

11+ Maths Practice Paper

Year 4 · Foundation

Lesson 5.5: Simultaneous logic puzzles

Read this with your child:

1. This paper has **20 questions** in two parts. Work through them in order. The questions get harder as you go.
2. **Part 1** is multiple choice. Choose **one** answer, A, B, C, D or E, and mark it on the separate answer sheet by drawing a firm line through the box next to its letter. If you change your mind, rub the line out completely and mark your new answer.
3. **Part 2** asks you to write your answer. Write it in the boxes on the answer sheet, **one digit in each box**, starting from the left.
4. If a question is hard, leave it and come back to it at the end.
5. You may use rough paper for working out. You may **not** use a calculator.
6. Suggested time: **25 minutes**.

The answer sheet is after the questions. The answers, with a short explanation of each, are at the back for a parent to mark with.

These are original practice questions written by Elite Learners in the style of 11+ entrance tests. They are not produced by, or connected with, GL Assessment or Cambridge University Press & Assessment (CEM).

Example

Each shape stands for a whole number. The same shape always stands for the same number.

What number does the circle stand for?

$$\star + \star = 10$$

$$\star + \bigcirc = 12$$

A 7

B 5

C 12

D 2

E 10

Answer: A Two stars make 10, so a star is 5. Then $5 + \text{circle} = 12$, so the circle is 7.

The answer, A, has already been marked on your answer sheet.

Now turn over and start Part 1.

Part 1: Multiple choice

1

Each shape stands for a whole number. The same shape always stands for the same number.

What number does the circle stand for?

$$\bigcirc + \bigcirc + \bigcirc = 12$$

A 12

B 3

C 9

D 4

E 6

2

Each shape stands for a whole number. The same shape always stands for the same number.

What number does the square stand for?

$$\triangle + \triangle = 14$$

$$\triangle + \square = 10$$

A 7

B 4

C 3

D 10

E 14

3

Each shape stands for a whole number.

Which shape can you find first?

$$\star + \bigcirc = 11$$

$$\diamond + \diamond + \diamond = 12$$

$$\bigcirc + \square = 14$$

$$\diamond + \star = 9$$

A



B



C



D



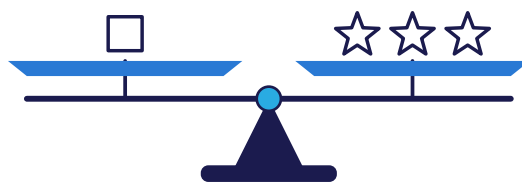
E



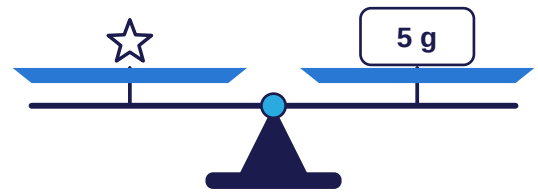
4

The scales balance. Shapes that look the same weigh the same.

How many grams does the square weigh?



Scale A



Scale B

A 15

B 5

C 8

D 3

E 20

5

Two numbers add up to 16. Their difference is 4.

What is the bigger number?

A 8

B 6

C 10

D 12

E 4

6

Each shape stands for a whole number. The same shape always stands for the same number.

What number does the star stand for?

$$\diamond + \diamond + \star = 17$$

$$\diamond + \diamond = 10$$

A 5

B 10

C 17

D 27

E 7

7

In this grid, each shape stands for a whole number. The number at the end of each row is its total, and the number under each column is its total.

What is the missing total?

		12
		15
12	?	

A 12

B 15

C 9

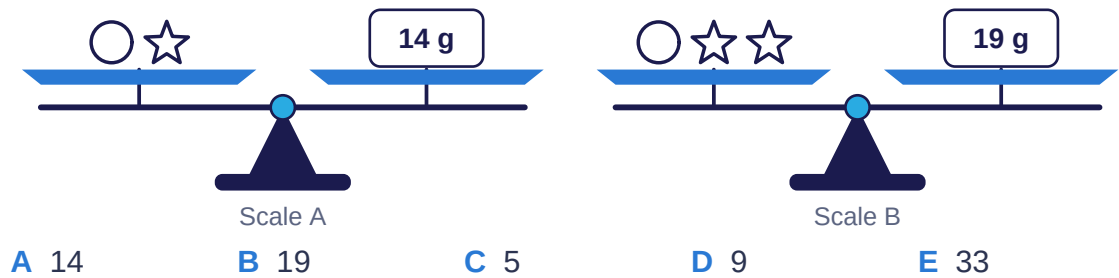
D 6

E 18

8

The scales balance. Shapes that look the same weigh the same.

How many grams does a star weigh?



9

Each shape stands for a whole number. The same shape always stands for the same number.

What number does the circle stand for?

$$\star + 4 = 11$$

$$\star + \bigcirc = 12$$

- A 7 B 4 C 8 D 15 E 5

10

Ben and Ali have 20 marbles altogether. Ben has 6 more marbles than Ali.

How many marbles does Ali have?

- A 13 B 7 C 10 D 14 E 6

11

A farm has hens and sheep. A hen has 2 legs and a sheep has 4 legs. There are 5 heads and 14 legs.

How many sheep are there?

- A 2 B 3 C 4 D 5 E 1

12

Each shape stands for a whole number. The same shape always stands for the same number.

What number does the square stand for?

$$\triangle + \triangle + \triangle = 15$$

$$\triangle + \bigcirc = 9$$

$$\bigcirc + \square + \square = 14$$

A 4

B 5

C 10

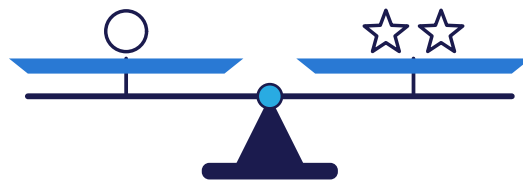
D 14

E 7

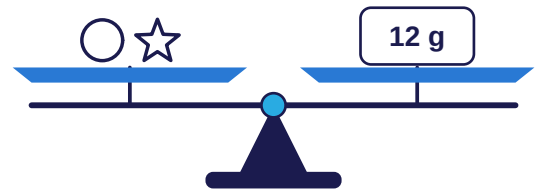
13

The scales balance. Shapes that look the same weigh the same.

How many grams does a star weigh?



Scale A



Scale B

A 6

B 8

C 3

D 4

E 12

14

Two numbers add up to 15. One number is twice the other.

What is the smaller number?

A 10

B 7

C 3

D 15

E 5

15

Each shape stands for a whole number. The same shape always stands for the same number.

What number does the star stand for?

$$\star + \star + \bigcirc = 16$$

$$\star + \bigcirc = 11$$

A 6

B 11

C 16

D 5

E 8

Part 2: Write your answer

16

Each shape stands for a whole number. The same shape always stands for the same number.

What number does the diamond stand for?

$$\square + \square + \square + \square = 20$$

$$\square + \diamond = 13$$

Write your answer in the boxes on the answer sheet, one digit in each box.

17

In this grid, each shape stands for a whole number. The number at the end of each row is its total, and the number under each column is its total.

What number does the star stand for?

		16
		11
11	16	

Write your answer in the boxes on the answer sheet, one digit in each box.

18

Two numbers add up to 30. Their difference is 6.

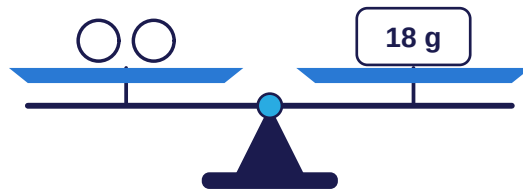
What is the smaller number?

Write your answer in the boxes on the answer sheet, one digit in each box.

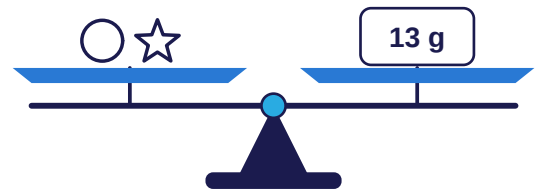
19

The scales balance. Shapes that look the same weigh the same.

How many grams does a star weigh?



Scale A



Scale B

Write your answer in the boxes on the answer sheet, one digit in each box.

20

A farm has hens and sheep. A hen has 2 legs and a sheep has 4 legs. There are 8 heads and 22 legs.

How many hens are there?

Write your answer in the boxes on the answer sheet, one digit in each box.

Answer sheet

11+ Maths Practice Paper · Year 4 · Lesson 5.5: Simultaneous logic puzzles

Name

Draw a firm line through the box next to your answer, like the example.

Part 1: Multiple choice

Ex	A ☒	B ☐	C ☐	D ☐	E ☐
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 ☐
6	A ☐	B ☐	C ☐	D ☐	E ☐
7	A ☐	B ☐	C ☐	D ☐	E ☐
8	A ☐	B ☐	C ☐	D ☐	E ☐
9	A ☐	B ☐	C ☐	D ☐	E ☐
10	A ☐	B ☐	C ☐	D ☐	E ☐
11	A ☐	B ☐	C ☐	D ☐	E ☐
12	A ☐	B ☐	C ☐	D ☐	E ☐
13	A ☐	B ☐	C ☐	D ☐	E ☐
14	A ☐	B ☐	C ☐	D ☐	E ☐
15	A ☐	B ☐	C ☐	D ☐	E ☐

Part 2: Write your answer, one digit in each box

16		19	
17		20	
18			

Answers

For a parent to mark with. One mark for each question: the paper is out of 20. Talk through any your child got wrong, using the explanation.

Q	Answer	How to get it
1	D 4	Three circles make 12. Share 12 by 3: the circle is 4.
2	C 3	Two triangles make 14, so a triangle is 7. Then $7 + \text{square} = 10$, so the square is 3.
3	A a diamond	The second clue has only diamonds: three diamonds make 12, so a diamond is 4. Every other clue has a shape you do not know yet. Then the star is $9 - 4 = 5$, the circle is $11 - 5 = 6$ and the square is $14 - 6 = 8$. (There is no triangle in the puzzle.)
4	A 15	Scale B shows a star weighs 5 g. Scale A shows a square balances three stars: $5 + 5 + 5 = 15$ g.
5	C 10	Take the difference off: $16 - 4 = 12$. Share it: $12 \div 2 = 6$, the smaller number. The bigger number is $6 + 4 = 10$.
6	E 7	The two diamonds make 10. The first clue is the same two diamonds and a star, and it makes 17, so the star is $17 - 10 = 7$.
7	B 15	Row 1 is 2 circles making 12, so a circle is 6. Row 2 makes 15; take away the shapes you know: $15 - 6 = 9$, so the star is 9. The missing total is column 2: $6 + 9 = 15$.
8	C 5	Scale B has the same circle and star as scale A, plus one extra star. It weighs $19 - 14 = 5$ g more, so the star weighs 5 g.
9	E 5	$\text{Star} + 4 = 11$, so the star is 7. Then $7 + \text{circle} = 12$, so the circle is 5.
10	B 7	Take the difference off: $20 - 6 = 14$. Share it: $14 \div 2 = 7$. Ali has 7 and Ben has 13.
11	A 2	If all 5 were hens there would be 10 legs, which is 4 too few. Each sheep adds 2 legs: $4 \div 2 = 2$ sheep (and 3 hens).
12	B 5	Three triangles make 15, so a triangle is 5. Then $5 + \text{circle} = 9$, so the circle is 4. Then $4 + \text{two squares} = 14$, so the two squares make 10 and one square is 5.
13	D 4	Scale A shows a circle balances two stars. Swap the circle on scale B for two stars: three stars weigh 12 g, so a star weighs 4 g.
14	E 5	That is 3 equal parts: one for the smaller number and two for the bigger. $15 \div 3 = 5$, so the numbers are 5 and 10.
15	D 5	The first clue has one more star than the second, and it is $16 - 11 = 5$ more. So the star is 5.
16	8	Four squares make 20, so a square is 5. Then $5 + \text{diamond} = 13$, so the diamond is 8.
17	3	Row 1 is 2 triangles making 16, so a triangle is 8. Column 1 makes 11; take away the shapes you know: $11 - 8 = 3$, so the star is 3.

Q	Answer	How to get it
18	12	Take the difference off: $30 - 6 = 24$. Share it: $24 \div 2 = 12$. The numbers are 12 and 18.
19	4	Two circles weigh 18 g, so a circle weighs 9 g. On scale B, $9 + \text{star} = 13$, so the star weighs 4 g.
20	5	If all 8 were hens there would be 16 legs, 6 too few. Each sheep adds 2: $6 \div 2 = 3$ sheep. $8 - 3 = 5$ hens.

Score: out of 20