

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

1 Here are seven numbers.

13 6 12 7 6 4 8

1 (a) Work out the range of the seven numbers.

Circle your answer.

[1 mark]

5 6 7 8 9

1 (b) What is the mode of the seven numbers?

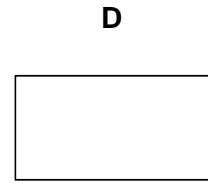
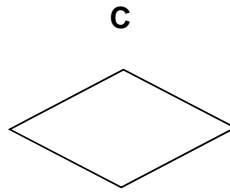
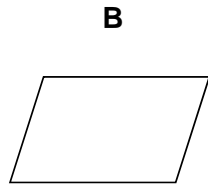
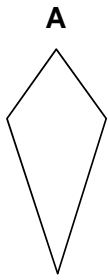
Circle your answer.

[1 mark]

5 6 7 8 9

- 2 Which shape has **two** lines of symmetry **and** its diagonals intersecting at 90° ?
Circle the correct letter.

[1 mark]



- 3 Which of these is a cube number?
Circle your answer.

[1 mark]

3

9

27

100

Turn over for the next question

4 Liz buys a car for £7500

She pays a deposit of £1875

She pays the rest in 36 equal monthly payments.

Work out the amount of each monthly payment.

[3 marks]

Answer £ _____

5 120 men and 80 women were asked if they drive to work.

Altogether $\frac{1}{4}$ of the people said yes.

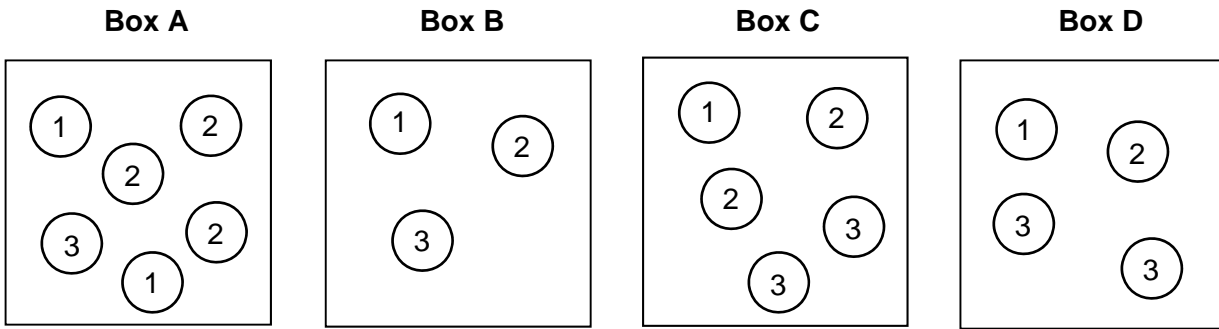
$\frac{1}{3}$ of the men said yes.

What fraction of the women said yes?

[4 marks]

Answer _____

6 Boxes A, B, C and D contain balls with numbers on them.



A ball is picked at random from each box.

6 (a) Which box gives the **greatest** chance of picking a 3?
You **must** show your working.

[2 marks]

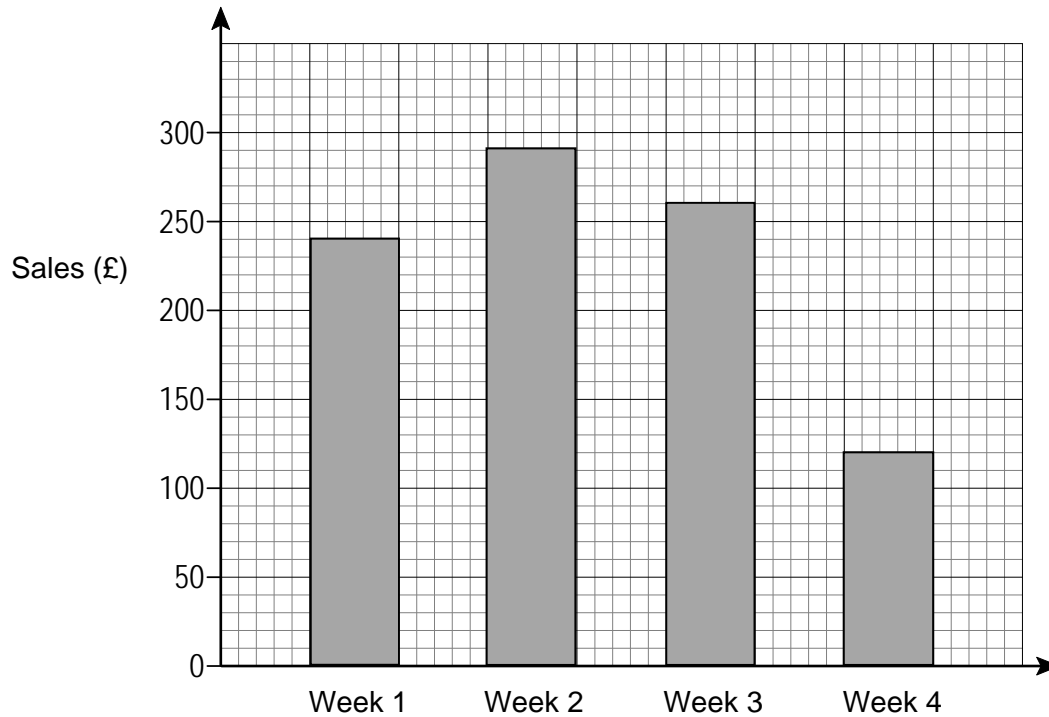
Box _____

6 (b) Which two boxes give the **same** chance of picking a 1?

[1 mark]

Box _____ and Box _____

7 Zayn records his weekly sales.



Every week his costs are £87.50

7 (a) Work out his profit in Week 1

[2 marks]

Answer £ _____

7 (b) His sales in Week 4 were half of his sales in Week 1

Zayn says,

“This means that my profit in Week 4 was half of my profit in Week 1”

Is he correct?

You **must** show your working.

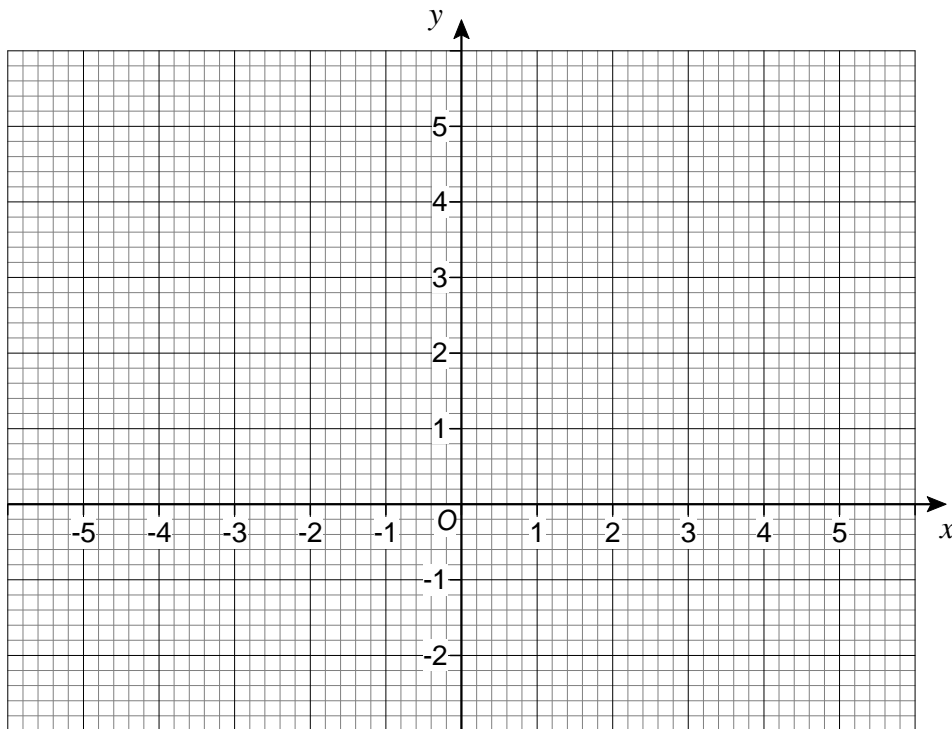
[2 marks]

8 Work out the value of $5x + 9y$ when $x = 7$ and $y = -2$

[2 marks]

Answer _____

9 The points $(-1, 0)$ and $(1, 4)$ are the diagonally opposite corners of a square.

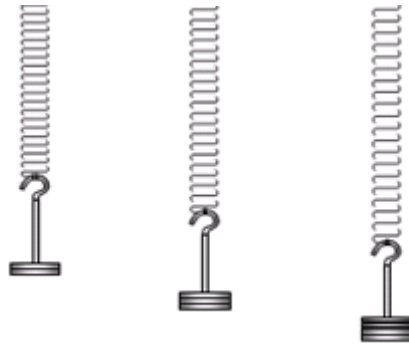


Work out the coordinates of the other **two** corners of the square.

[2 marks]

Answer (_____ , _____) and (_____ , _____)

- 10** In an experiment, different masses are hung on a spring.

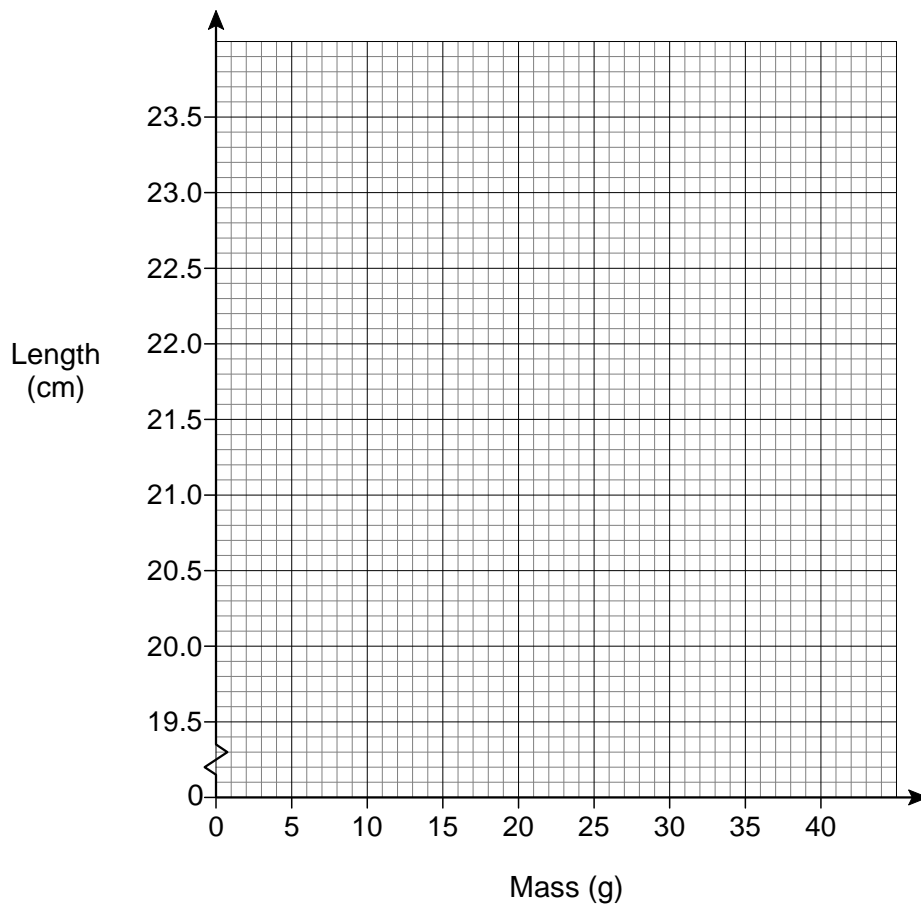


The length of the spring is measured for each mass.

| | | | | |
|--------------------|------|------|------|------|
| Mass (g) | 10 | 20 | 30 | 40 |
| Length (cm) | 20.8 | 21.6 | 22.4 | 23.2 |

- 10 (a)** Draw a graph to show the length of the spring for masses from 10 g to 40 g

[2 marks]



10 (b) Estimate the length of the spring with no mass hung on it.

[1 mark]

Answer _____ cm

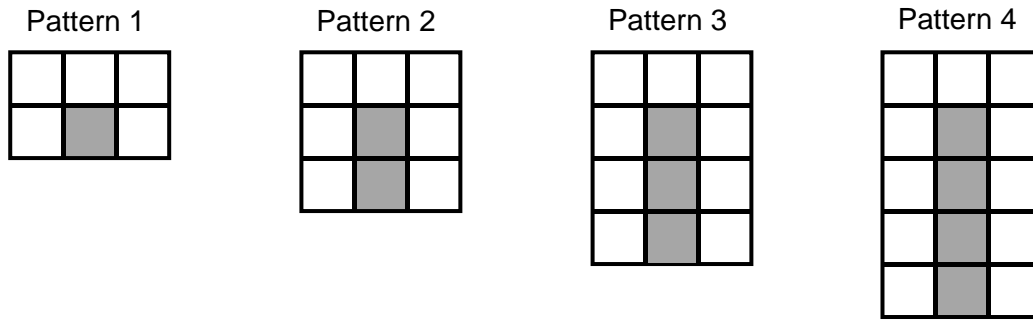
10 (c) How much longer is the spring with a 35 g mass than with a 15 g mass?

[2 marks]

Answer _____ cm

Turn over for the next question

- 11** A sequence of patterns uses grey squares and white squares.
Here are the first four patterns.



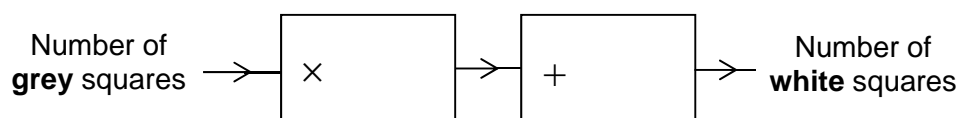
- 11 (a)** Work out the **total** number of squares in Pattern 100

[3 marks]

Answer _____

11 (b) Complete this number machine for the sequence of patterns.

[1 mark]



Turn over for the next question

12 In Scotland, squirrels are red or grey in the ratio red : grey = $1 : 2\frac{1}{2}$

12 (a) What fraction of the squirrels in Scotland are red?

[2 marks]

Answer _____

12 (b) In Scotland there are 120 000 red squirrels.

How many squirrels are there altogether in Scotland?

[2 marks]

Answer _____

- 13** Hayley and Tom have £2000 to spend on food at their wedding.
Here are their two options.

Wonderful Weddings!

Normal price £32 per person

Special offer

10% off

Kim the Caterer

| Number of people | Price per person |
|------------------|------------------|
| 100 & over | £24.50 |
| 80 to 99 | £26.50 |
| 60 to 79 | £28.50 |
| up to 59 | £30.50 |

Work out the **maximum** number of people they can pay for.

Show working to compare the maximum number of people for **both** options.

[5 marks]

Answer _____

14 Solve $4(x + 5) = 15$

[3 marks]

$x =$ _____

15 The mass of 40 cm^3 of copper is 356 grams.
Work out the mass of 90 cm^3 of copper.

[2 marks]

Answer _____ grams

- 16** 24 boys, 45 girls and 281 adults are the members of a badminton club.
50 more children join the club.
The number of girls is **now** 18% of the total number of members.

How many of the 50 children were **boys**?

[4 marks]

Answer _____

Turn over for the next question

- 17 The table shows information about the marks of 30 students in a test.

| Mark | Frequency |
|------|------------|
| 14 | 2 |
| 15 | 10 |
| 16 | 2 |
| 17 | 3 |
| 18 | 13 |
| | Total = 30 |

Students who scored less than the mean mark have to retake the test.

How many students have to retake the test?

You **must** show your working.

[3 marks]

Answer _____

- 18** Work out the square root of 100 million.
Circle your answer.

[1 mark]

1000

10 000

100 000

1 000 000

- 19** $\mathbf{a} = \begin{pmatrix} 5 \\ -2 \end{pmatrix}$ and $\mathbf{b} = \begin{pmatrix} -2 \\ 3 \end{pmatrix}$

Circle the vector $\mathbf{a} - \mathbf{b}$

[1 mark]

$\begin{pmatrix} -3 \\ -5 \end{pmatrix}$

$\begin{pmatrix} 7 \\ 1 \end{pmatrix}$

$\begin{pmatrix} 3 \\ 1 \end{pmatrix}$

$\begin{pmatrix} 7 \\ -5 \end{pmatrix}$

- 20** Circle the decimal that is closest in value to $\frac{2}{3}$

[1 mark]

0.6

0.66

0.667

0.67

Turn over for the next question

21 When $x^2 = 16$ the **only** value that x can be is 4

Is this true or false?

Tick a box.

[1 mark]

True False

Reason _____

22 In 1999 the minimum wage for adults was £3.60 per hour.

In 2013 it was £6.31 per hour.

Work out the percentage increase in the minimum wage.

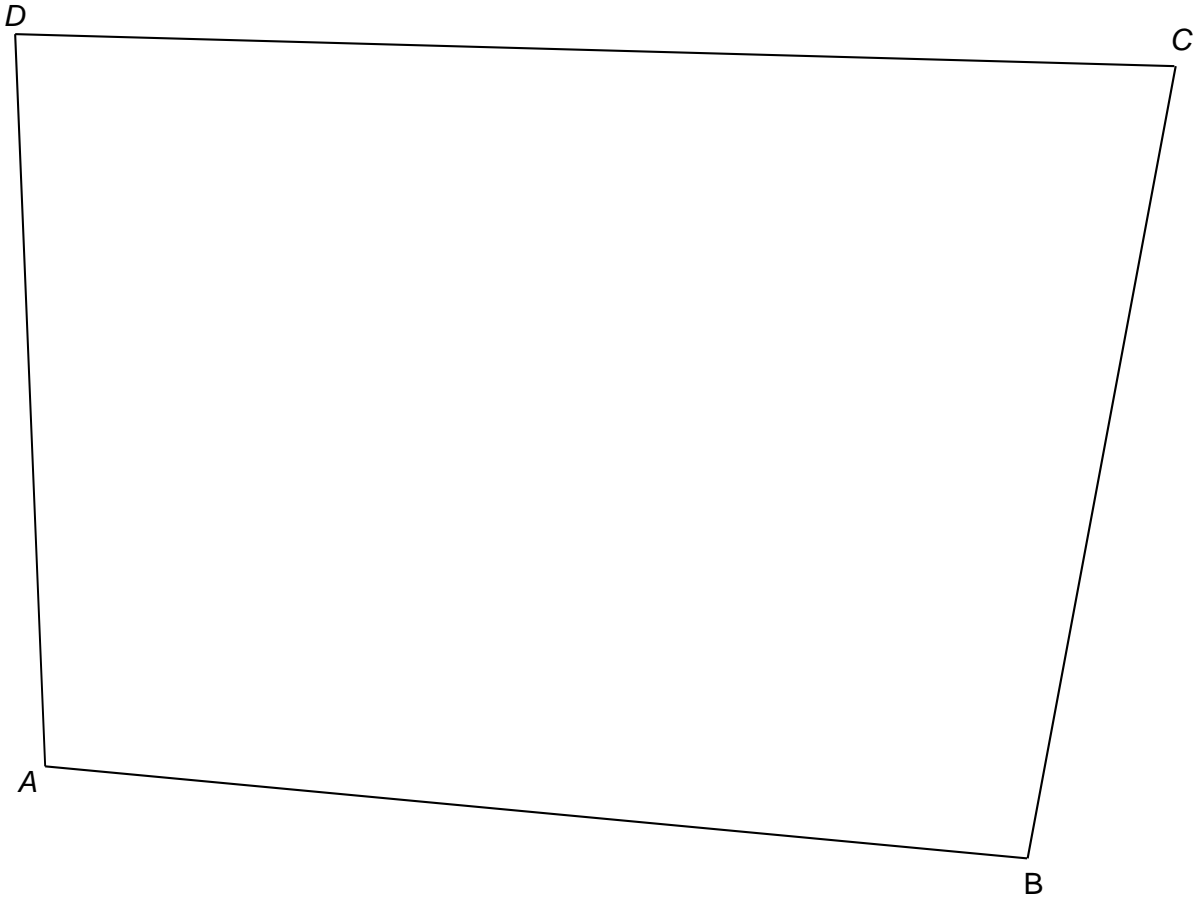
[3 marks]

Answer _____ %

23 Use ruler and compasses to answer this question.

Point P is

- the same distance from AB and AD
- 6 cm from C .



Show the position of P on the diagram.

[3 marks]

Turn over for the next question

24 (a) Use your calculator to work out $19.42^2 - \sqrt[3]{1006} \div 4.95$

Write down your full calculator display.

[1 mark]

Answer _____

24 (b) Use approximations to check that your answer to part (a) is sensible.
You **must** show your working.

[2 marks]

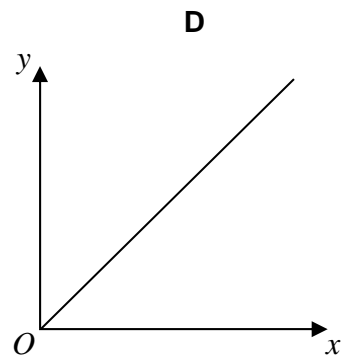
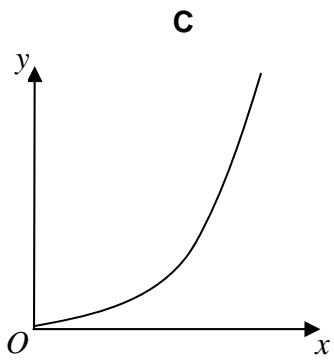
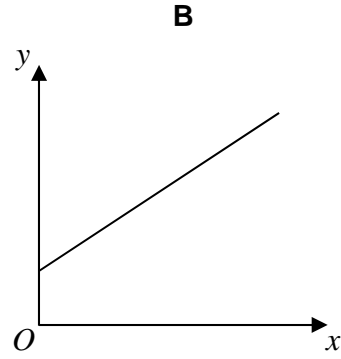
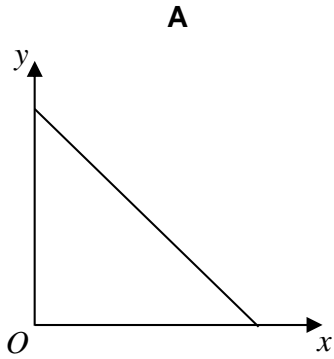
26

 y is directly proportional to x .

Which graph shows this?

Circle the correct letter.

[1 mark]



- 27 A bag contains counters that are red, blue, green or yellow.

| | red | blue | green | yellow |
|--------------------|-----|------|---------|--------|
| Number of counters | 9 | $3x$ | $x - 5$ | $2x$ |

A counter is chosen at random.

The probability it is **red** is $\frac{9}{100}$

Work out the probability it is green.

[4 marks]

Answer _____

Turn over for the next question

28 The pressure at sea level is 101 325 Pascals.

Any rise of 1 km above sea level decreases the pressure by 14%

For example,

at 3 km above sea level the pressure is 14% less than at 2 km

Work out the pressure at 4 km above sea level.

Give your answer to 2 significant figures.

[4 marks]

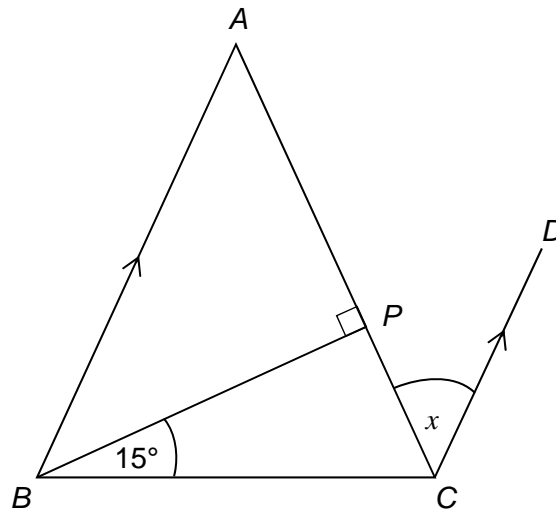
Answer _____ Pascals

29

ABC is a triangle with $AB = AC$

BA is parallel to CD .

Not drawn
accurately



Show that angle $x = 30^\circ$

[3 marks]

END OF QUESTIONS

There are no questions printed on this page

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