Ma

KEY STAGE 3

TIER 3–5

2001

Mathematics test

Paper 2

Calculator allowed

Please read this page, but do not open the booklet until your teacher tells you to start. Write your name and the name of your school in the spaces below. If you have been given a pupil number, write that also.

First name _____

Last name _____

School _____

Pupil number | | | | | | |

Remember

- The test is 1 hour long.
- You may use a calculator in this test.
- You will need: pen, pencil, rubber, ruler, an angle measurer or protractor and a calculator.
- This test starts with easier questions.
- Try to answer all the questions.
- Write all your answers and working on the test paper – do not use any rough paper.
- Check your work carefully.
- Ask your teacher if you are not sure what to do.

For marker's use only		
	Total marks	
	Borderline check	

QCA/01/664

Instructions

Answers

This means write down your answer or show your working and write down your answer.

Calculators

You **may** use a calculator to answer any question in this test.

1. (a) Joe bought a box of cards for **£6.80**

He paid with a **£10** note.

How much change should Joe get?

£ . . . .

1 mark

(b) Sanjay bought **15 boxes** of cards.

Each box cost **£6.80**

How much did Sanjay pay for the boxes altogether?

£ . . . .

1 mark

(c) Amy paid **£26.60** for some packets of cards.

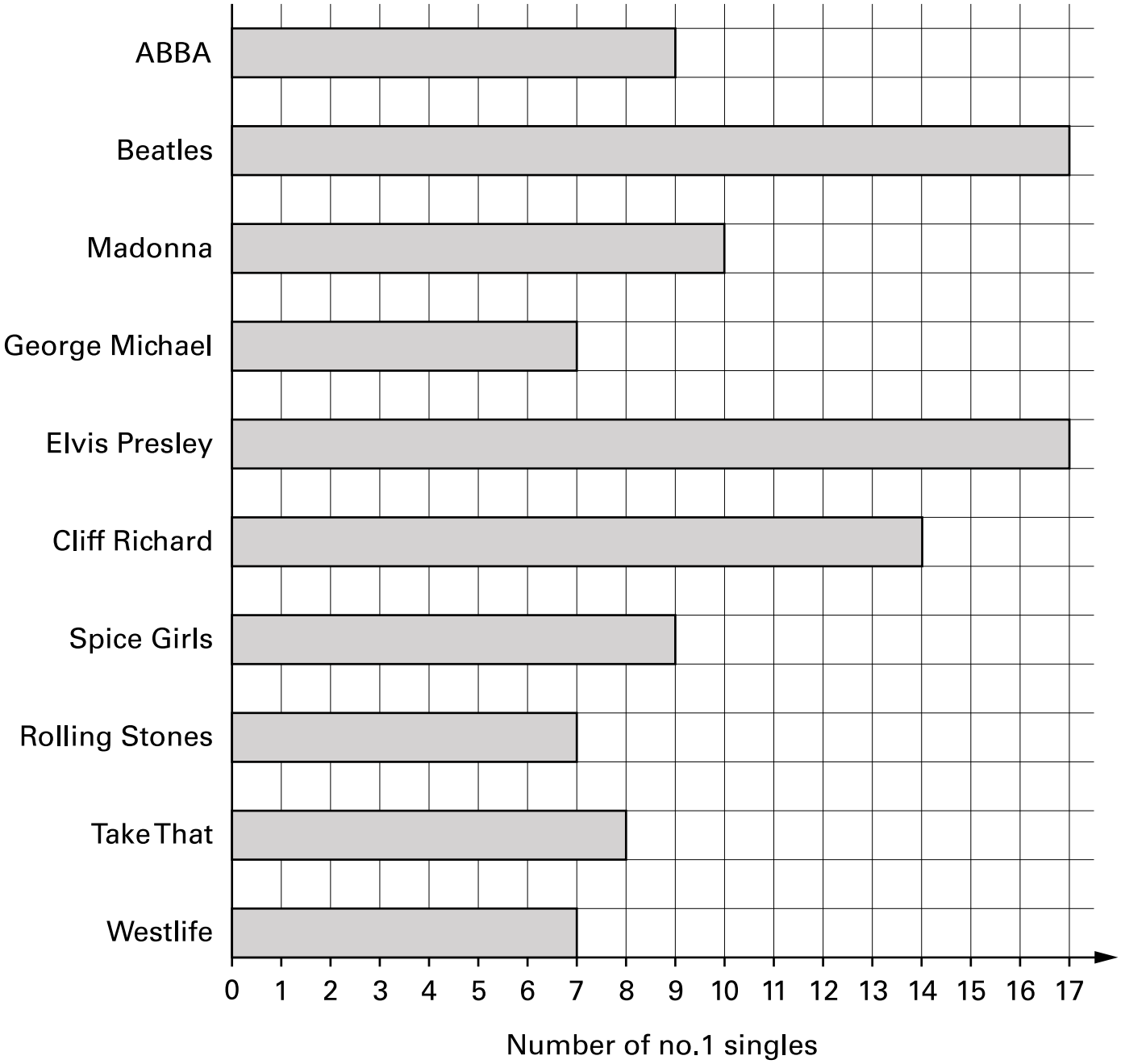
Each packet cost **£1.90**

How many packets did Amy buy?

. . . . . packets . . . .

1 mark

2. The graph shows which pop stars had the most no.1 singles in the UK charts.*



Use the graph to answer these questions.

(a) How many no.1 singles did **George Michael** have?

. . . .

1 mark

(b) Who had **10** no.1 singles?

. . . .

1 mark

(c) **How many more** no.1 singles did **Cliff Richard** have than **Take That**?

. . . .

1 mark

(d) The graph shows that the Beatles and Elvis Presley came joint first.
Cliff Richard came third.

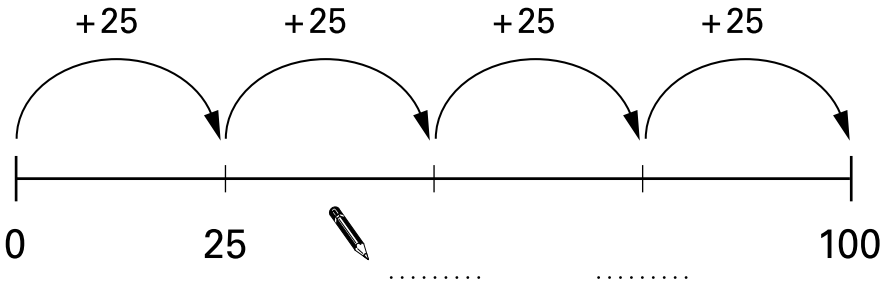
Who came **joint fifth**?

. . . . and . . . .

1 mark

3. (a) The number line goes from **0 to 100** using **4 equal steps**.
Each step size is **25**

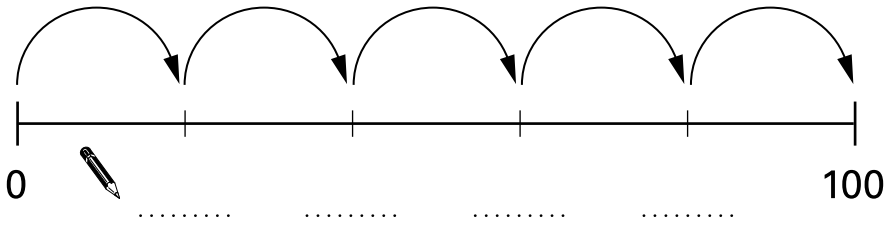
Fill in the missing numbers on the number line.



1 mark

(b) This number line goes from **0 to 100** using **5 equal steps**.

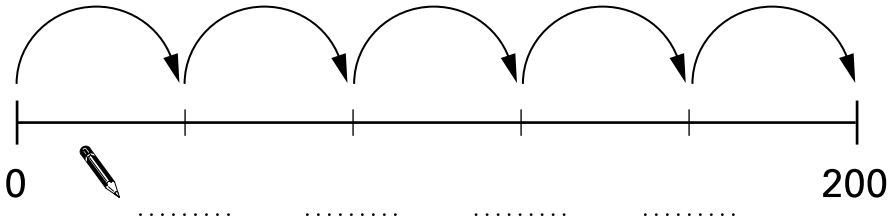
Fill in the missing numbers on the number line.



1 mark

(c) A different number line goes from **0 to 200** using **5 equal steps**.

Fill in the missing numbers on the number line.



. . . . .

. . . . .

2 marks

(d) Another number line goes up in **steps of size 15**

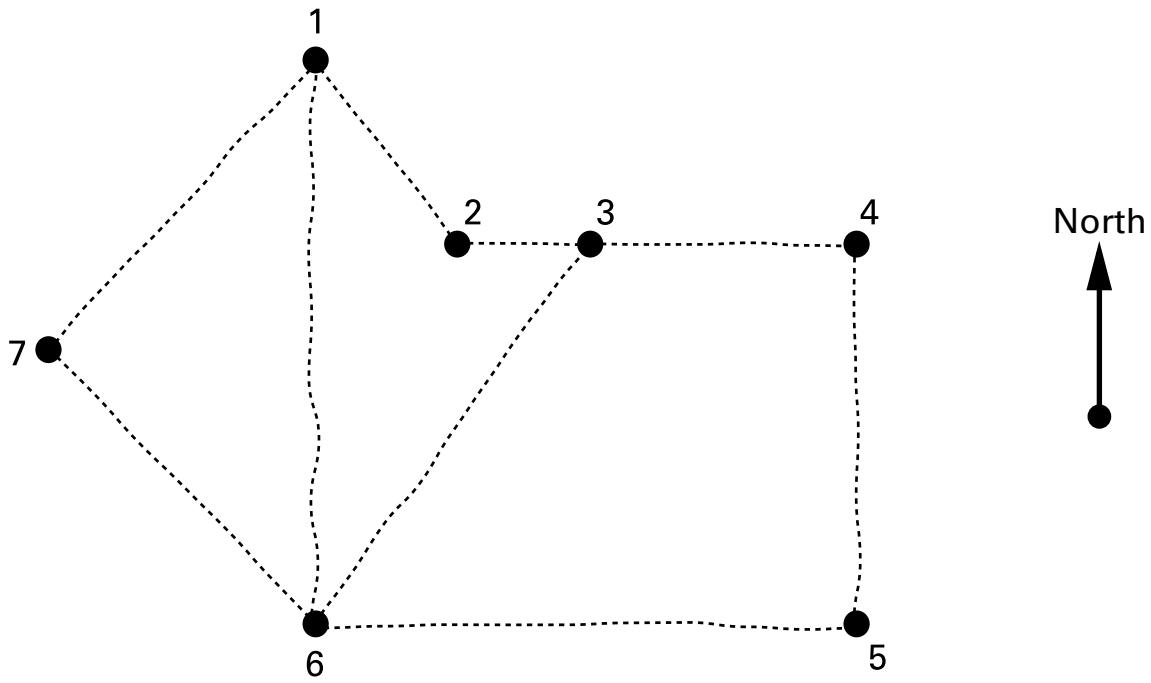
How many of these steps will it take to get from **0 to 60**?

. . . . . .

. . . . .

1 mark

4. The map shows the positions of seven towns, numbered 1 to 7
The dashed lines show the roads between the towns.



(a) A girl cycled from **town 1**

She went **south** to a town.

Then she went **east** to a different town, where she stopped for a drink.

In which town did she stop for a drink?

town . . . . . .

1 mark

(b) Complete the missing directions in the boxes below.

Start at **town 5**, go **north** to **town 4**,

then go . . . . . to **town 3**

. . . .
1 mark

Start at **town 6**, go **north-west** to **town 7**,

then go . . . . . to **town 1**

. . . .
1 mark

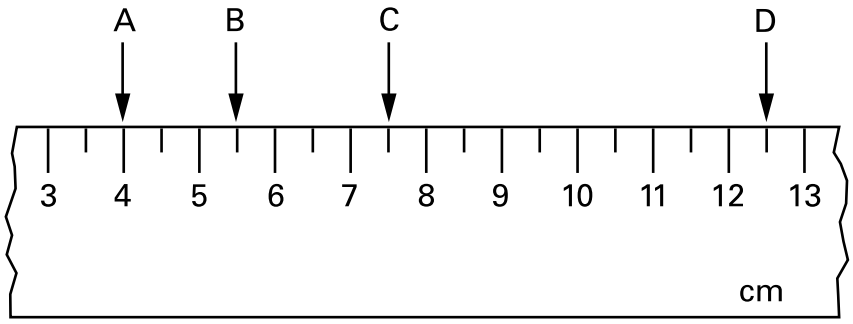
(c) Steve lives in one of these towns.
Town 3 is **west** of where Steve lives.

In which town does Steve live?

town . . . . . .

. . . .
1 mark

5. (a) The diagram shows part of a ruler.



Complete these sentences.

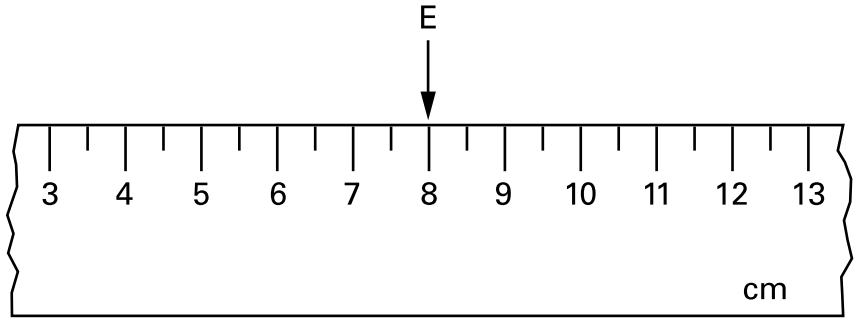
The distance between **A** and **B** is . . . . . cm.

. . . .
1 mark

The distance between **C** and **D** is . . . . . cm.

. . . .
1 mark

(b) Look at the ruler below.



I want the distance between E and F to be $3\frac{1}{2}$ cm.

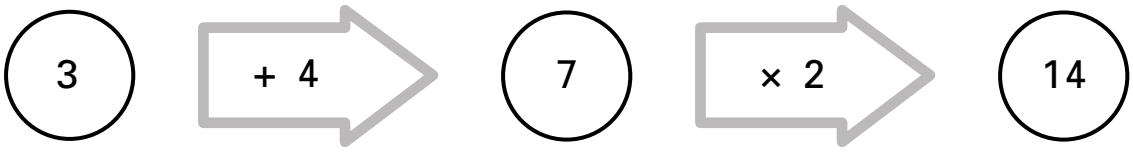
There are **two places** F could be.

. . . .

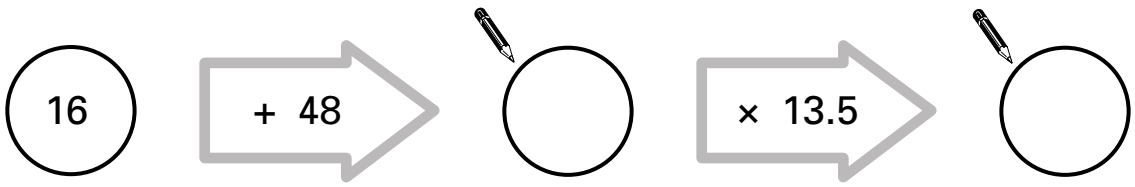
Show the two places by drawing arrows on the ruler.

. . . .
2 marks

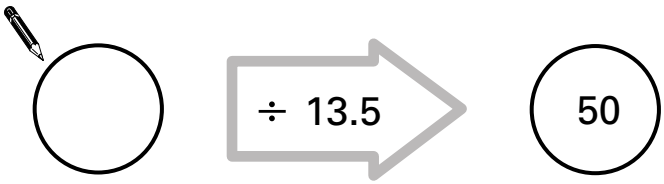
6. Look at this number chain.



(a) Fill in the missing numbers in the circles below.

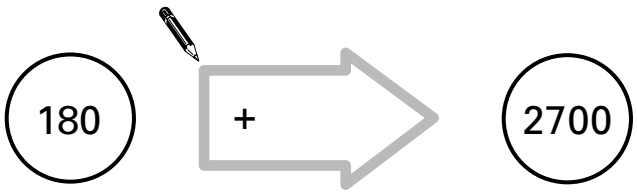


. . . . .
1 mark

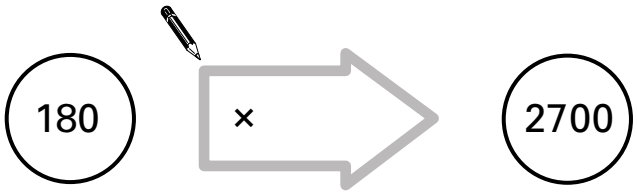


. . . . .
1 mark

(b) Fill in the missing numbers in the arrows below.

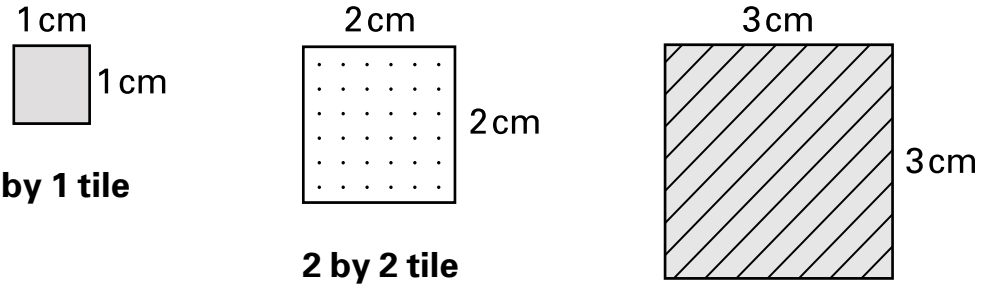


. . . . .
1 mark



. . . . .
1 mark

7. Alika has a box of square tiles.
The tiles are three different sizes.



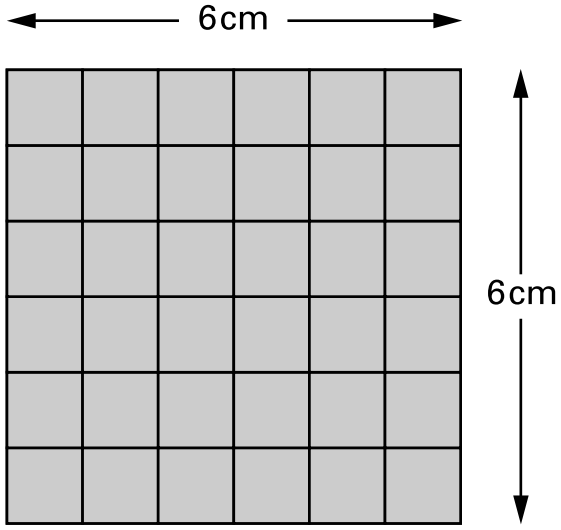
1 by 1 tile

2 by 2 tile

3 by 3 tile

She also has a mat that is 6 cm by 6 cm.

36 of the 1 by 1 tiles will cover the mat.



(a) How many of the **2 by 2 tiles** will cover the mat?

. . . . . .

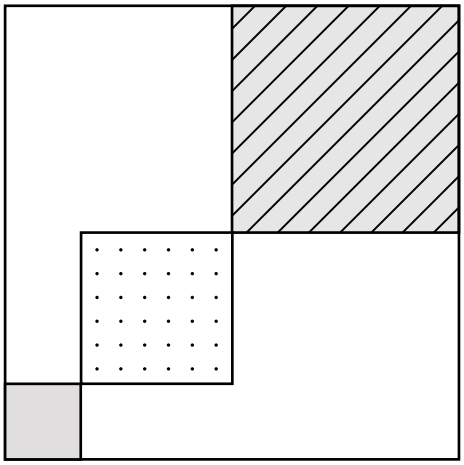
1 mark

(b) How many of the **3 by 3 tiles** will cover the mat?

. . . . . .

1 mark

(c) Alika glues three tiles on her mat like this:



Complete the gaps below.

She could cover the rest of the mat by using

another **two** 3 by 3 tiles, and

another . . . . . 1 by 1 tiles.

. . . .
1 mark

She could cover the rest of the mat by using

another **two** 2 by 2 tiles, and

another . . . . . 1 by 1 tiles.

. . . .
1 mark

8. Some pupils are planning a disco.
They use the spreadsheet on the opposite page to work out their costs.

Use the spreadsheet to answer these questions.

(a) How much does each ticket cost?

£ . . . .
1 mark

(b) Explain why column **C** always shows the same amount.

. . . .
1 mark

(c) The pupils will lose money if they do not sell many tickets.
The pupils want to make a **profit**.

What is the smallest number of tickets they need to sell?

. . . .
1 mark

(d) The pupils decide they want to make a profit of **at least £20**

Now what is the smallest number of tickets they need to sell?

. . . .
1 mark

(e) At the disco they sell **30** tickets.

Work out how much profit they make.

£ . . . .
1 mark

A	B	C	D	E	F
Number of tickets we might sell	**Income from selling tickets**	**Hire of hall**	**Cost of food**	**Total costs**	**Profit or loss**
10	£40.00	£46.50	£15.00	£61.50	−£21.50
11	£44.00	£46.50	£16.50	£63.00	−£19.00
12	£48.00	£46.50	£18.00	£64.50	−£16.50
13	£52.00	£46.50	£19.50	£66.00	−£14.00
14	£56.00	£46.50	£21.00	£67.50	−£11.50
15	£60.00	£46.50	£22.50	£69.00	−£9.00
16	£64.00	£46.50	£24.00	£70.50	−£6.50
17	£68.00	£46.50	£25.50	£72.00	−£4.00
18	£72.00	£46.50	£27.00	£73.50	−£1.50
19	£76.00	£46.50	£28.50	£75.00	£1.00
20	£80.00	£46.50	£30.00	£76.50	£3.50
21	£84.00	£46.50	£31.50	£78.00	£6.00
22	£88.00	£46.50	£33.00	£79.50	£8.50
23	£92.00	£46.50	£34.50	£81.00	£11.00
24	£96.00	£46.50	£36.00	£82.50	£13.50
25	£100.00	£46.50	£37.50	£84.00	£16.00
26	£104.00	£46.50	£39.00	£85.50	£18.50
27	£108.00	£46.50	£40.50	£87.00	£21.00
28	£112.00	£46.50	£42.00	£88.50	£23.50
29	£116.00	£46.50	£43.50	£90.00	£26.00

9. A cookery book shows how long, in minutes, it takes to cook a joint of meat.

Microwave oven
Time = (12 × weight in pounds) + 15

Electric oven
Time = (30 × weight in pounds) + 35

(a) How long will it take to cook a **3 pound** joint of meat in a **microwave oven**?

. . . . . minutes

1 mark

(b) How long will it take to cook a **7 pound** joint of meat in an **electric oven**?

. . . . . minutes

1 mark

(c) How much quicker is it to cook a **2 pound** joint of meat in a microwave oven than in an electric oven?

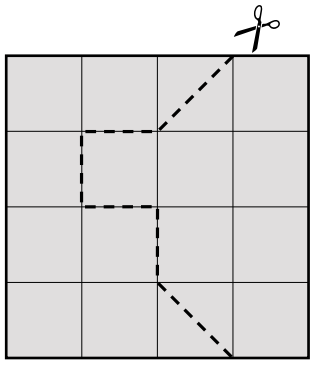
Show your working.

. . . . . minutes

2 marks

10. (a) I have a square piece of card.

I cut along the dashed line to make two pieces of card.



Do the two pieces of card have the **same area**? Tick (✓) Yes or No.

Yes ☐ No ☐

Explain your answer.

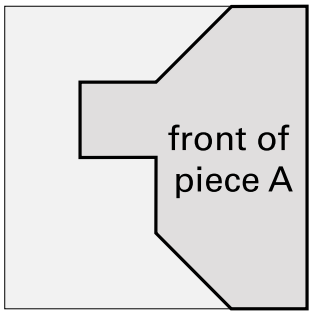
. . . .
1 mark

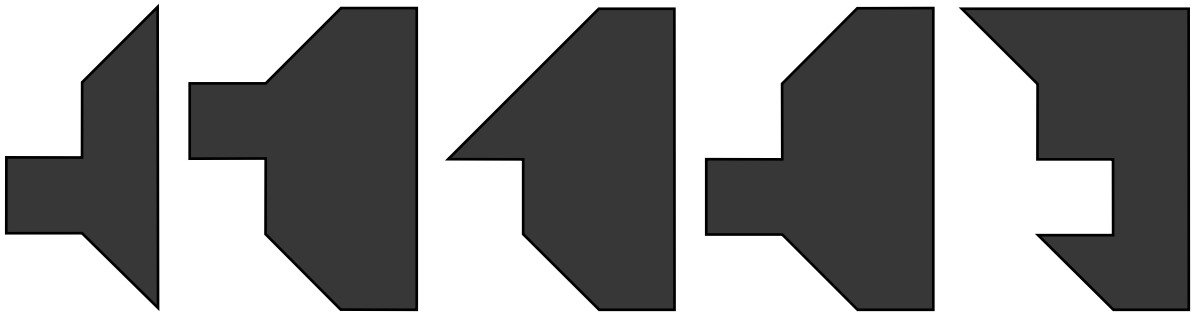
(b) The card is shaded **grey** on the front, and **black** on the back.

I turn piece A over to see its black side.

Which of the shapes below shows the black side of piece A?

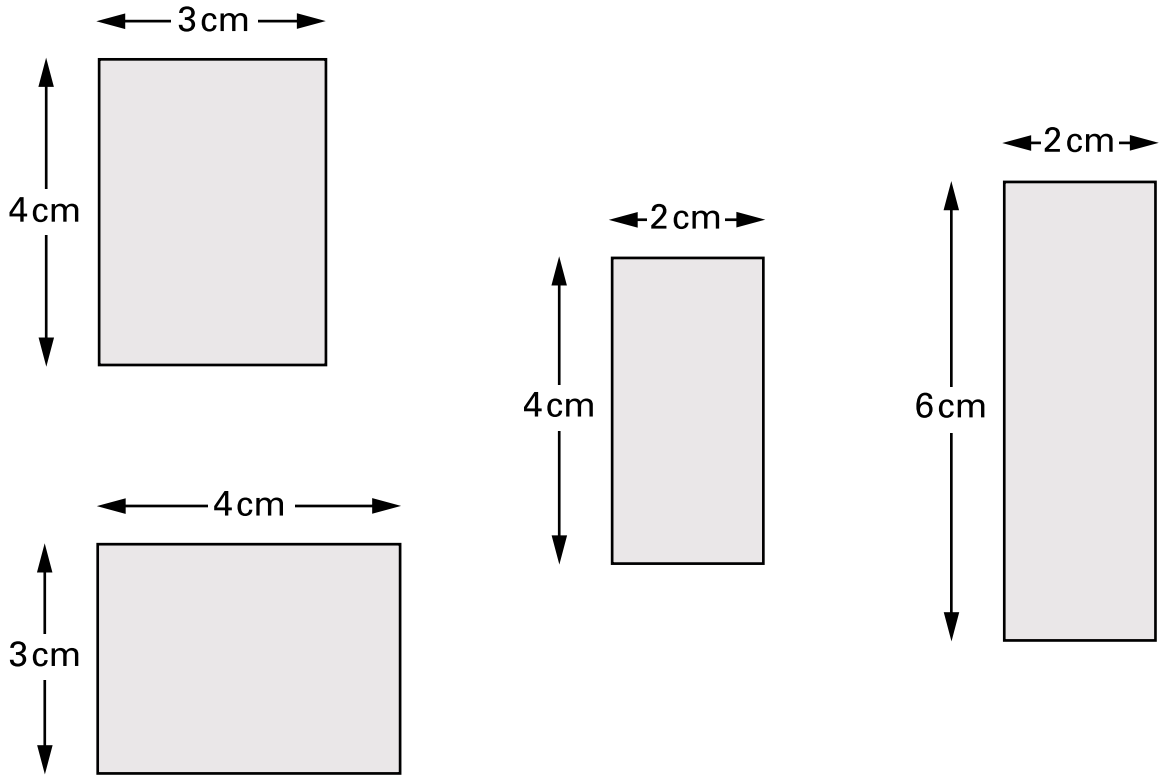
Put a tick (✓) under the correct answer.





. . . .
1 mark

11. (a) Tick (✓) any rectangles below that have an **area** of **12** cm^2



. . . .
1 mark

(b) A **square** has an area of **100** cm^2

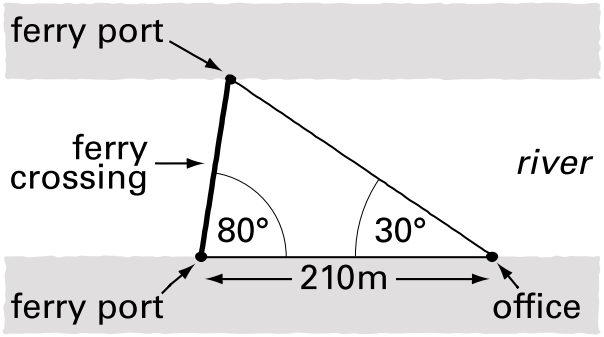
What is its **perimeter**?
Show your working.

. . . .

. . . . . cm

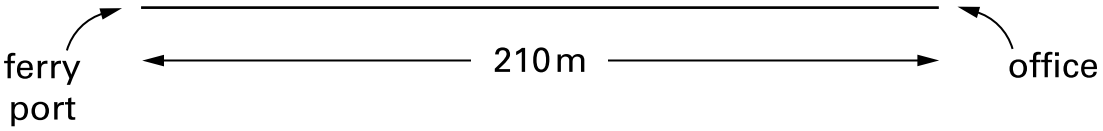
. . . .
2 marks

12. Here is a plan of a ferry crossing.



Not drawn accurately

(a) Complete the accurate scale drawing of the ferry crossing below.



. . . . .

. . . . .

2 marks

(b) What is the length of the ferry crossing on **your** diagram?

cm

. . . . .

1 mark

(c) The scale is **1 cm** to **20 m**. Work out the length of the real ferry crossing.
Show your working, and **write the units with your answer**.

. . . . .

. . . . .

2 marks

13. (a) You pay **£2.40** each time you go swimming.

Complete the table.

Number of swims	0	10	20	30
Total cost (£)	0	24		

. . . .
1 mark

(b) Now show this information on the graph on the page opposite.
Join the points with a straight line.

. . . .

. . . .
2 marks

(c) A different way of paying is to pay a yearly fee of **£22**
Then you pay **£1.40** each time you go swimming.

Complete the table.

Number of swims	0	10	20	30
Total cost (£)	22	36		

. . . .
1 mark

(d) Now show this information on the same graph.
Join these points with a straight line.

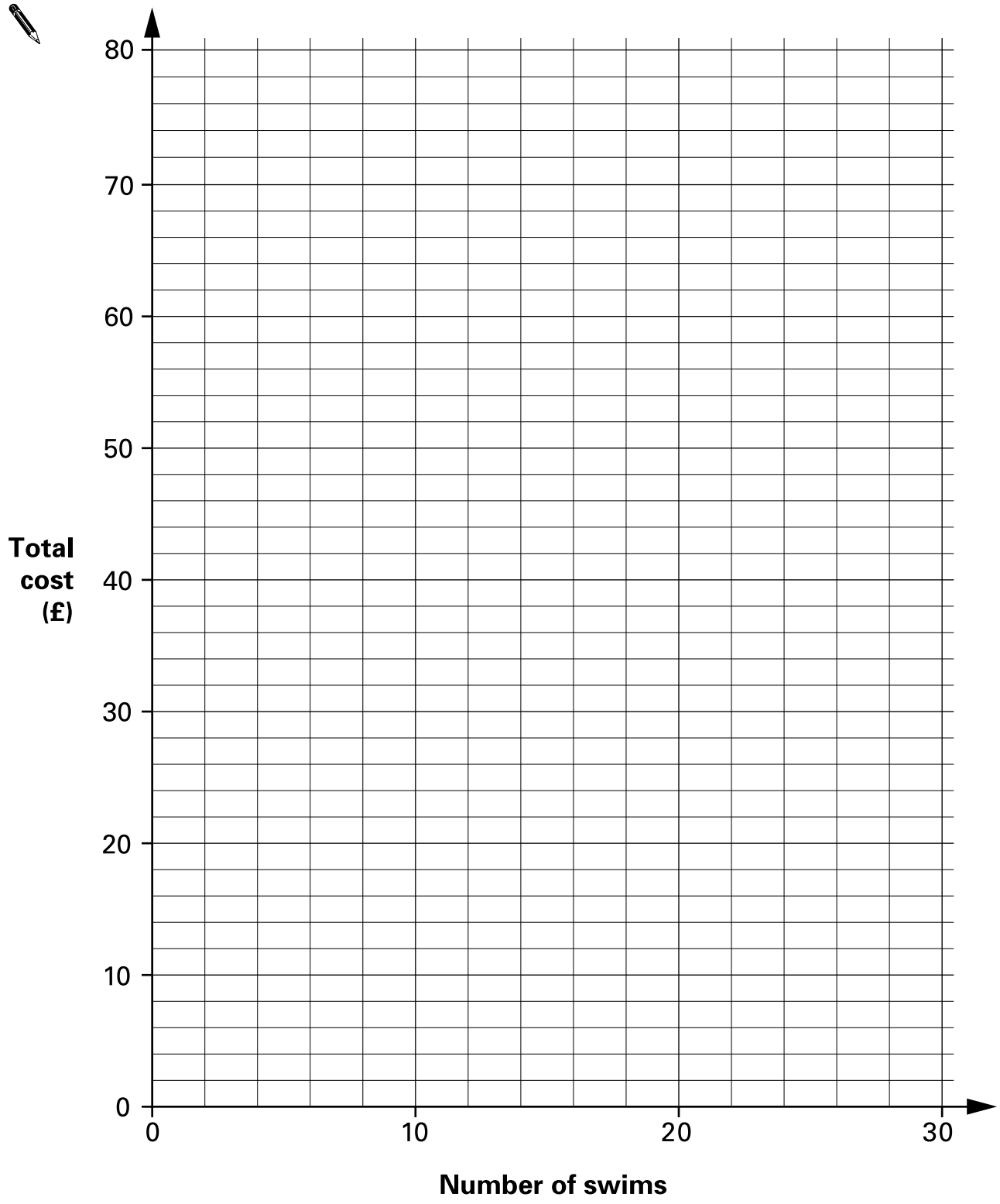
. . . .

. . . .
2 marks

(e) For **how many swims** does the graph show that the cost is the **same** for both ways of paying?

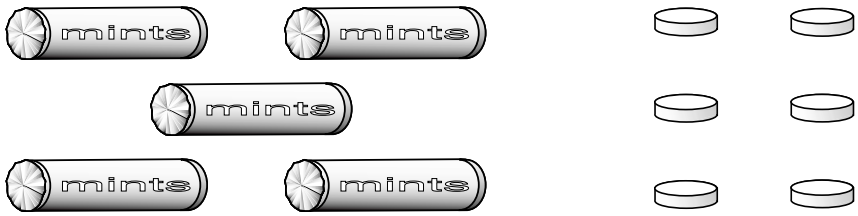
. . . . . .

. . . .
1 mark


80
70
60
50
40
30
20
10
0
Total cost (£)
0
10
20
30
Number of swims

14. A teacher has **5 full packets** of mints and **6 single** mints.

The number of mints inside each packet is the same.



The teacher tells the class:

> '**Write an expression** to show **how many mints** there are **altogether**.
> Call the number of mints inside each packet y'

Here are some of the expressions that the pupils write:

$5 + 6 + y$	$5y6$	$5y + 6$
$6 + 5y$	$5 + 6y$	$(5 + 6) \times y$

(a) Write down **two** expressions that are correct.

. . . . .

. . . . . and . . . . . .

2 marks

(b) A pupil says: 'I think the teacher has a total of **56 mints**'.

Could the pupil be correct? Tick (✓) Yes or No.

Yes ☐ No ☐

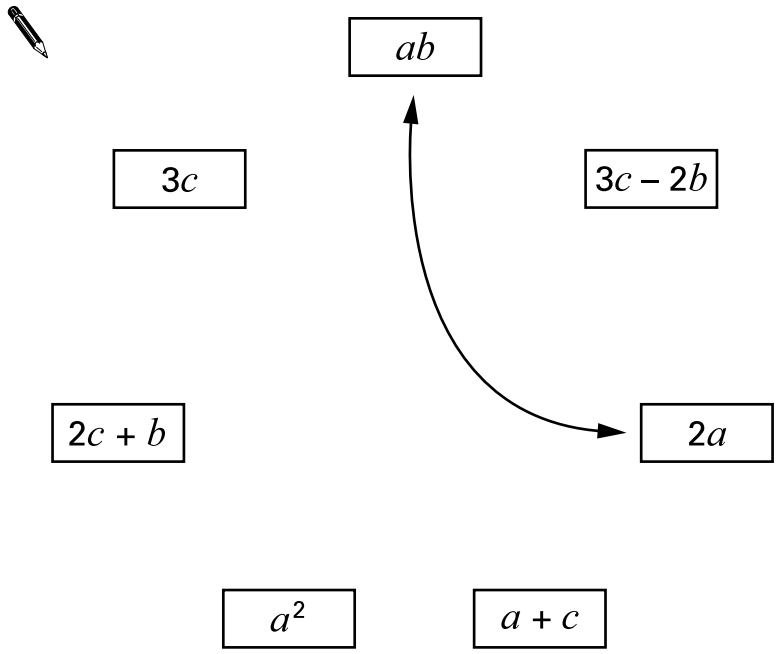
Explain how you know.

. . . . .

1 mark

15. Join pairs of algebraic expressions that have the **same value** when $a = 3$, $b = 2$ and $c = 6$

One pair is joined for you.



. . . .

. . . .

2 marks

QCA, Key Stage 3 Team, 83 Piccadilly, London W1J 8QA

00-6651/3