

Familiarisation Test

Non-Verbal Reasoning & Mathematics

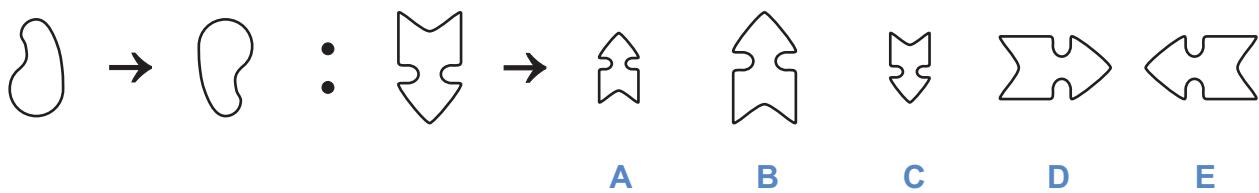
Read the following with your child:

1. This is a multiple-choice test in which you have to mark your answer to each question on the separate answer sheet. You should mark only one answer for each question.
2. Draw a firm line clearly through the rectangle next to your answer, like this . If you make a mistake, rub it out as completely as you can and put in your new answer.
3. There are three sections in this paper – two for Non-Verbal Reasoning and one for Mathematics. The first two sections start with an explanation of what to do followed by one or two worked examples with the answers already marked on the answer sheet. These sections also contain some practice questions. Solutions to the examples and practice questions are provided.
4. Be sure to keep your place in the correct section on the answer sheet. Mark your answer in the box that has the same number as the question.
5. You may find some of the questions difficult. If you cannot do a question, **do not waste time on it but go on to the next**. If you are not sure of an answer, choose the one you think is best.
6. **Work as quickly and as carefully as you can.**

Non-Verbal Reasoning: Section 1

On the left of the example below are two shapes with an arrow between them. Decide how the second is related to the first. After these there is a third shape, then an arrow and then five more shapes. Decide which of the five shapes goes with the **third** one (before the arrow) to **make a pair** like the two on the left. Its letter has been marked on your answer sheet.

Example



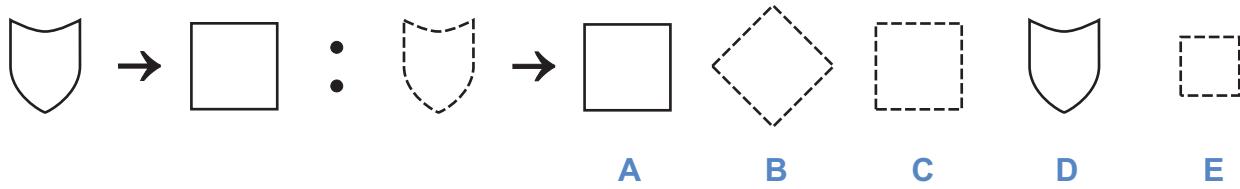
The shape rotates 180° but doesn't change size.

Answer: B

Now do the two practice questions below.

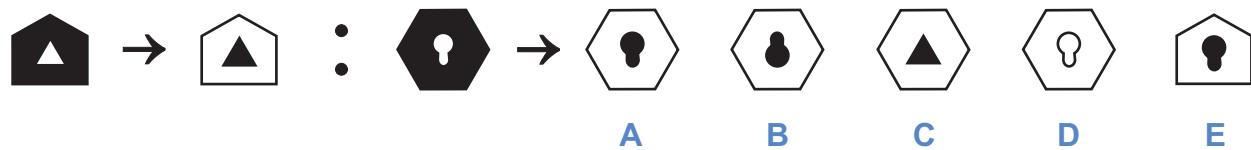
Mark the correct answers on your answer sheet.

P1



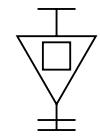
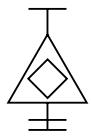
In the two shapes on the left, we can see that the shape changes from a shield to a square but the size remains the same and so does the line style. This means that the dashed shield will change to a dashed square of the same size. This makes **C** the correct answer.

P2

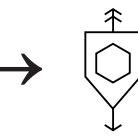
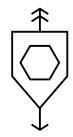


In the two shapes on the left, we can see that the shapes stay the same but there is a reversal of shading. The third shape is a small white 'keyhole' inside a black six-sided figure so shape four must be the same but with reverse shading. Therefore, **A** is the correct answer.

1



⋮



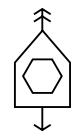
A



B



C

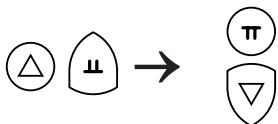


D



E

2



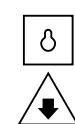
⋮



A



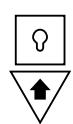
B



C

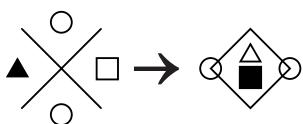


D



E

3



⋮



A



B



C

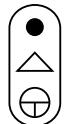


D

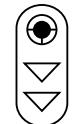


E

4



→



⋮



A



B



C

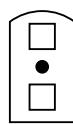
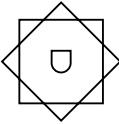


D



E

5



⋮



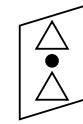
A



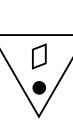
B



C

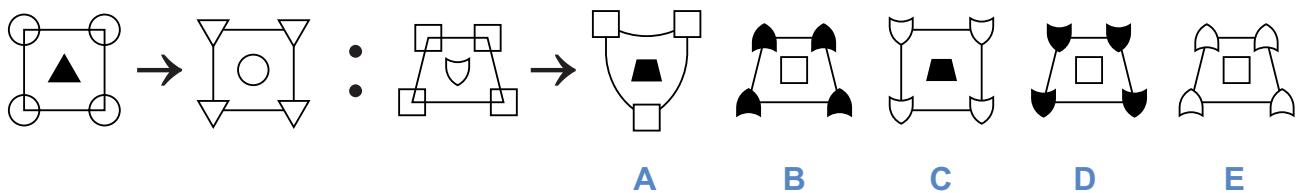


D

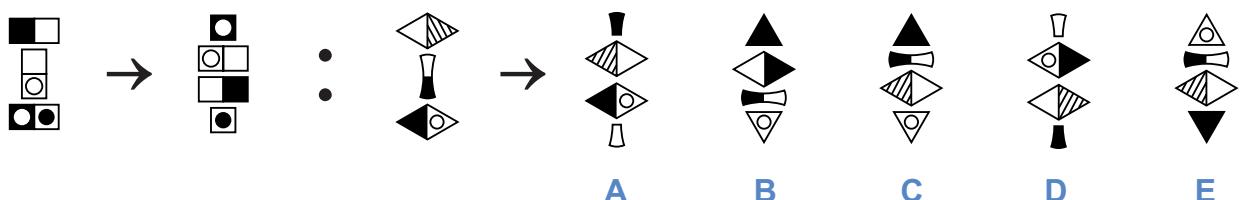


E

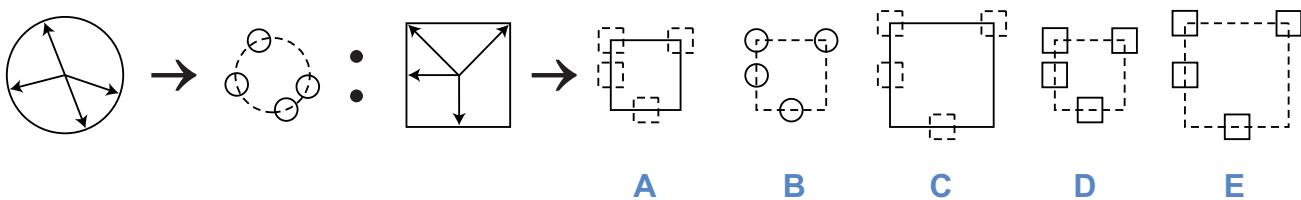
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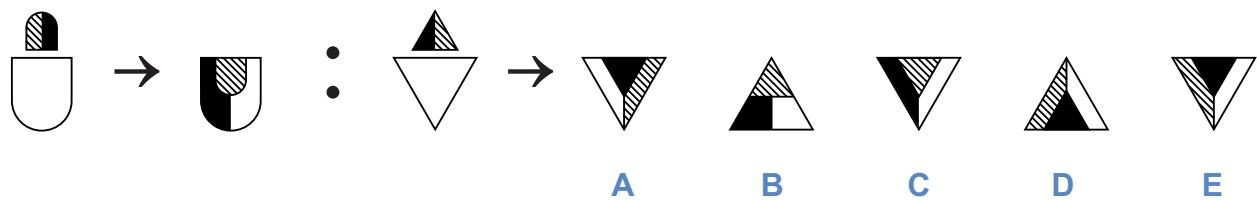
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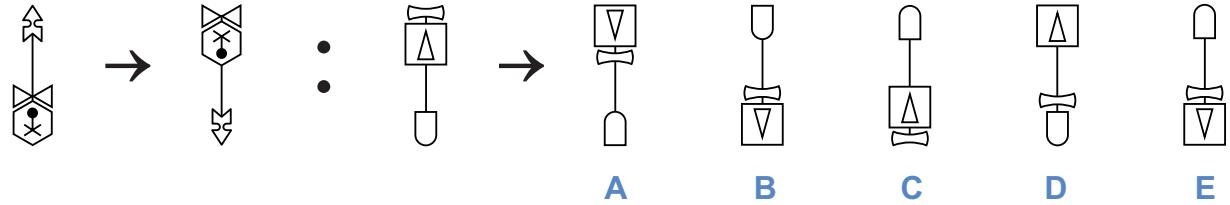
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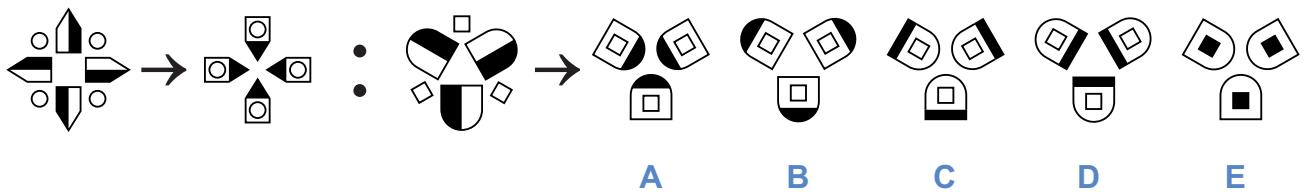
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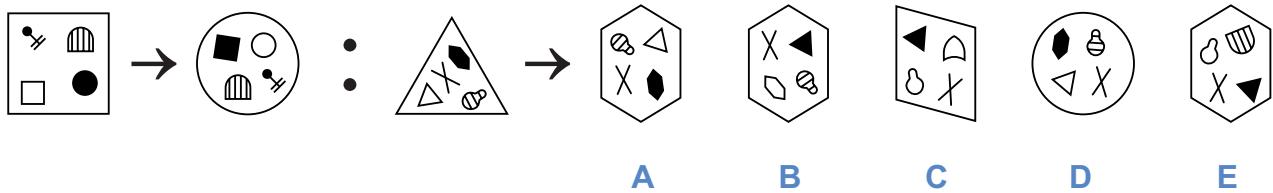
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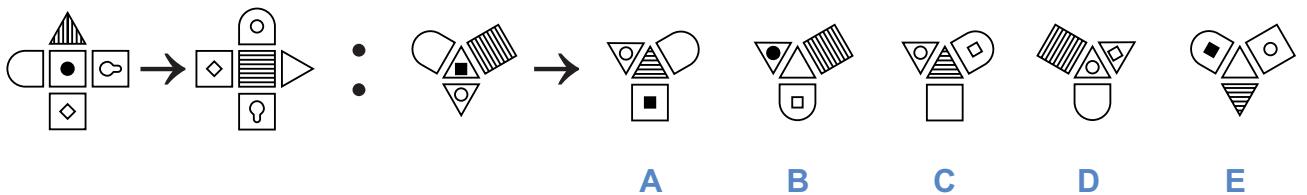
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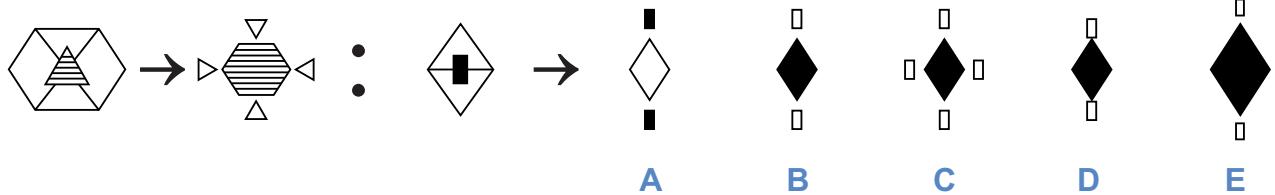
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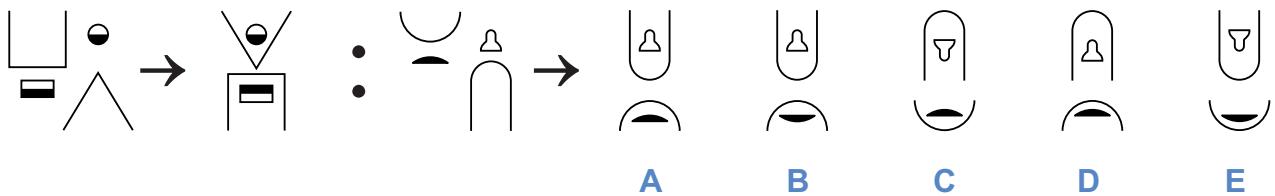
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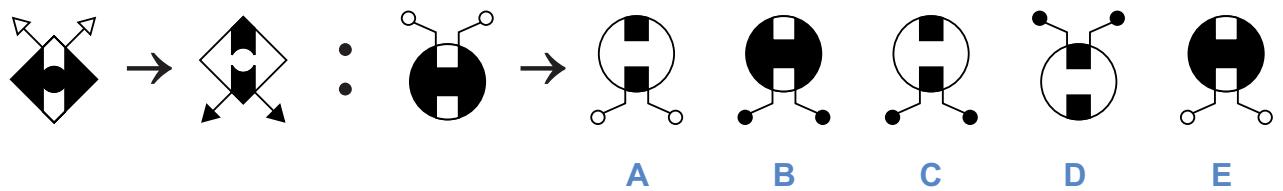
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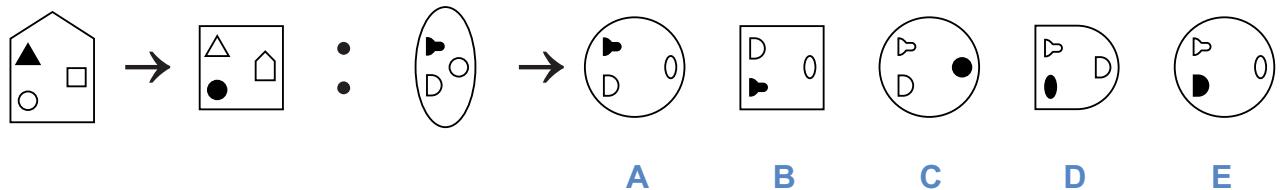
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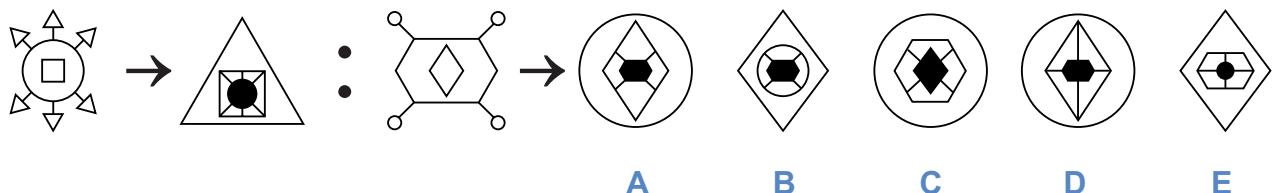
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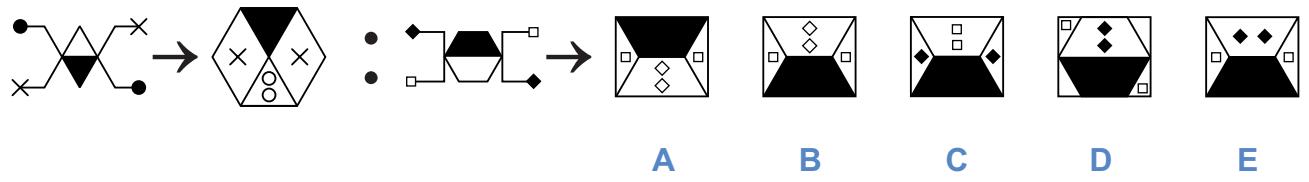
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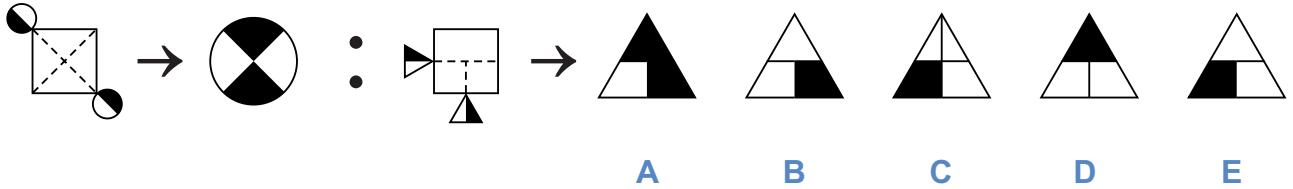
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19



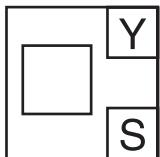
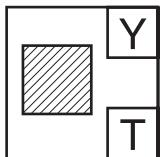
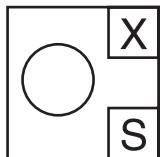
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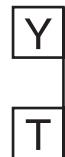
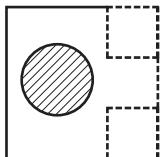
Non-Verbal Reasoning: Section 2

To answer these questions you have to work out a code. In the boxes on the left are shapes and the code letters that go with them. The top letters mean something different to the bottom ones. You must decide how the letters go with the shapes. Then find the correct code for the **test shape** from the set of five codes on the right and **mark its letter on your answer sheet**. The examples below have been done for you and the answers have been marked on your answer sheet.

Example 1



TEST SHAPE

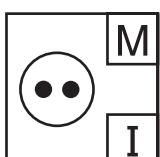
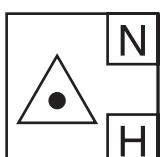
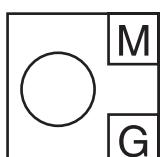


A B C D E

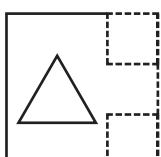
Answer: B

In the example above, both squares have a Y at the top but the circle has an X, so the top code must be for shape. Both white shapes have an S at the bottom, but the shaded shape has a T, so the bottom code must be for shading. The test shape is a shaded circle so its code letters must be X for circle and T for shading, and **B** has been marked on your answer sheet. Now look at the second example:

Example 2



TEST SHAPE



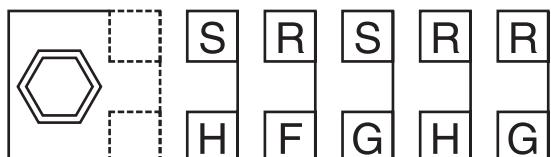
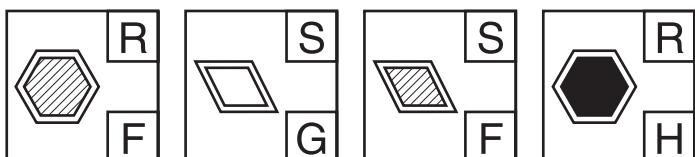
A B C D E

Answer: A

Both circles have an M at the top but the triangle has an N, so the top code must be for shape. The bottom code letter is different for each shape so G, H and I must be the codes for no dot, one dot and two dots. The test shape is a triangle with no dots so its code letters must be N for triangle and G for no dots, and **A** has been marked on your answer sheet.

Now do the practice question below and mark the correct answer on your answer sheet. **Remember, there is a new code for each question.**

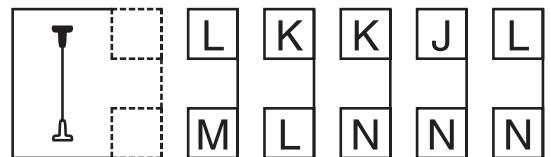
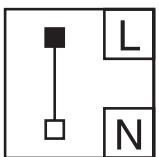
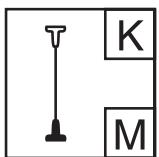
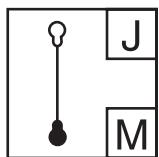
P1



A B C D E

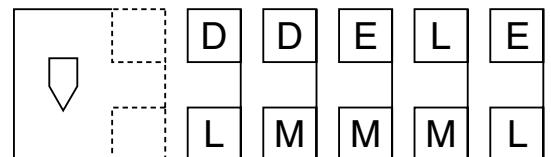
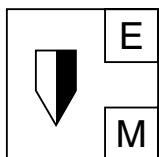
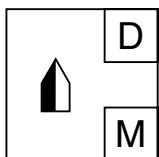
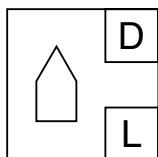
Both six-sided shapes have an R at the top and both four-sided shapes have an S, so the top code must be for the shape. The bottom codes show that both shapes with diagonal lines have an F, the unshaded shape a G and the shaded shape an H, so the bottom codes must be for the shading. The test shape is six-sided and unshaded so its code letters must be R for shape and G for shading, so **E** is the correct answer.

21



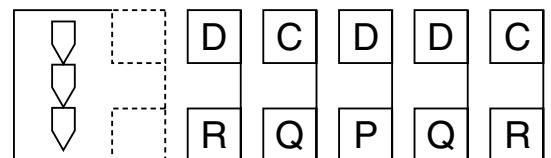
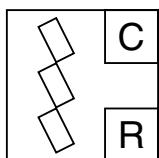
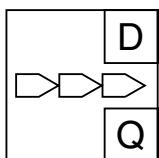
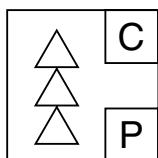
A B C D E

22



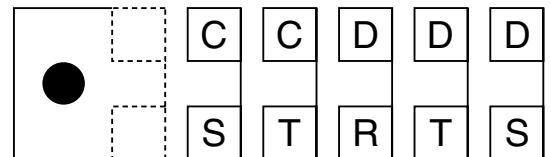
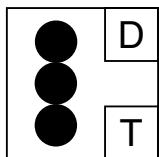
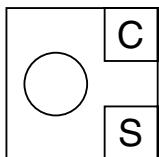
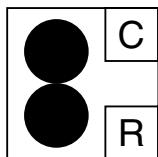
A B C D E

23



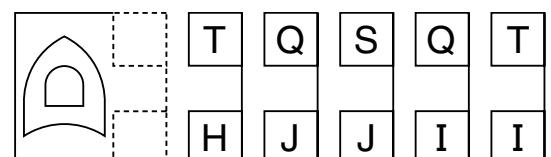
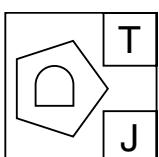
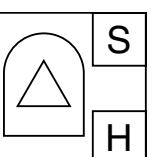
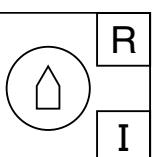
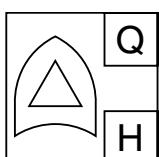
A B C D E

24



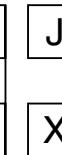
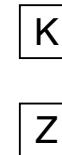
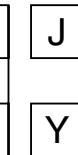
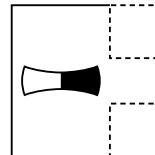
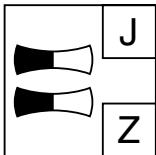
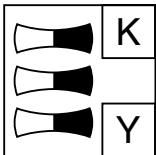
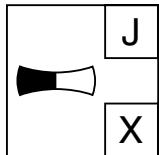
A B C D E

25



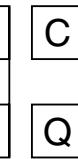
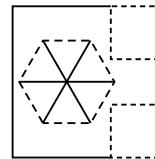
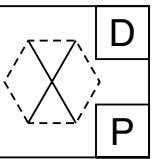
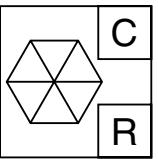
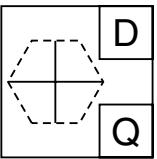
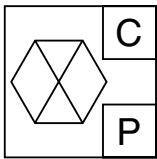
A B C D E

26



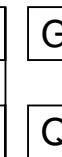
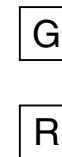
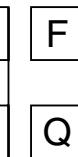
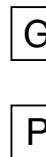
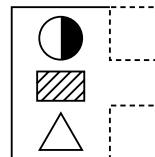
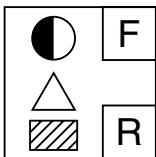
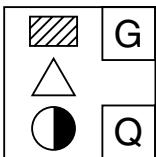
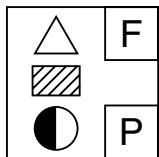
A B C D E

27



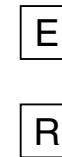
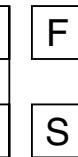
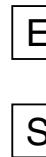
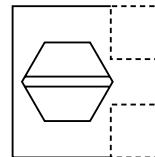
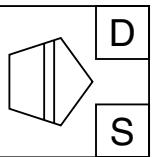
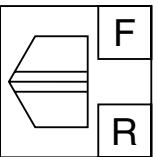
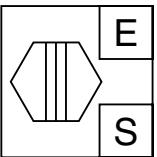
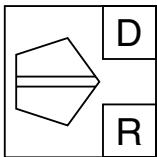
A B C D E

28



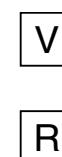
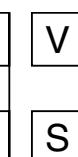
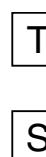
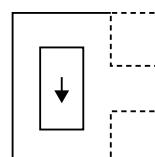
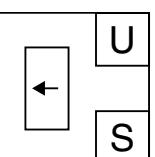
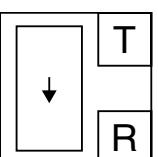
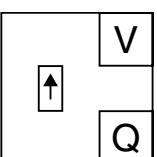
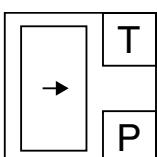
A B C D E

29



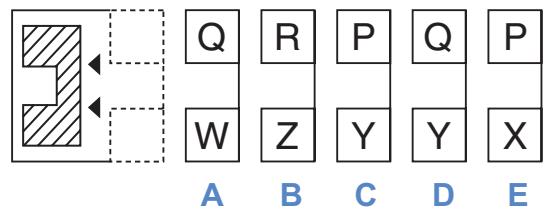
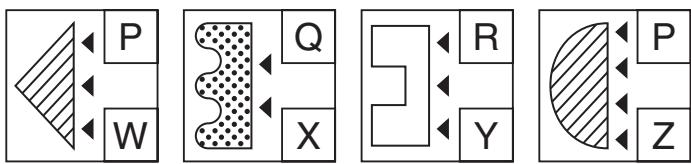
A B C D E

30

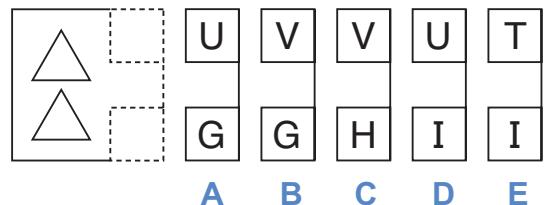
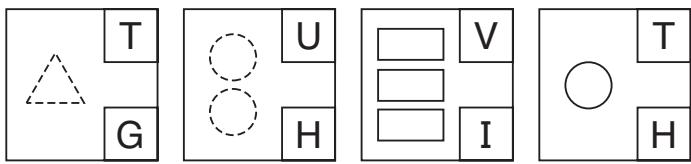


A B C D E

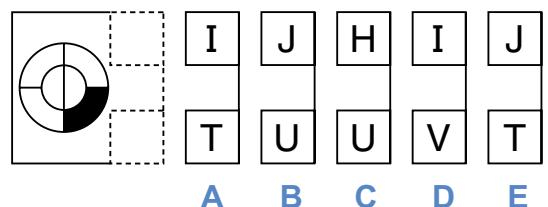
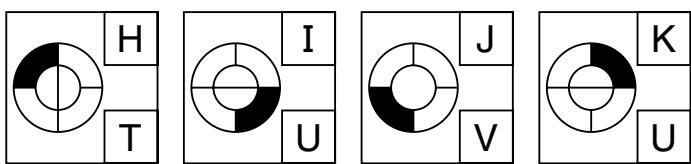
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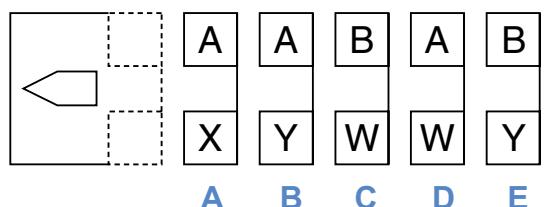
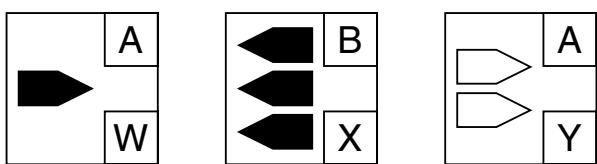
32



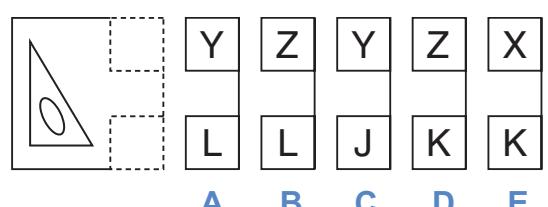
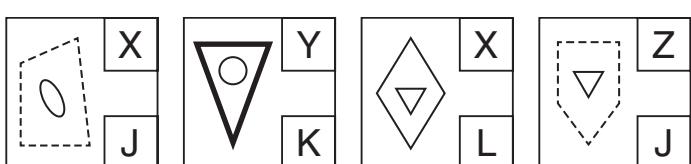
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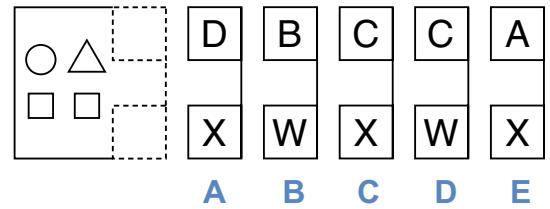
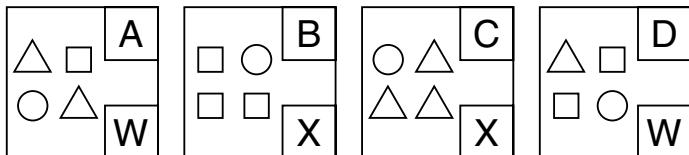
34



35

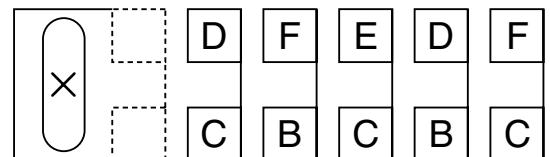
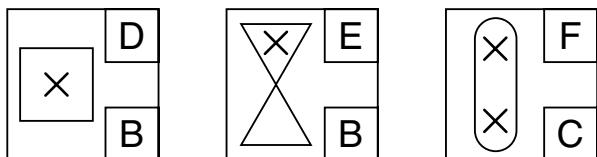


36



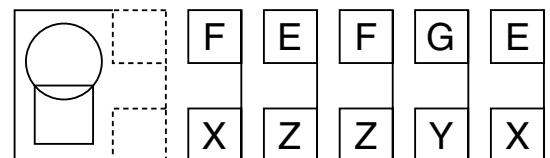
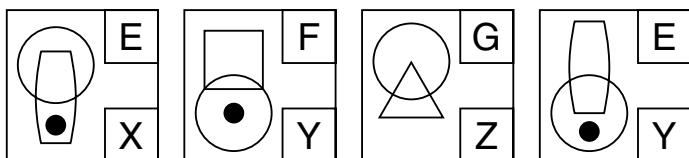
A B C D E

37



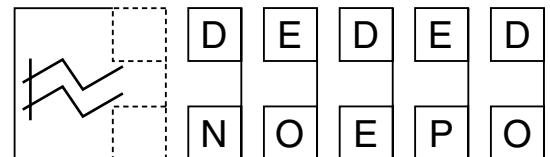
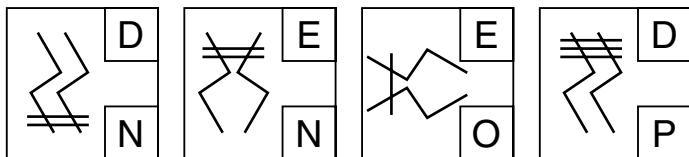
A B C D E

38



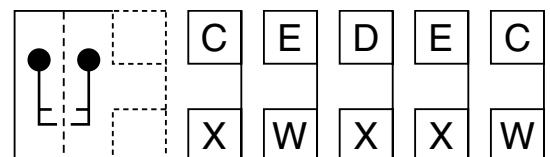
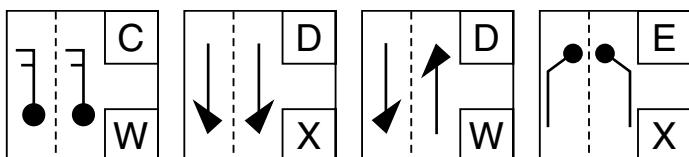
A B C D E

39



A B C D E

40



A B C D E

Mathematics

41



stands for 12 ships.

Look at this table.

Dock	Number of Ships
A	
B	
C	

How many more ships are in dock A than dock C?

A 0.5

B 1

C 3

D 4

E 6

42

What is the value of the 7 in this number?

7240

A 7 thousands

B 7 hundreds

C 7 tens

D 7 ones

E 7 thousandths

43

Iveta was 1.43 metres tall.

She grew 2 centimetres more.

How tall was she then in metres?

A 1.45 m

B 1.63 m

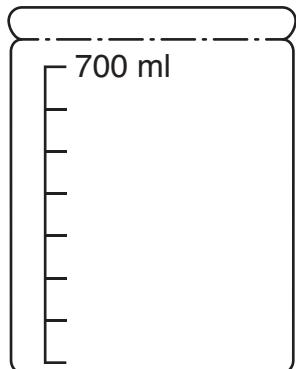
C 1.65 m

D 1.405 m

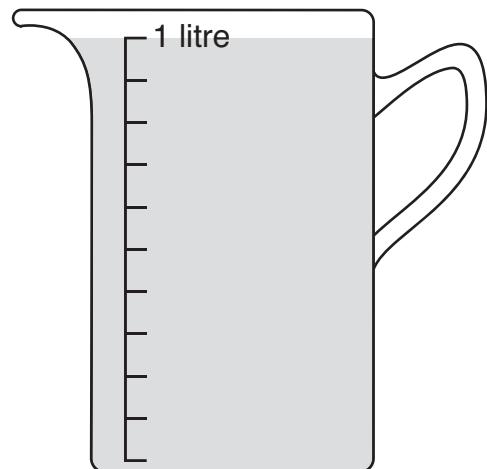
E 1.603 m

44

An empty jar = 700 millilitres



A jug holding 1 litre of water



The jug holds 1 litre of water.

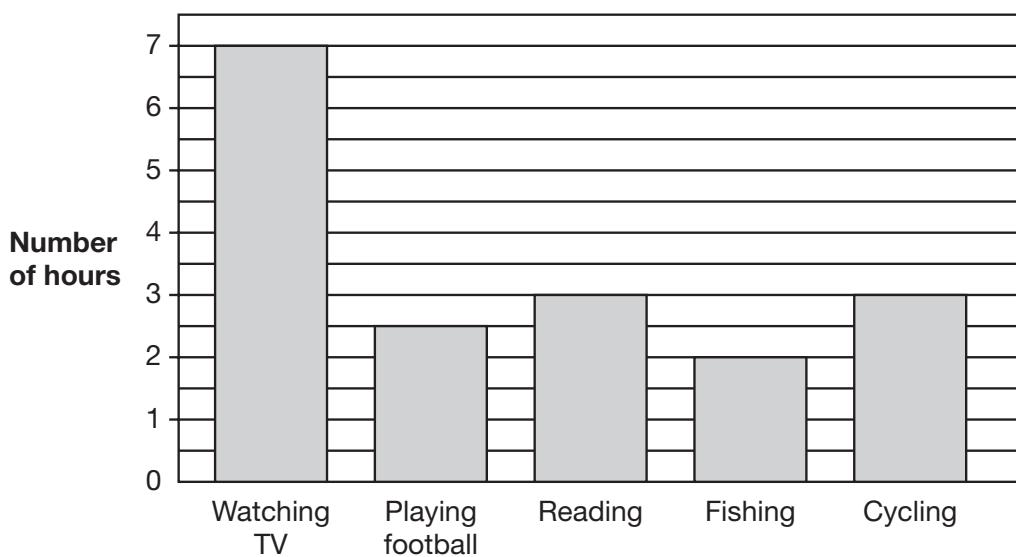
The jar is **filled** from the jug.

How much water will be left in the jug?

- A 0.3 litres B 0.25 litres C 400 millilitres D 0.35 litres E 200 millilitres

45

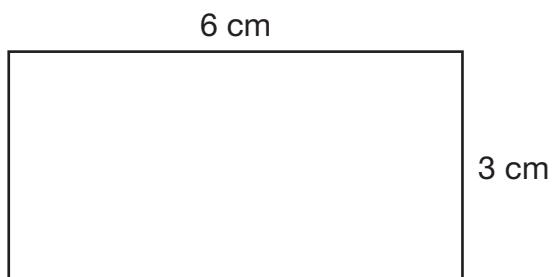
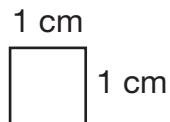
This chart shows how Kai spent his spare time last week.



How many hours did he spend out of doors? (playing football, fishing and cycling)

- A 6.5 hours B 7 hours C 7.5 hours D 8 hours E 8.5 hours

46



How many small squares will fit into the large rectangle?

- A 12 B 15 C 18 D 21 E 24
-

47

Which of these digital alarm clocks shows that it is quarter past seven in the evening?

- A 7:15
- B 7:25
- C 19:25
- D 19:15
- E 21:15
-

48

Join Heritage today! Take advantage of this great offer now.

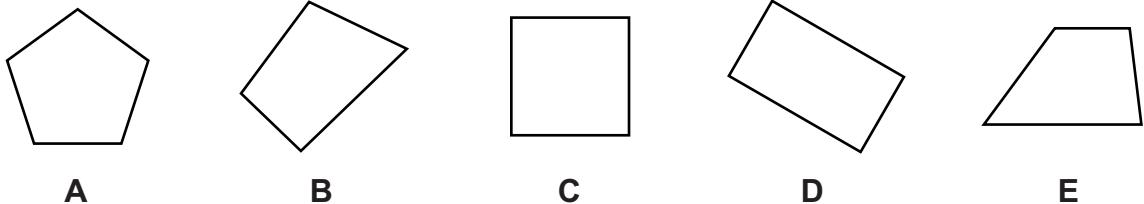
Type of membership	Normal price	Offer price
Individual member	£47.90	£35.63
Joint membership (2 adults)	£79.50	£59.63
Family group (2 adults and children under 18)	£82.00	£61.50
Family one adult (1 adult and children under 18)	£62.00	£46.50
Young person – aged 13–25	£21.50	£16.13

Mrs Ward wants to join Heritage with her three children, aged 10, 12 and 15.

How much must she pay?

- A £82.00 B £62.63 C £62.00 D £61.50 E £46.50

49



Which of these is NOT a quadrilateral?

- A A B B C C D D E E

50

Here is part of a train timetable.

Purley	23:21
East Croydon	22:56	23:01	23:10	23:27	23:30
Norwood Junc.
London Bridge
Clapham Junc.	23:07	23:13	23:21	23:37	23:40
Victoria	23:12	23:18	23:27	23:43	23:45

A train leaves East Croydon at 23:27.

How long does it take to get to Victoria?

- A** 6 minutes **B** 10 minutes **C** 13 minutes **D** 16 minutes **E** 26 minutes
-

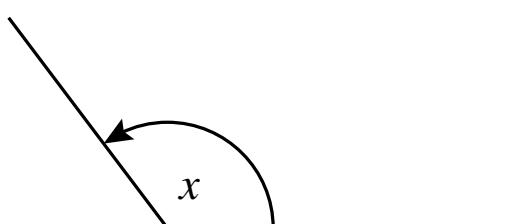
51

What percentage of £5 is 50p?

- A** 1% **B** 5% **C** 10% **D** 20% **E** 50%
-

52

Look at this angle.



Which of the following statements is correct?

- A** Angle x is less than 90 degrees.
B Angle x is a right angle.
C Angle x is more than 180 degrees.
D Angle x is between 90 and 180 degrees.
E Angle x is 180 degrees.

53

$$105 \div \triangle = 21$$

What number does \triangle stand for?

- A 4 B 5 C 6 D 7 E 15

54

A swimming pool charges £3.60 for entry.

You can save $\frac{1}{3}$ of the entry fee with a membership card.

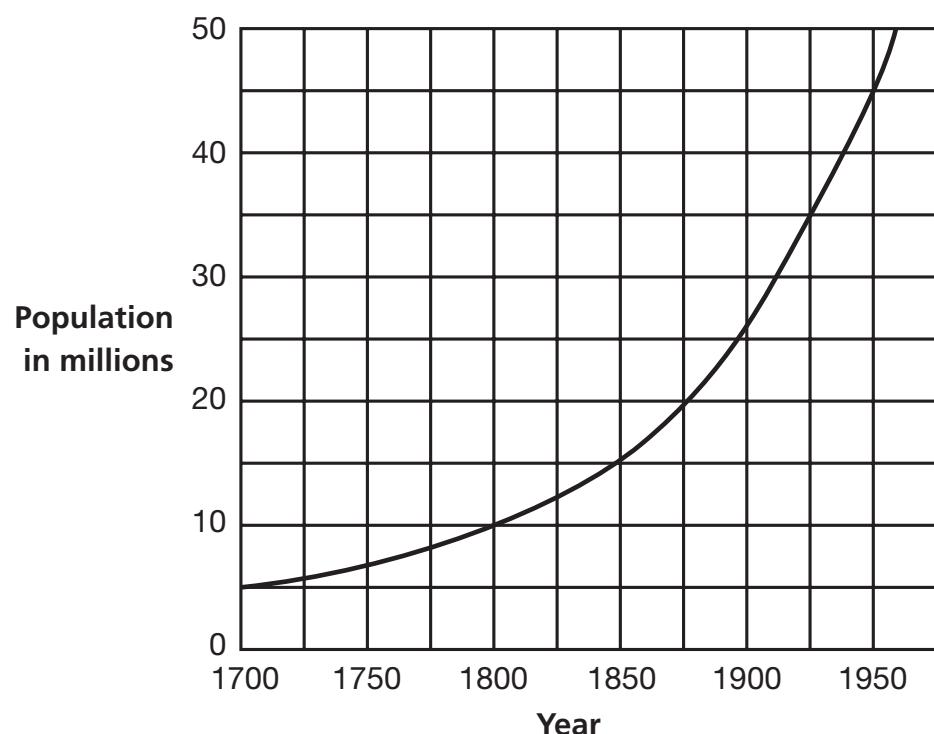
On his first visit, Ken spends £5 on a membership card plus the reduced entry fee.

How many times does Ken visit before he gets back his £5?

- A 4 B 2 C 5 D 1 E 3

55

The graph shows the population of Britain from 1700.



In which year was the population twice as much as it was in 1800?

- A 1850 B 1875 C 1895 D 1900 E 1910

56

9

36

81

The three numbers above are alike in some ways.

Select ONE of the following to say one way in which they are alike.

- A They are all even numbers.
- B They are all two-figure numbers.
- C They are all prime numbers.
- D They are all square numbers.
- E They can all be divided by 2 without a remainder.

57

Mateo's temperature is 37.5°C.
When he was ill it rose 3°C.

What was his temperature when he was ill?

- A 37.8°C
- B 47.5°C
- C 34.5°C
- D 37.2°C
- E 40.5°C

58

Ava had 5 boxes.
Each box weighed 800 grams.

How many KILOGRAMS was this altogether?

- A 4 kg
- B 4.5 kg
- C 40 kg
- D 4000 kg
- E 4500 kg

59

What is 3^2 ?

- A 5
- B 6
- C 9
- D 18
- E 27

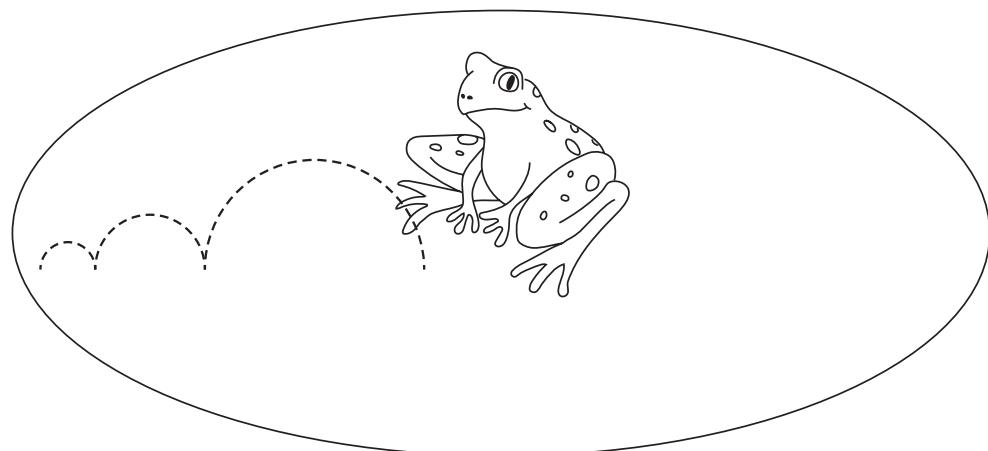
60

Work out XXVI multiplied by XLI.

- A CMLXXXIV
- B MLXVI
- C DCCCLXXXIV
- D MCDLXIV
- E MDLXXXVI

61

A frog starts jumping from the middle of a circular pond.
The pond is 12 metres across, from one side to the other.
The frog starts jumping towards the edge of the pond.
Each jump is in the same direction.



Each jump halves his distance from the edge of the pond.

How far is the frog from the edge after three jumps?

- A 10.5 m
- B 75 cm
- C 150 cm
- D 5.25 m
- E 125 cm

62

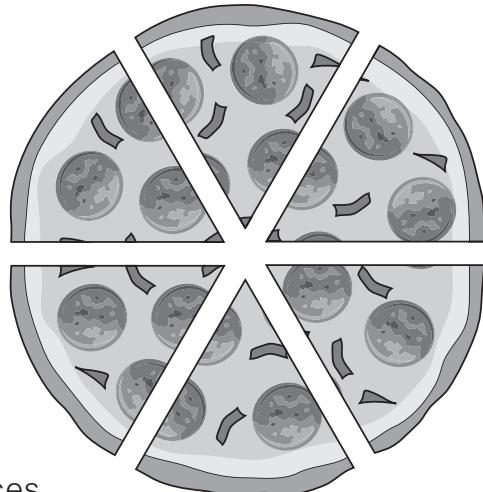
Put the correct number in the box

$$27 \times 99 = 2700 - \boxed{}$$

- A 27
- B 37
- C 127
- D 137
- E 687

63

Ali and his sister share a pizza cut into six equal pieces.



Ali eats $\frac{1}{3}$ of all the pieces.

His sister eats $\frac{1}{4}$ of the remaining pieces.

After both Ali and his sister have eaten, what fraction of the pizza is left?

- A $\frac{5}{12}$ B $\frac{1}{2}$ C $\frac{1}{4}$ D $\frac{1}{12}$ E $\frac{1}{6}$

64

Instructions for roasting meat:

Cook for 30 minutes at 230 °C.

Turn down the heat to 180 °C.

Allow 30 minutes cooking time for every 450 g.

A piece of meat takes $2\frac{1}{2}$ hours altogether to cook.

How heavy is it?

- A 2.25 kg B 1.25 kg C 1.8 kg D 2.7 kg E 1.35 kg

65

To make brown paint, you mix 2 parts red, 17 parts yellow and 1 part blue.

How much red paint is needed to make 40 litres of brown paint?

- A 20 litres
B 34 litres
C 1.5 litres
D 4 litres
E 2 litres

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