

# 11+ Maths Practice Paper

## Year 6 · Advanced

### Lesson 4.3: Scale factors and maps

#### Read this with your child:

1. This paper has **27 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: **35 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

A rectangle is 3 cm by 7 cm.

In an enlargement, the longer side is 28 cm.

**How long is the shorter side of the enlargement?**

**A** 12 cm      **B** 84 cm      **C** 4 cm      **D** 24 cm      **E** 21 cm

**Answer: A** The scale factor is  $28 \div 7 = 4$ , so the shorter side is  $3 \times 4 = 12$  cm.

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

**Now turn over and start Part 1.**

## Part 1: Multiple choice

1

On a map, 6 cm stands for 42 km.

**What does 1 cm stand for?**

- A** 6 km      **B** 36 km      **C** 7 km      **D** 252 km      **E** 48 km

2

A shape is enlarged by scale factor 3. Then the new shape is enlarged by scale factor 4.

**What single scale factor would do the same?**

- A** 16      **B** 12      **C** 7      **D** 4      **E** 1

3

A real bus is 1200 cm long.

A model of it is made to a scale of 1 : 40.

**How long is the model?**

- A** 300 cm      **B** 1160 cm      **C** 1240 cm      **D** 3 cm      **E** 30 cm

4

On a map, 1 cm stands for 250 m.

A real canal is 2250 m long.

**How long is the canal on the map?**

- A** 8 cm      **B** 10 cm      **C** 90 cm      **D** 9 cm      **E** 2000 cm

5

Triangle A has sides of 6 cm and 8 cm. Triangle B is an enlargement of triangle A.

The side of B that matches the 8 cm side is 20 cm.

**How long is the side of B that matches the 6 cm side?**

- A** 12 cm      **B** 18 cm      **C** 15 cm      **D** 24 cm      **E** 16 cm

6

On a map, 1 cm stands for 5 km.

Route A is 8 cm long and Route B is 6.5 cm long on the map.

**How much shorter is Route B in real life?**

- A** 2.5 km      **B** 32.5 km      **C** 40 km      **D** 1.5 km      **E** 7.5 km
- 

7

A scale bar has blocks 2 cm long. The marks read 0, 5, 10 and 15 km.

**What does 1 cm stand for?**

- A** 2 km      **B** 2.5 km      **C** 7.5 km      **D** 10 km      **E** 5 km
- 

8

On a map, 2 cm stands for 5 km.

Two hills are 8 cm apart on the map.

**How far apart are the real hills?**

- A** 20 km      **B** 13 km      **C** 80 km      **D** 16 km      **E** 40 km
- 

9

A photo is 10 cm wide and 8 cm tall.

It is enlarged so that it is 20 cm tall.

**How wide is the enlargement?**

- A** 22 cm      **B** 20 cm      **C** 50 cm      **D** 25 cm      **E** 30 cm
- 

10

On a map, 1 cm stands for 4 km.

A forest on the map is a rectangle 3 cm long and 1.5 cm wide.

**How big is the real forest?**

- A** 3 km by 1.5 km  
**B** 12 km by 1.5 km  
**C** 12 km by 6 km  
**D** 12 km by 4 km  
**E** 7 km by 5.5 km
-

11

A model of a castle is made to a scale of 1 : 200.

The real tower is 3000 cm tall.

**How tall is the model tower?**

- A** 2800 cm      **B** 1.5 cm      **C** 150 cm      **D** 20 cm      **E** 15 cm
- 

12

On a map, 1 cm stands for 3 km.

Mia walks 21 km along a straight path.

**How long is her walk on the map?**

- A** 6 cm      **B** 63 cm      **C** 24 cm      **D** 7 cm      **E** 18 cm
- 

13

A picture 5 cm wide is enlarged by scale factor 3. Then the enlargement is enlarged by scale factor 2.

**How wide is the final picture?**

- A** 25 cm      **B** 30 cm      **C** 10 cm      **D** 15 cm      **E** 11 cm
- 

14

On a map, 1 cm stands for 2 km.

Treasure is buried 10 km east and 6 km north of a rock.

**Where is the treasure on the map?**

- A** 5 cm east and 3 cm north  
**B** 10 cm east and 6 cm north  
**C** 20 cm east and 12 cm north  
**D** 8 cm east and 4 cm north  
**E** 3 cm east and 5 cm north
-

15

On a plan, 1 cm stands for 50 cm.  
A real bed is 200 cm long and 150 cm wide.

**How big is the bed on the plan?**

- A 150 cm by 100 cm
- B 4 cm by 3 cm
- C 4 cm by 2 cm
- D 5 cm by 4 cm
- E 40 cm by 30 cm

16

Rectangle P is 4 cm by 6 cm. Rectangle Q is 10 cm by 15 cm.

**What is the scale factor from P to Q?**

- A 9
- B 3
- C 2
- D 6
- E 2.5

17

Two towns are 36 km apart. On a map they are 9 cm apart.  
On the same map, a lake is 2.5 cm wide.

**How wide is the real lake?**

- A 6.5 km
- B 4 km
- C 14 km
- D 10 km
- E 12 km

18

A model aeroplane is made to a scale of 1 : 20.  
The wings of the model are 45 cm across.

**How far across are the wings of the real aeroplane?**

- A 900 cm
- B 9000 cm
- C 450 cm
- D 2.25 cm
- E 65 cm

19

On a map, 1 cm stands for 500 m.  
A road is 7.5 cm long on the map.

**How long is the real road?**

- A 507.5 m
- B 3500 m
- C 3750 m
- D 375 m
- E 4000 m

20

A shape is enlarged by scale factor 4.  
One side of the enlargement is 18 cm long.

**How long is that side on the original shape?**

- A 72 cm      B 22 cm      C 4 cm      D 14 cm      E 4.5 cm

## Part 2: Write your answer

21

A rectangle is 5 cm by 8 cm.  
It is enlarged so that its shorter side is 35 cm.

**How many centimetres long is its longer side?**

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

22

On a map, 3 cm stands for 18 km.  
On the same map, two farms are 11 cm apart.

**How many kilometres apart are the real farms?**

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

23

A model is made to a scale of 1 : 30.  
The real object is 840 cm long.

**How many centimetres long is the model?**

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

24

On a map, 1 cm stands for 2 km.  
A route has four straight pieces: 2.5 cm, 3 cm, 1.5 cm and 4 cm.

**How many kilometres long is the real route?**

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

25

A shape is enlarged by scale factor 2, and then the new shape is enlarged by scale factor 5.

One side of the original shape is 7 cm long.

**How many centimetres long is that side on the final shape?**

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

---

26

On a map, 1 cm stands for 250 m.

A straight walk is 2750 m long.

**How many centimetres long is the walk on the map?**

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

---

27

Triangle A has a side 6 cm long. Triangle B is an enlargement of A, and the matching side of B is 15 cm.

Another side of A is 4 cm long.

**How many centimetres long is the matching side of B?**

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

# Answer sheet

11+ Maths Practice Paper · Year 6 · Lesson 4.3: Scale factors and maps

Name .....

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

## Part 1: Multiple choice

|    |                                       |                            |                            |                            |                            |
|----|---------------------------------------|----------------------------|----------------------------|----------------------------|----------------------------|
| Ex | A <input checked="" type="checkbox"/> | B <input type="checkbox"/> | C <input type="checkbox"/> | D <input type="checkbox"/> | E <input type="checkbox"/> |
| 1  | A <input type="checkbox"/>            | B <input type="checkbox"/> | C <input type="checkbox"/> | D <input type="checkbox"/> | E <input type="checkbox"/> |
| 2  | A <input type="checkbox"/>            | B <input type="checkbox"/> | C <input type="checkbox"/> | D <input type="checkbox"/> | E <input type="checkbox"/> |
| 3  | A <input type="checkbox"/>            | B <input type="checkbox"/> | C <input type="checkbox"/> | D <input type="checkbox"/> | E <input type="checkbox"/> |
| 4  | A <input type="checkbox"/>            | B <input type="checkbox"/> | C <input type="checkbox"/> | D <input type="checkbox"/> | E <input type="checkbox"/> |
| 5  | A <input type="checkbox"/>            | B <input type="checkbox"/> | C <input type="checkbox"/> | D <input type="checkbox"/> | E <input type="checkbox"/> |
| 6  | A <input type="checkbox"/>            | B <input type="checkbox"/> | C <input type="checkbox"/> | D <input type="checkbox"/> | E <input type="checkbox"/> |
| 7  | A <input type="checkbox"/>            | B <input type="checkbox"/> | C <input type="checkbox"/> | D <input type="checkbox"/> | E <input type="checkbox"/> |
| 8  | A <input type="checkbox"/>            | B <input type="checkbox"/> | C <input type="checkbox"/> | D <input type="checkbox"/> | E <input type="checkbox"/> |
| 9  | A <input type="checkbox"/>            | B <input type="checkbox"/> | C <input type="checkbox"/> | D <input type="checkbox"/> | E <input type="checkbox"/> |
| 10 | A <input type="checkbox"/>            | B <input type="checkbox"/> | C <input type="checkbox"/> | D <input type="checkbox"/> | E <input type="checkbox"/> |
| 11 | A <input type="checkbox"/>            | B <input type="checkbox"/> | C <input type="checkbox"/> | D <input type="checkbox"/> | E <input type="checkbox"/> |
| 12 | A <input type="checkbox"/>            | B <input type="checkbox"/> | C <input type="checkbox"/> | D <input type="checkbox"/> | E <input type="checkbox"/> |
| 13 | A <input type="checkbox"/>            | B <input type="checkbox"/> | C <input type="checkbox"/> | D <input type="checkbox"/> | E <input type="checkbox"/> |
| 14 | A <input type="checkbox"/>            | B <input type="checkbox"/> | C <input type="checkbox"/> | D <input type="checkbox"/> | E <input type="checkbox"/> |
| 15 | A <input type="checkbox"/>            | B <input type="checkbox"/> | C <input type="checkbox"/> | D <input type="checkbox"/> | E <input type="checkbox"/> |
| 16 | A <input type="checkbox"/>            | B <input type="checkbox"/> | C <input type="checkbox"/> | D <input type="checkbox"/> | E <input type="checkbox"/> |
| 17 | A <input type="checkbox"/>            | B <input type="checkbox"/> | C <input type="checkbox"/> | D <input type="checkbox"/> | E <input type="checkbox"/> |
| 18 | A <input type="checkbox"/>            | B <input type="checkbox"/> | C <input type="checkbox"/> | D <input type="checkbox"/> | E <input type="checkbox"/> |
| 19 | A <input type="checkbox"/>            | B <input type="checkbox"/> | C <input type="checkbox"/> | D <input type="checkbox"/> | E <input type="checkbox"/> |
| 20 | A <input type="checkbox"/>            | B <input type="checkbox"/> | C <input type="checkbox"/> | D <input type="checkbox"/> | E <input type="checkbox"/> |

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

|    |                      |                      |
|----|----------------------|----------------------|
| 21 | <input type="text"/> | <input type="text"/> |
| 22 | <input type="text"/> | <input type="text"/> |
| 23 | <input type="text"/> | <input type="text"/> |
| 24 | <input type="text"/> | <input type="text"/> |
| 25 | <input type="text"/> | <input type="text"/> |
| 26 | <input type="text"/> | <input type="text"/> |
| 27 | <input type="text"/> | <input type="text"/> |

# Answers

For a parent to mark with. One mark for each question: the paper is out of 27. Talk through any your child got wrong, using the explanation.

| Q  | Answer                     | How to get it                                                                                                             |
|----|----------------------------|---------------------------------------------------------------------------------------------------------------------------|
| 1  | C 7 km                     | $42 \div 6 = 7$ , so 1 cm stands for 7 km.                                                                                |
| 2  | B 12                       | Every length is multiplied by 3, then by 4: $3 \times 4 = 12$ .                                                           |
| 3  | E 30 cm                    | The real bus is 40 times as long as the model, so divide: $1200 \div 40 = 30$ cm.                                         |
| 4  | D 9 cm                     | Real life to the map: divide. $2250 \div 250 = 9$ cm.                                                                     |
| 5  | C 15 cm                    | The scale factor is $20 \div 8 = 2.5$ , so the side is $6 \times 2.5 = 15$ cm. Adding 12 (18 cm) is wrong.                |
| 6  | E 7.5 km                   | Route B is $8 - 6.5 = 1.5$ cm shorter on the map, and $1.5 \times 5 = 7.5$ km.                                            |
| 7  | B 2.5 km                   | Each block is 2 cm and stands for 5 km, so 1 cm stands for $5 \div 2 = 2.5$ km.                                           |
| 8  | A 20 km                    | 8 cm is 4 lots of 2 cm, so the hills are $4 \times 5 = 20$ km apart.                                                      |
| 9  | D 25 cm                    | The scale factor is $20 \div 8 = 2.5$ , so the width is $10 \times 2.5 = 25$ cm.                                          |
| 10 | C 12 km by 6 km            | Multiply both lengths by 4: $3 \times 4 = 12$ km and $1.5 \times 4 = 6$ km.                                               |
| 11 | E 15 cm                    | The real tower is 200 times as tall, so divide: $3000 \div 200 = 15$ cm.                                                  |
| 12 | D 7 cm                     | Real life to the map: divide. $21 \div 3 = 7$ cm.                                                                         |
| 13 | B 30 cm                    | $5 \times 3 = 15$ cm, then $15 \times 2 = 30$ cm. Or use the single scale factor $3 \times 2 = 6$ : $5 \times 6 = 30$ cm. |
| 14 | A 5 cm east and 3 cm north | Real life to the map: divide. $10 \div 2 = 5$ cm east and $6 \div 2 = 3$ cm north.                                        |
| 15 | B 4 cm by 3 cm             | Divide both lengths by 50: $200 \div 50 = 4$ cm and $150 \div 50 = 3$ cm.                                                 |
| 16 | E 2.5                      | $10 \div 4 = 2.5$ and $15 \div 6 = 2.5$ , so the scale factor is 2.5.                                                     |
| 17 | D 10 km                    | $36 \div 9 = 4$ , so 1 cm stands for 4 km. The lake is $2.5 \times 4 = 10$ km wide.                                       |
| 18 | A 900 cm                   | The real aeroplane is 20 times as big, in the same units: $45 \times 20 = 900$ cm.                                        |
| 19 | C 3750 m                   | $7.5 \times 500 = 3750$ m.                                                                                                |
| 20 | E 4.5 cm                   | Going back to the original: divide. $18 \div 4 = 4.5$ cm.                                                                 |
| 21 | 56                         | The scale factor is $35 \div 5 = 7$ , so the longer side is $8 \times 7 = 56$ cm.                                         |
| 22 | 66                         | $18 \div 3 = 6$ , so 1 cm stands for 6 km. $11 \times 6 = 66$ km.                                                         |
| 23 | 28                         | The real object is 30 times as long, so divide: $840 \div 30 = 28$ cm.                                                    |
| 24 | 22                         | Add the pieces: $2.5 + 3 + 1.5 + 4 = 11$ cm. Then multiply: $11 \times 2 = 22$ km.                                        |
| 25 | 70                         | The single scale factor is $2 \times 5 = 10$ , so the side is $7 \times 10 = 70$ cm.                                      |
| 26 | 11                         | Real life to the map: divide. $2750 \div 250 = 11$ cm.                                                                    |
| 27 | 10                         | The scale factor is $15 \div 6 = 2.5$ , so the side is $4 \times 2.5 = 10$ cm.                                            |

Score: ..... out of 27