

**Ma**

KEY STAGE

**3**

TIER

**3–5****2004**

# Mathematics test

## Paper 2

### Calculator allowed

Please read this page, but do not open your booklet until your teacher tells you to start. Write your name and the name of your school in the spaces below.

**First name** \_\_\_\_\_

**Last name** \_\_\_\_\_

**School** \_\_\_\_\_

#### Remember

- The test is 1 hour long.
- You may use a calculator for any question in this test.
- You will need: pen, pencil, rubber, ruler, tracing paper (optional) 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. Marks may be awarded for working.
- Check your work carefully.
- Ask your teacher if you are not sure what to do.

For marker's  
use only

|                  |  |
|------------------|--|
| Total marks      |  |
| Borderline check |  |

## 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 shop sells sports equipment.

|   |   |   |   |   |
|---|---|---|---|---|
|  |  |  |  |  |
| sports bag<br><b>£12.99</b>   | trampoline<br><b>£17.99</b>   | basketball stand<br><b>£169</b>   | tennis racket<br><b>£14.99</b>  | football<br><b>£5.99</b>  |

(a) Mr Adams pays for a sports bag and a basketball stand.  
Altogether, how much does he pay?




.....  
1 mark

(b) Mrs Brown has £20  
She pays for two footballs.  
How much change should she get?




.....  
1 mark

(c) Mrs Cooke has £50  
How many tennis rackets can she buy with £50?



.....

.....  
1 mark



2. There are 30 pupils in class 9A.  
The table shows if they travel to school by train.

| Class 9A | Travel by train | Do not travel by train |
|----------|-----------------|------------------------|
| Boys     | 4               | 12                     |
| Girls    | 2               | 12                     |

- (a) Altogether, how many pupils in class 9A do not travel by train?



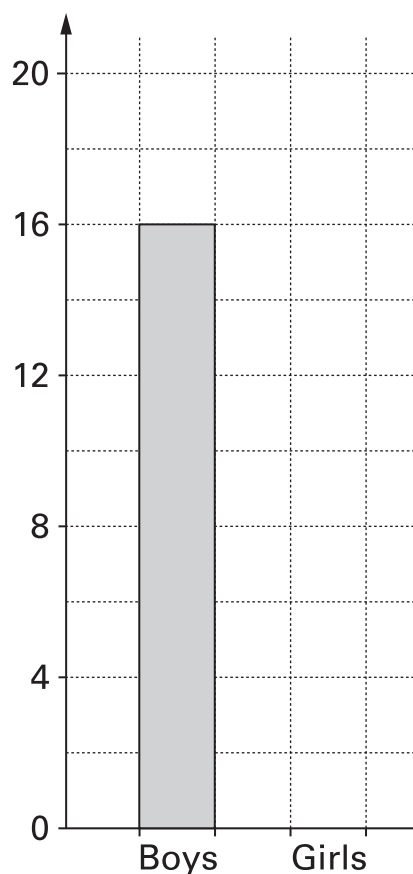
.....

.....  
1 mark

- (b) Complete the bar chart to show how many girls are in class 9A.

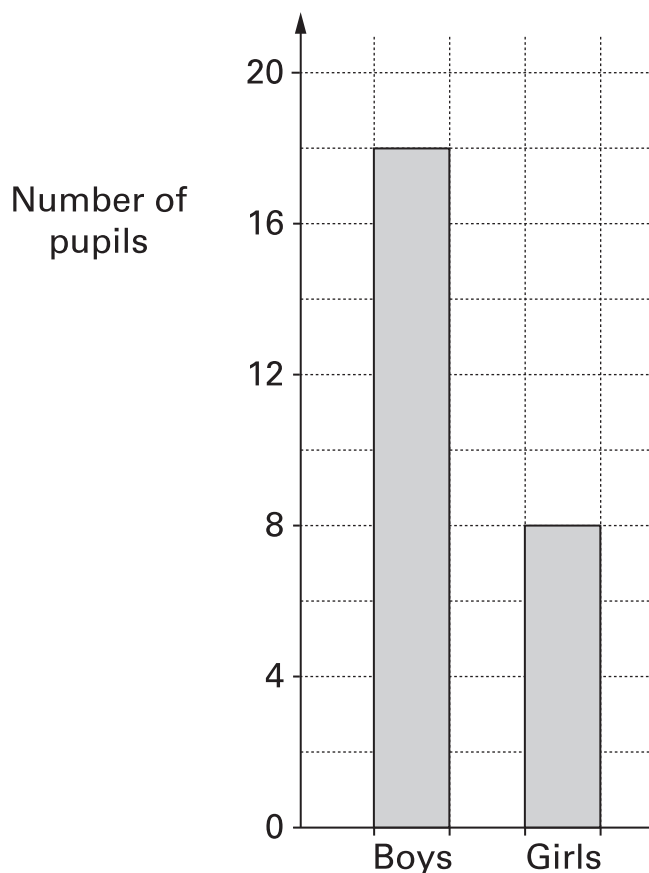


Number of pupils



.....  
1 mark


(c) This bar chart shows how many pupils are in class 9B.



In class 9B, no boys travel by train.

Half of the girls travel by train.

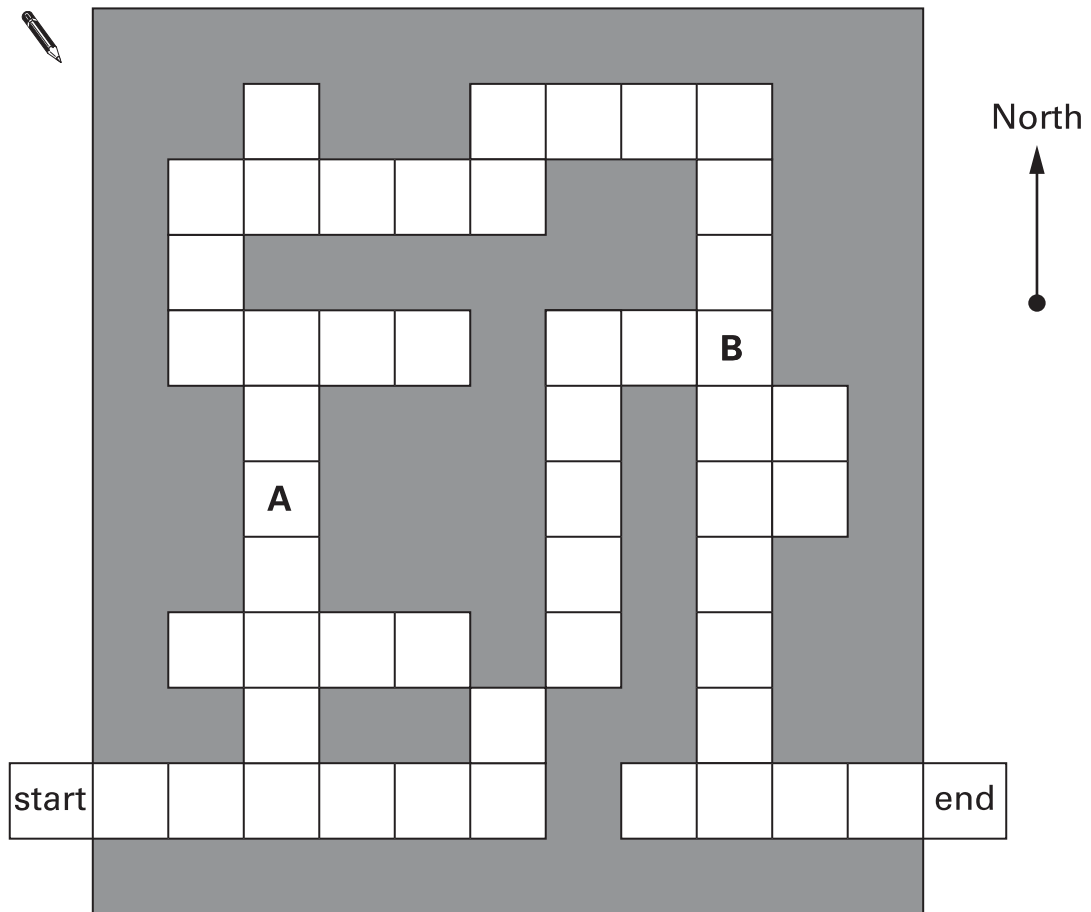
Fill in the missing numbers on the table below.

| Class 9B  |       | Travel by train | Do not travel by train |
|---|-------|-----------------|------------------------|
|  | Boys  | .....           | .....                  |
|   | Girls | .....           | .....                  |

.....  
.....  
2 marks



3. The diagram shows a maze.



(a) Andrew is at the square marked A.

He moves two squares north, then  
he moves one square west.

Where is Andrew now? Write X on the correct square.

.....  
1 mark

(b) Bachir is at the square marked B. He moves to the end of the maze.

Complete the directions to show how he moves.



He moves ..... squares ....., then

he moves ..... squares .....

.....  
1 mark

(c) Carol is at a square in the maze. Call this square C.

She moves two squares south, then

she moves three squares east.

Then Carol moves back to square C.

Complete the directions to show how she moves.



She moves ..... squares ....., then

she moves ..... squares .....

.....

.....

2 marks

4. Work out the values of  $a$ ,  $b$  and  $c$  in the number sentences below.



$$3 \times 10 + 4 = a$$

$$a = \dots\dots\dots$$

.....

1 mark

$$3 \times 10 + b = 38$$

$$b = \dots\dots\dots$$

.....

1 mark

$$c \times 10 + 12 = 52$$

$$c = \dots\dots\dots$$

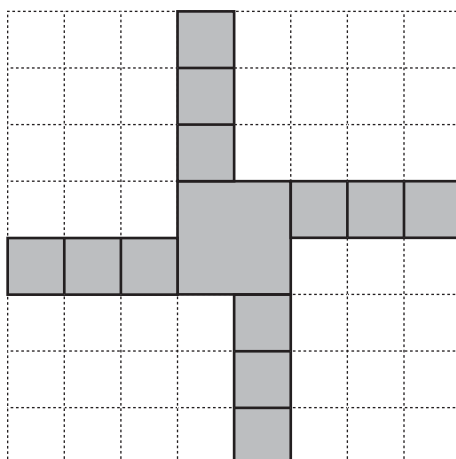
.....

1 mark

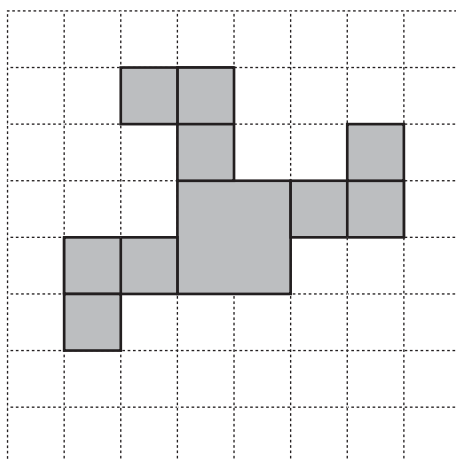


5. 'Windmill' patterns look the same when you turn the grid through one or more right angles.

Example:

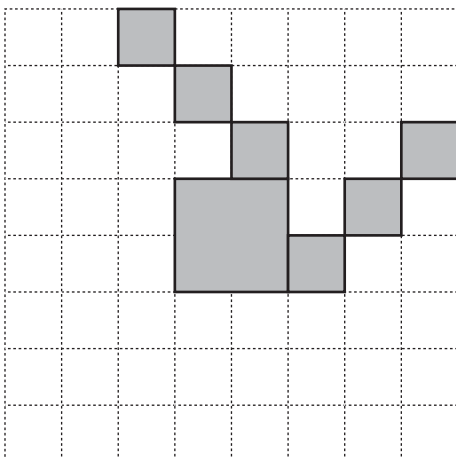


- (a) Shade 3 squares to complete the windmill pattern on the square grid below.



1 mark

- (b) Shade 6 squares to complete the windmill pattern on the square grid below.



1 mark



6. (a) Anna says:

Multiply any number by three.  
The answer must be an odd number.

 Give an example to show that Anna is wrong.

.....  
1 mark

(b) Jay says:

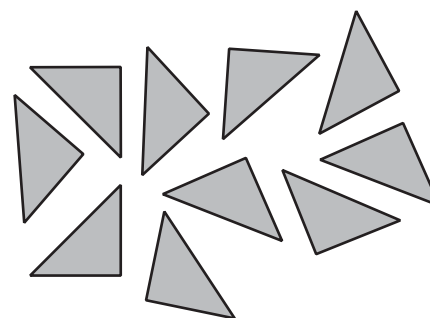
Divide any even number by two.  
The answer must be an odd number.

 Give an example to show that Jay is wrong.

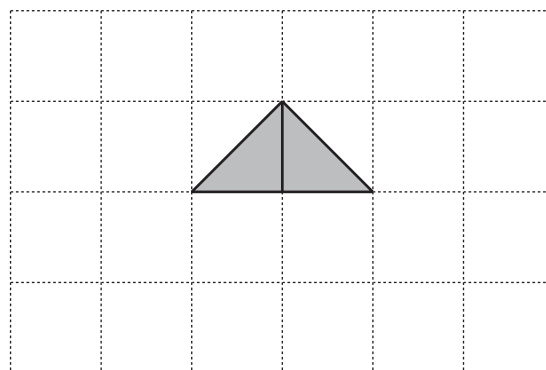
.....  
1 mark



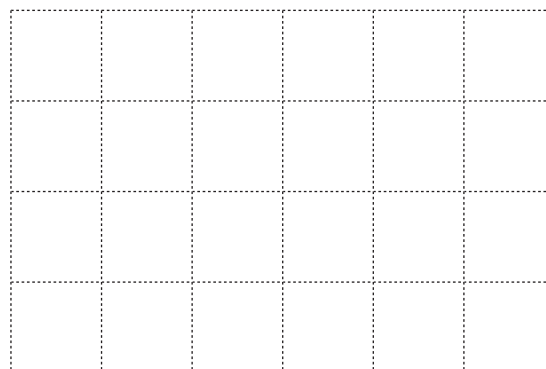
7. Here are some right-angled triangular tiles.  
The tiles are all the same shape and size.



Two of these tiles join to make a triangle.



- (a) Show how eight of these tiles join to make a square.



.....  
1 mark

- (b) Show how four of these tiles join to make a square.



.....  
1 mark

8. The pie charts show what percentage of household rubbish is recycled in different countries.

**Key**

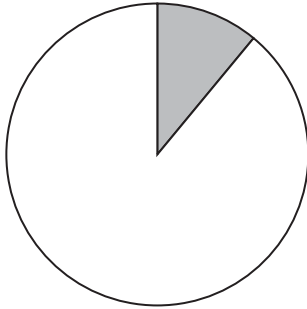


% of rubbish recycled

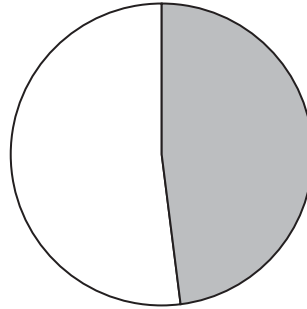


% of rubbish not recycled

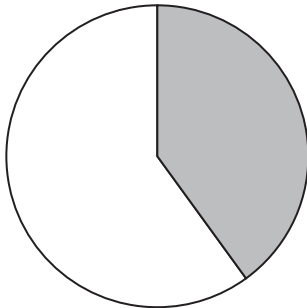
**England**



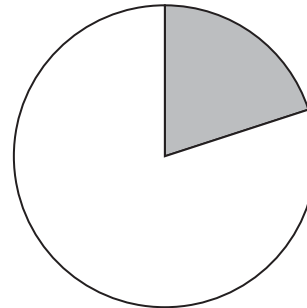
**Germany**



**Norway**



**Spain**



(a) In England, about what percentage of rubbish is recycled?



..... %

.....  
1 mark

(b) England wants to recycle 30% of rubbish by the year 2010.

Which countries already recycle more than 30% of their rubbish?

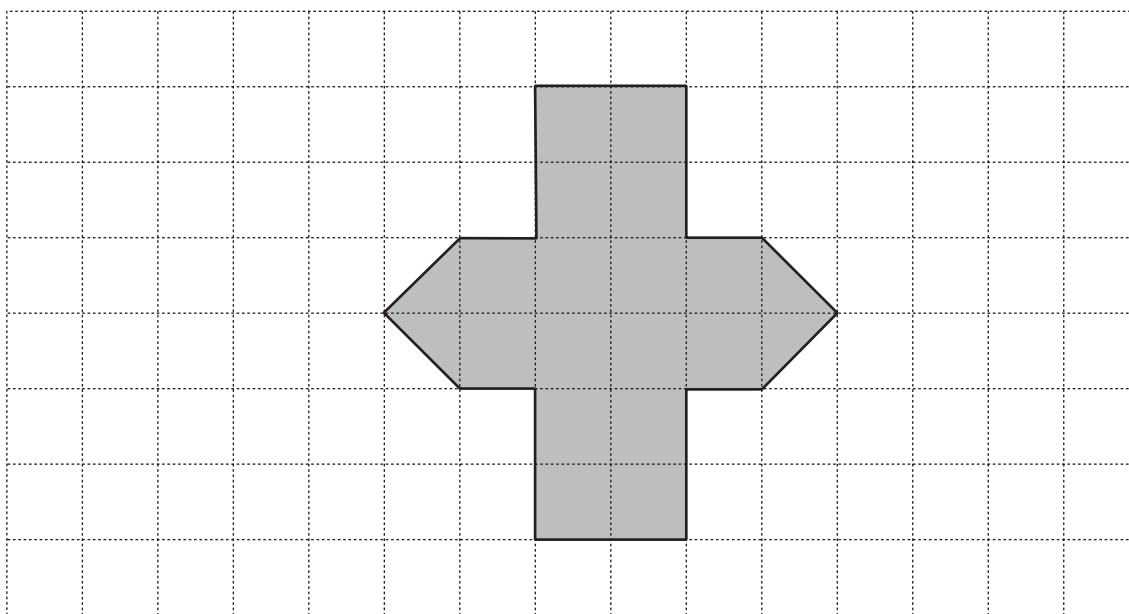


.....

.....  
1 mark



9. Here is a shaded shape on a centimetre square grid.



(a) What is the area of the shaded shape?



.....  $\text{cm}^2$

.....  
1 mark

(b) Now draw a rectangle that has the same area as the shaded shape.



.....  
1 mark

10. I have some 5p coins and some 2p coins.



5p coins



2p coins

I can use some of my coins to make 27p.

(a) Complete the table to show different ways to make 27p.

The first way is done for you.

| Ways to make 27p       |                 |
|------------------------|-----------------|
| Use five 5p coins and  | ..... 2p coin.  |
| Use three 5p coins and | ..... 2p coins. |
| Use one 5p coin and    | ..... 2p coins. |

.....  
1 mark

.....  
1 mark

(b) I cannot make 27p from 5p coins and 2p coins using an even number of 5p coins.

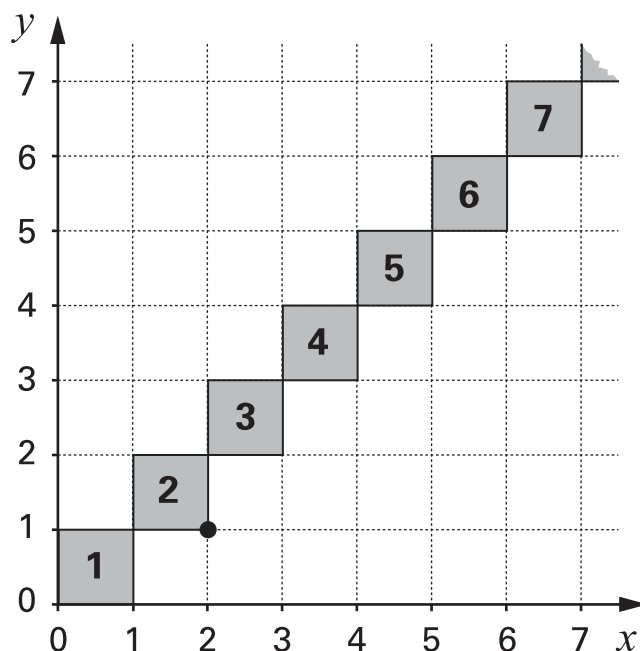
Explain why not.




.....  
1 mark



11. I put square tiles on a large grid so that the tiles touch at the corners.  
The diagram shows part of my diagonal pattern.



- (a) The bottom right-hand corner of tile 2 is marked with a ●  
Write the coordinates of this point.

 (   ,   )

.....  
1 mark

- (b) Tile 4 touches two other tiles.  
Write the coordinates of the points where tile 4 touches two other tiles.

 (   ,   ) (   ,   )

.....  
1 mark

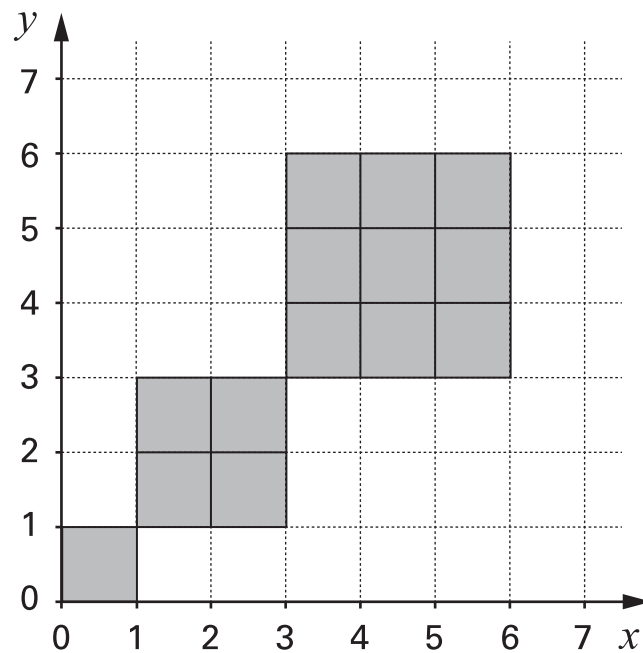
- (c) Write the coordinates of the points where tile 17 touches two other tiles.

 (   ,   ) (   ,   )

.....  
1 mark

(d) I have 30 tiles to make a pattern on a grid.

The pattern is a series of squares.



I have used some of the 30 tiles to make my pattern.

Do I have enough tiles left to make the next square, of side length 4?

Show working to explain your answer.



.....  
.....  
2 marks



12. Here are the ingredients for a cordial used to make a drink.

50g ginger

1 lemon

1.5 litres of water

900g sugar

(a) Jenny is going to make this cordial with 25g of ginger.

How much lemon, water and sugar should she use?

25g ginger

..... lemon

..... litres of water

.....g sugar

.....  
1 mark

.....  
1 mark

.....  
1 mark

(b) The finished drink should be <sup>1</sup> cordial and <sup>2</sup> water.

Jenny puts 100ml of cordial in a glass.

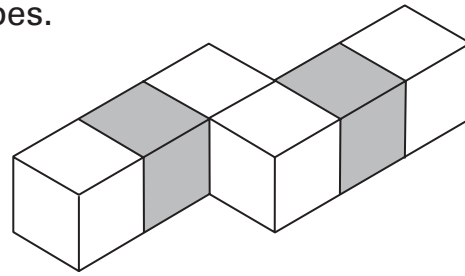
How much water should she put with it?

 ..... ml

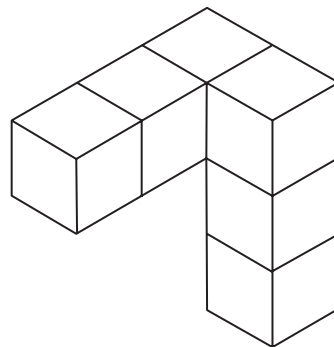
.....  
1 mark



13. Look at this shape made from six cubes.  
 Four cubes are white.  
 Two cubes are grey.

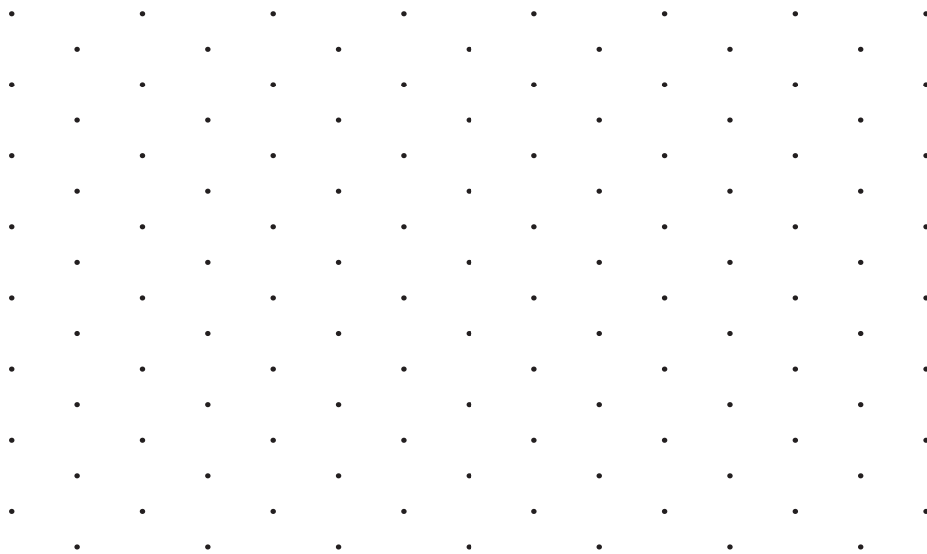


- (a) Part of the shape is rotated through  $90^\circ$  to make the shape below.  
 Shade the faces that are grey.



.....  
1 mark

- (b) After another rotation of  $90^\circ$ , the shape is a cuboid.  
 Draw this cuboid on the grid below.



.....

.....  
2 marks


Isometric grid



14. (a) For each number in the table, write a multiple of that number.

Each multiple must be between 100 and 130

The first one is done for you.



| Number | Multiple between 100 and 130 |
|--------|------------------------------|
| 40     | 120                          |
| 35     |                              |
| 27     |                              |

.....  
1 mark

.....  
1 mark

(b) Is 7 a factor of 140?

Tick (✓) Yes or No.



Yes

No

Explain your answer.



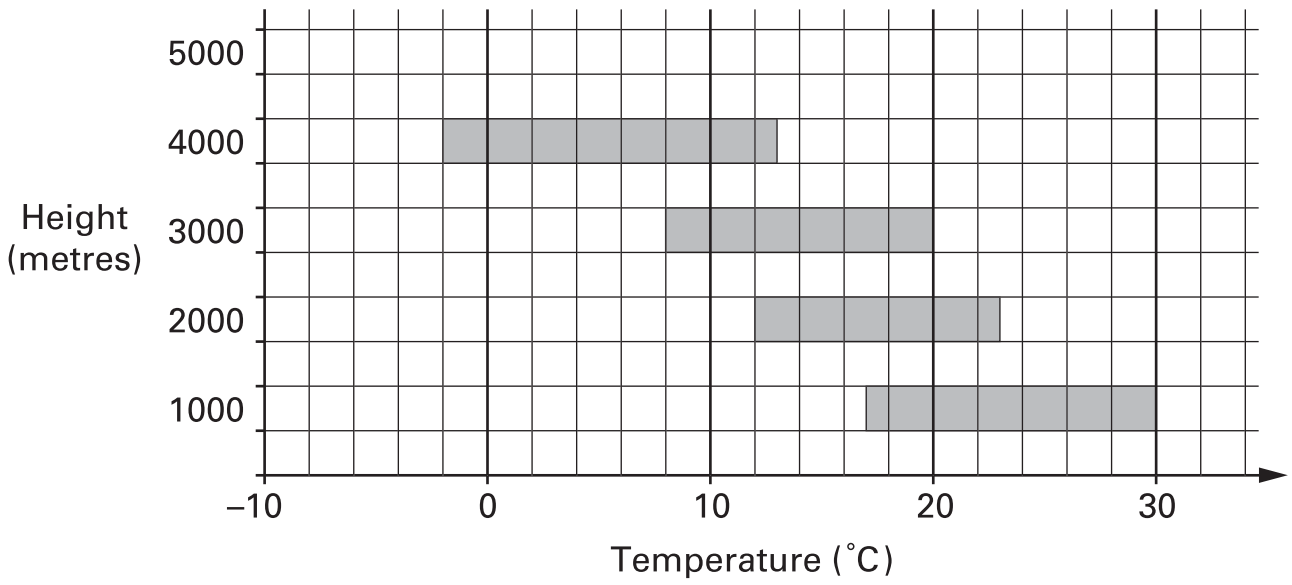
.....  
1 mark

15. There are high mountains in Nepal.  
At different heights, the temperature is different.

The graph shows information about temperatures in one month.



**Range in temperature (minimum to maximum)**



For example:

At 1000 metres, the maximum temperature is 30°C.

- (a) At 3000 metres, what is the minimum temperature?



.....°C

.....  
1 mark

- (b) At 5000 metres, the minimum temperature is -3°C.

The range in temperature is 15°C.

On the graph above, draw a bar to show this information.

.....  
.....  
2 marks



16. (a) A pupil measured the angles in a triangle.

She said:

The angles are  $30^\circ$ ,  $60^\circ$  and  $100^\circ$

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




Yes

No

Explain your answer.

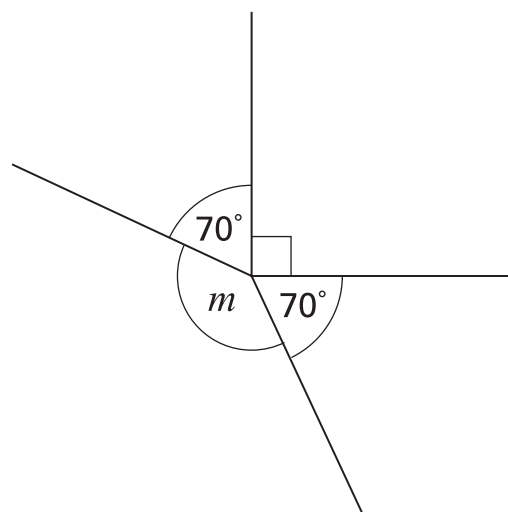


.....  
1 mark

(b) This diagram is not drawn accurately.

Calculate the size of angle  $m$

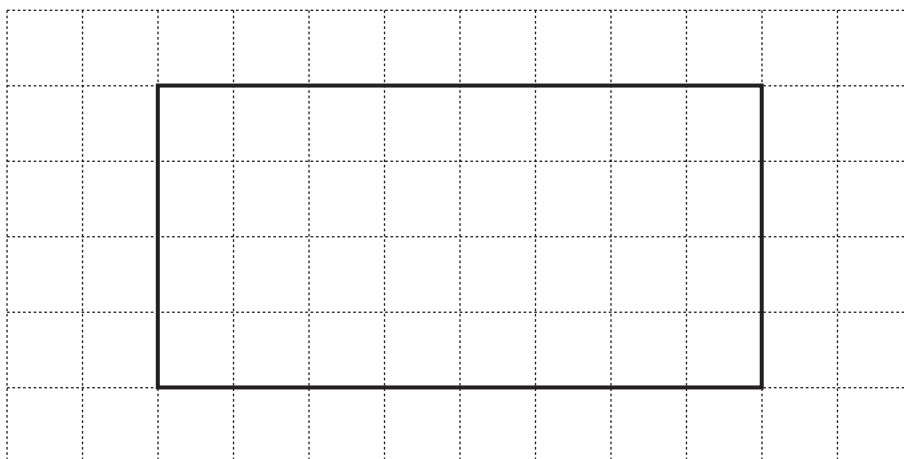
Show your working.



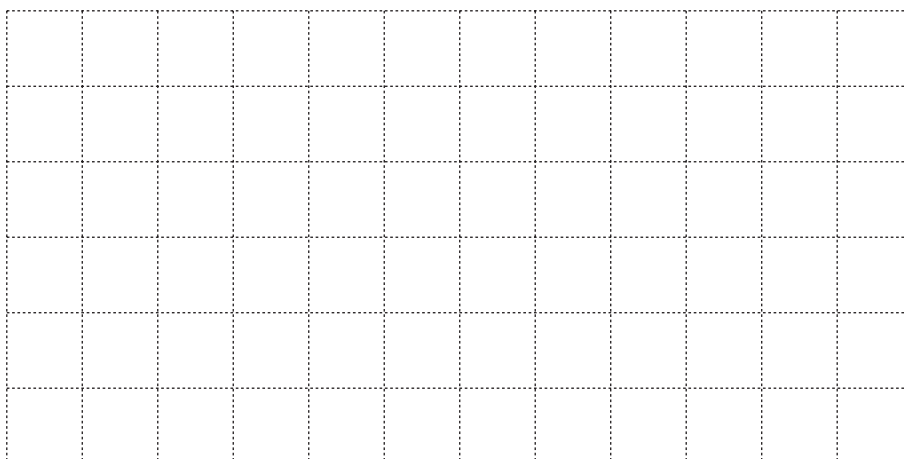
.....  
o

.....  
2 marks

17. The square grid below shows a quadrilateral that has four right angles.

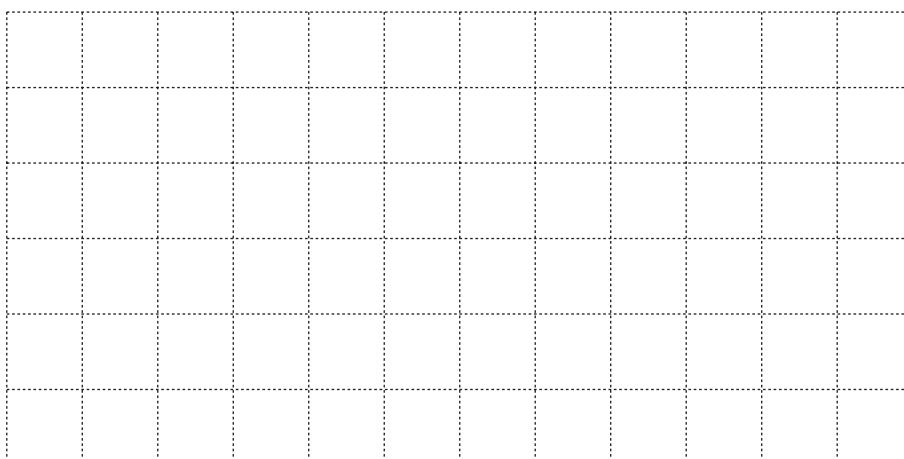


- (a) Draw a quadrilateral that has exactly two right angles.



1 mark

- (b) Draw a quadrilateral that has exactly one right angle.





1 mark



18. The diagram shows part of a number grid. The grid has 6 columns.  
All the prime numbers in the grid are circled.

|    |    |    |    |    |    |
|----|----|----|----|----|----|
| 43 | 44 | 45 | 46 | 47 | 48 |
| 37 | 38 | 39 | 40 | 41 | 42 |
| 31 | 32 | 33 | 34 | 35 | 36 |
| 25 | 26 | 27 | 28 | 29 | 30 |
| 19 | 20 | 21 | 22 | 23 | 24 |
| 13 | 14 | 15 | 16 | 17 | 18 |
| 7  | 8  | 9  | 10 | 11 | 12 |
| 1  | 2  | 3  | 4  | 5  | 6  |

 column X
  column Y

- (a) 35 is not circled.

Explain why 35 is not a prime number.



1 mark

(b) There are no prime numbers circled in column Y.

Explain how you know there will never be a prime number in column Y.



.....  
1 mark

(c) There is one prime number circled in column X.

Explain how you know there will never be another prime number in column X.



.....  
1 mark

- 
19. A box contains bags of crisps.  
Each bag of crisps weighs 25 grams.

Altogether, the bags of crisps inside the box weigh 1 kilogram.



How many bags of crisps are inside the box?



.....

.....  
1 mark



20. Shoe sizes in Britain and Germany are different.

The rule below shows how to change a British shoe size to a German shoe size.

Multiply the British shoe size by 1.25,  
then add 32,  
then round the answer to the nearest whole number.

Tom's British shoe size is 7, Karl's British shoe size is 7<sup>1</sup>

They say:

'The rule shows that we have the same German shoe size'.

Are they correct? Tick (✓) Yes or No.



Yes

No

Show working to explain your answer.



.....

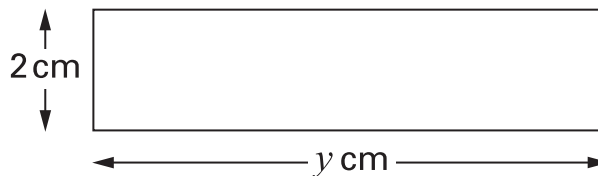
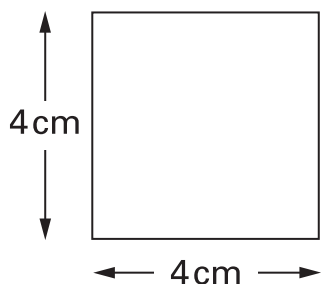
.....

.....

3 marks



21. The square and the rectangle below have the same area.



Not drawn

Work out the value of  $y$



$$y = \dots\dots\dots \text{ cm}$$

.....  
1 mark

22. In 1976 the average yearly wage was £3275  
On average, people spent 17% of £3275 on their family holiday.

How much is 17% of £3275?

Show your working.



£

.....  
.....  
2 marks



**END OF TEST**

**BLANK PAGE**

