples below and determine the two letter code for the final box.



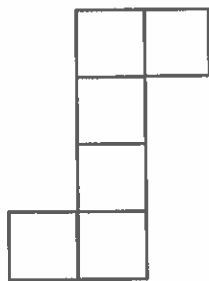
- a.
b.
c.
d.

Cube Nets

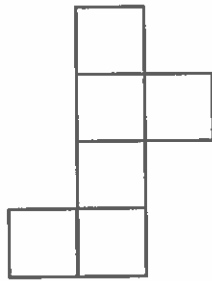
These exercises will help to develop spatial reasoning by testing the ability to relate three-dimensional objects to their two-dimensional forms (nets).

1

Which of the nets below can not be folded into a cube? There may be more than one.



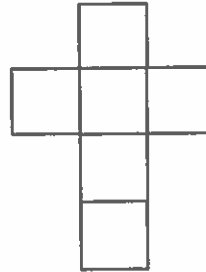
a.



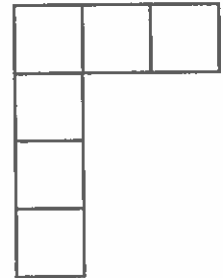
b.



c.



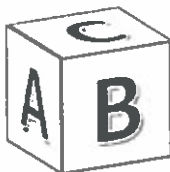
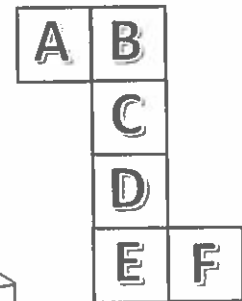
d.



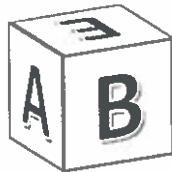
e.

2

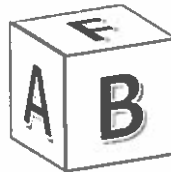
Which of the cubes below can be made from this net?



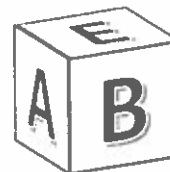
a.



b.



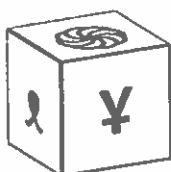
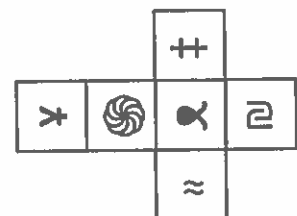
c.



d.

3

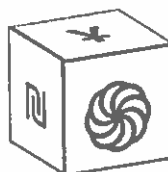
Which of the cubes below can be made from this net?



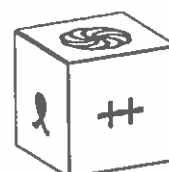
a.



b.



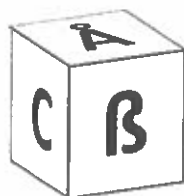
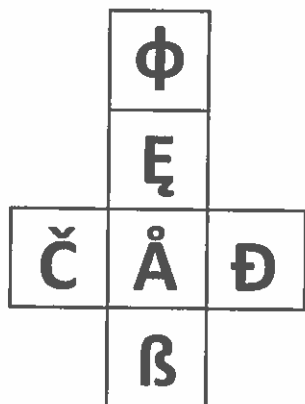
c.



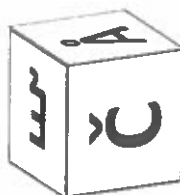
d.

4

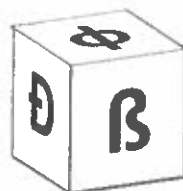
Which of the cubes can be made from this net?



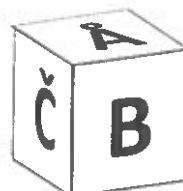
a.



b.



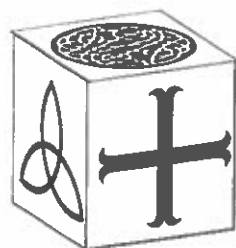
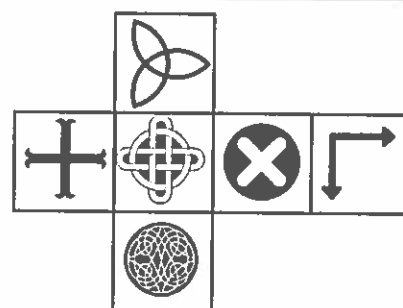
c.



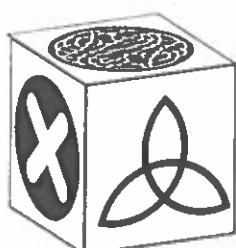
d.

5

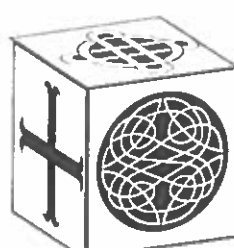
Which of the cubes can be made from this net?



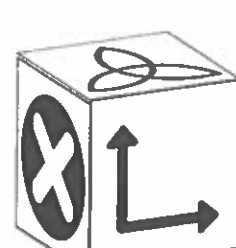
a.



b.



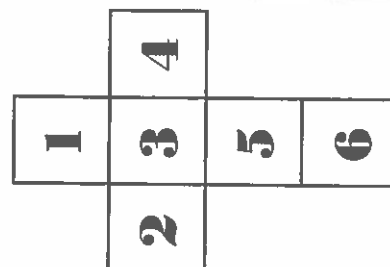
c.



d.

6

Which of the cubes can be made from this net?



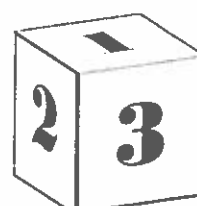
a.



b.



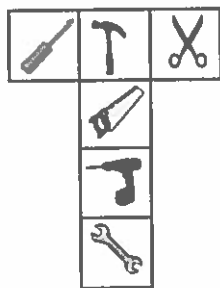
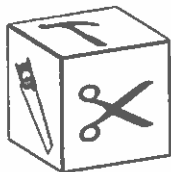
c.



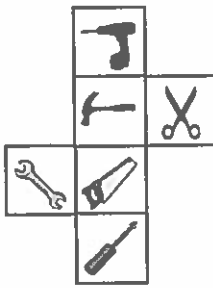
d.

For each of the cubes below, identify the net that can be folded to create the cube as shown:

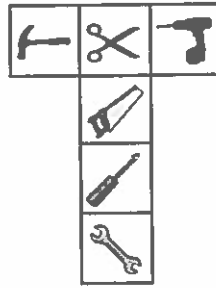
7



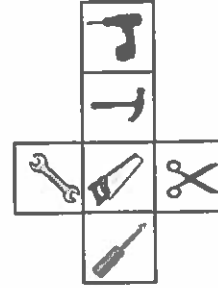
a.



b.

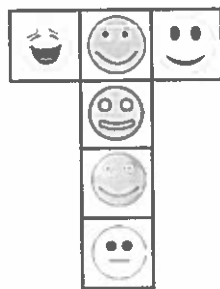
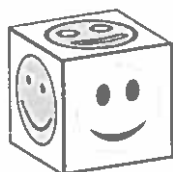


c.

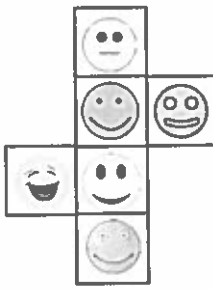


d.

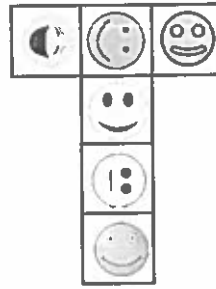
8



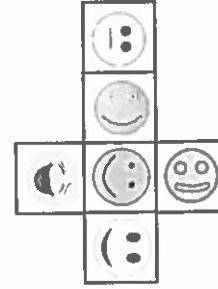
a.



b.

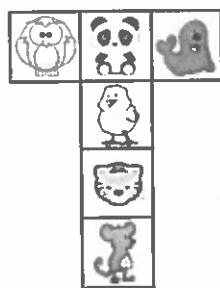


c.

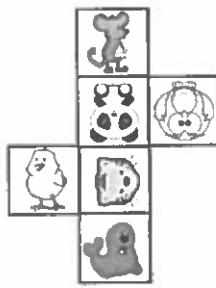


d.

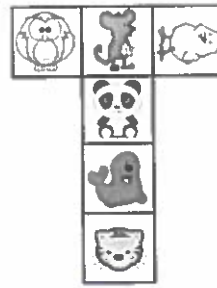
9



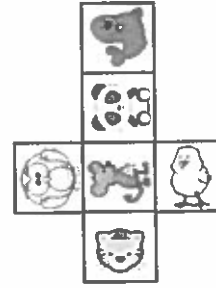
a.



b.

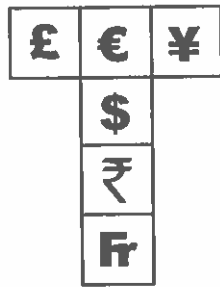


c.

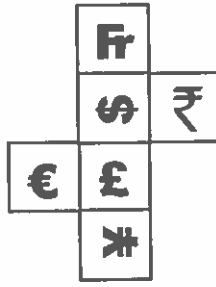


d.

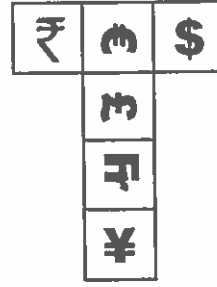
10



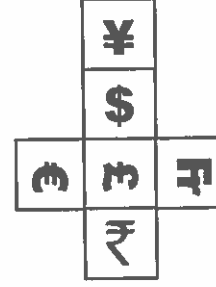
a.



b.



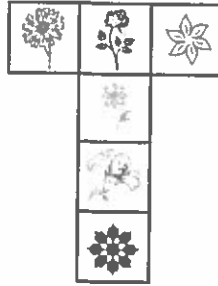
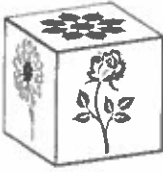
c.



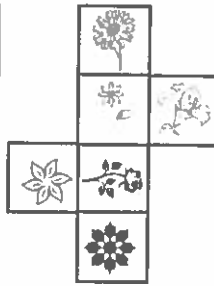
d.

For each of the cubes below, identify the net that can be folded to create the cube as shown:

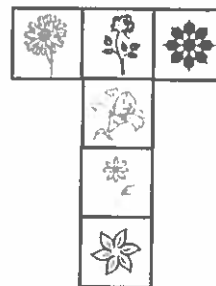
11



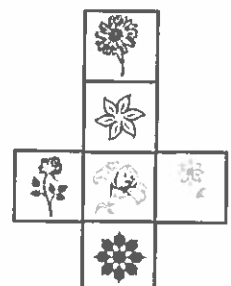
a.



b.

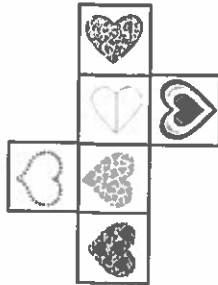
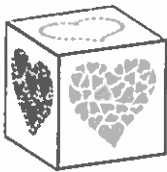


c.

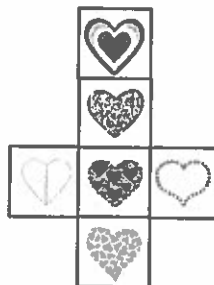


d.

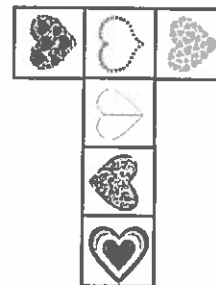
12



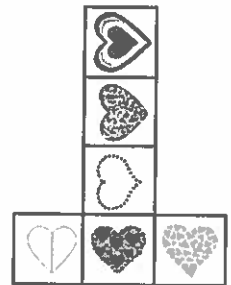
a.



b.

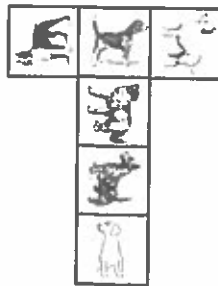


c.

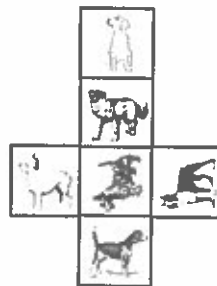


d.

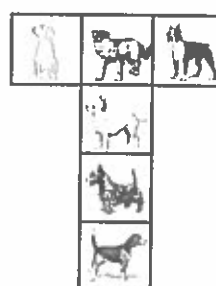
13



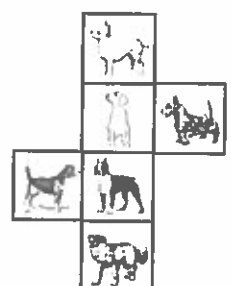
a.



b.



c.



d.

14



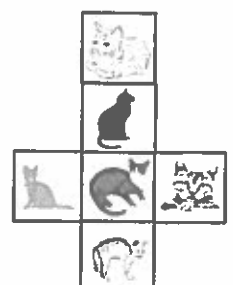
a.



b.

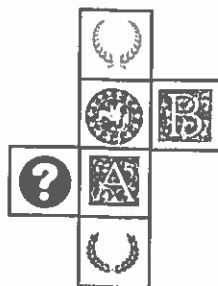
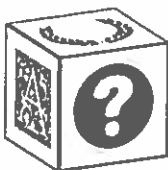


c.

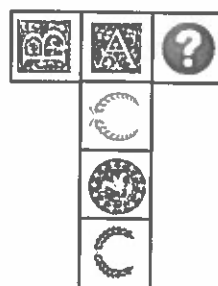


d.

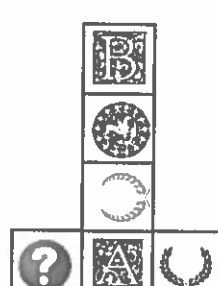
15



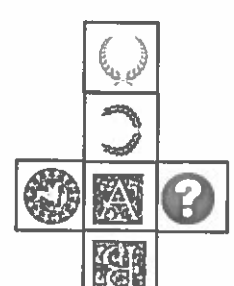
a.



b.



c.



d.

Anagrams

with synonym clues

Anagrams are words or phrases formed by rearranging the letters of another word or phrase. These puzzles are excellent for increasing vocabulary and reinforcing spelling. Use the word bank at the bottom of the page if you need help.

- | | | |
|-------------------|------------------------|-------|
| 1) ten line | (tolerant, lax) | _____ |
| 2) pay hat | (disinterest) | _____ |
| 3) trout | (teacher) | _____ |
| 4) yes rat end | (inactive, not moving) | _____ |
| 5) trainer | (land, contour) | _____ |
| 6) peace climb | (flawless) | _____ |
| 7) ice tin | (stir up trouble) | _____ |
| 8) soul cal | (insensitive) | _____ |
| 9) present | (reptile) | _____ |
| 10) meat peer | (spread throughout) | _____ |
| 11) nod car | (honesty) | _____ |
| 12) if or clip | (productive) | _____ |
| 13) fringe | (digit) | _____ |
| 14) rope postures | (absurd) | _____ |
| 15) tuna band | (ample) | _____ |
| 16) bye rat | (be disloyal) | _____ |

- 17) set it duet (poor) _____
- 18) iron fire (lesser) _____
- 19) toss to auntie (flashy, extravagant) _____
- 20) selves (container; ship) _____
- 21) curious lid (silly) _____
- 22) ear implant (political assembly) _____
- 23) it viral (unimportant) _____
- 24) cool cinema (cost-effective) _____
- 25) dad can tie (contender) _____
- 26) dog hurt (scarcity; no rain) _____
- 27) cat van (empty) _____
- 28) farm gent (part, bit) _____
- 29) acronym or pet (modern) _____
- 30) canine us (annoyance) _____

WORD BANK

FRAGMENT	NUISANCE	LENIENT	BETRAY
TERRAIN	RIDICULOUS	DESTITUTE	PROLIFIC
CANDIDATE	TRIVIAL	DROUGHT	VESSEL
APATHY	SEDENTARY	CONTEMPORARY	OSTENTATIOUS
VACANT	ABUNDANT	IMPECCABLE	CANDOR
INCITE	PARLIAMENT	SERPENT	INFERIOR
FINGER	PERMEATE	PREPOSTEROUS	CALLOUS
ECONOMICAL	TUTOR		

3-D Cubes

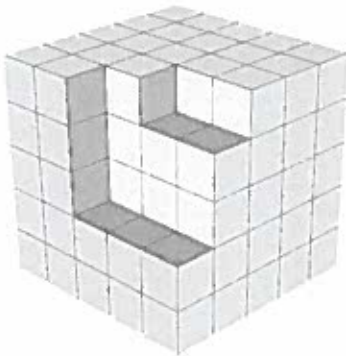
The following exercises will test your visual perception, as well as the ability to use basic geometry

1 The following questions refer to the cube below.

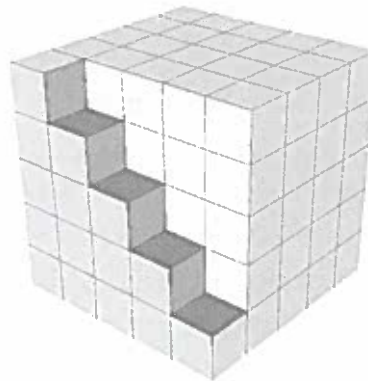
- How many individual cubes were needed to build the larger cube, as shown on the right?
- If you paint the entire cube in blue, how many cubes will have at least one blue face?



2 Which of these models have had more cubes removed?

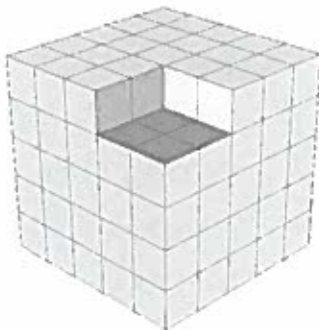


a.

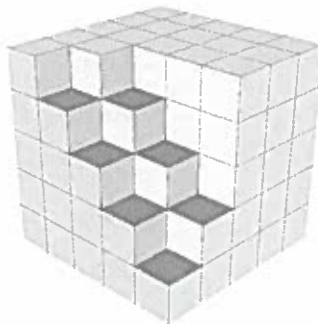


b.

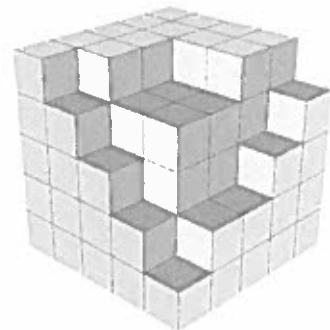
3 How many cubes have been removed from the larger cube?



a. _____



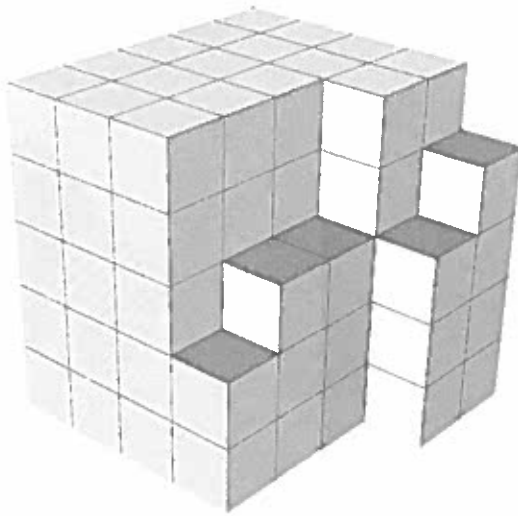
b. _____



c. _____

4

For the model below, how many cubes have been removed from the larger cube?

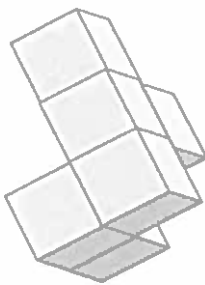
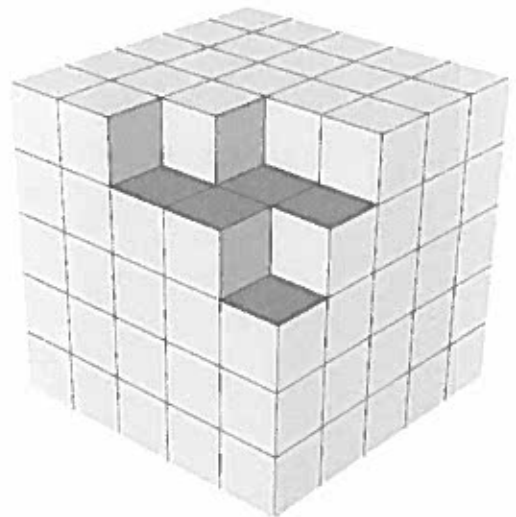


a.. _____

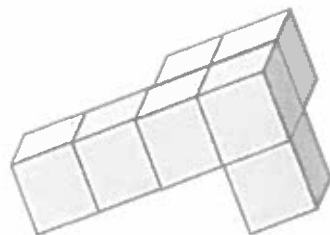
b. What percentage of the larger cube has been removed?

5

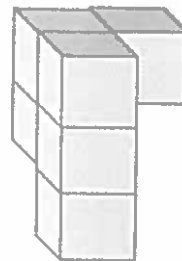
Try to identify which of the models below represents most accurately the missing piece of the large cube shape to the right.



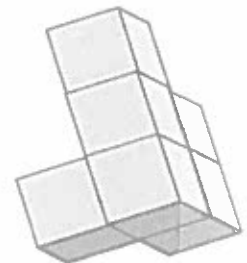
a



b



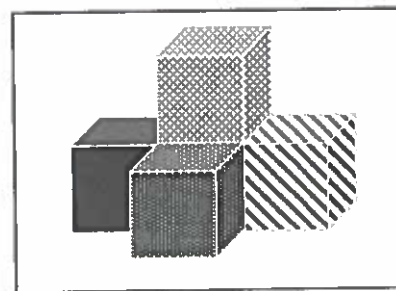
c



d

6

Try to identify which of the models below is exactly the same as the model to the right



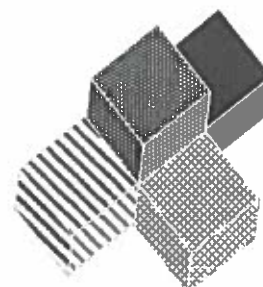
a



b



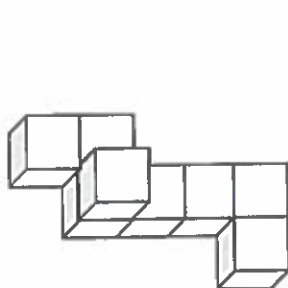
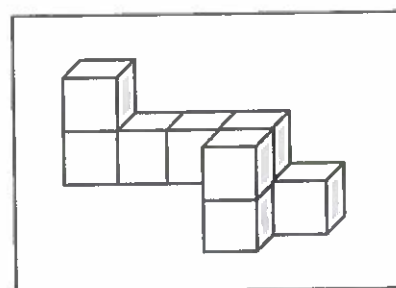
c



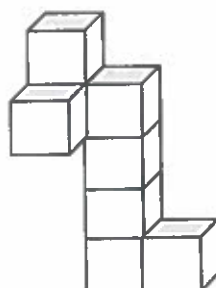
d

7

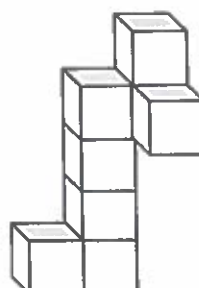
Try to identify which of the models below is exactly the same as the model to the right



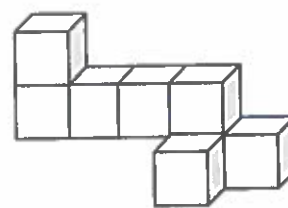
a



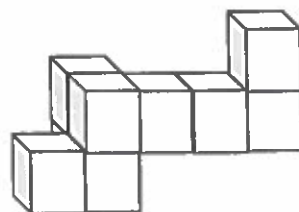
b



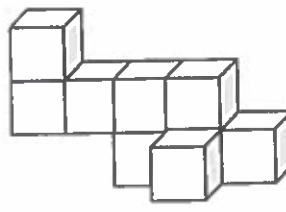
c



d



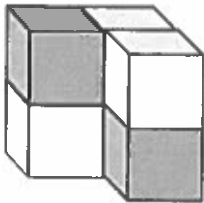
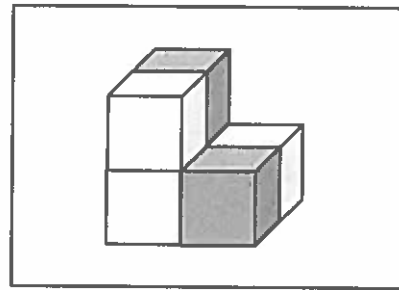
e



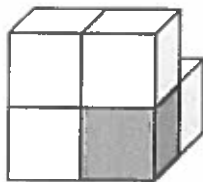
f

8

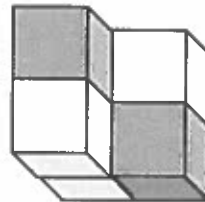
Try to identify which of the models below is **not** **the same** as the model to the right



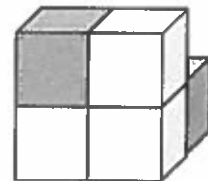
a



b



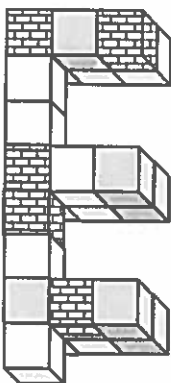
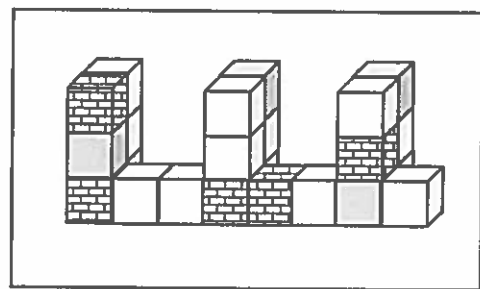
c



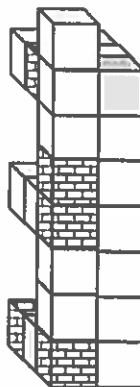
d

9

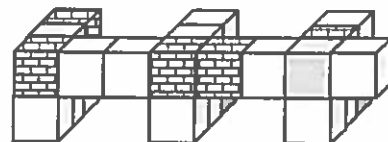
Try to identify which of the models below is exactly the same as the model to the right



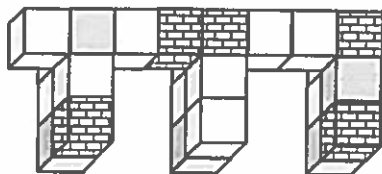
a



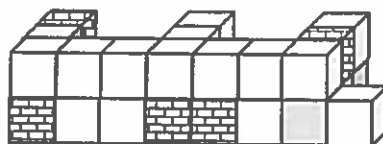
b



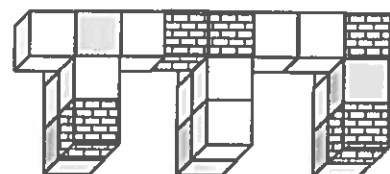
c



d



e



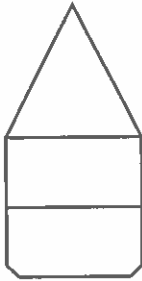
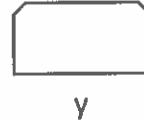
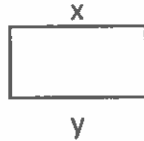
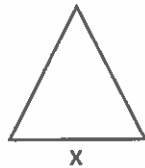
f

Shape Creations

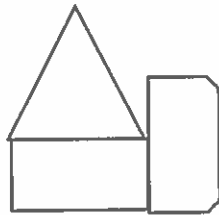
The following exercises will test spatial reasoning, the ability to interpret and visualise smaller shapes as they combine and form new shapes

For all of the following questions, look at the shapes given. Note the letters on the sides of each shape. Join the shapes where the letters correspond

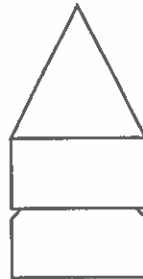
1



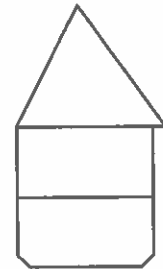
a



b

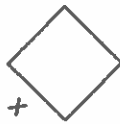


c

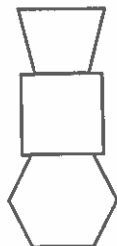


d

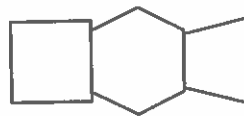
2



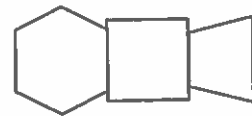
a



b



c

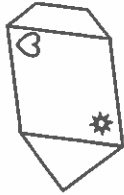
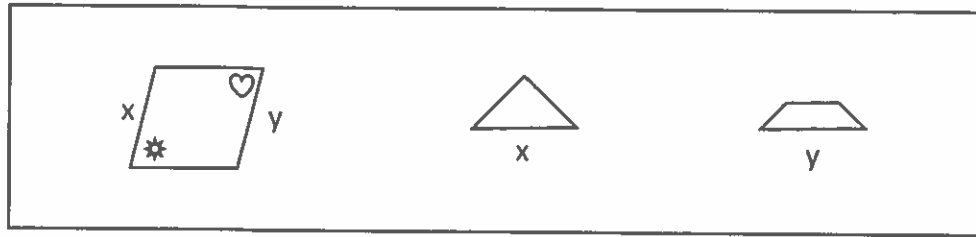


d

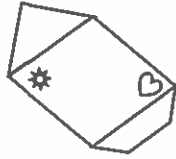
TIPS for solving shape combinations:

- 1) Identify any distinguishing features of the corresponding sides
- 2) Shapes will usually be rotated, so make sure you can mentally 'move' the shapes around
- 3) It might be a good idea to draw the shape and compare to the answers

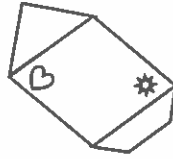
3



a



b

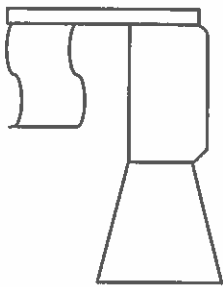
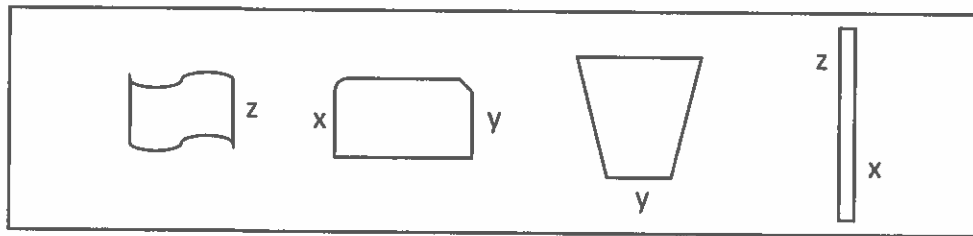


c

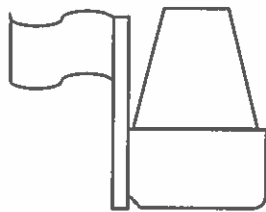


d

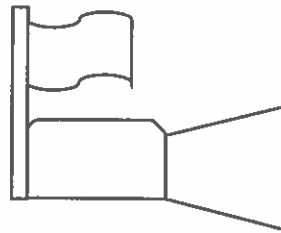
4



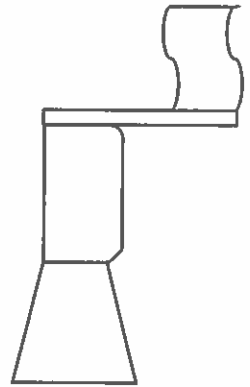
a



b

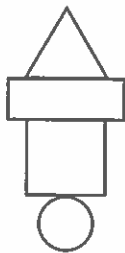
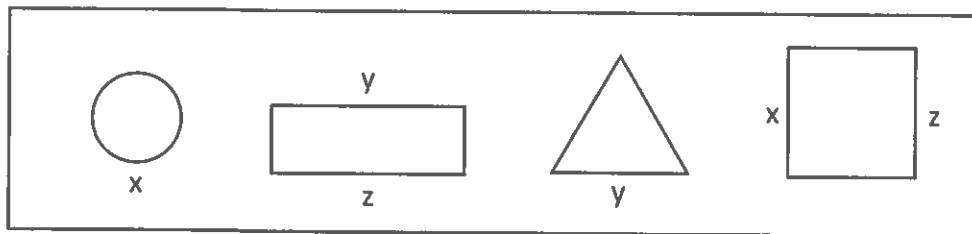


c

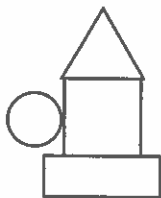


d

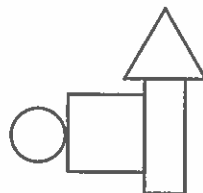
5



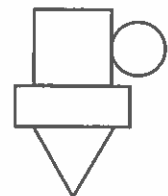
a



b

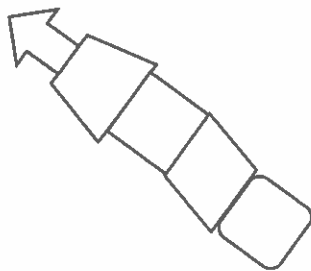
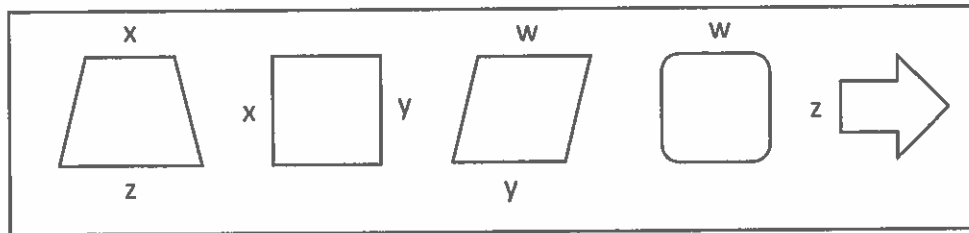


c

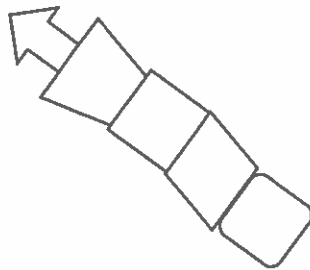


d

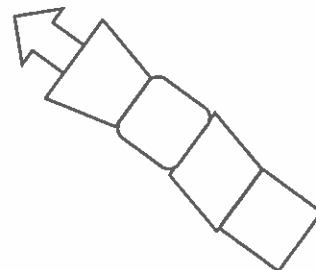
6



a

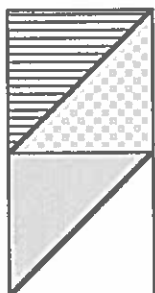
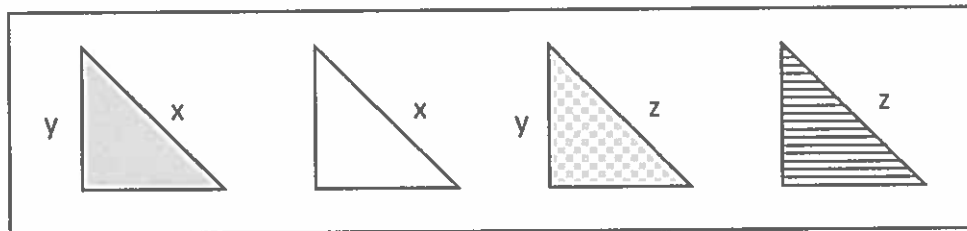


b

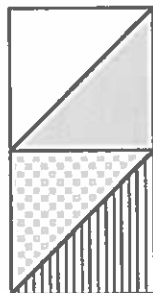


c

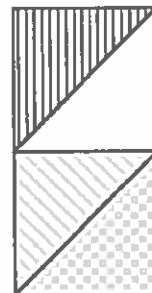
7



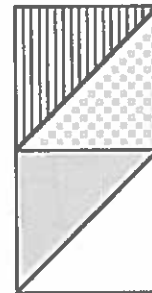
a



b

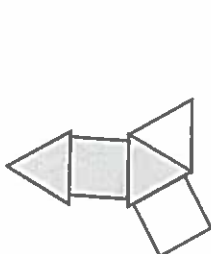
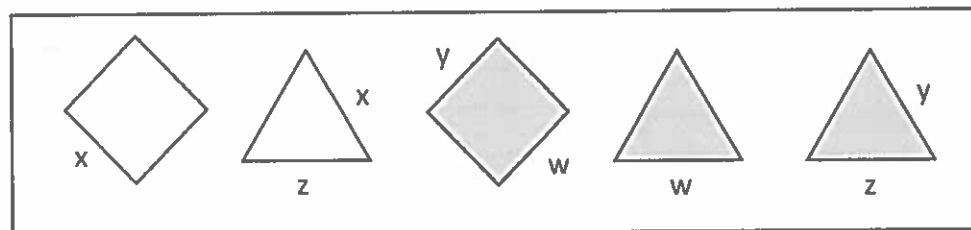


c

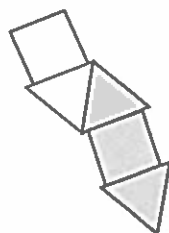


d

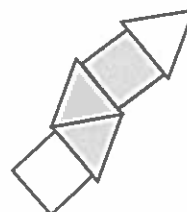
8



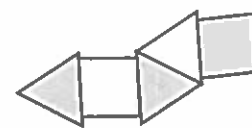
a



b



c



d


Square Hopper

This game tests your ability to think ahead and anticipate changing directions based on the numbers required.

In this game, you must move **left** or **right**, **up** or **down** (but never diagonally) *exactly* the number of squares as the number you land on. You cannot move off of the board. For example, you will start on the number 4. From this position you can only move right 4 spaces, or down 4 spaces.

The goal is to reach the square marked 'End Here.' Can you do this in 7 moves? You should use a pencil for trial and error.


Start Here



4	4	3	5	3	4
3	4	3	1	2	2
4	1	1	3	1	3
1	2	3	2	4	4
3	1	1	3	4	2
4	2	2	3	3	End Here

Now try it again. You should aim to complete this one also in 7 moves.

Start Here



5	4	3	1	2	4	1
3	2	4	3	4	1	6
1	3	2	4	2	2	1
3	4	1	2	2	1	5
2	4	3	4	1	3	4
3	2	3	4	1	4	3
1	4	1	4	4	3	2
2	2	5	3	4	5	End Here

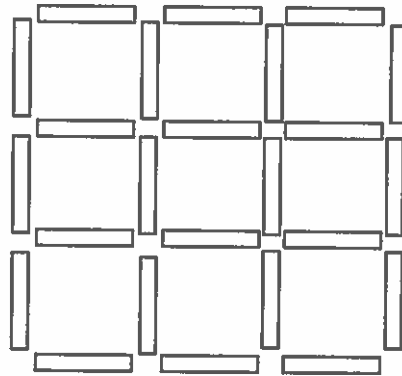
Straw Puzzles

These exercises test lateral thinking by arranging various types of shapes as instructed. The answers are not always obvious and require an indirect and creative approach. TIP: You might want to recreate these shapes using pencils or crayons, to help find the answers.

1

Twenty straws have been arranged into nine squares as shown.

Can you form only four separate squares, without any extra straws remaining, by removing just eight of the straws?

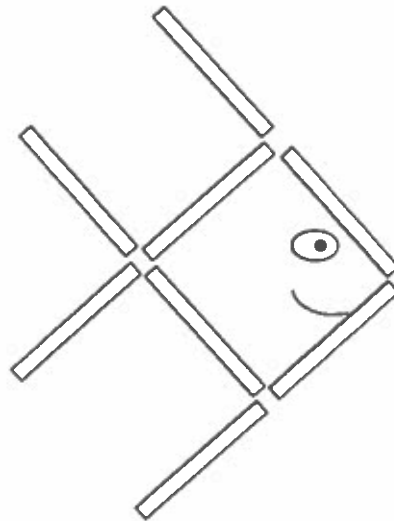


2

Imagine this arrangement of straws is a fish, swimming to the right.

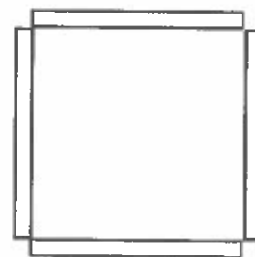
Can you make the fish change directions (and swim to the left), by only moving three straws?

You should move the eye and mouth as well!



3

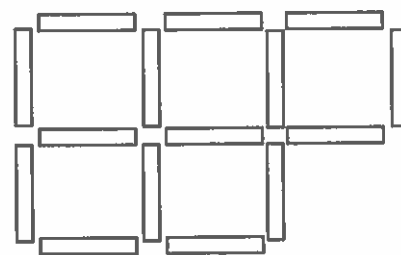
Can you change this single square into two squares, by only adding two straws?



4

Looking at the figure on the right, can you remove three straws to give you only three squares, without any extra straws remaining?

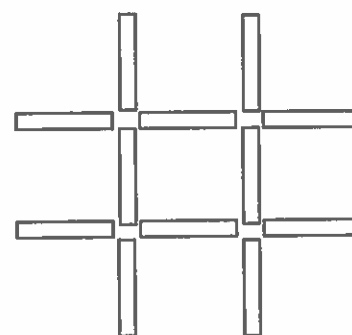
All three squares will need to be the same size.



5

Looking at the figure on the right, can you move 3 straws to give you three squares?

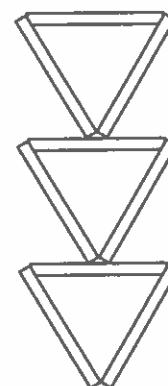
All three squares will need to be the same size.



6

Looking at the straws forming three triangles on the right, can you move three straws, to form four triangles in total?

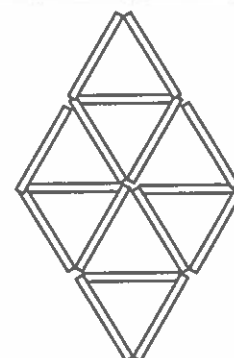
Hint: the triangles might not all be the same size



7

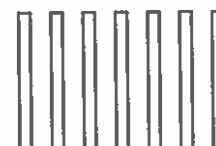
The 16 straws to the right have been placed in a formation of eight equal triangles.

Can you remove just four of the straws so that only four of the triangles remain?



8










From the seven straws lined up to the right, can you remove one straw, then move two others, to leave nothing?



Symbol Addition




In this exercise you will try to determine the value of each symbol based on the sum of each row, column or diagonal as shown. The first problem has been done as an example

The sum of the 3 symbols in this column is 10

12	10	13	9	
			16	The sum of the 3 symbols in this row is 16
			13	
			6	










The sum of the 3 symbols in the diagonal is 9

Answers




	= 5
	= 2
	= 6

TIP for solving symbol addition: Remember to use simple algebra to solve for unknown variables.










1

13	16	25	13	
			11	
			18	
			25	




Answers

	=	___
	=	___
	=	___

2

11	12	17	16
			17
			12
			11




Answers

	=	___
	=	___
	=	___










3

25	26	24	12
			25
			25
			25




Answers

	=	___
	=	___
	=	___










4

14	12	16	14
			16
			14
			12




Answers

	=	___
	=	___
	=	___










5

-3	8	10	5
			5
			3
			7


Answers

	=	___
	=	___
	=	___










6

12	22	2	4
			20
			4
			12




Answers

	=	___
	=	___
	=	___

7

2	7	7	-1
			2
			15
			-1

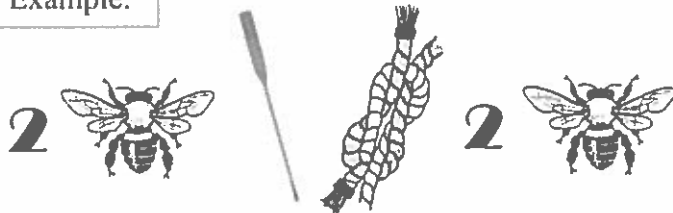
Answers

	=	___
	=	___
	=	___

Get on the Rebus

A rebus is a puzzle in which you must determine the word or phrase, which is represented by a combination of pictures, symbols or letters. In some of the exercises, each word is represented, in others some words are assumed by the pictures or arrangement of the letters. Aside from the general amusement, these help you improve verbal reasoning by challenging your ability to use vocabulary, infer meaning and think creatively.

Example:



Clue

Answer

Famous quote
from Hamlet

To be or not to be



Clue

It's all around us






Wake me up



What's missing?

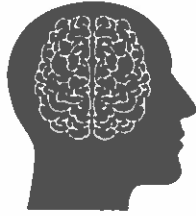


It's the right thing to do

<div> <div>5</div> <div> M CE M CE M CE </div> <div>Nursery rhyme</div> </div>	<div> <div>6</div> <div> <div>e</div> <div>v</div> <div>i</div> <div>g</div> </div> <div>I can't do it</div> </div>
<div> <div>7</div> <div>  </div> <div>(sounds like) a perfect place</div> </div>	<div> <div>8</div> <div> <div>storm</div> <div>th</div> </div> <div>get inside – the weather's bad</div> </div>
<div> <div>9</div> <div>  </div> <div>computer</div> </div>	<div> <div>10</div> <div> <div>111111</div> <div>10:48am</div> </div> <div>begin the tale</div> </div>
<div> <div>11</div> <div>  </div> <div> CCCC <div> CCCCCCCCCCCCC CCCCCCCCCCCCCCCCC </div> </div> <div>looking for adventure</div> </div>	
<div> <div>12</div> <div> 1. 2. blame 3. blame </div> <div>faultless</div> </div>	<div> <div>13</div> <div> <div>o_er_t_o_</div> </div> <div>it doesn't hurt</div> </div>

<div data-bbox="170 195 256 268" data-label="Text">14</div> <div data-bbox="342 195 672 268" data-label="Text">STA4NCE</div>	<div data-bbox="836 195 922 268" data-label="Text">15</div> <div data-bbox="1089 149 1235 300" data-label="Text"> BARD BARN BARE </div>
<div data-bbox="170 485 256 558" data-label="Text">16</div> <div data-bbox="410 468 578 573" data-label="Text"> TEEET TEEET </div>	<div data-bbox="836 485 922 558" data-label="Text">17</div> <div data-bbox="984 478 1349 569" data-label="Text"> $2 \infty + \frac{B}{D}$ </div>
<div data-bbox="170 800 256 873" data-label="Text">18</div> <div data-bbox="318 779 781 898" data-label="Image"> </div>	<div data-bbox="836 800 922 873" data-label="Text">19</div> <div data-bbox="927 762 1446 978" data-label="Text"> <p>secret ←</p> <p>secret secret</p> <p>secret secret secret</p> <p>secret secret secret secret</p> </div>
<div data-bbox="170 1209 256 1283" data-label="Text">20</div> <div data-bbox="358 1167 708 1335" data-label="Image"> </div>	<div data-bbox="836 1209 922 1283" data-label="Text">21</div> <div data-bbox="1003 1073 1349 1398" data-label="Image"> </div>
<div data-bbox="170 1629 256 1703" data-label="Text">22</div> <div data-bbox="423 1472 699 1902" data-label="Image"> </div>	<div data-bbox="836 1629 922 1703" data-label="Text">23</div> <div data-bbox="1032 1587 1325 1734" data-label="Text"> <p>STANDS</p> <hr/> <p>023456789</p> </div>

24

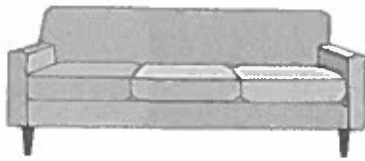


O + 4

WELCOME

+ R

25



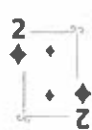
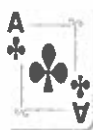
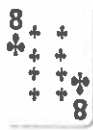
26



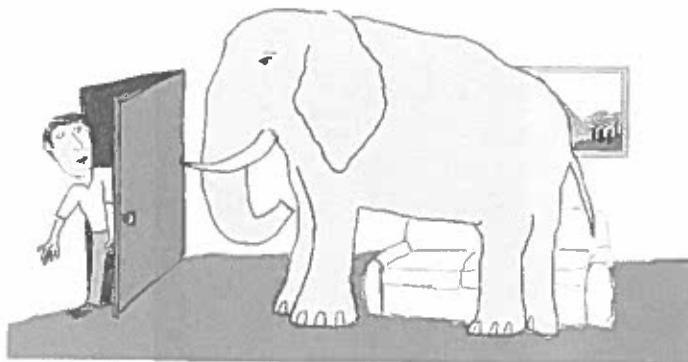
m +



27

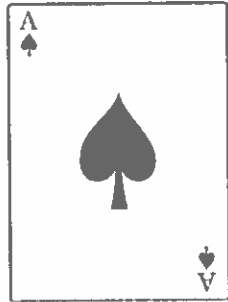


28



29

F +



the



30



31



32



in



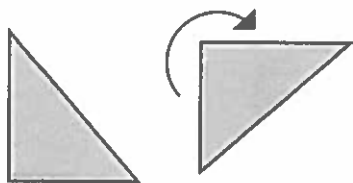
=



Reflections and Rotations

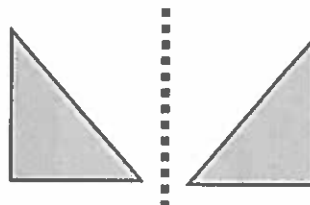
These exercises will help you identify reflections and rotations, which will appear in many non-verbal questions.

A **rotation** is when a shape is turned around a fixed point



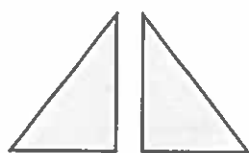
In this example the shape has been rotated clockwise 90 degrees

A **reflection** flips the image over a line

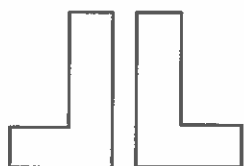


Just as it might look in a mirror.

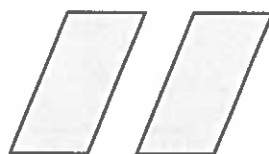
1 Which of the below is not a reflection?



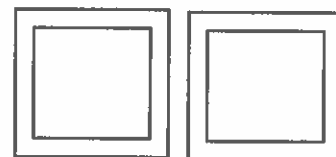
a.



b.



c.

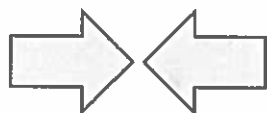


d.

2 Which of the below is not a reflection?



a.



b.



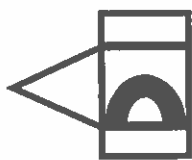
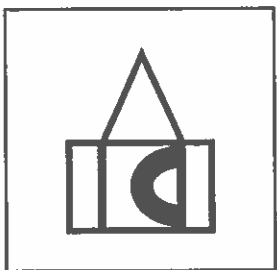
c.



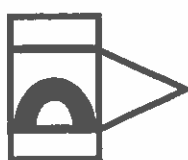
d.

Identify which image can be rotated from the original

3



a.

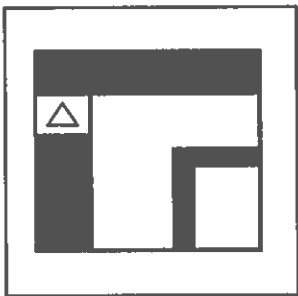


b.

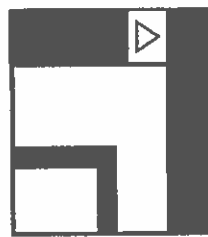


c.

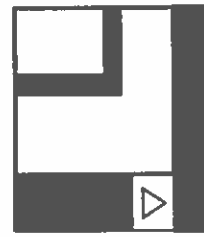
4



a.

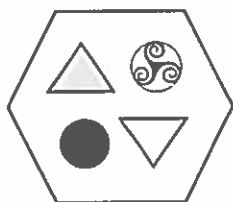
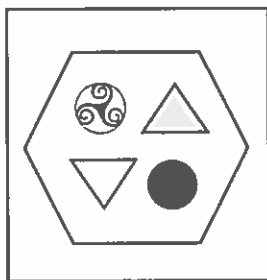


b.

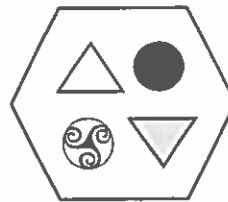


c.

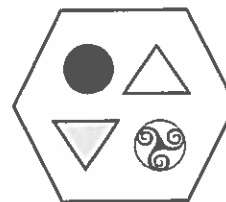
5



a.

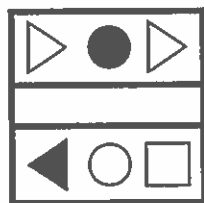
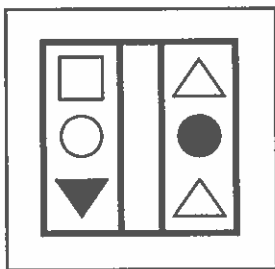


b.

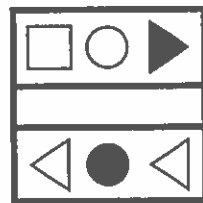


c.

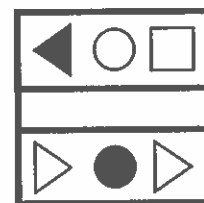
6



a.

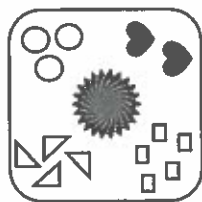
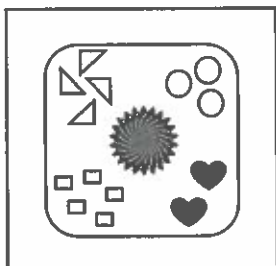


b.

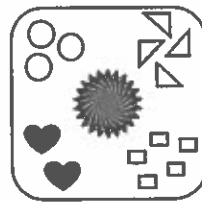


c.

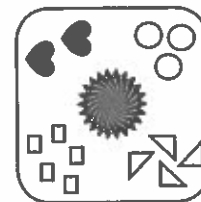
7



a.



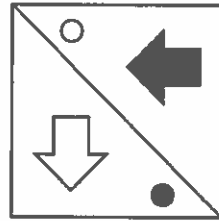
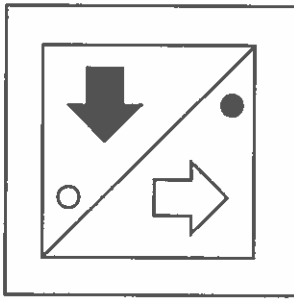
b.



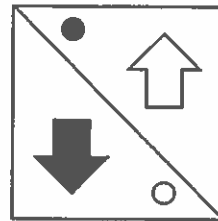
c.

Identify which image cannot be rotated from the original

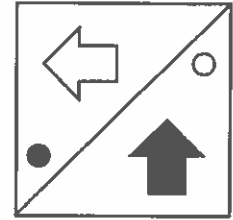
8



a.

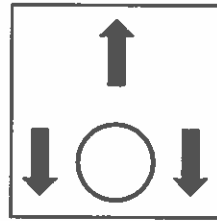
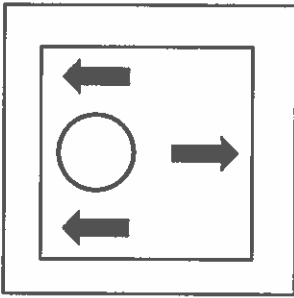


b.

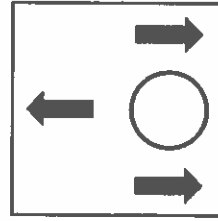


c.

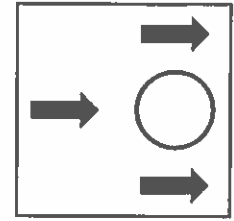
9



a.

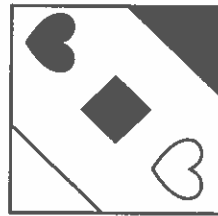
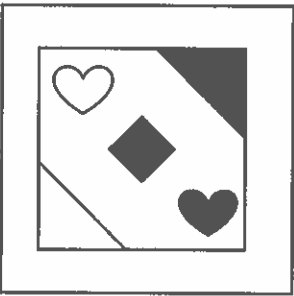


b.

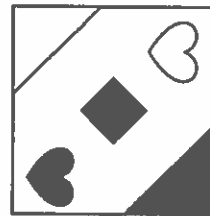


c.

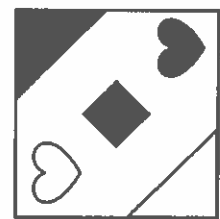
10



a.

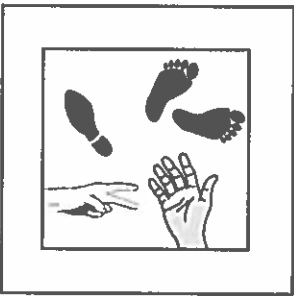


b.

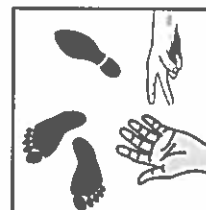


c.

11



a.

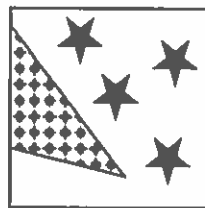
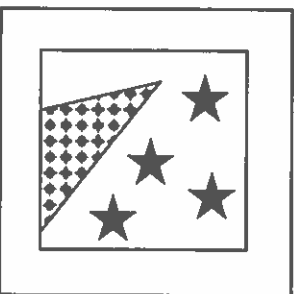


b.

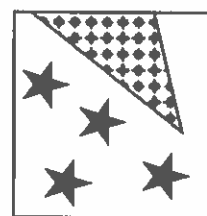


c.

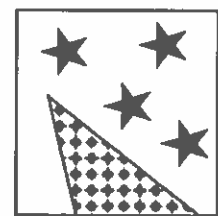
12



a.



b.

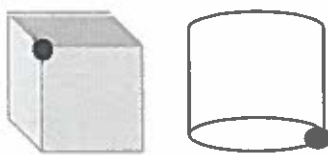
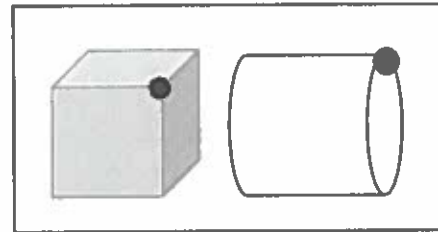


c.

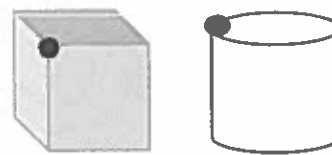
In these exercises, three-dimensional shapes are being rotated and you must determine which answer reflects the actual rotation, based on two points identified on each shape.

13

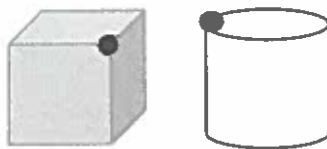
Identify the shape below which is the same as the shapes to the right. Both shapes have been rotated the same amount in the same direction



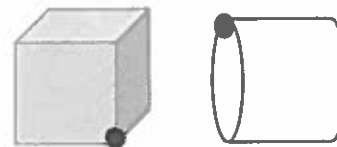
a.



b.



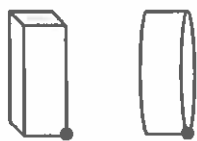
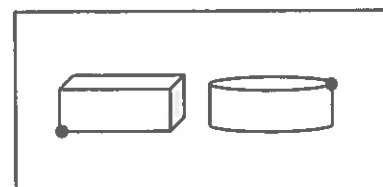
c.



d.

14

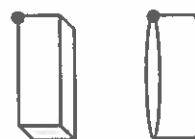
Identify the shape below which is the same as the shapes to the right. Both shapes have been rotated the same amount in the same direction



a.



b.



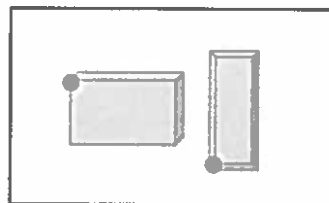
c.



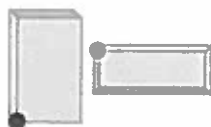
d.

15

Identify the shape below which is the same as the shapes to the right. Both shapes have been rotated in the same direction



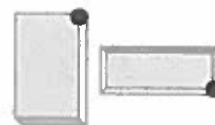
a.



b.



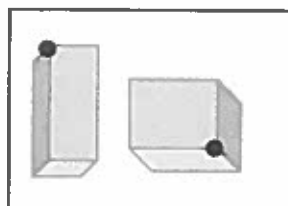
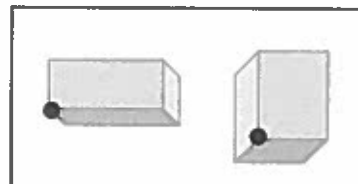
c.



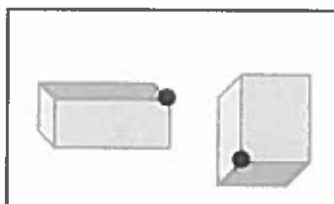
d.

16

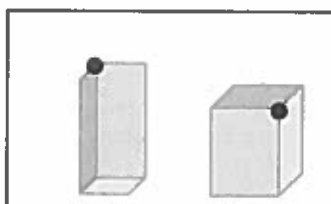
Identify the shape below which is the same as the shapes to the right. Both shapes have been rotated the same amount in the same direction



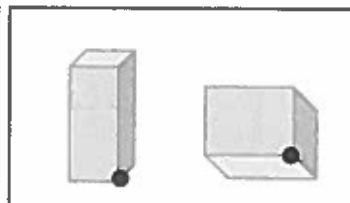
a.



b.



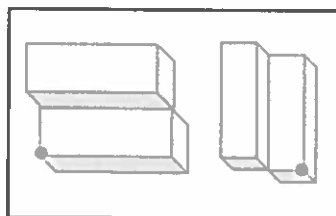
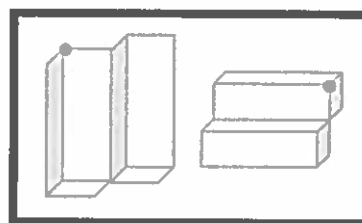
c.



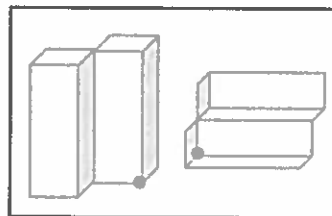
d.

17

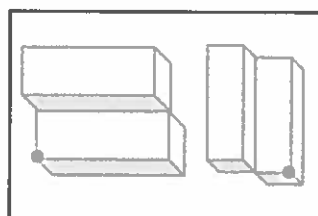
Identify the shape below which is the same as the shapes to the right. Both shapes have been rotated the same amount in the same direction



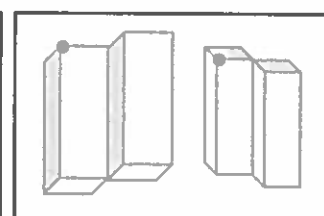
a.



b.



c.

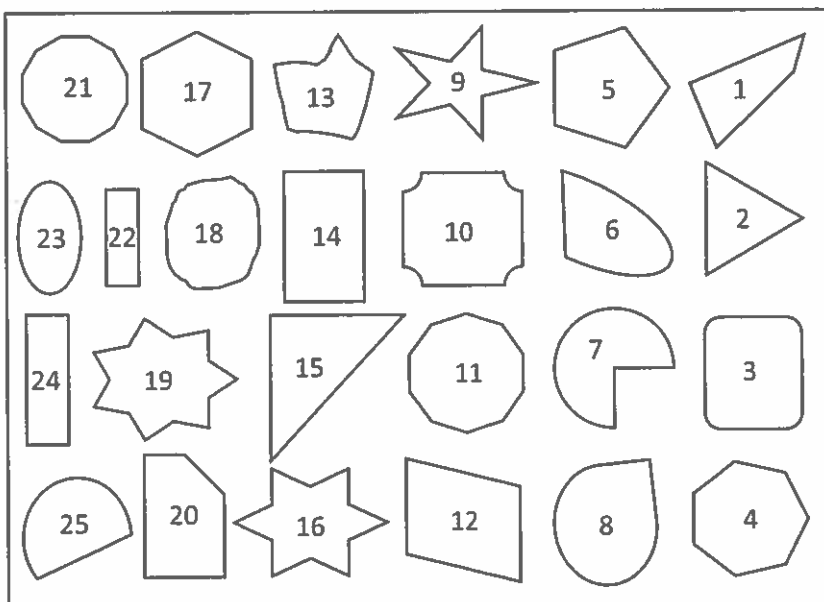


d.

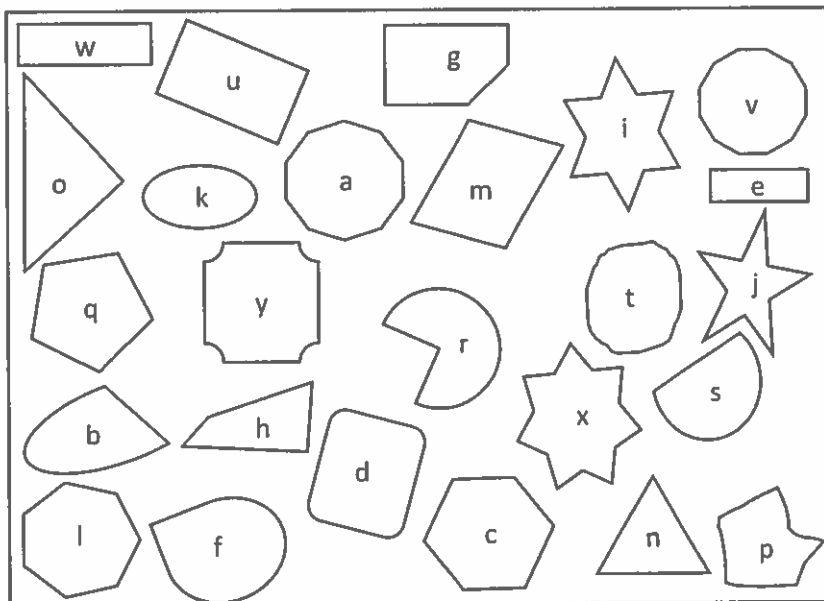
Shape Matching

These exercises test your ability to match shapes quickly in a timed scenario. Shape matching is a function of spatial reasoning, being able to quickly identify shape types and characteristics.

Exercise One: (10 minutes)

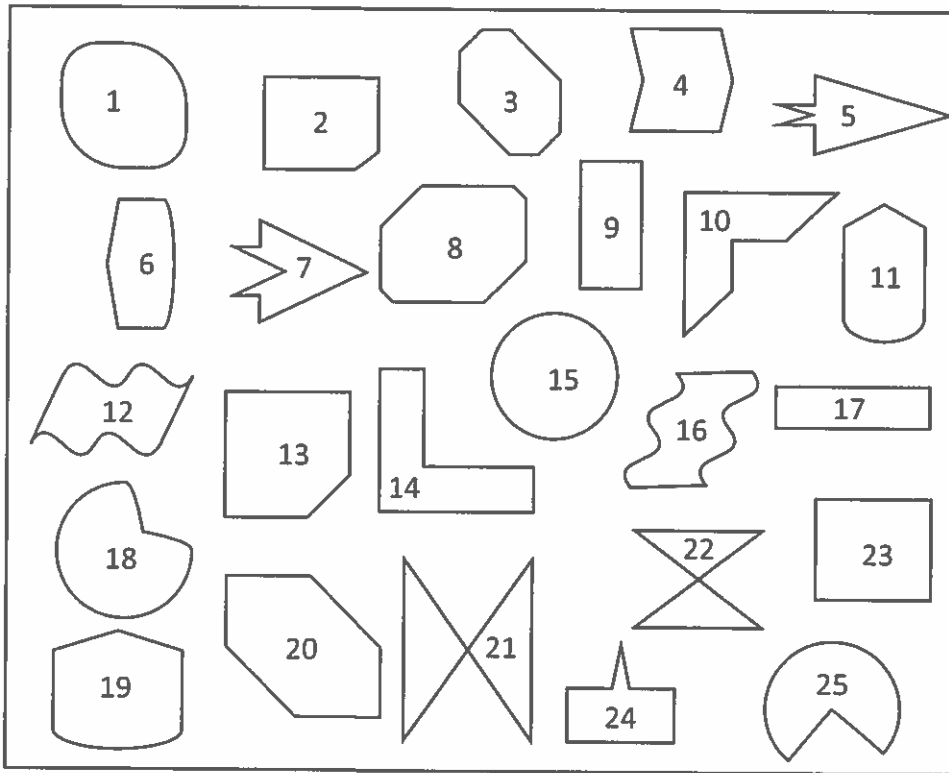


Identify each shape in the box above with the identical shape below

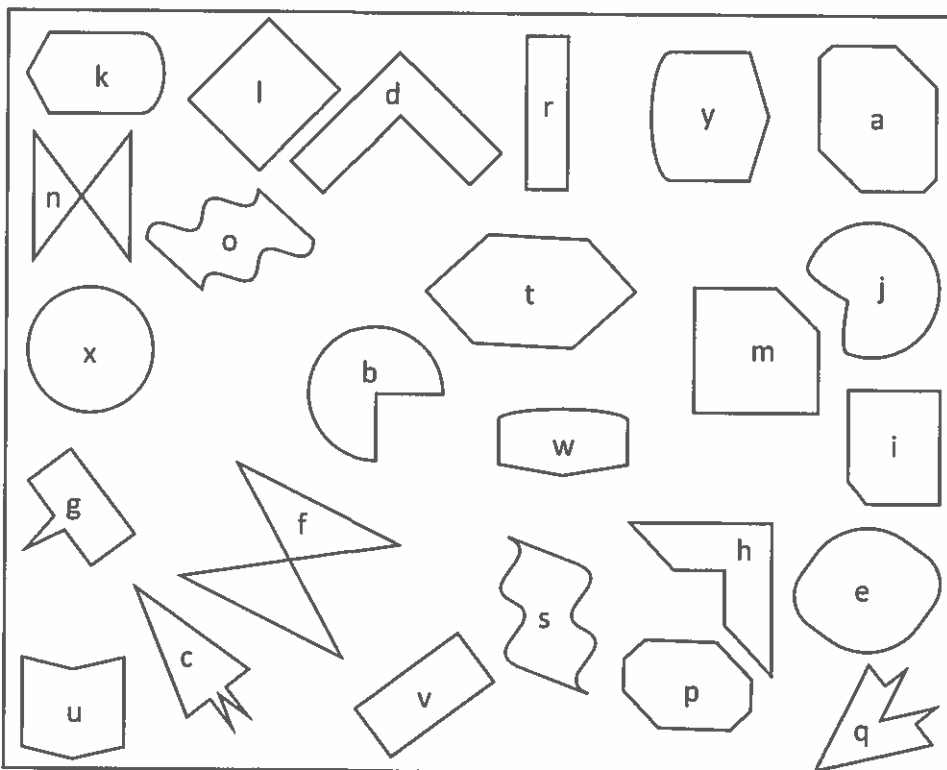


- 1) _____
- 2) _____
- 3) _____
- 4) _____
- 5) _____
- 6) _____
- 7) _____
- 8) _____
- 9) _____
- 10) _____
- 11) _____
- 12) _____
- 13) _____
- 14) _____
- 15) _____
- 16) _____
- 17) _____
- 18) _____
- 19) _____
- 20) _____
- 21) _____
- 22) _____
- 23) _____
- 24) _____
- 25) _____

Exercise Two: (10 minutes)



Identify each shape in the box above with the identical shape below



- 1) _____
- 2) _____
- 3) _____
- 4) _____
- 5) _____
- 6) _____
- 7) _____
- 8) _____
- 9) _____
- 10) _____
- 11) _____
- 12) _____
- 13) _____
- 14) _____
- 15) _____
- 16) _____
- 17) _____
- 18) _____
- 19) _____
- 20) _____
- 21) _____
- 22) _____
- 23) _____
- 24) _____
- 25) _____

Missing Operators

These exercises will challenge your mathematical reasoning and deduction by turning around typical maths questions.

Fill in the blanks for each question by inserting a mathematical operator – addition (+), subtract (-), multiplication (x), or division (÷). **You can only use each operator once per question.**

Note: Operations are performed from **left** to **right**, and **do not** use BODMAS. The first question has been done as an example.

5	x	5	÷	5	+	5	=	10
		=25			=5			=10

①

1		5		5	=	1
---	--	---	--	---	---	---

 (two possible answers)

②

3		7		2	=	20
---	--	---	--	---	---	----

③

5		5		5	=	50
---	--	---	--	---	---	----

④

15		5		6	=	18
----	--	---	--	---	---	----

5

$$12 - 12 + 6 = 6$$

6

$$7 - 1 + 2 = 4$$

7

$$100 - 10 + 4 = 14$$

8

$$8 - 2 + 2 = 5$$

9

$$12 - 2 + 5 - 3 = 3$$

10

$$15 - 5 + 4 - 3 + 3 = 6$$

11

$$5 - 1 + 3 - 2 + 4 = 0$$

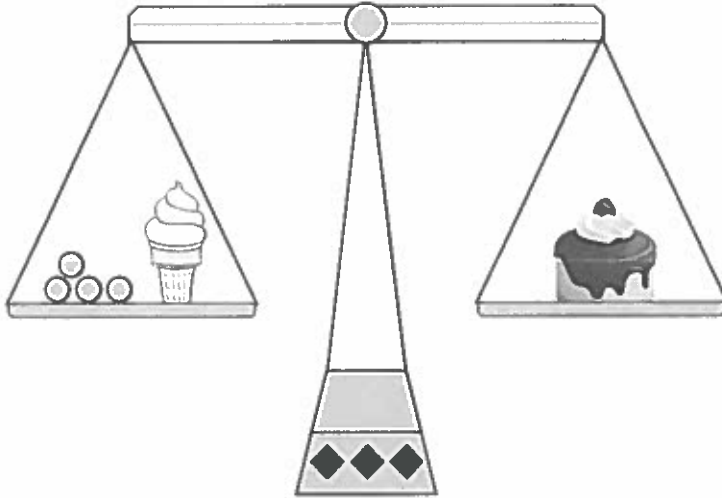
12

$$24 - 6 + 1 - 4 + 8 = 0$$

Symbolic Scales

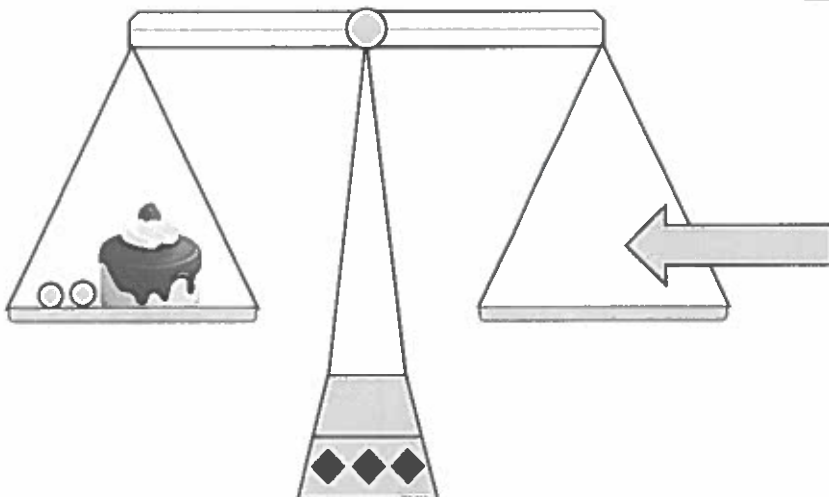
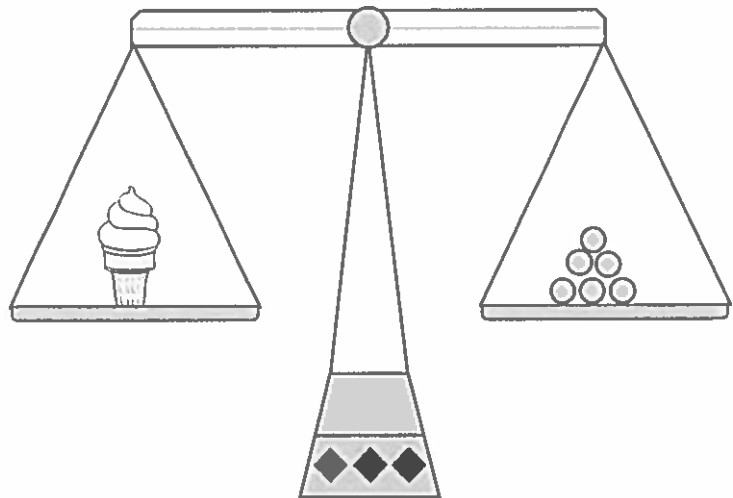
In these exercises you must determine the relative value of different objects by observing how they balance with each other, and using your mathematical deduction skills.

1



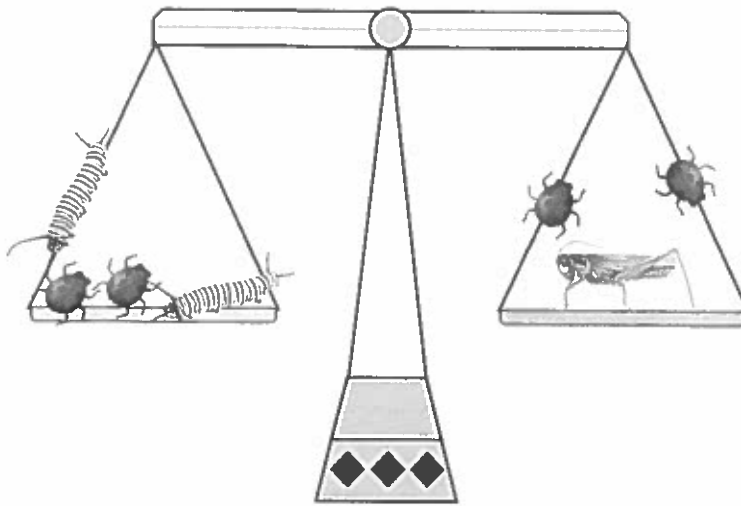
All of the scales shown are balanced

Observe the balanced relationships amongst the cakes, ice cream cones, and marbles.



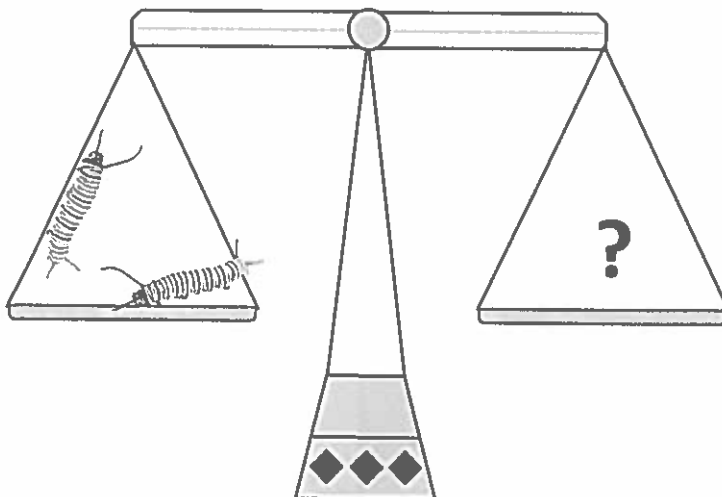
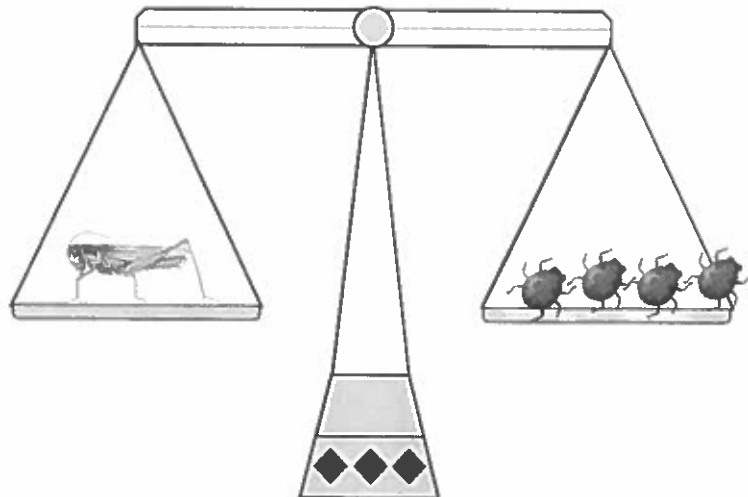
How many ice cream cones will be needed to balance the scales?

2



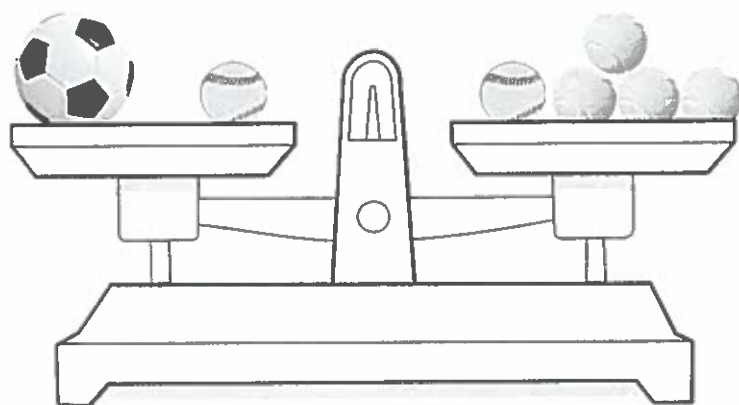
All of the scales shown are balanced

Observe the balanced relationships among the grasshopper, ladybugs and caterpillars.



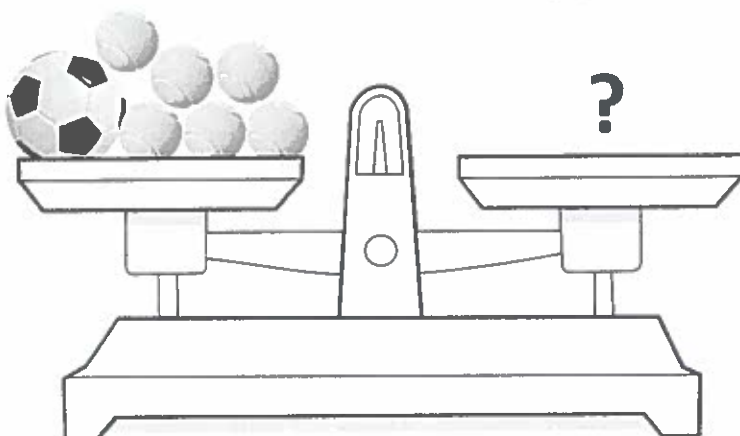
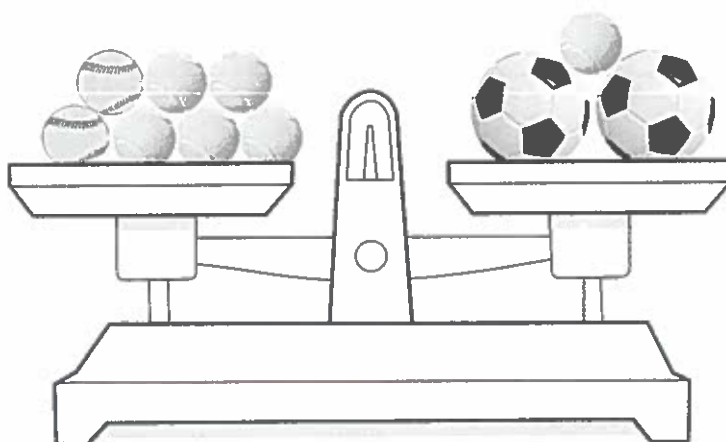
How many lady bugs will be needed to balance the scales?

3



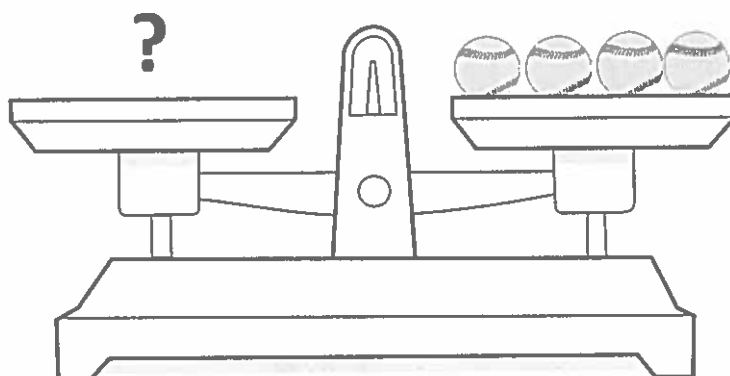
All of the scales shown are balanced

Observe the balanced relationships among the soccer balls, baseballs, and tennis balls

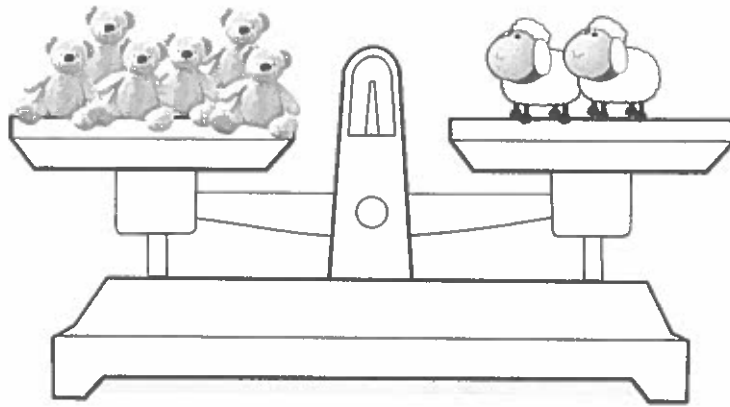


How many baseballs will be needed to balance the scales?

How many tennis balls will be needed to balance the scales?

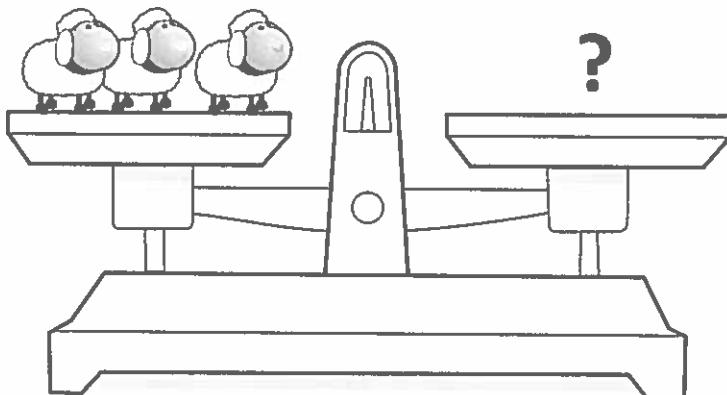
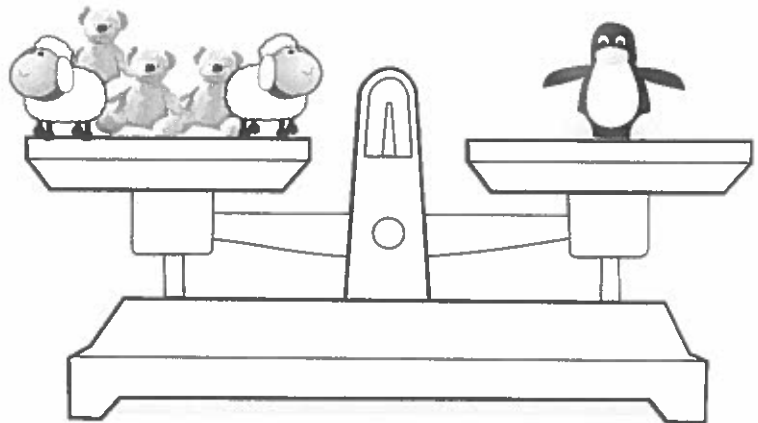


4



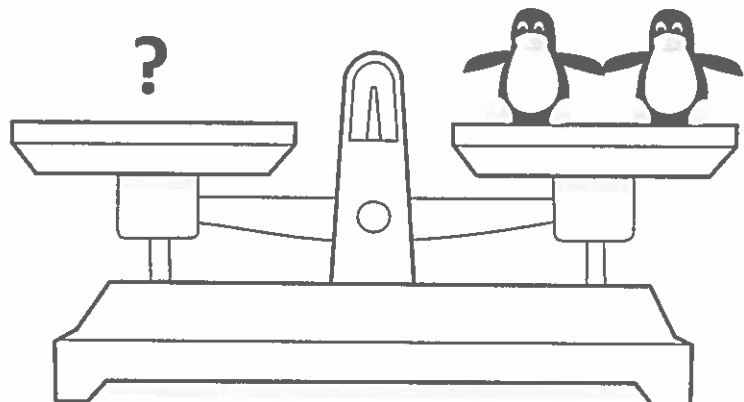
All of the scales shown are balanced

Observe the balanced relationships amongst the teddy bears, penguins and sheep



How many teddy bears will be needed to balance the scales?

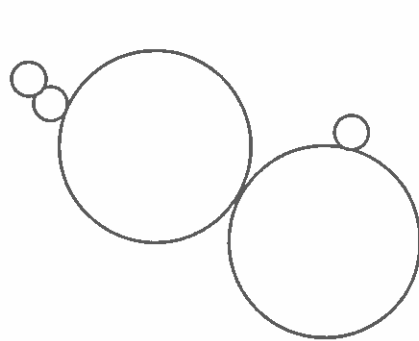
How many teddy bears will be needed to balance the scales?



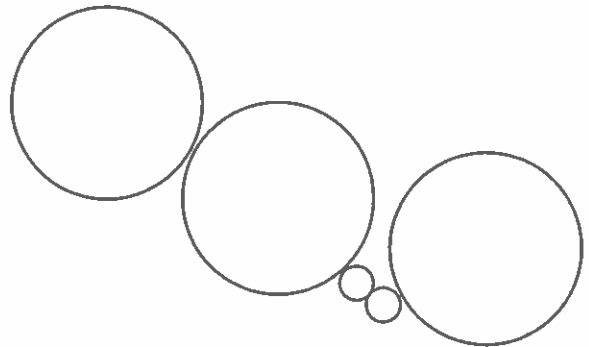
Logical Comparisons

In these exercises you must look at an example and understand the logical comparison based on your deductive skills

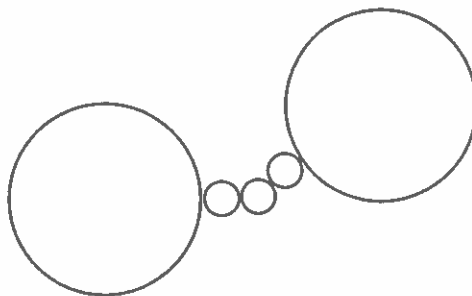
1



is to

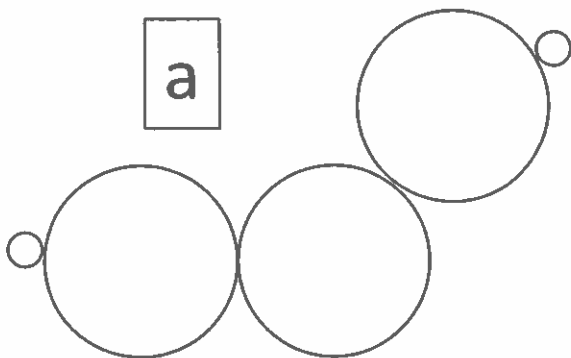


as

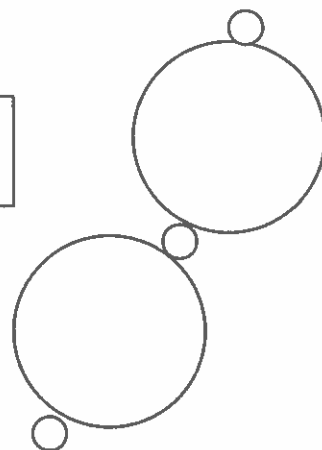


is to:

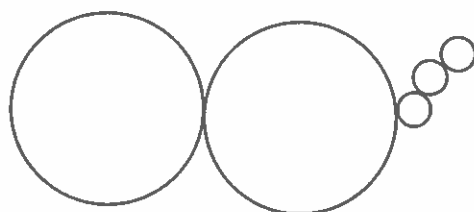
a



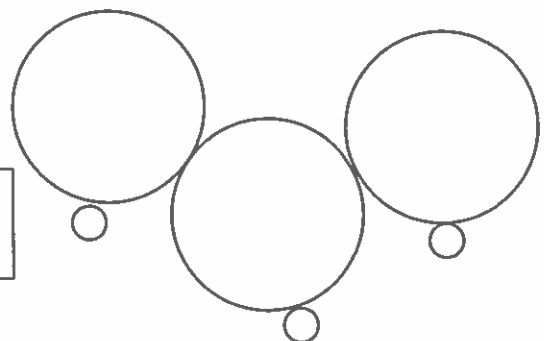
b



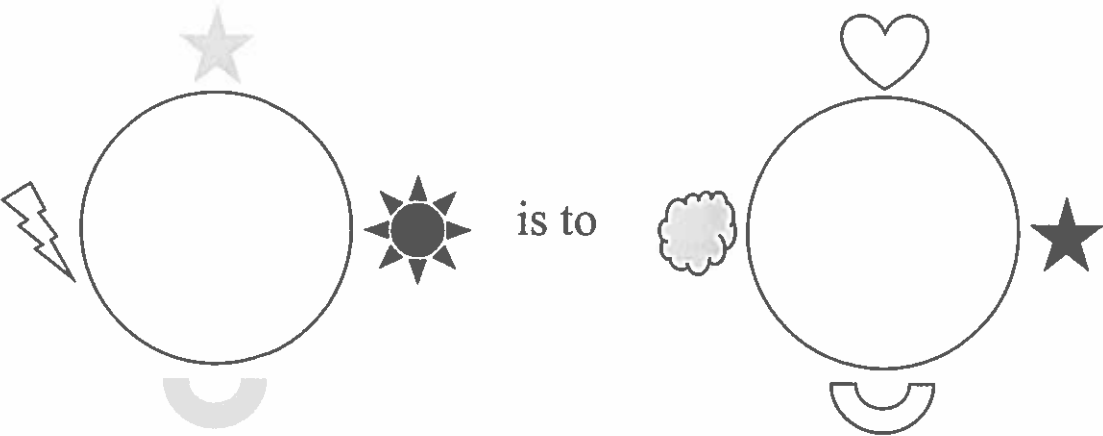
c



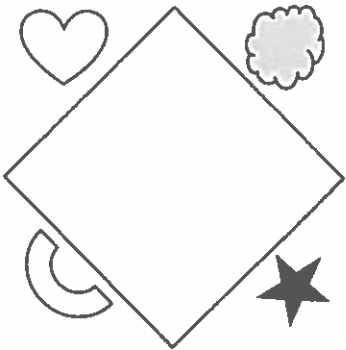
d



2

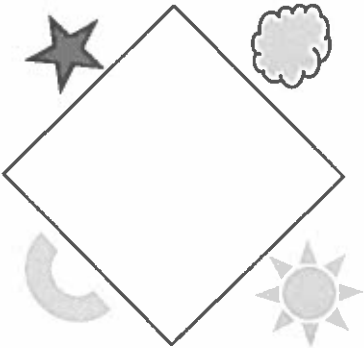


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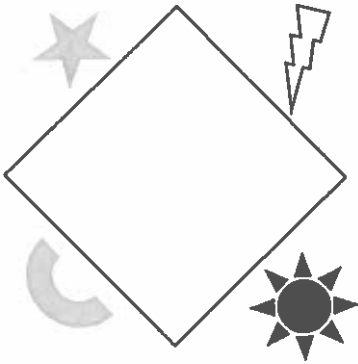


is to:

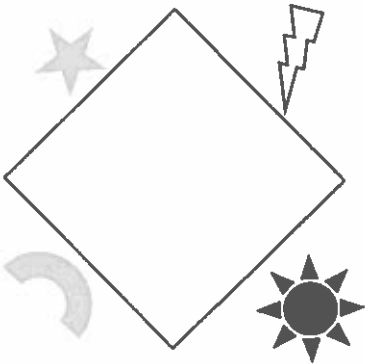
a



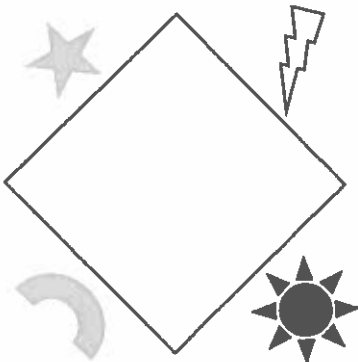
b



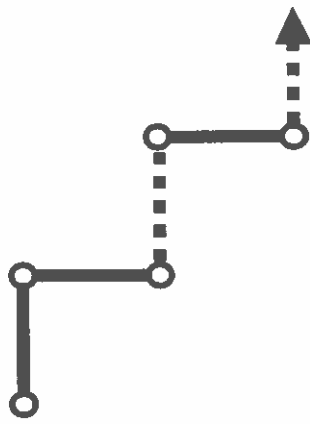
c



d



3



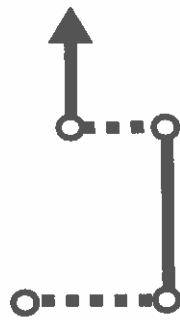
is to



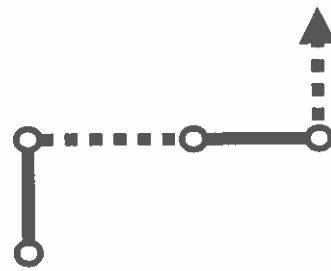
as



is to:



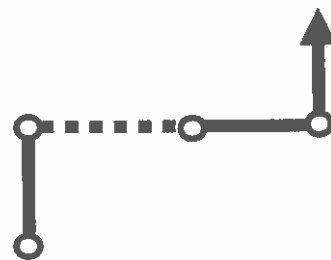
a



b

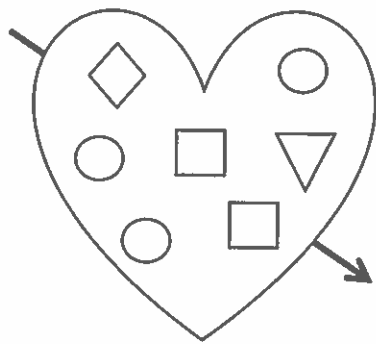


c

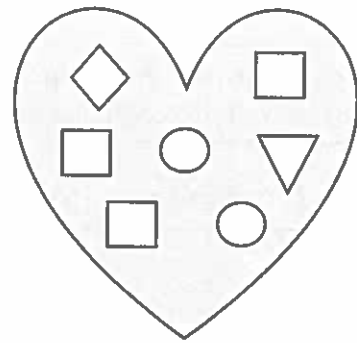


d

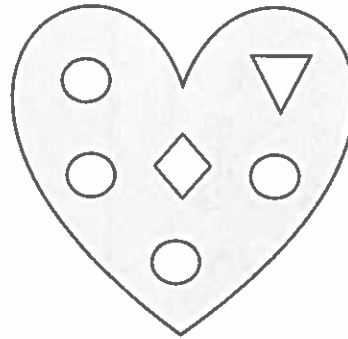
4



is to

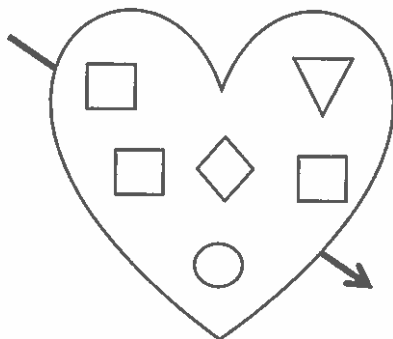


as

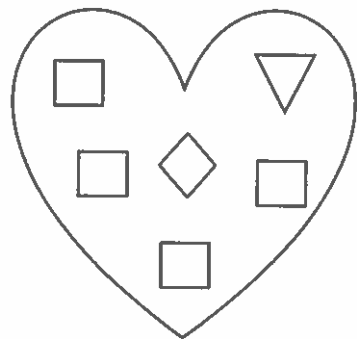


is to:

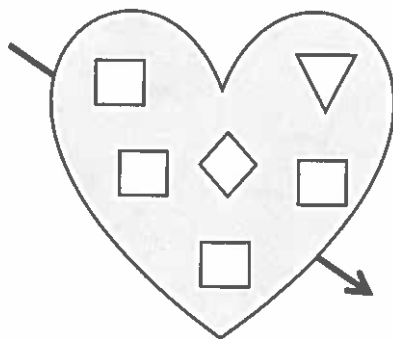
a



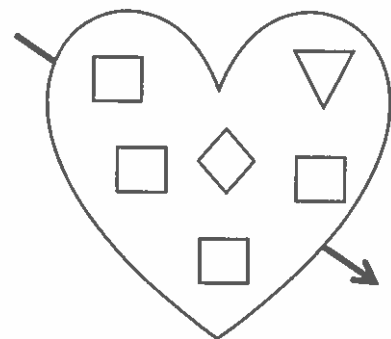
b



c



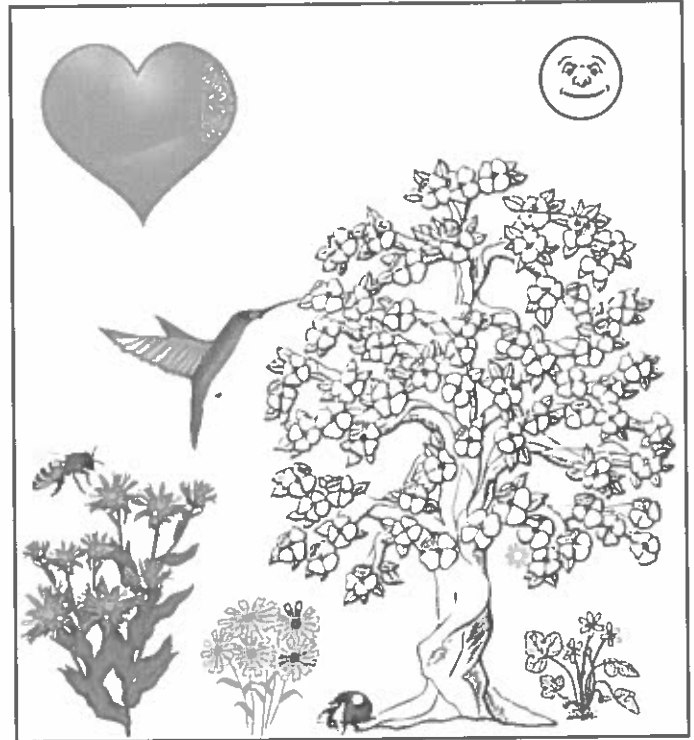
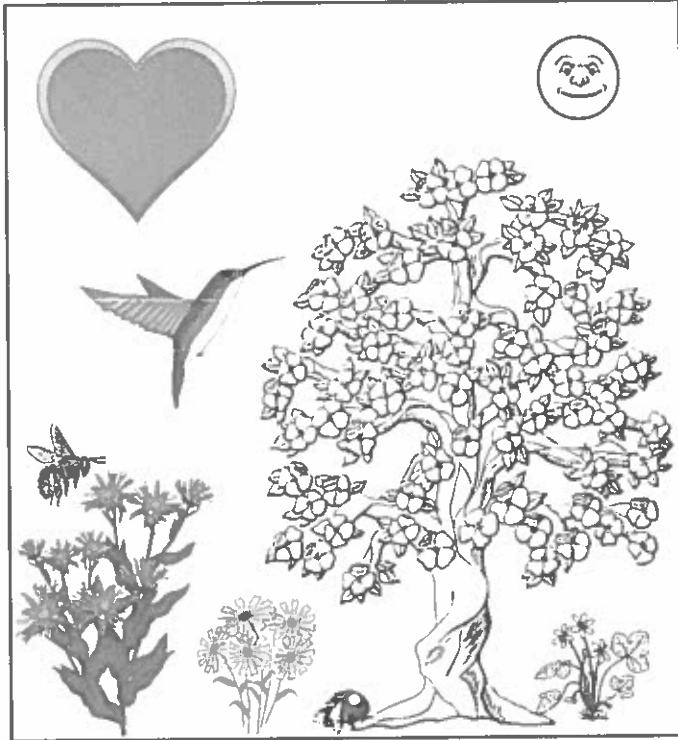
d



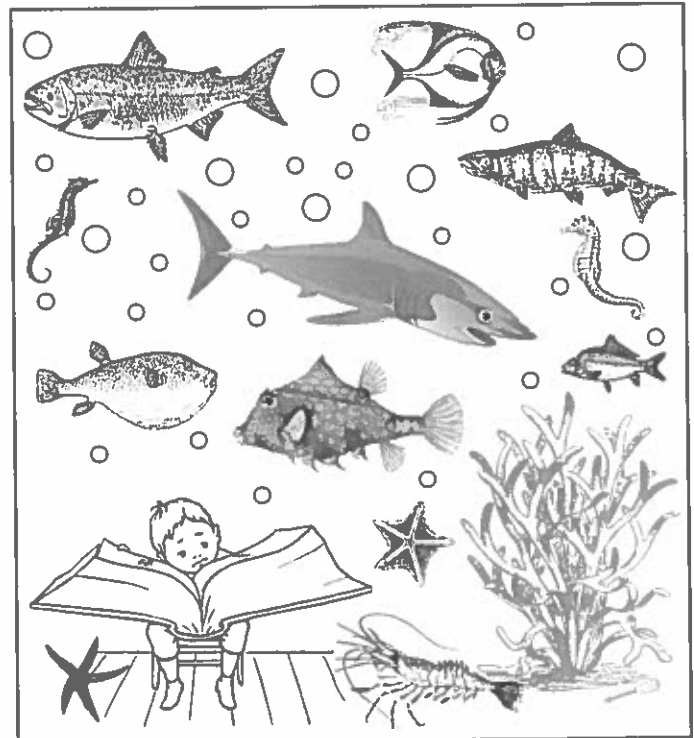
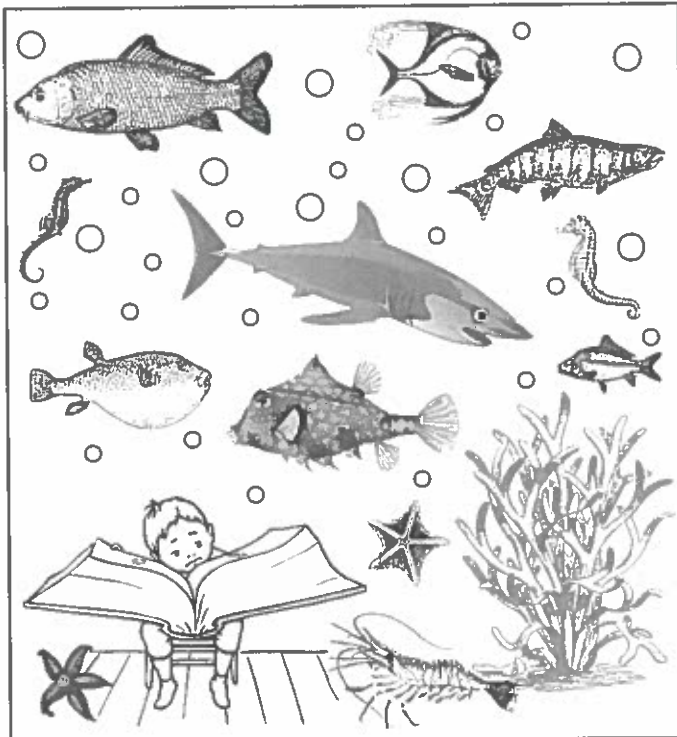
What's the Difference?

These exercises will test your attention to fine detail. The first two should take no more than five minutes each; try to complete pictures 3 and 4 in fifteen minutes or less.

Picture 1. Find five (5) differences from the image on the left



Picture 2. Find five (5) differences from the image on the left

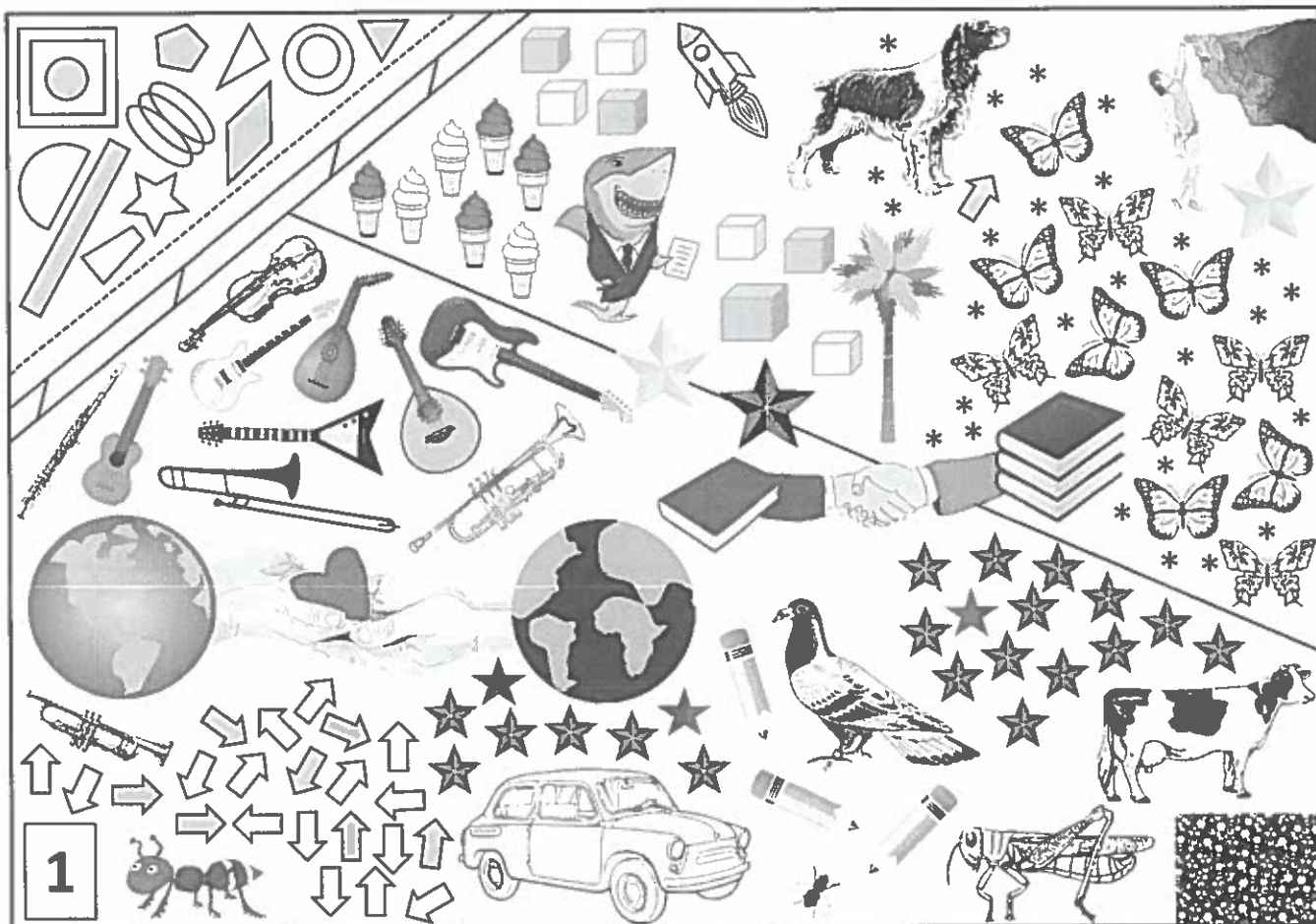


Picture 3.



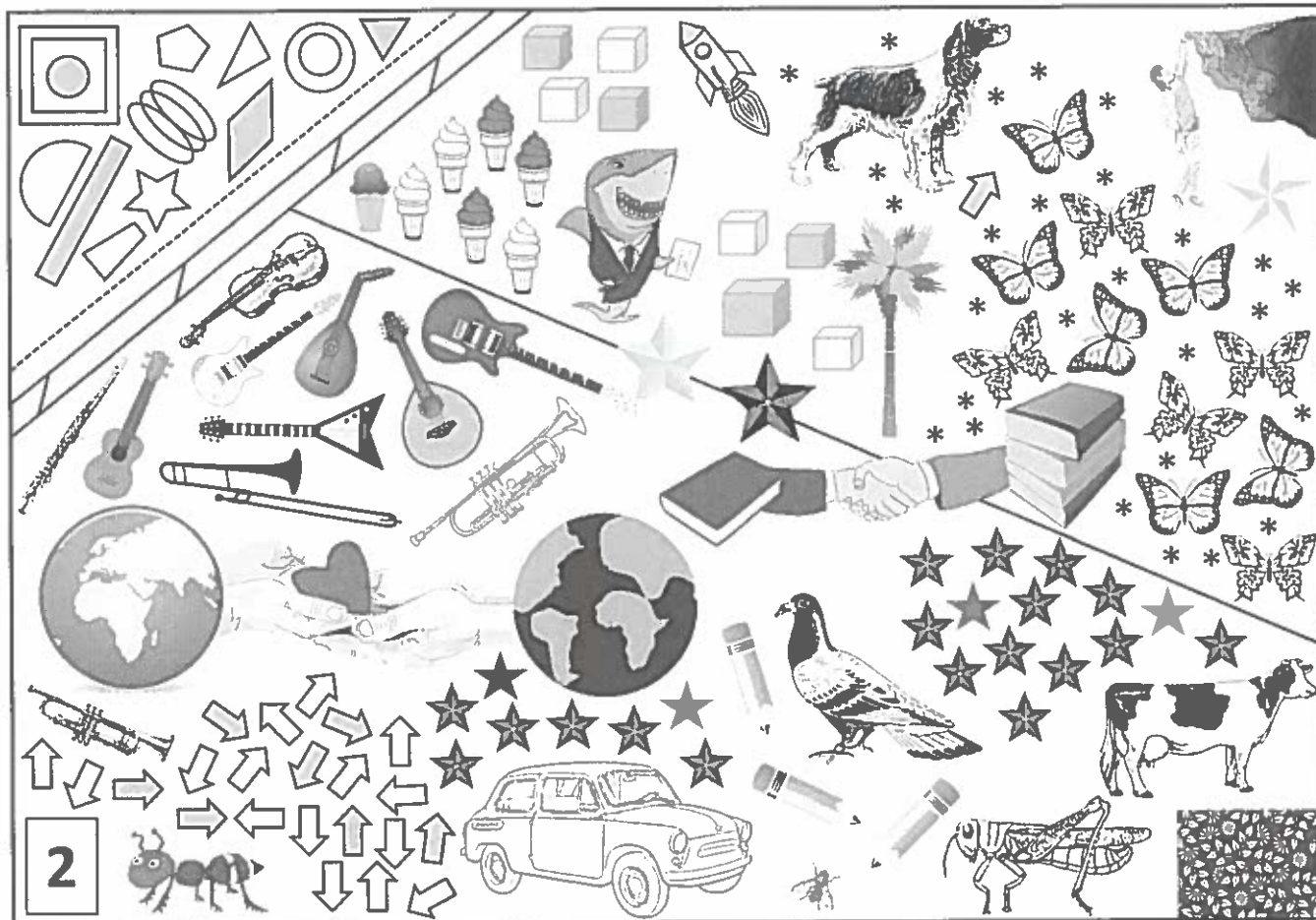
Find the seven (7) differences from image 1 to image 2





Picture 4.

Find the twelve (12) differences from image 1 to image 2



Memory Jogger

Read the following passage carefully, and then answer the questions afterward, without going back to look over the story again. This will test your reading comprehension and ability to recall key facts.

The Myth of Pandora

In Greek mythology, Pandora was a mortal woman created by Zeus, the king of the gods, in a plan to punish Prometheus. Prometheus was also a god, but disagreed with the way Zeus was treating the humans, so he stole the power of fire and gifted it to all humanity. This made Zeus very angry.

Zeus directed that a woman be created and given gifts by all of the gods. They called her Pandora – which means ‘all-endowed.’ All of the gods helped to give her beauty, charm, and other attractive qualities. Finally, she was given a jar, in which the gods had placed many evils, illnesses and diseases. Pandora was told that she must never open the jar.

She was then sent to marry Epimetheus, the brother of Prometheus. Prometheus advised his brother not to accept any gifts from Zeus, but Pandora was so attractive that he married her anyway. One day, out of curiosity, Pandora opened the jar and released all of the evils inside of it into the world. She tried to quickly put the lid back on, but only managed to keep ‘hope’ trapped inside. According to the myth, this is how evil and disease were brought to the human world, and why hope is the last thing to leave man.

In later years, Pandora’s story was translated into other languages and the jar became a box. The story of Pandora’s box has been passed down to modern times and the term ‘Pandora’s box’ has become to mean something that will cause many unforeseen problems.

Questions – The Myth of Pandora

1) Who was the king of the gods?

- a. Prometheus b. Zeus c. Pandora d. Neptune e. Epimetheus

2) What was the main reason Pandora was created?

- a. Because one of the gods wanted a wife
- b. Because Prometheus was lonely
- c. To reward humanity for behaving well
- d. As revenge for Prometheus stealing fire and giving it to humanity

3) What does the name Pandora mean?

- a. Something unexpected
- b. Very beautiful
- c. All-endowed
- d. Keeper of the box

4) What was in the container that Pandora had been given?

- a. The power of fire
- b. Evil, diseases and illnesses
- c. A poisonous liquid
- d. Enchanted fruits

5) Whom did Pandora marry?

- a. Prometheus b. Epimetheus c. Zeus' son d. She did not marry

6) Did Prometheus approve of the marriage?

- a. Yes b. No c. He had no opinion

7) What happened when Pandora opened the jar?

- a. The gods took revenge and killed Prometheus
b. Pandora became ill and died
c. Epimetheus became angry and left the city
d. All of the evil, diseases and illnesses were released to humanity

8) What is the modern meaning of Pandora's box?

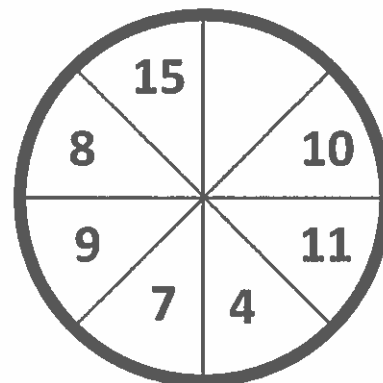
(Open answer)



The Final Challenge

Now that you have made it to the end, here are a variety of logic puzzles that will require many of the techniques and observational skills that you have practised up to this point. There may even be a new trick to learn. Good luck!

- 1** Look carefully at the wheel to the right. Determine the missing number.

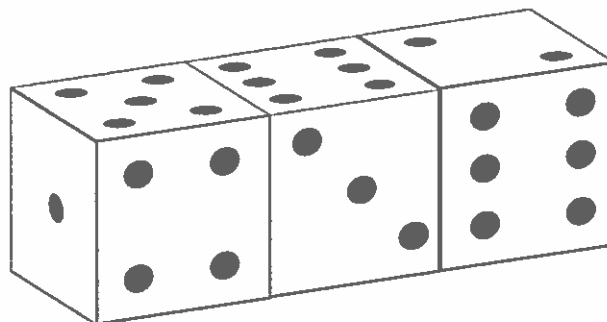


- 2** ?

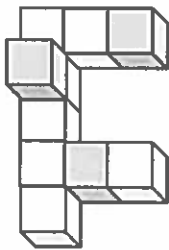
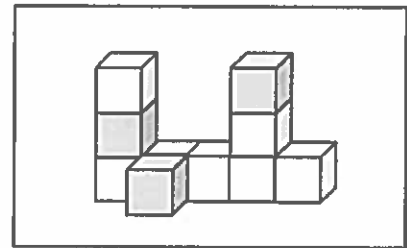
What is the missing figure in the above sequence?

- a. b. c. d. e.

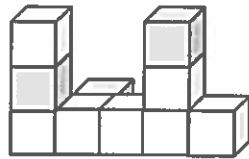
- 3** What is the sum of the values of the 11 hidden sides of the three dice as shown below? (Hint: The total number of dots on a single die is 21)



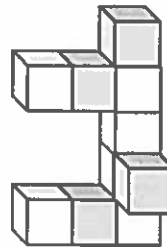
- 4 Try to identify which of the models below is exactly the same as the model to the right



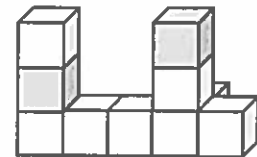
a



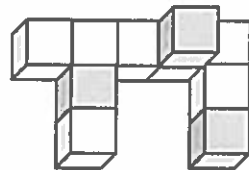
b



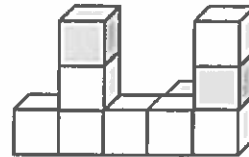
c



d

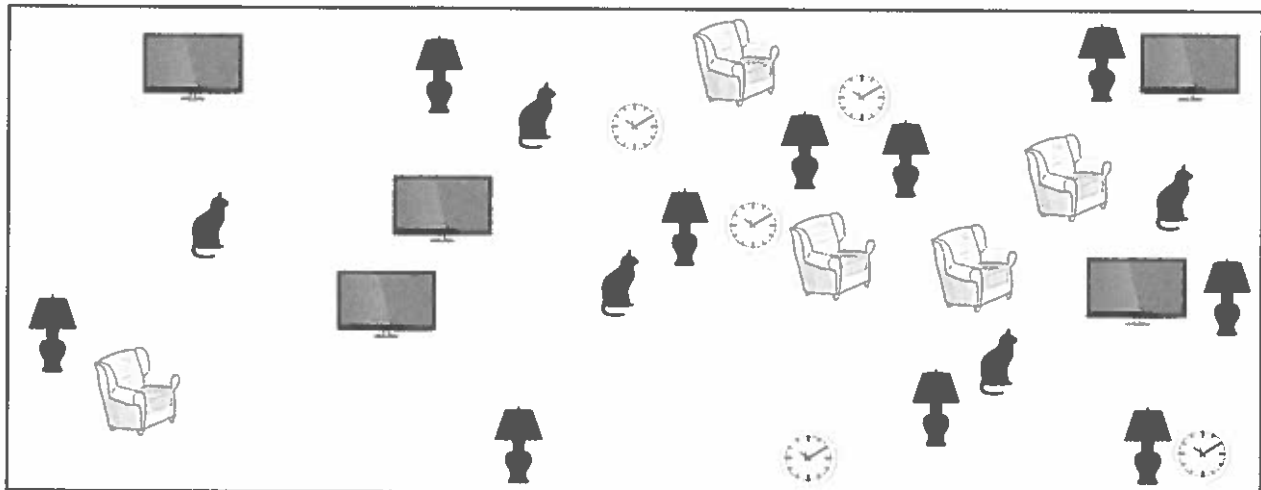


e



f

- 5 Using only three straight lines, can you divide the picture below into five sections, which each contain one chair, one big screen TV, a clock, two lamps, and a cat.



6

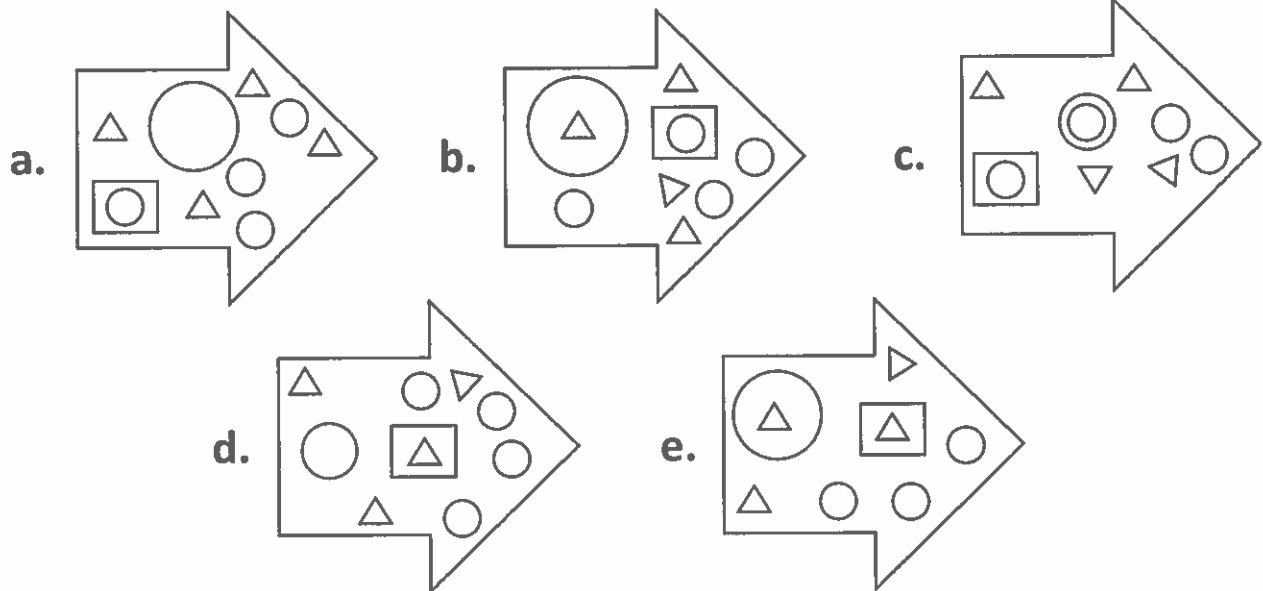
A friend is holding dollar bills, of unknown value, in his right hand behind his back. He tells you that they total \$15, yet one of them cannot be a ten dollar bill.

What could the type of dollar notes he is holding possibly be?



7

Which one of the below does not belong to the group?



8



is to



as



is to:



a.



b.



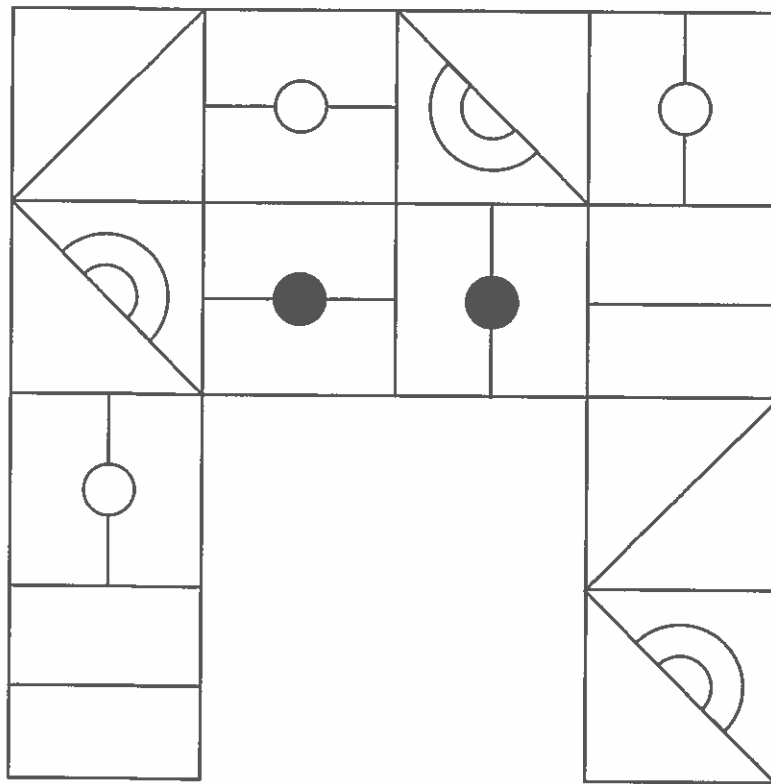
c.



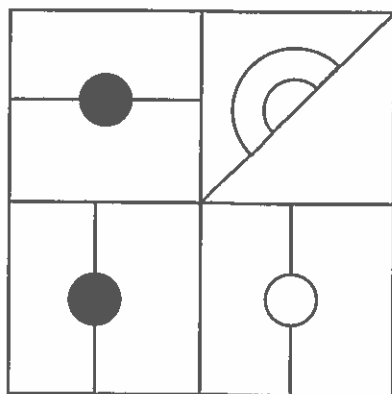
d.

9

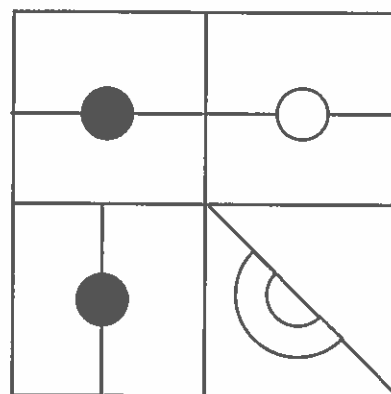
Identify the mission section from the grid below:



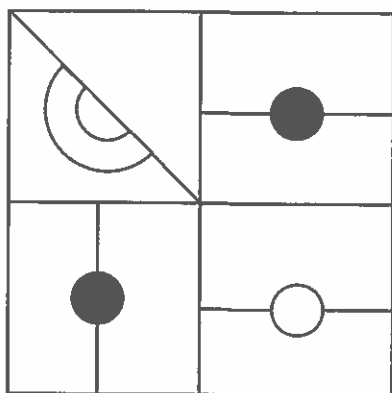
a.



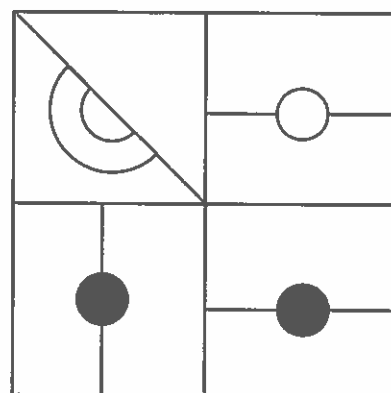
b.



c.



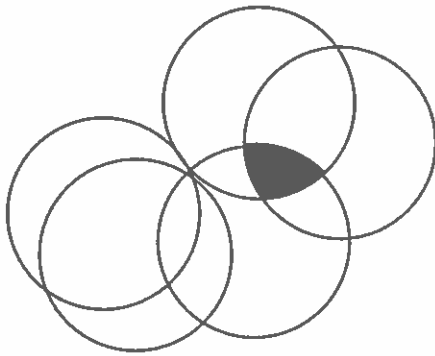
d.



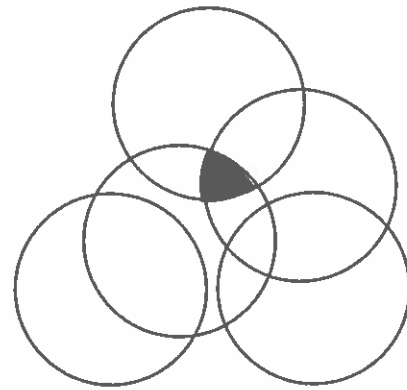
BDF
TVX
HJK
OQS
UWY

10 Which of these is the odd one out?

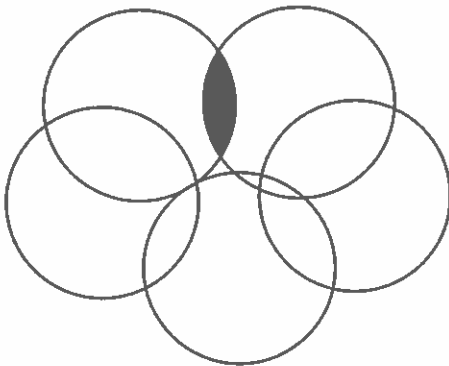
11 Which of the following is the odd one out?



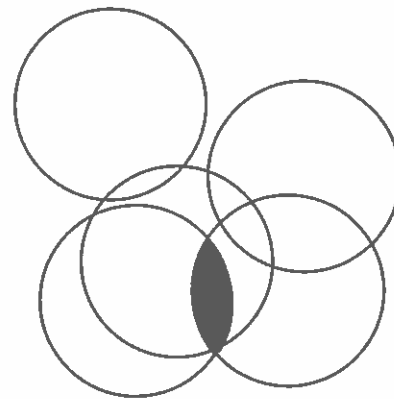
a.



b.



c.



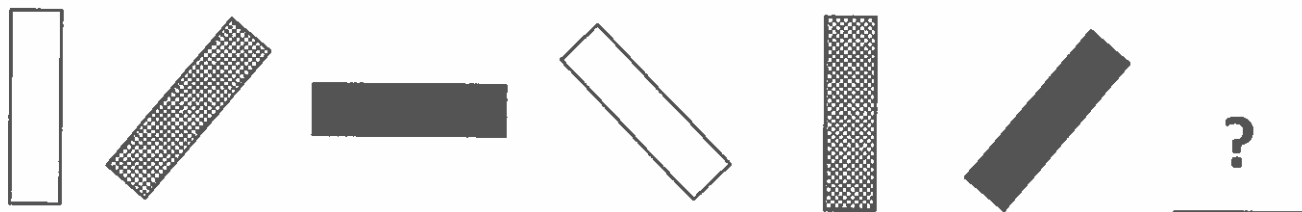
d.

12 During a school trip, a total of 42 people went to the Natural History Museum. If there were twice as many girls as boys, and twice as many boys as teachers, then how many teachers were there in the group?



13

What comes next in this sequence?



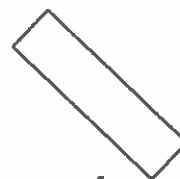
a.



b.



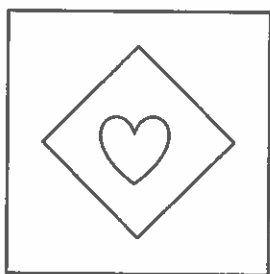
c.



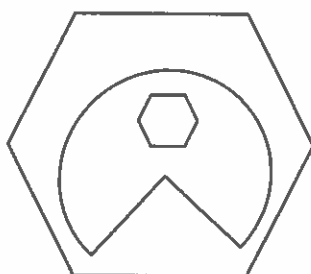
d.

14

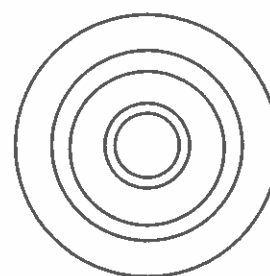
Which of the following is the odd one out?



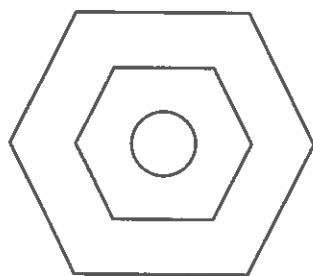
a.



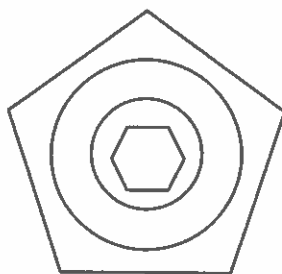
b.



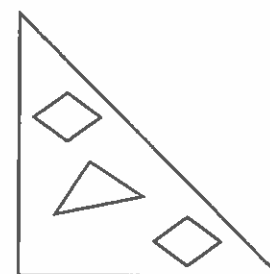
c.



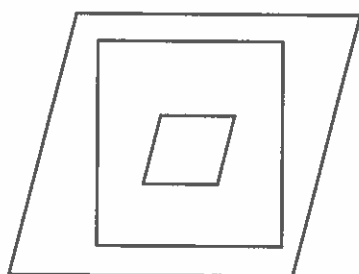
d.



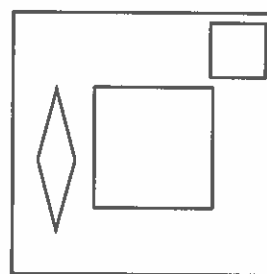
e.



f.

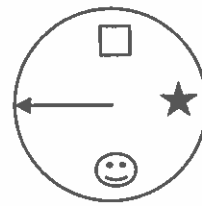
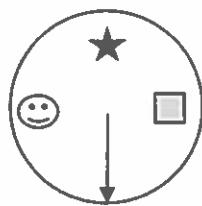
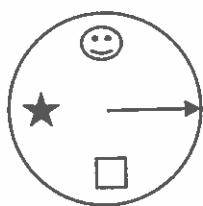
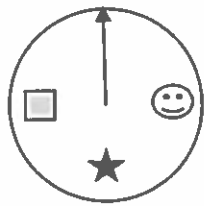


g.

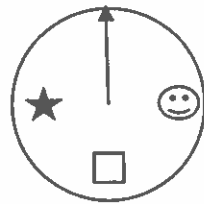


h.

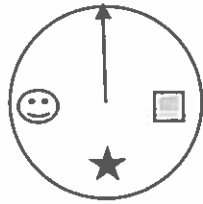
15 What comes next in this sequence?



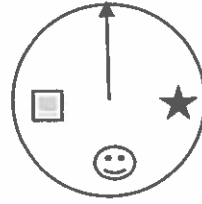
_____ ?



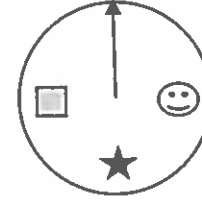
a.



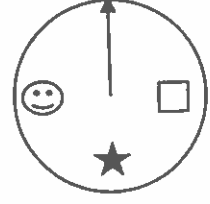
b.



c.



d.



e.

16 Can you figure out the pattern below and fill in the last equation?

$$3 + 5 = 28$$

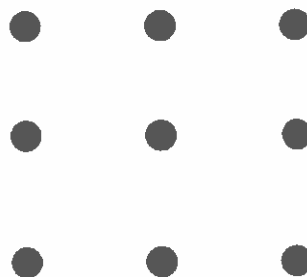
$$4 + 9 = 513$$

$$2 + 6 = 48$$

$$6 + 8 = 214$$

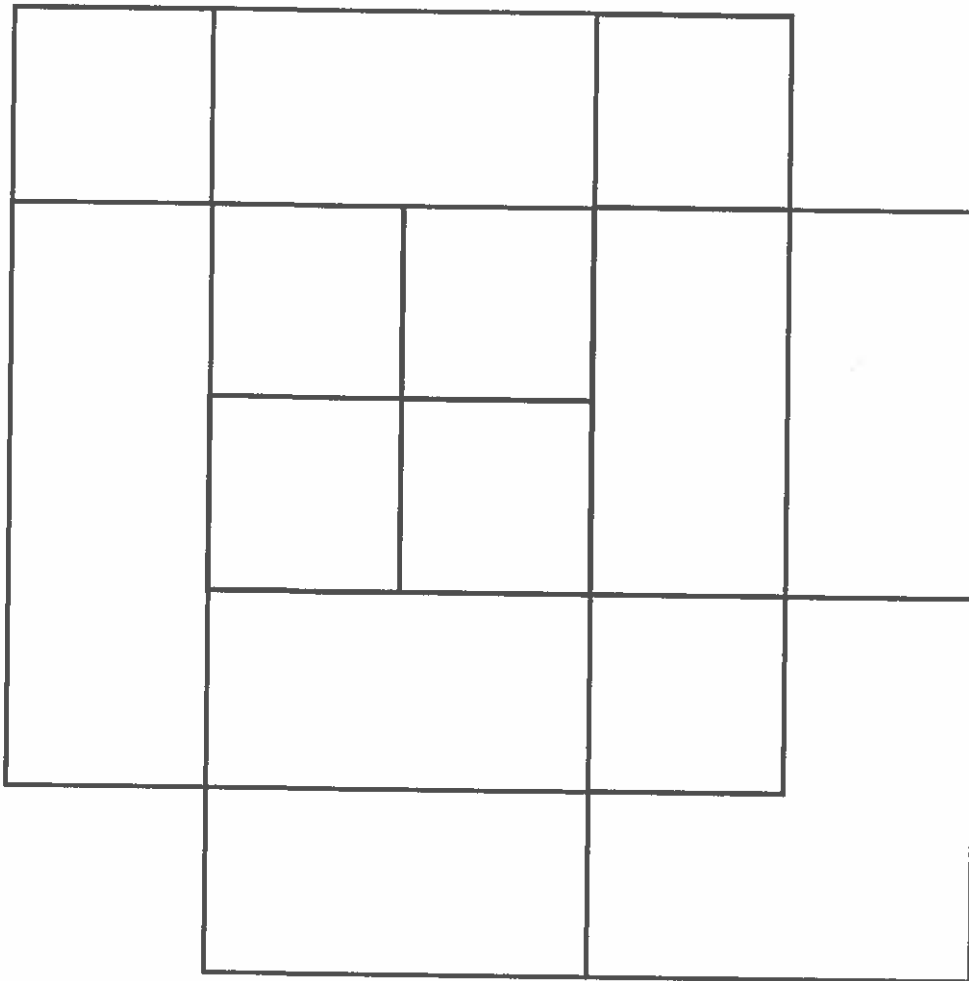
$$1 + 3 = \underline{\hspace{2cm}}$$

17 Can you connect all nine dots below, using only four lines? You should not lift your pen/pencil off the paper.



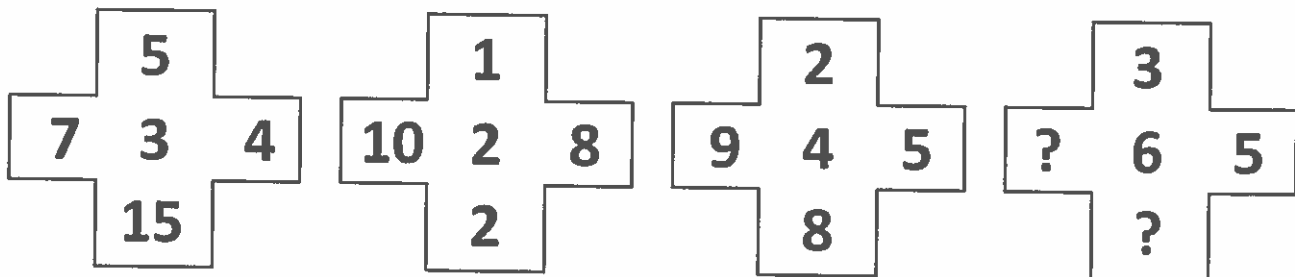
18

How many squares can you count in the shape below? Hint: Be sure to include all sizes, some may overlap others



19

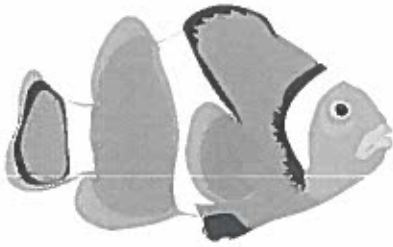
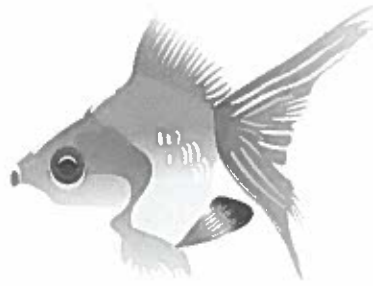
Look carefully at the shapes below and provide the missing numbers.



20

A number of fish are swimming in a fish bowl. Can you figure out how many goldfish and how many clownfish there are?

Not counting himself, a goldfish sees that there are as many clownfish as other goldfish swimming in the bowl



Not counting himself, a clownfish sees that there are as three times as many goldfish as clownfish swimming in the bowl

21

If your Aunt's brother is not your uncle, then what relation would he be to you?



22

A tree planted doubles its height each year, until it stops growing after eight years. How many years did it take to reach half of its maximum height?



23

Which of these words doesn't belong to the group?

COAST TACOS TOAST ASCOT COATS

Finding the truth in the forest

Congratulations, you have made it to the final question!

To get to the final answer, you have to make a trip to the enchanted forest, and meet with a talking squirrel and a rabbit. Both animals are known to tell lies and you have to make sure you use your logical powers to determine who is being honest, or you will be stuck in the forest!

The squirrel only tells lies on Monday, Tuesday, and Wednesday. On the other days, he only tells the truth. The rabbit only tells lies on Thursday, Friday, and Saturday. On the other days, he only tells the truth.

The problem is, once you are in the forest you become disoriented and forget what day of the week it is.

Finally you meet the squirrel and the rabbit.

The squirrel announces, "Yesterday I told a lie."

The rabbit replies, "Yesterday I told a lie too."

Which one is telling the truth?



Which One Doesn't Belong? pages 6-9

- 1) B - All of the others are balls used in sporting games.
- 2) C - All of the others are pairs.
- 3) A - All of the others are mammals
- 4) C - All of the others are even numbers
- 5) D - All of the others begin with h (hammer, helicopter, headphones)
- 6) D - All of the other circles are divided into four parts
- 7) B - All of the others can be divided by 3; or the sum of the two numbers in each box is 6
- 8) D - All of the others have only one vertical line
- 9) A - The arrow is facing the opposite direction to all of the others, which have been rotated
- 10) D - The others have simply been rotated. On D, the black circle has switched positions with the other hollow circle
- 11) C - The interior shape is touching two of the sides, the others are touching only one side
- 12) B - All shapes are the same except for the square, which has rounded edges
- 13) C - This is a mirror reflection, the others are the same shape in different rotations
- 14) D - The horizontal shape lies on top of the vertical shape, unlike all of the others
- 15) A - The shape inside the main shape has a curved line. The other factors are not relevant
- 16) D - The house does not have a chimney. All of the others do.
- 17) D - The frog is an amphibian, the others are reptiles
- 18) B - The USB is a storage device, the others are writing instruments (pencil, quill, pen)
- 19) C - The other numbers are prime numbers

What's the Plan, pages 10-12

- 1) B 2) A 3) D 4) C 5) A 6) D 7) B

Riddles, pages 13-16

- 1) They are part of a set of triplets; 2) A towel; 3) The letter m; 4) A hole; 5) A window;
- 6) A clock; 7) There is no dirt in a hole; 8) Dylan, of course! 9) Your age; 10) An envelope;
- 11) The three people were a grandfather (also a father), a father (also a son), and a son.
- 12) Your name; 13) David is bald; 14) A computer keyboard; 15) The word *dozens*; 16) A map;
- 17) The word *incorrectly*; 18) Four brothers, three sisters – seven siblings in total; 19) You are both standing back-to-back; 20) Four; 21) One of the contractors is a woman, and she built four houses;

Riddles, pages 13-16 (continued)

22) \$105 (The hat was \$5, therefore \$100 less than the coat) 23) All of them 24) Your right elbow
25) Paige took the cookies. Look at each statement as being false – Alfie said it wasn't Julie or Paige, so it had to be either Julie or Paige. As Julie confesses, we know she is lying, so therefore it has to be Paige.

Pattern Detective, pages 17-21

- 1) A - Both have a triangle with two circles around two of the corners
- 2) C - Both have the same four shapes, with the upper left shape being shaded
- 3) D - The star is placed inside all of the circles and the square
- 4) C - Both have five lines with connecting dots with the pattern black-white-black-black-white-black
- 5) D - Both have the same four shape types present
- 6) A - It is the same group of shapes rotated to the left 90 degrees
- 7) B - It has a number of dots equal to half of the sides of the shape
- 8) B - It has arrows pointing to each side of the square
- 9) C - The sum of the sides for all the shapes is 11
- 10) C - Both shapes are one-half shaded
- 11) A - The centre shape (octagon) has two less sides than the outer shape (decagon)
- 12) D - The box has two whole white shapes and two grey shapes (that have been combined)
- 13) B - The larger, smaller shape has one more side than the larger shape, and the number of dots is one less than the number of sides on the main shape.
- 14) C - The arrows are going in the same direction, and the right side shape has been rotated 180 degrees from the left side - A and B are mirror reflections.
- 15) D - It has all of the same shapes, in the same orientation and shading
- 16) A - Is the same shape rotated 90 degrees to the left (square divided in half with a vertical line, and an arrow pointing upward)
- 17) C - The pattern is, starting with the upper left square, to go clockwise skipping two letters (L, m, n, O, p, q, R, s, t, U...)
- 18) D - The bicycle is the only other inanimate (non living) choice..

Logic Grids

Summer Activities, page 23

Name	Activity	Location	Date
Mia	Tennis	Los Angeles	July 21 st
Noah	Drama	Chicago	August 1 st
Olivia	Technology	Minneapolis	August 14 th

	Drama	Technology	Tennis	Los Angeles	Chicago	Minneapolis	July 21 st	August 1 st	August 14 th
Mia	X	X			X	X		X	X
Noah		X	X	X		X	X		X
Olivia	X		X	X	X		X	X	
Los Angeles	X	X							
Chicago		X	X						
Minneapolis	X		X						

Birthdays and Presents, page 24

Name	Birthday	Present
Daniel	November 18	Computer
Claire	May 6	Bicycle
George	February 14	Jacket
James	November 7	Guitar

	Guitar	Jacket	Bicycle	Computer	February 14	May 6	November 7	November 18
Daniel	X	X	X		X	X	X	
Claire	X	X		X	X		X	X
George	X		X	X		X	X	X
James		X	X	X	X	X		X
February 14	X		X	X				
May 6	X	X		X				
November 7		X	X	X				
November 18	X	X	X					

Dogs' Dinner, page 25

Name	Breed	Food	Age
Alfie	Schnauzer	Salmon	10
Nemo	Labrador Retriever	Beef	3
Pearl	Golden Retriever	Lamb	6
Trixie	Bulldog	Chicken	5

	Bulldog	Golden Retriever	Labrador Retriever	Schnauzer	3	5	6	10	Beef	Chicken	Lamb	Salmon
Alfie	X	X	X		X	X	X		X	X	X	
Nemo	X	X		X		X	X	X		X	X	X
Pearl	X		X	X	X	X		X	X	X		X
Trixie		X	X	X	X		X	X	X		X	X
Beef	X	X		X		X	X	X				
Chicken		X	X	X	X		X	X				
Lamb	X		X	X	X	X		X				
Salmon	X	X	X		X	X	X					
3	X	X		X								
5		X	X	X								
6	X		X	X								
10	X	X	X									

Famous Explorers, page 26

Explorer	Nationality	What	When
Jacques Cartier	French	Explored and claimed Canada for France	1534
Juan Ponce De Leon	Spanish	First European to explore Florida	1513
Amelia Earhart	American	First woman to fly solo across the Atlantic	1932
Ferdinand Magellan	Portugese	First to go around the world	1522
Marco Polo	Italian	Explored China	1271

	American	French	Italian	Portugese	Spanish	1271	1513	1522	1534	1932	First to go around the world	Explored China	First European to explore Florida	Explored and claimed Canada for France	First woman to fly solo across the Atlantic
Jacques Cartier	X		X	X	X	X	X	X		X	X	X	X		X
Juan Ponce de Leon	X	X	X	X		X		X	X	X	X	X		X	X
Amelia Earhart		X	X	X	X	X	X	X	X		X	X	X	X	
Ferdinand Magellan	X	X	X		X	X	X		X	X		X	X	X	X
Marco Polo	X	X		X	X		X	X	X	X	X		X	X	X
First to go around the world	X	X	X		X	X	X		X	X					
Explored China	X	X		X	X		X	X	X	X					
First European to explore Florida	X	X	X	X		X		X	X	X					
Explored and claimed Canada for France	X		X	X	X	X	X	X	X		X				
First woman to fly solo across the Atlantic		X	X	X	X	X	X	X	X						
1271	X	X		X	X										
1513	X	X	X	X											
1522	X	X	X		X										
1534	X		X	X	X										
1932		X	X	X	X										

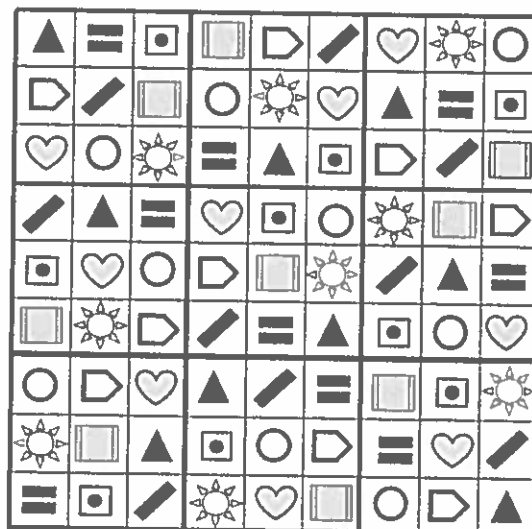
Number-Letter Equations, page 27

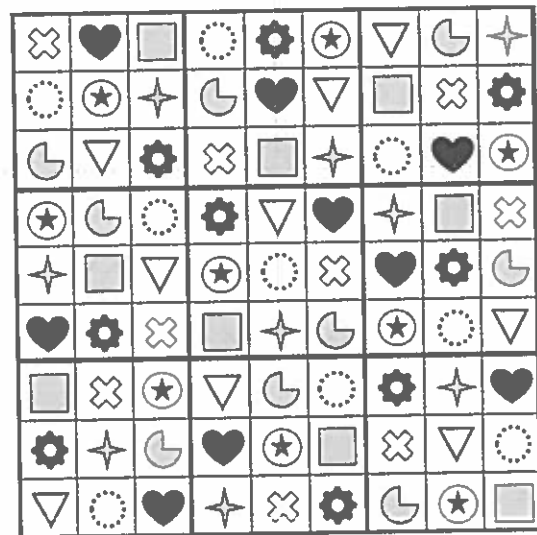
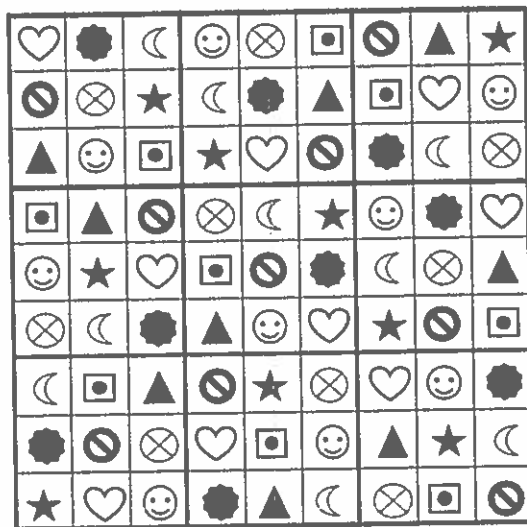
1) 52 weeks in a year; 2) 365 days in a year; 3) 26 letters of the alphabet; 4) 100 years in a century;
5) 60 seconds in a minute; 6) 90 degrees in a right angle; 7) 24 hours in a day; 8) 60 minutes in an
hour; 9) 14 days in a fortnight; 10) 1000 years in a millennium; 11) 7 colors of the rainbow (red,
orange, yellow, green, blue, indigo, violet); 12) 29 days in February in a Leap Year

What Comes Next? pages 28-31

- 1) B - The hexagon has six sides. The pattern is 3, 4, 5, 6
- 2) C - The pattern is to fill one-quarter of the box each turn
- 3) A - The pattern is showing an arrow up and then down
- 4) D - The pattern is showing the first letter of the numbers 1 through 11
- 5) A - The pattern is to subtract 2 to the previous number, then to add three to the next
- 6) B - The pattern is to have the square move clockwise around the front of the cube
- 7) C - The pattern is to multiply the previous number by 2
- 8) B - The words end in a letter of the alphabet from a, b, c, d, e ...
- 9) D - One-fifth is added to each fraction
- 10) A - The pattern is -6, -4, -6, -4, and so on
- 11) C - The pattern is going up every four years (note: 2008, 12, 16, and 20 are all Leap Years)
- 12) B - There are two different sequences; numbers are going up by 3 in the alternate numbers starting with 59 (59, 62, 65) and reduced by 3 in the second (18, 15, 12, 9)
- 13) C - The series is 1, 4, 9, 16. Note that each is a square number.
- 14) A - There are two different sequences; numbers are going up by 2, 4, 8, 16 in the alternate numbers starting with 10 (10, 12, 16, 24, 40) and reduced by 2, 4, 8 in the second (60, 58, 54, 46)
- 15) D - The pattern is to add ten, then subtract seven.

Symbol Sudoku, Page 32





Conundrums, page 35-37

1) **Careful Measures** – Evan must first fill the 3-gallon bucket, then pour all of the water into the 5-gallon bucket. Next, he refills the 3-gallon bucket and pours water from it until the 5-gallon bucket is full – so that there should be exactly one litre of water left over in the 3-litre bucket. Then he should dump out all of the water in the 5-gallon container and pour the one litre of water into it. Finally, he completely refills the 3-gallon bucket and adds that to the one litre, giving him a total of four gallons in the 5-gallon bucket.

2) **See the Light** – Mike should turn on the first two light switches and wait for a minute or two. The 3rd switch remains turned off. After waiting for a few minutes, he turns off the second switch and opens the door to go into the room. Looking at the two lights that are off, he feels each bulb to see which one is warm or hot. He will know which switch controls each light by observing the following:

- 1 – The light that is on is controlled by the first switch
- 2 – The light that is warm to the touch is controlled by the second switch
- 3 – The light that is cold or not warm is controlled by the third switch.

3) **Traveling Salesman** – To get everything across the river safely, the salesman must first take the mouse and place him on the other side. Next, the salesman picks up the candy and brings it over – but takes the mouse back with him. Setting down the mouse, he grabs the cat and takes it across the river. Finally, he returns and picks up the mouse. They key is that the cat will not get into the candy.

4) **Take It Down A Peg** – Think of the four discs as a,b,c, d (a being the smallest and d the largest), and move the discs to the numbered pegs (1,2,3) in the following order:

a3; b2; a2; c3; a1; b3; a3; d2; a2; b1; a1, c2; a3; b2; a2

5) **Slow Train to Paris** – The trains are at an equal distance to Paris when they meet

Mazes

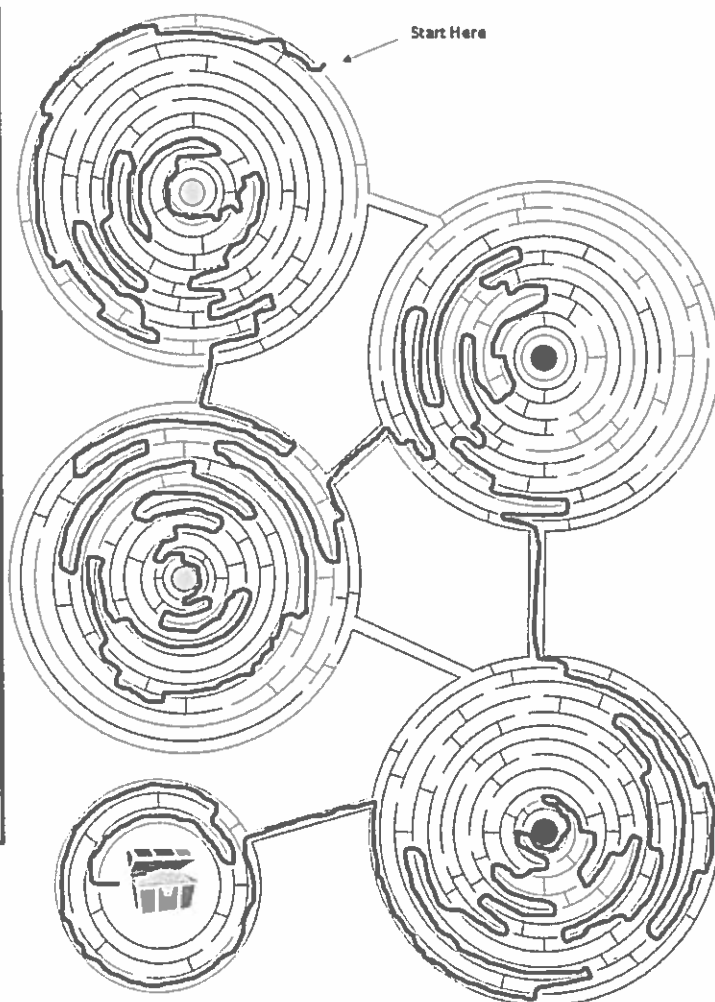
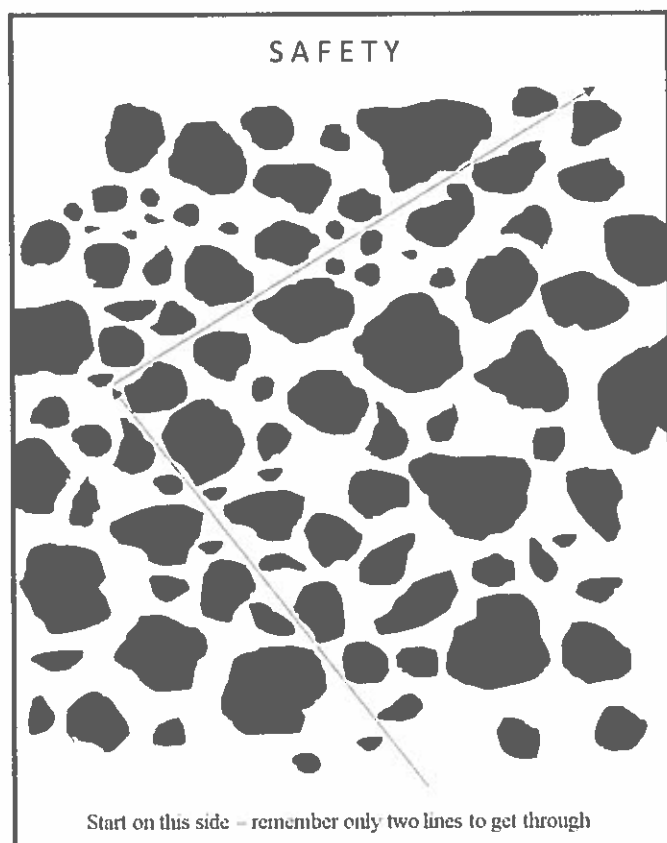
page 38

A large triangle contains a wavy line and four smaller triangles labeled A, B, C, and D. The wavy line starts at the bottom right, goes up to the top, and then down to the bottom left. The triangles are labeled: C at the top, B in the center, A on the left, and D on the right. The bottom edge of the large triangle is divided into four segments by four small triangles labeled D, C, B, and A from left to right.

Castle Maze, page 59

start

The maze is a square grid with various paths and dead ends. A castle is located at the bottom right. Three dragons are positioned at different points within the maze. A path is highlighted in thick black lines, starting from the 'start' point at the top left, winding through the maze, and ending at the castle.



Fill In The Blanks, pages 42-45

- 1) D - The triangles are at varying heights, so in the third row, the missing box should have one at mid-level within the box, pointing upward. The star is also required for the missing box.
- 2) E - Each row has boxes with an arrow (all pointing in the same direction) and a triangle of the same shape and shading.
- 3) B - The diagonal line must match the others in the row. The rectangle must be at the bottom, in line under the rectangles in the two boxes above it. A smiley face should also be in the box as there should be one in each row.
- 4) D - Patterned circle (one circle, one star, one triangle per row), with arrow to the right (one arrow up, one left and one right each per row)
- 5) A - Each row has a 3-sided shaped, a 4-sided shape, and a 5-sided shape of the same shading.
- 6) C - Each row has an arrow pointing to the right with a white circle underneath.
- 7) D - The numbers should add up to 9 for each row and column, the top squares should be white and grey, each row has a black triangle which should be pointing upward.

Code Breaker, pages 46-49

- 1) TO – T is a shape with double lines; O is a shape with no arrows.
- 2) d. – (DN) – D is a square with 4 lines (A had one, B had two, C had three); N is a square with the diagonal lines going up to the right.
- 3) JC – J is a triangle on top of the shape; C is a pentagon on the bottom.
- 4) 5431 – The numbers correspond to each letter (P=5, A=4, S=3, T=1)
- 5) I12 – The letters are all of the vowels; the numbers increase by adding itself (3, 6, 12, 24, 48) each turn
- 6) B9 – The letter B is an arrow pointing left; the numbers must total 11 when added together
- 7) 0 – Each black triangle adds 5 to the total, each white triangle subtracts 5
- 8) YE – Y is the 5-pointed star shape; E is a shape without any black dots inside it.
- 9) C – A is a dark grey colored shape; S means there is an arrow pointing to the left
- 10) E – S is a square (or 4-sided shape); B is a horizontal line through the shape
- 11) D – A means 5 shapes (B is 6, C is 7); U means there are square shapes
- 12) B – Each letter represents a shape; O is a triangle, H is a half circle
- 13) C – R is the shape in the circle (a star); F is a rectangle with a black section on top
- 14) B – Y is a shape a horizontal arrow; C is a shape with six sides (hexagon)
- 15) A – A is a circle; Z has a line going in an counterclockwise direction.
- 16) D – K means there is an even number in the upper left of the box; W means the shape does not have a line.

Cube Nets, pages 50-53

- | | | | | | | | |
|------------|-------|-------|-------|-------|-------|-------|------|
| 1) C and E | 2) D | 3) B | 4) B | 5) C | 6) D | 7) B | 8) D |
| 9) A | 10) C | 11) A | 12) D | 13) B | 14) C | 15) D | |

Anagrams, pages 54-55

- | | | | | | |
|--------------|------------------|---------------|----------------|----------------|---------------|
| 1) LENIENT | 2) APATHY | 3) TUTOR | 4) SEDENTARY | 5) TERRAIN | 6) IMPECCABLE |
| 7) INCITE | 8) CALLOUS | 9) SERPENT | 10) PERMEATE | 11) CANDOR | 12) PROLIFIC |
| 13) FINGER | 14) PREPOSTEROUS | 15) ABUNDANT | 16) BETRAY | 17) DESTITUTE | |
| 18) INFERIOR | 19) OSTENTATIOUS | 20) VESSEL | 21) RIDICULOUS | 22) PARLIAMENT | |
| 23) TRIVIAL | 24) ECONOMICAL | 25) CANDIDATE | 26) DROUGHT | 27) VACANT | |
| 28) FRAGMENT | 29) CONTEMPORARY | 30) NUISANCE | | | |

3-D Cubes, pages 56-59

- 1) a. 125 cubes ($5 \times 5 \times 5$) b. A total of 98 cubes will have at least one face painted blue - all of the cubes in the top and bottom rows ($25 + 25$), and 16 in each of the middle layers ($16 + 16 + 16$)
- 2) A - It has 11 cubes removed (B has only 10 cubes removed)
- 3) a. 4 b. 16 c. 23 4) a. 25 b. 20% ($25/125 = .20$) 5) d 6) d 7) e 8) b 9) c

Shape Creations, pages 60-62

- 1) a 2) c 3) b 4) d 5) a 6) b 7) d 8) b

Square Hopper, pages 63-64

Puzzle One: 7 Moves - (From Start) Right 4 squares, Down 3 squares, Left 4 squares, Up 1 square, Right 4 squares, Right 1 square, Down 3 squares

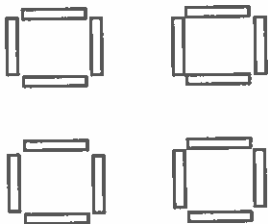
Puzzle Two: 7 Moves - (From Start) Down 5 squares, Up 3 squares, Right 1 square, Down 3 squares, Down 2 squares, Right 2 squares, Right 3 squares

4	4	3	5	3	4
3	4	3	1	2	2
4	1	1	3	1	3
1	2	3	2	4	4
3	1	1	3	4	2
4	2	2	3	3	End Here

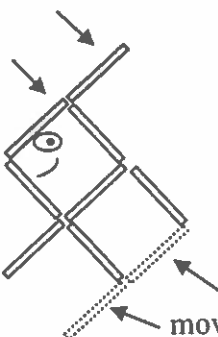
5	4	3	1	2	4	1
3	2	4	3	4	1	6
1	3	2	4	2	2	1
3	4	1	2	2	1	5
2	4	3	4	1	3	4
3	2	3	4	1	4	3
1	4	1	4	4	3	2
2	2	5	4	5	End Here	

Straw Puzzles, pages 65-66

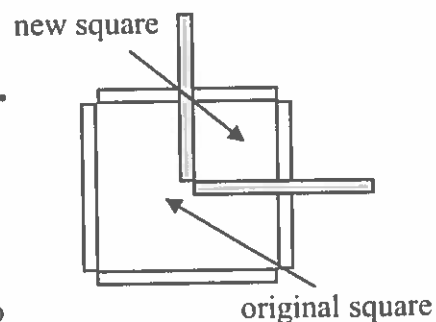
1.



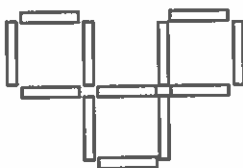
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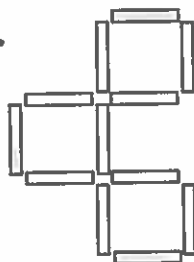
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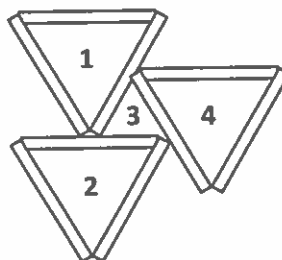
4.



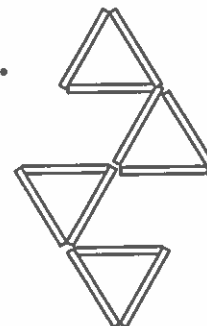
5.



6.
























7.



8.



Symbol Addition, pages 67-69

1.  = 5  = 3  = 10	2.  = 3  = 7  = 2	3.  = 11  = 4  = 10	4.  = 6  = 4  = 4
5.  = -1  = 4  = 2	6.  = 0  = 2  = 10	7.  = 6  = 3  = -2	

Get on the Rebus, pages 70-74

Environment (In v+iron+mint) 2) Alarm Clock (A L+arm K+lock) 3) Missing you (Alphabet without the U) 4) Forgive and forget (4 give's & 4 get's) 5) Three Blind Mice (3 Mice without I's – so they can't see) 6) Give up (give going up) 7) Paradise (pair of dice) 8) Thunderstorm (th under the word storm) 9) Notebook (musical note + book) 10) Once upon a time (I's over time) 11) Sailing on the high seas (ship on the c's elevated above the other c's) 12) No one to blame 13) Painless operation (the missing letters from the word *operation* are p,a,i,n) 14) For instance (Four in stance) 15) End up behind bars 16) Two left feet 17) To infinity and beyond 18) Need for speed 19) Top Secret 20) No fooling around 21) Feeling on top of the world 22) Thinking (thin king) 23) No one understands 24) Mind over matter (Mind / O+four / mat+R) 25) Couch potato 26) Not my cup of tea 27) Hijacking (A Jack and King card at a higher level than the other cards) 28) "An elephant in the room" (an expression meaning that there is a subject that everyone knows about but does not want to discuss because it will make someone uncomfortable) 29) Face the music 30) Breakfast (The word fast breaking into pieces) 31) waterfall (water – plus a man falling) 32) "A bird in the hand is worth two in the bush" (proverb meaning it is better to keep what you have, than give it up for something which may lead to nothing)

Reflections & Rotations, pages 75-79

1) c 2) d 3) b 4) b 5) c 6) c 7) a 8) b 9) c 10) a 11) b 12) a
 13) b (counterclockwise 90°); 14) d (clockwise 180°); 15) a (clockwise 90°); 16) d (counter clockwise 90°); 17) b (counter clockwise 180°)

Shape Matching, pages 80-81

Exercise One – 1) h 2) n 3) d 4) l 5) q 6) b 7) r 8) f 9) j 10) y 11) a 12) m 13) p 14) u 15) o
16) i 17) c 18) t 19) x 20) g 21) v 22) e 23) k 24) w 25) s

Exercise Two – 1) e 2) i 3) p 4) u 5) c 6) w 7) q 8) a 9) v 10) h 11) k 12) s 13) m 14) d
15) x 16) o 17) r 18) j 19) y 20) t 21) f 22) n 23) l 24) g 25) b

Missing Operators, pages 82-83

- 1) $1 + 5 - 5 = 1$ or $1 \times 5 \div 5 = 1$
- 2) $3 + 7 \times 2 = 20$
- 3) $5 + 5 \times 5 = 50$
- 4) $15 \div 5 \times 6 = 18$
- 5) $12 - 12 + 6 = 6$
- 6) $7 + 1 \div 2 = 4$
- 7) $100 \div 10 + 4 = 14$
- 8) $8 + 2 \div 2 = 5$
- 9) $12 + 2 - 5 \div 3 = 3$
- 10) $15 + 5 \div 4 - 3 \times 3 = 6$
- 11) $5 \times 1 + 3 \div 2 - 4 = 0$
- 12) $24 \div 6 \times 1 + 4 - 8 = 0$

Symbolic Scales, pages 84-87

1) We see in the second picture that an ice cream cone equals 6 marbles. Substituting 6 marbles in the first picture, then a cake equals ten marbles. Therefore, two ice cream cones are needed to balance one cakes and two marbles (or twelve marbles).

2) Using the first two scale illustrations, solve for the value of a grasshopper and caterpillar in terms of lady bugs (one grasshopper = 4 lady bugs, one caterpillar = 2 lady bugs). Therefore, 4 lady bugs will be needed to balance the two caterpillars.

3) From the first picture, we can see that one soccer ball equals 4 tennis balls. Knowing this, we can solve that one baseball equals 2 tennis balls. Therefore, 5 baseballs are needed to balance the one soccer ball and six tennis balls. In the last question, 8 tennis balls will be needed to balance the four baseballs.

Symbolic Scales, pages 84-87

4) Using the first two scale illustrations, solve for the value of penguins and sheep in terms of teddy bears (one penguin = 9 teddy bears, and one sheep = 3 teddy bears). Therefore 9 teddy bears will be needed to balance the three sheep; and 18 teddy bears will be needed to balance the two penguins.

Logical Comparisons, pages 88-91

1) **A** – In this example, the small circles turn into large circles, and the large circles turn into small circles. Note the number and position.

2) **B** – The symbols change in the opposite way as in the first example (the heart changes to a grey star, the cloud changes to a lightning bolt, the black star changes to a black sun, and the white half circle changes to a grey half circle)

3) **D** – The key is to notice that the solid lines change from vertical to horizontal, and the dotted lines do not change at all.

4) **D** – The changes are reversed from the first example – The grey heart changes to white, an arrow is added, and all circles change to squares

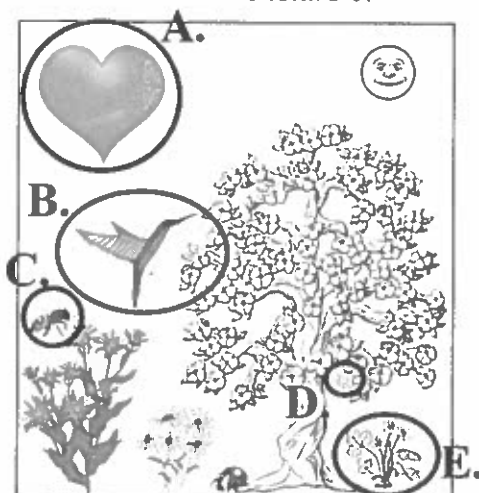
Memory Jogger, pages 91-93

The Myth of Pandora

1) b. Zeus 2) d. As revenge for Prometheus stealing fire and giving it to humanity 3) c. All-endowed
4) b. Evil, diseases and illnesses 5) b. Epimetheus, brother of Prometheus 6) b. No 7) d. All of the evil, diseases and illnesses were released to humanity 8) **What is the modern meaning of Pandora's box?** Something that is the cause of many unforeseen or unknown troubles

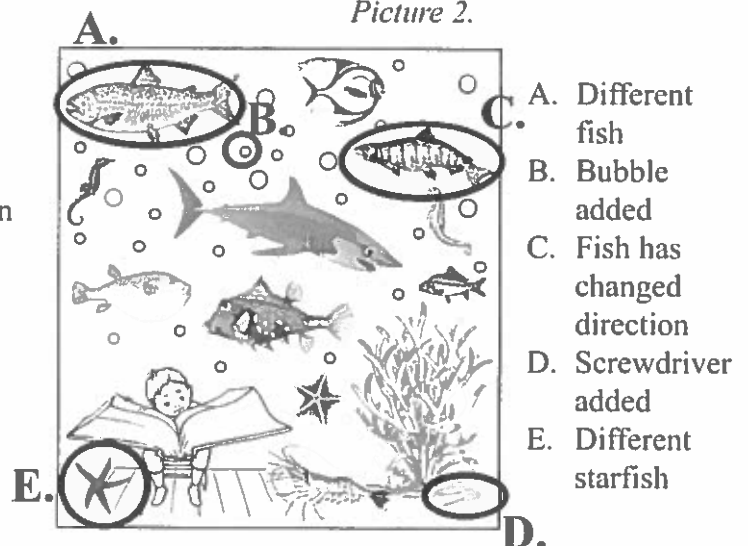
What's the Difference?, pages 94-96

Picture 1.



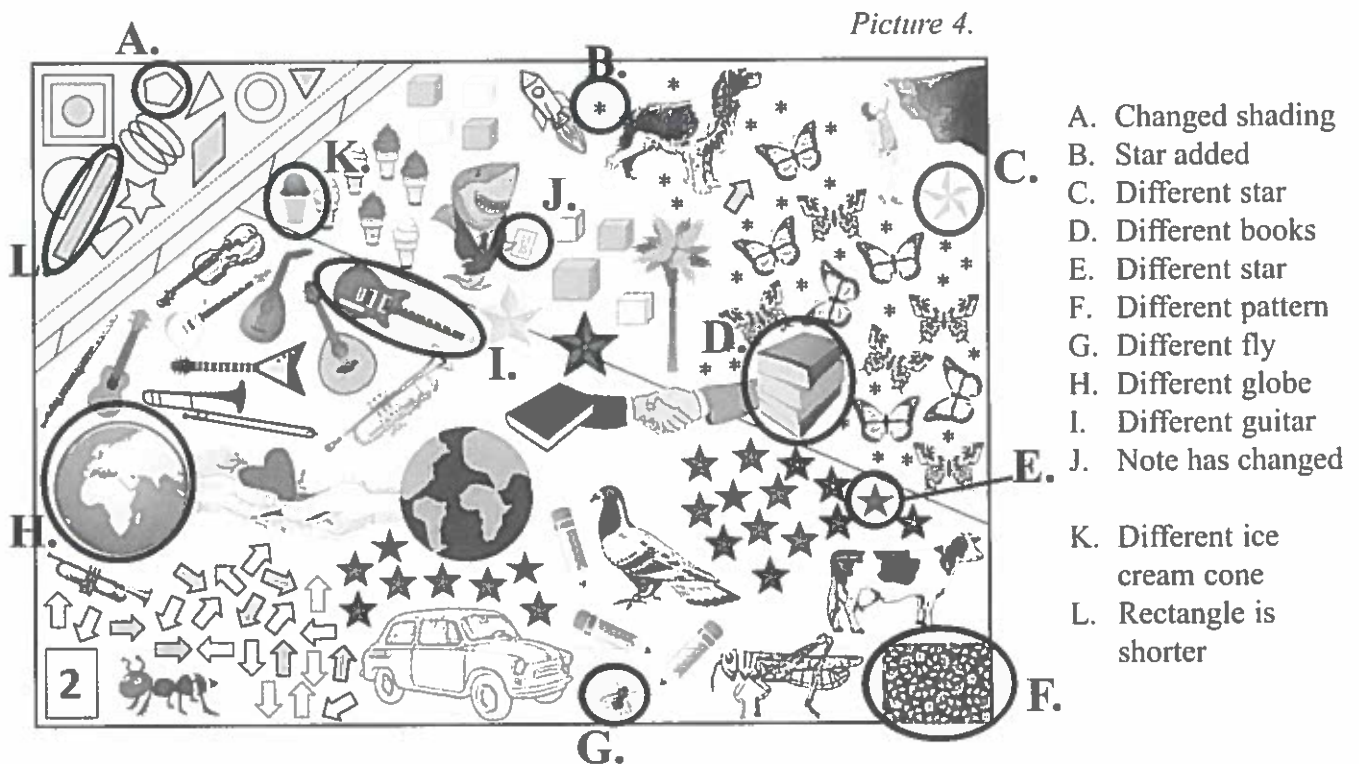
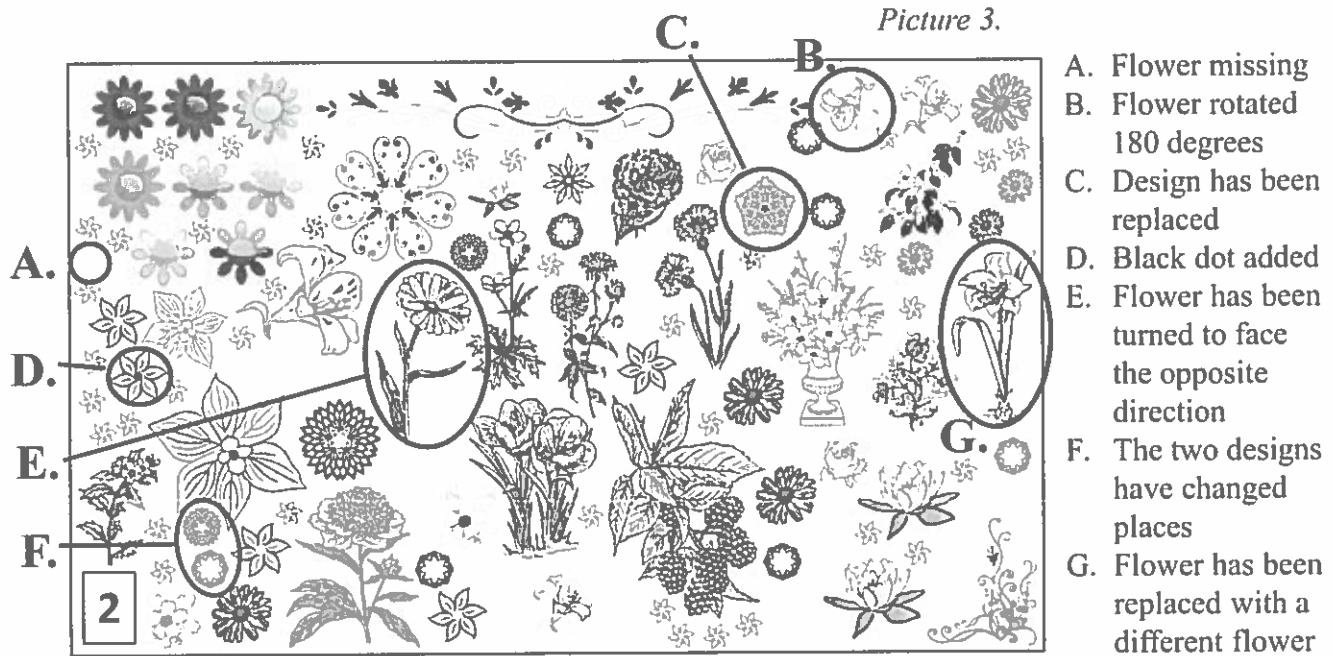
- A. Different heart
- B. Bird has moved down toward tree
- C. Bee has changed
- D. Flower added
- E. Plant has changed position

Picture 2.



- A. Different fish
- B. Bubble added
- C. Fish has changed direction
- D. Screwdriver added
- E. Different starfish

What's the Difference?, pages 94-96



Memory Jogger, pages 95-97

The Myth of Pandora

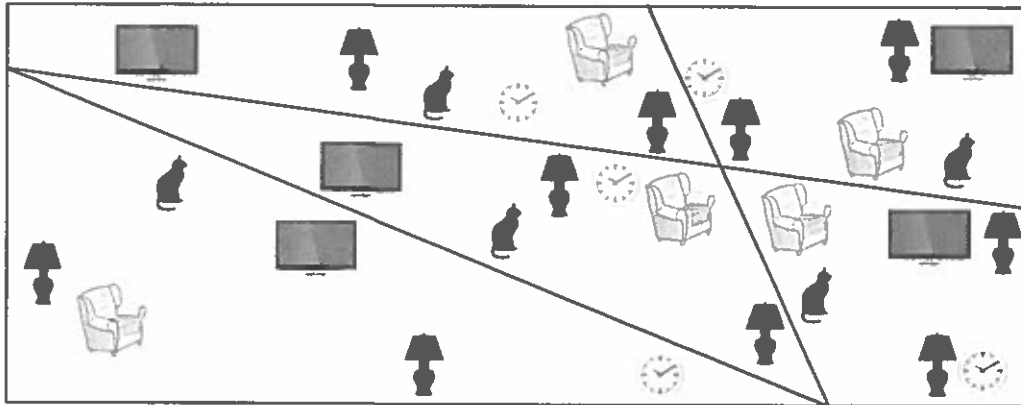
- 1) b. Zeus 2) d. As revenge for Prometheus stealing fire and giving it to humanity 3) c. All-endowed
- 4) b. Evil, diseases and illnesses 5) b. Epimetheus, brother of Prometheus 6) b. No 7) d. All of the evil, diseases and illnesses were released to humanity 8) What is the modern meaning of Pandora's box? Something that is the cause of many unforeseen or unknown troubles

The Final Challenge, pages 98-107

- 1) 12 (The sum of opposing pieces of the pie should total 19)
 2) D (The letters U, V, W, X have been rotated on their sides)
 3) 36 – The sum of the dots showing is 27. Subtract 27 from the total number of dots on all three dice, which is $21+21+21 = 63$. Therefore $63 - 27 = 36$.

4) F

5)



6) The notes are a ten dollar note and a five dollar note. The friend stated that one of them could not be a ten dollar note, not both.

7) E – All of the others have five circles

8) B – The carrots and beets both grow in the ground. The apple grows on a tree, the cherries are the only option that also grow on trees.

9) D – Rows 3 and 4 are simply rows 1 and 2 repeated, but in the opposite order.

10) HJK – The pattern is to skip one letter in the alphabet after each letter

11) C – In all of the others, the shaded intersection is with three circles

12) There were six teachers in the group. To solve using algebra, x = number of teachers.

$$x + 2x + 4x = 42$$

$$7x = 42$$

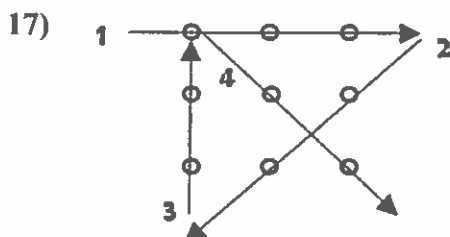
$$x = 6$$

13) A – The sequence is a rectangle alternating colors from white to a checkered pattern to black, whilst rotating 45 degrees.

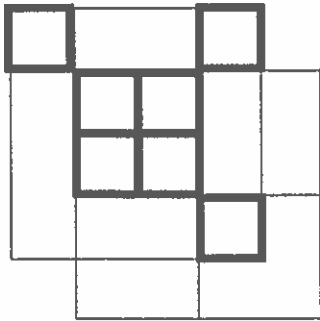
14) E – All of the other shapes have the larger, outer shape repeated inside.

15) D

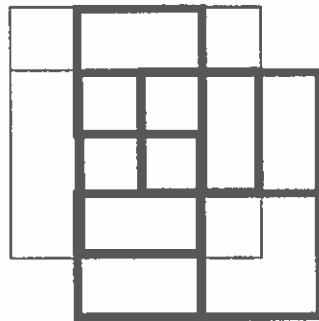
16) 24 – The first digit is the difference between the two numbers, the next are the sum.



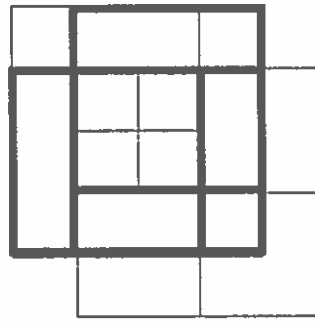
18) There are 19 total squares. If you break them down to square sizes:



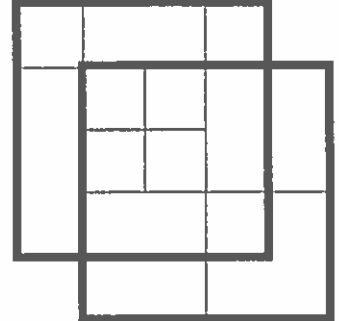
7 single block squares



7 four-block squares

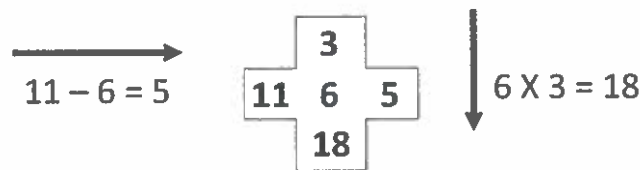


3 nine-block squares



2 sixteen-block squares

19) The key to the cross formulas is that the top number is multiplied by the middle number to get the bottom number. The left number subtracts the middle number to get the number on the right. The missing numbers are 11 and 18.



20) There are 3 goldfish and 2 clownfish.

A goldfish sees that there are as many clownfish (C) as goldfish (G-1). We subtract one from the total G because the goldfish making the observation is not counting himself.

$$C = G - 1$$

A clownfish sees that there are 3 times as many goldfish as clownfish (again, not counting himself).

$$3(C - 1) = G$$

So combining the two equations, we get $3C - 3 = C + 1$ then $2C = 4$, so $C = 2$

Solving for G, $4 = G - 1$ so $G = 3$

21) He would be your father

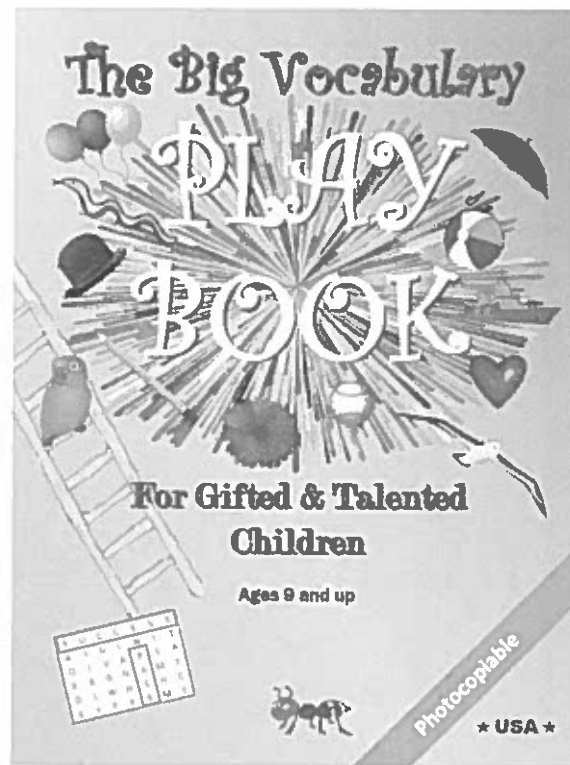
22) Seven years – in the 7th year it doubles in growth to the maximum height

23) Toast – all of the other words are anagrams and have the same letters

24) The squirrel – There is no day that both are lying, so it must be that one is lying, or both are telling the truth (Sunday). However, Sunday would not work because the squirrel does not lie on Saturday. If the rabbit is telling the truth, that would only work for him to make the statement on Sunday – which we already know it isn't.

Therefore the squirrel is telling the truth and the rabbit is lying.

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