Surname

Other Names

Candidate Signature

For Examiner's Use

Examiner's Initials

| Pages | Mark |
|---|---|
| 3 | |
| 4–5 | |
| 6–7 | |
| 8–9 | |
| 10–11 | |
| 12–13 | |
| 14–15 | |
| 16–17 | |
| 18–19 | |
| 20–21 | |
| 22–23 | |
| TOTAL | |

# Mathematics (Linear) 43651F

**Paper 1**

**F**

**Thursday 8 November 2012      1.30 pm to 2.45 pm**

**For this paper you must have:**
- mathematical instruments.

You must **not** use a calculator.

## Time allowed
- 1 hour 15 minutes

## Instructions
- Use black ink or black ball-point pen.  Draw diagrams in pencil.
- Fill in the boxes at the top of this page.
- Answer **all** questions.
- You must answer the questions in the spaces provided.  Do not write outside the box around each page or on blank pages.
- Do all rough work in this book.

## Information
- The marks for questions are shown in brackets.
- The maximum mark for this paper is 70.
- The quality of your written communication is specifically assessed in Questions 10 and 11. These questions are indicated with an asterisk (*).
- You may ask for more answer paper, tracing paper and graph paper. These must be tagged securely to this answer book.

## Advice
- In all calculations, show clearly how you work out your answer.
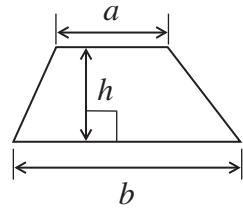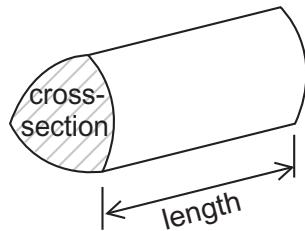
**43651F**

**Formulae Sheet: Foundation Tier**

**Area of trapezium** = $\frac{1}{2}(a+b)h$
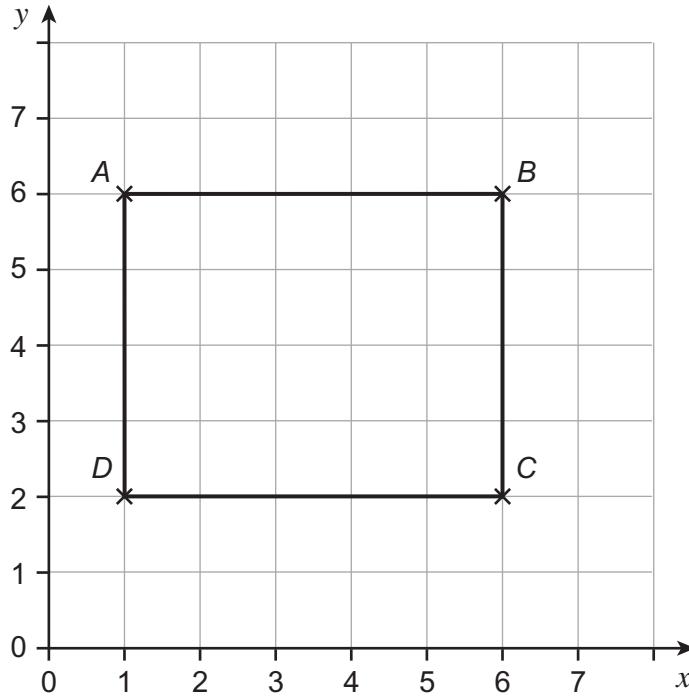


**Volume of prism** = area of cross-section × length

Answer **all** questions in the spaces provided.

**1**   *ABCD* is a rectangle on a centimetre grid.



**1 (a)**   Write down the coordinates of *A*.

Answer        ( .......... , .......... )        *(1 mark)*

**1 (b)**   Mark the midpoint of *BC* with a cross.

*(1 mark)*

**1 (c)**   Work out the perimeter of the rectangle.

..................................................................................................................................

Answer ................................................................ cm        *(2 marks)*

**4**

**Turn over ▶**

**2** Work out the following.

**2 (a)** 184 + 139

Answer .................................................................. *(1 mark)*

**2 (b)** 362 – 207

Answer .................................................................. *(1 mark)*

**2 (c)** 8 × 65

Answer .................................................................. *(1 mark)*

**2 (d)** 138 ÷ 6

Answer .................................................................. *(1 mark)*

**3** Work out the **two** missing values in this shopping bill.
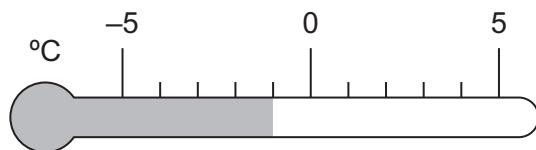
| | |
|---|---|
| 4 doughnuts at 60p each | £2.40 |
| 3 coffees at ............................ each | ............................ |
| **Total** | £6.00 |

*(2 marks)*

**Turn over for the next question**
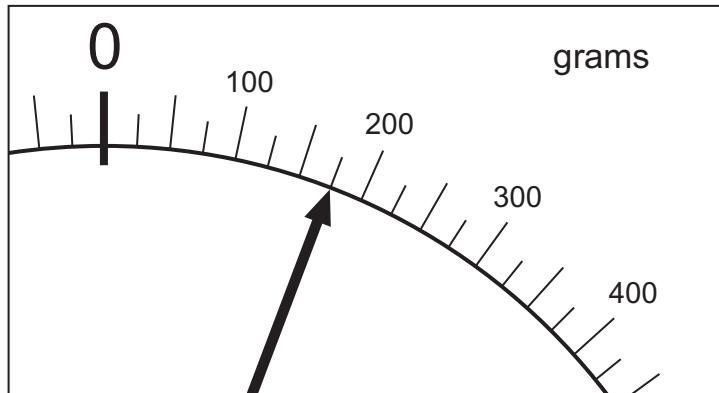
**Turn over ▶**

**4 (a)** Write down the temperature shown.

°C    −5        0        5

Answer ................................................................. °C        *(1 mark)*
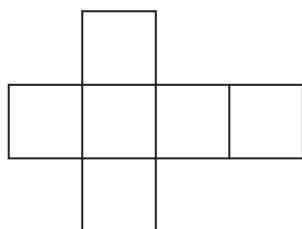
**4 (b)** Write down the weight shown.

0                grams

100

200

300

400

Answer .......................................................... grams        *(1 mark)*
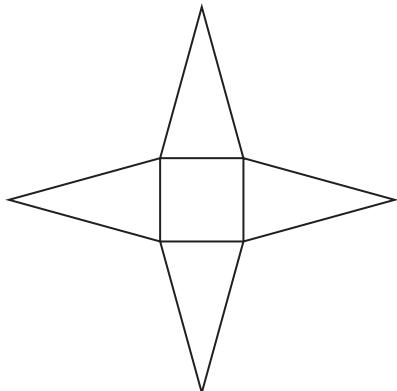
**5** Match each net with a solid.
The first one has been done.
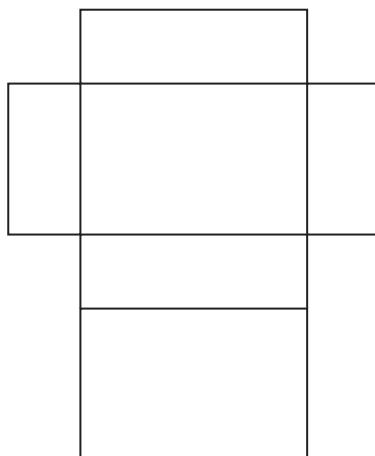
- Cuboid
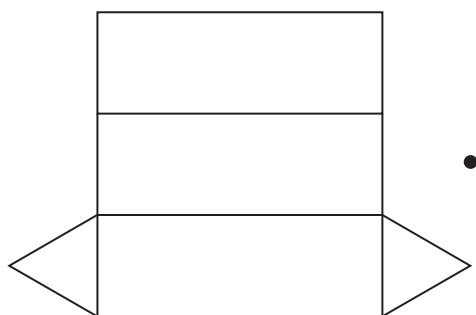
- Pyramid

- Cylinder

- Cube

- Triangular prism

*(3 marks)*

**Turn over ▶**

5
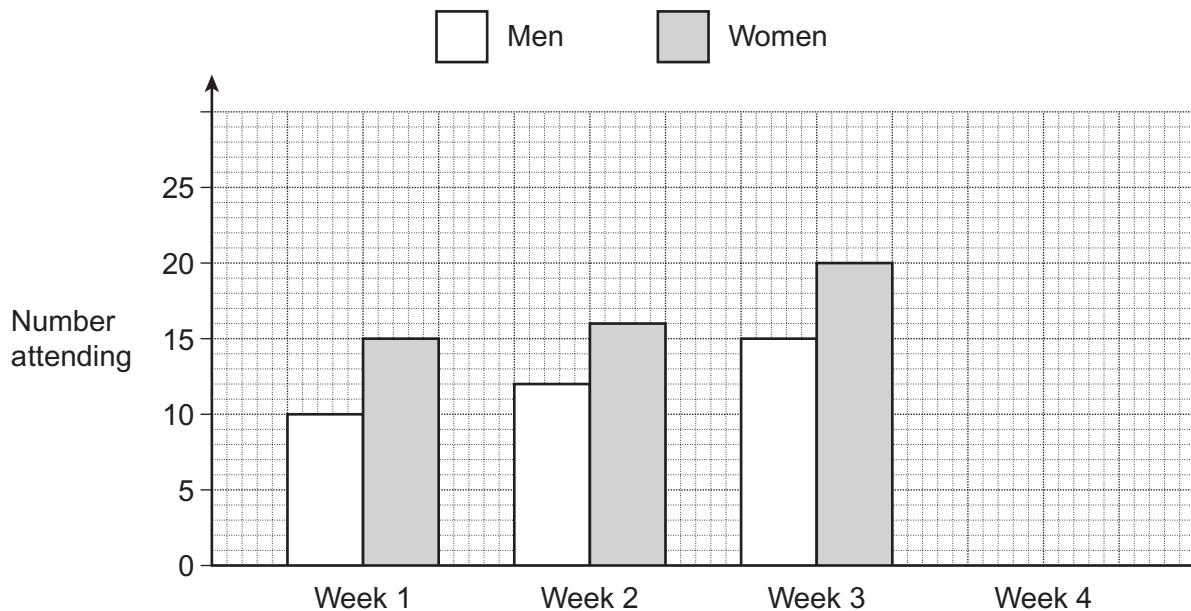
**6**     Alison records how many men and women attend her fitness class over four weeks.
The bar chart shows the information for Weeks 1, 2 and 3.



**6 (a)**     How many **men** attended in Week 2?

Answer ................................................................     *(1 mark)*

**6 (b)**     How many people attended in Week 3 **altogether**?

..............................................................................................................................

Answer ................................................................     *(1 mark)*

**6 (c)**   40 people attended the class in Week 4.
There were 8 **more** women than men.

Complete the bar chart for Week 4.

.........................................................................................................................................

.........................................................................................................................................

*(2 marks)*

**6 (d)**   Each week,

- Alison pays out £30 to run the class
- she charges each person £5 to attend.

How much profit did she make in Week 1?

.........................................................................................................................................

.........................................................................................................................................

.........................................................................................................................................
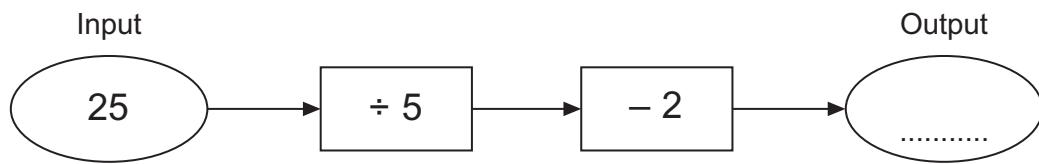
Answer £  ................................................................   *(3 marks)*

**Turn over for the next question**

**7**

**Turn over ▶**

**7 (a)** Here is a number machine.

Input                                                     Output

$$\boxed{25} \rightarrow \boxed{\div 5} \rightarrow \boxed{-2} \rightarrow \boxed{..........}$$
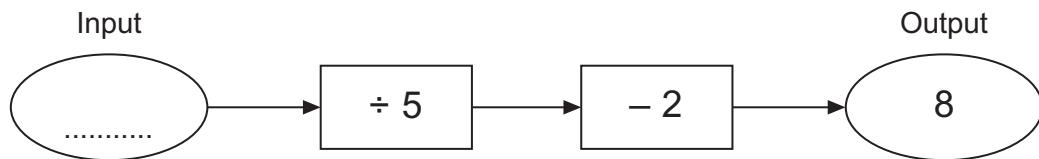
Work out the **output** when the input is 25.

.......................................................................................................................................

Answer ........................................................................ *(1 mark)*

**7 (b)** Here is the same number machine.

Input                                                     Output

$$\boxed{..........} \rightarrow \boxed{\div 5} \rightarrow \boxed{-2} \rightarrow \boxed{8}$$

Work out the **input** when the output is 8.

.......................................................................................................................................

Answer ........................................................................ *(2 marks)*

**8** Here are eight coins.



Ben and Yusaf take **four** coins each.
They both have exactly the same amount of money.

Which coins could they each have?

..........................................................................................................................

..........................................................................................................................

..........................................................................................................................

..........................................................................................................................

Ben .................................................................

Yusaf ................................................................. *(3 marks)*

**6**

**Turn over ▶**

**9 (a)** What **percentage** of this shape is shaded?

.................................................................................................................................

Answer ...................................................... %    *(1 mark)*

**9 (b)** Circle the **two** fractions that are equivalent to $\dfrac{4}{5}$

$\dfrac{2}{10}$        $\dfrac{6}{8}$        $\dfrac{8}{10}$        $\dfrac{20}{25}$        $\dfrac{8}{9}$

*(2 marks)*

**9 (c)** Work out    40% of 70

.................................................................................................................................

.................................................................................................................................

Answer ......................................................    *(2 marks)*

**\*10**   Harry is paid £800 per month.

These amounts are taken off his pay.

$\frac{1}{10}$   of his pay for National Insurance.

$\frac{1}{5}$   of his pay for tax.

How much money does he have left each month?

...................................................................................................................................

...................................................................................................................................

...................................................................................................................................

...................................................................................................................................

...................................................................................................................................

...................................................................................................................................

Answer £ ..................................................   *(4 marks)*

**11 (a)**   Simplify fully   $7a + 3a - 4a$

...................................................................................................................................

Answer ..................................................   *(1 mark)*

**\*11 (b)**   Simplify fully   $3 \times m \times 2 \times p$

...................................................................................................................................

Answer ..................................................   *(1 mark)*

**Turn over ▶**
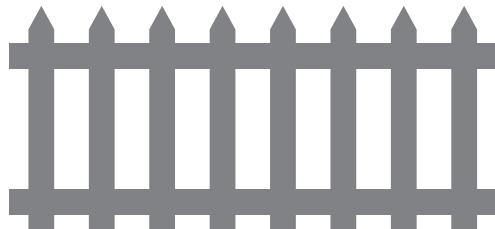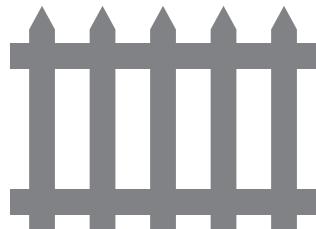
**12**   Fence sections are 5 feet or 8 feet long.



←——— 5 feet ———→            ←——————— 8 feet ———————→

The side of a garden is 36 feet long.

How many of each section are needed to fence the side **without** cutting any of the sections?
You **must** show your working.

...................................................................................................................................

...................................................................................................................................
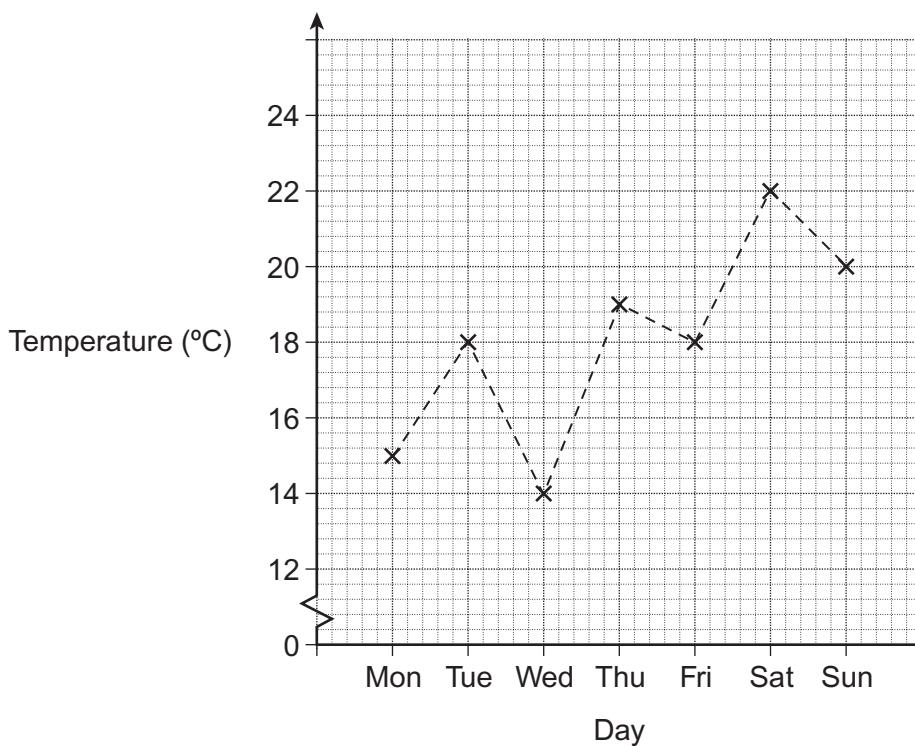
Answer ............................................. 5 feet sections

............................................. 8 feet sections          *(3 marks)*

**13** The graph shows the midday temperatures in a seaside town for a week.

Temperature (°C)

What is the range of the midday temperatures?

..........................................................................................................................

..........................................................................................................................

..........................................................................................................................

Answer .............................................................. °C        *(2 marks)*

**5**

**Turn over ▶**

**14**      Work out the value of      $4x + 3y$      when      $x = -2$ and $y = 5$

..........................................................................................................................................

..........................................................................................................................................

..........................................................................................................................................

Answer ...................................................................      *(2 marks)*

**15**      Expand and simplify      $5(x - 3) - 2(x - 1)$

..........................................................................................................................................

..........................................................................................................................................

..........................................................................................................................................

Answer ...................................................................      *(3 marks)*

**16** A school science department has 13 teachers.
The stem-and-leaf diagram shows their ages.

Key:  2 | 4 represents 24 years old

```
2 | 3   7
3 | 2   2   6   8
4 | 6   9
5 | 1   5   8   9
6 | 3
```

**16 (a)** How many teachers are over 50 years old?

Answer ........................................................ *(1 mark)*

**16 (b)** Work out the median age.

Answer ............................................. years *(1 mark)*
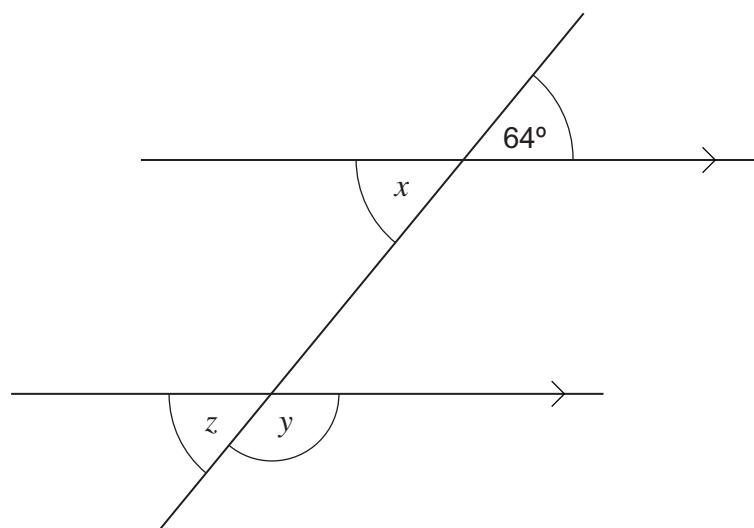
**16 (c)** The oldest teacher retires.
She is replaced by a new teacher aged 22 years.

Work out the new median age.

Answer ............................................. years *(1 mark)*

**8**

**Turn over ▶**

**17**

64°

*x*

Not drawn accurately

*z* *y*

**17 (a)** Write down the size of angle *x*.

Answer ........................................................ degrees        *(1 mark)*

**17 (b)** Work out the size of angle *y*.

.................................................................................................................................

Answer ........................................................ degrees        *(1 mark)*

**17 (c)** Choose the correct word from the list to complete the sentence.

**opposite**        **alternate**        **corresponding**        **interior**

Angle *x* and angle *z* are ............................................................ angles.
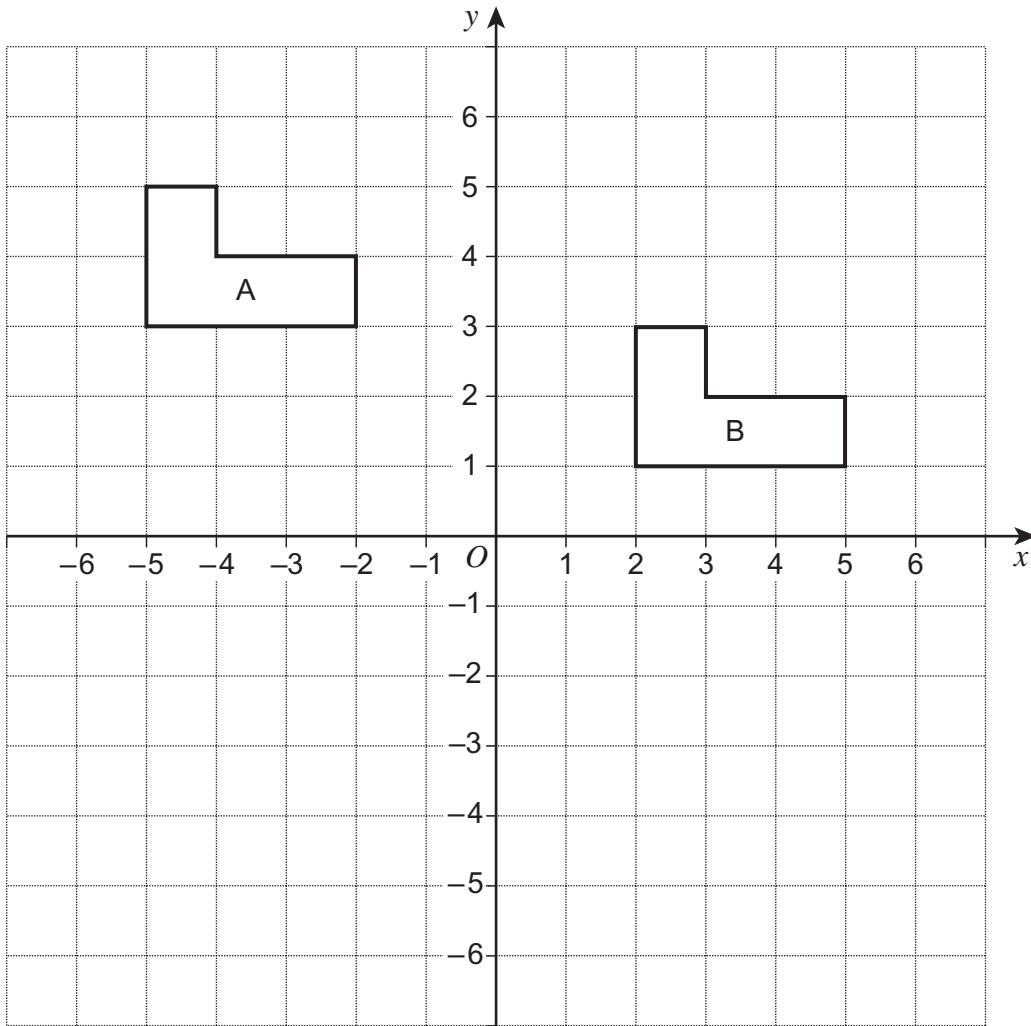
*(1 mark)*

**18**



**18 (a)** Describe fully the **single** transformation that maps shape A to shape B.

.......................................................................................................................................................

.......................................................................................................................................................
*(2 marks)*

**18 (b)** Draw the reflection of shape B in the line $y = -1$

*(2 marks)*

**Turn over ▶**
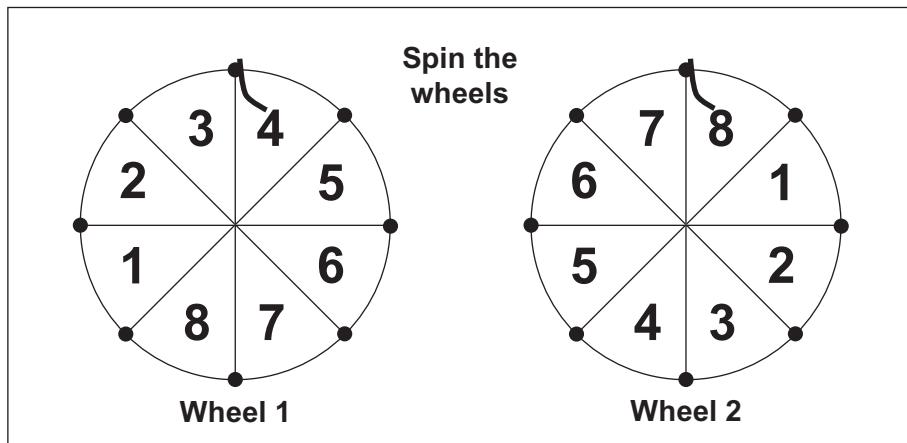
**19**     In a game, players spin two wheels.
The wheels are fair.

The numbers are added to get a score.
The wheels show a score of    4 + 8 = 12



You may use the grid below to help you answer the questions on the next page.

**Wheel 2**

| **+** | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| 1 |  |  |  |  |  |  |  |  |
| 2 |  |  |  |  |  |  |  |  |
| 3 |  |  |  |  |  |  |  |  |
| 4 |  |  |  |  |  |  |  |  12 |
| 5 |  |  |  |  |  |  |  |  |
| 6 |  |  |  |  |  |  |  |  |
| 7 |  |  |  |  |  |  |  |  |
| 8 |  |  |  |  |  |  |  |  |

**Wheel 1** (label for rows)

**19 (a)**    What is the most likely score?

.......................................................................................................................

.......................................................................................................................

Answer ................................................................... *(2 marks)*

**19 (b)**

Score
2, 3, 15 or 16
to win a prize

Work out the probability of winning a prize.

.......................................................................................................................

.......................................................................................................................

Answer ................................................................... *(3 marks)*

**Turn over for the next question**

**5**
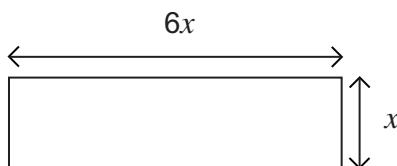
**Turn over ▶**

**20** The length of this rectangular tile is 6 times the width.

$6x$

$x$

Not drawn
accurately

Two tiles are put together to make this shape.

Not drawn
accurately

The perimeter of the new shape is 24 cm.

Work out the width of **one** tile.

.............................................................................................................................

.............................................................................................................................

.............................................................................................................................

.............................................................................................................................

.............................................................................................................................

.............................................................................................................................

Answer ............................................................. cm          *(3 marks)*
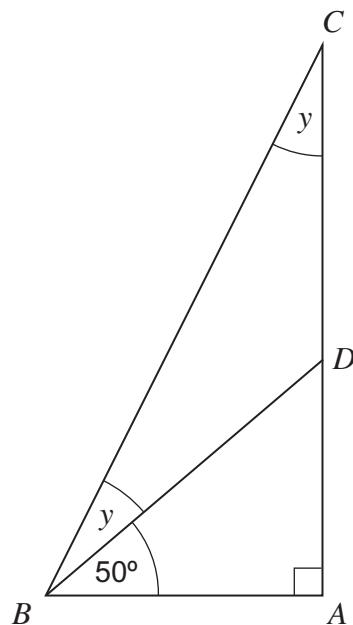
**21** *ABC* is a right-angled triangle.



Not drawn
accurately

Work out the size of angle *y*.

..........................................................................................................................

..........................................................................................................................

..........................................................................................................................

..........................................................................................................................

..........................................................................................................................

..........................................................................................................................

Answer ........................................................ degrees          *(3 marks)*

**END OF QUESTIONS**

**6**

**There are no questions printed on this page**

**DO NOT WRITE ON THIS PAGE**
**ANSWER IN THE SPACES PROVIDED**