

For **AQA**

Name

Class

GCSE
Mathematics
Specification
Paper 1 Foundation Tier

F

Churchill Paper 1D

1 hour 30 minutes

Materials

For this paper you must have:

- mathematical instruments

You must **not** use a calculator



Instructions

- Use black ink or black ball-point pen.
- Draw diagrams in pencil.
- Write your name and class in the box at the top of the 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.
- In all calculations, show clearly how you work out your answer.

Information

- The marks for questions are shown in brackets.
- The maximum mark for this paper is 80.

*Churchill
Maths*



Written by Shaun Armstrong

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

1 Work out $18 \div (-4)$

Circle your answer.

[1 mark]

-14

-4.5

4.5

14

2 Simplify $9x - 3x$

Circle your answer.

[1 mark]

6

3

$3x$

$6x$

3 Work out $\sqrt{16} + 9 \times 2$

Circle your answer.

[1 mark]

6

10

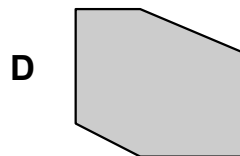
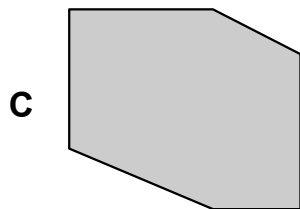
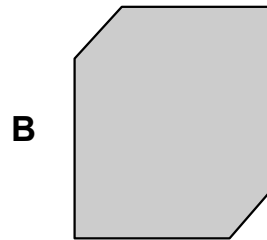
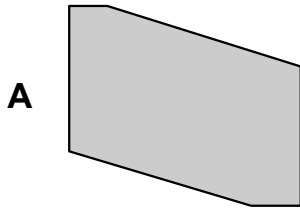
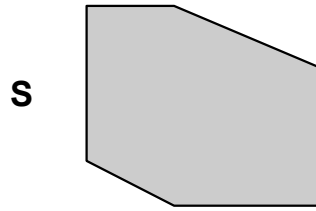
22

26





4 Which shape is congruent to shape S.

Circle the correct letter.

[1 mark]



- 5 Will works in a jewellery shop.
The incomplete pictogram shows the number of rings Will sold each day in one week.

Monday	
Tuesday	
Wednesday	
Thursday	
Friday	

Key:  represents 4 rings

- 5 (a) How many rings did Will sell on Monday? [1 mark]

Answer _____

- 5 (b) How many more rings did Will sell on Friday than on Wednesday? [1 mark]

Answer _____

Will sold 65 rings in total over the 5 days shown.

- 5 (c) Complete the pictogram. [2 marks]

6 Ayesha is saving to go on holiday.

Each week she earns £150.
She saves 20% of her earnings.

Work out the number of weeks it will take Ayesha to save £450.

[2 marks]

Answer _____ weeks

7 A map is drawn using the scale: **1 cm represents 250 m**

7 (a) A path is 1 km long.

Work out how long the path will be in centimetres on the map.

[2 marks]

Answer _____ cm

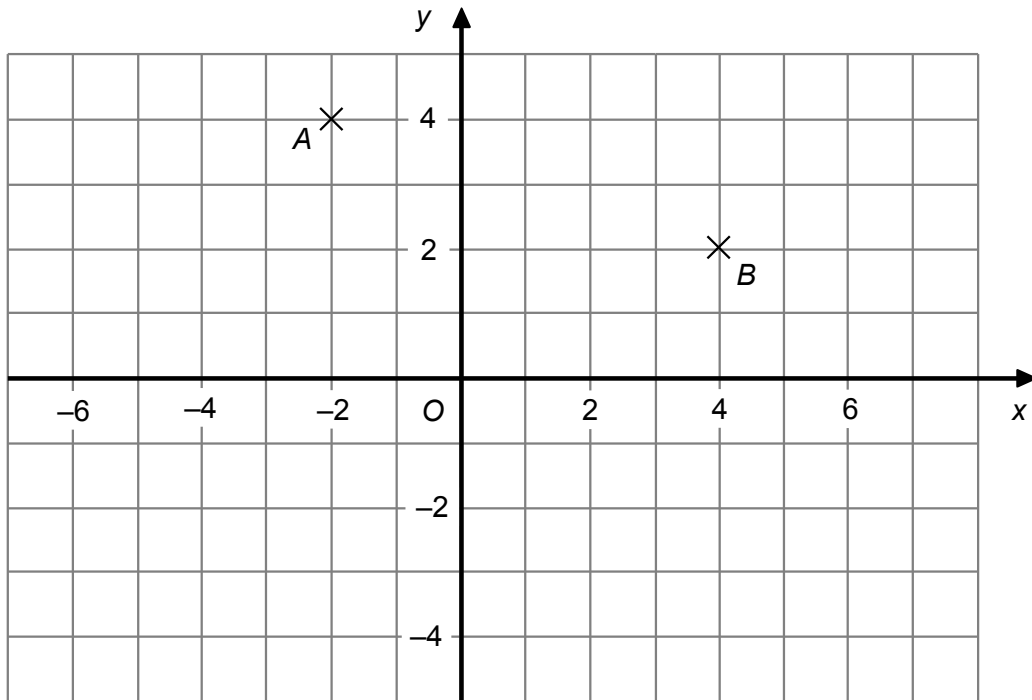
7 (b) Two buildings are 9 cm apart on the map.

Work out the actual distance between the buildings in kilometres.

[2 marks]

Answer _____ km

8



8 (a) Write down the coordinates of point A.

[1 mark]

Answer (_____ , _____)

The point M is the midpoint of AB .

8 (b) Find the coordinates of point M .

[1 mark]

Answer (_____ , _____)

The straight line L passes through the point B and is parallel to the line $y = x$.

8 (c) Find the equation of the line L .

[2 marks]

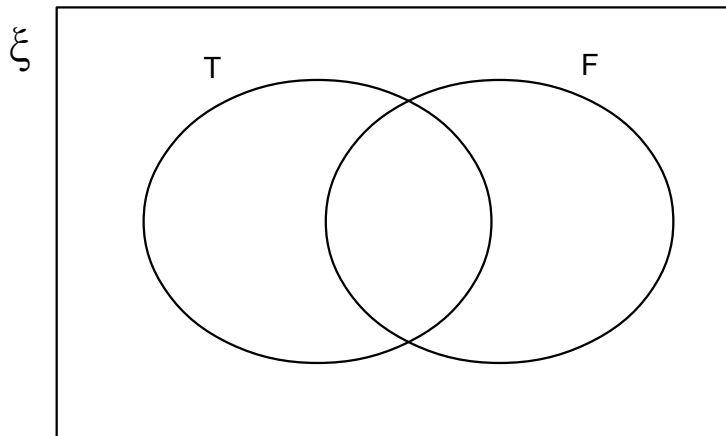
Answer _____

9 $\xi = \{2, 4, 6, 8, 10, 12, 14, 16, 18, 20\}$

T = multiples of 3

F = multiples of 4

9 (a) Complete the Venn diagram.



[3 marks]

9 (b) One of the numbers in set ξ is chosen at random.

Work out $P(T \cap F)$

[1 mark]

Answer _____

9 (c) Two of the numbers in set T are chosen at random.

List all the possible pairs of numbers that could have been chosen.

[1 mark]

10 Given that $13 \times 31 = 403$,

10 (a) find the value of 0.13×3.1

[1 mark]

Answer _____

10 (b) find the value of $8060 \div 1.3$

[2 marks]

Answer _____

10 (c) find the Highest Common Factor (HCF) of 52 and 4030.

[2 marks]

Answer _____

11 Work out $6^9 \div 6^7$

Circle your answer.

[1 mark]

6

12

36

216

12 The number of marbles Elsie, Fiona and Greta have are in the ratio 6 : 7 : 11

They decide to play a game.

During the game, the total number of marbles they have doesn't change.

At the end of the game, Elsie has half of all the marbles.

The number of marbles Fiona and Greta have are in the ratio 5 : 4

Find out if Fiona has more, less or the same number of marbles as she had before the game.

Show your working clearly.

[4 marks]

Answer _____

13 Neil, Penny and Trevor are making shelves.

They buy

9 planks of wood costing £10.99 each

3 tools costing £7.95 each

4 bags of fixings costing £3.85 each

Neil, Penny and Trevor split the total cost in the ratio 5 : 3 : 2

13 (a) Work out an estimate for the amount Penny pays.

[5 marks]

Answer £ _____

13 (b) Is your answer to part **(a)** an underestimate or an overestimate?

Give a reason for your answer.

[1 mark]

14 Work out 27.5% of 280

Circle the answer.

[1 mark]

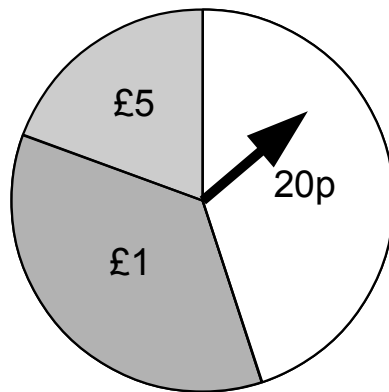
49

63

77

91

15



Not drawn accurately

A spinner at a fairground game has three sections.

According to which section the spinner lands on, a player wins 20p, £1 or £5.

The probability of a player winning 20p is 0.48

The probability of winning £1 is three times the probability of winning £5.

Circle the probability of winning £1.

[1 mark]

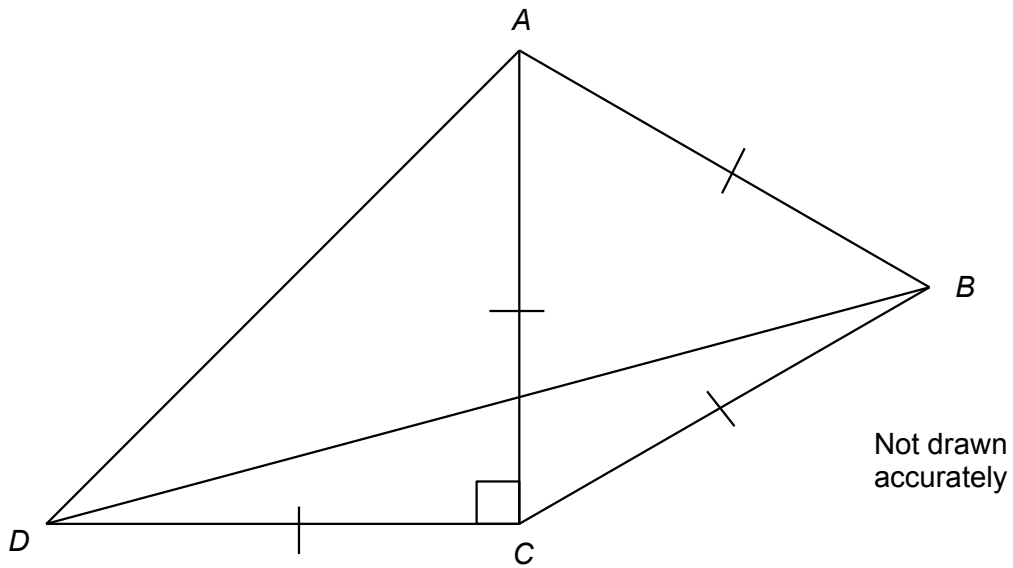
0.13

0.36

0.39

0.75

16



$ABCD$ is a quadrilateral.

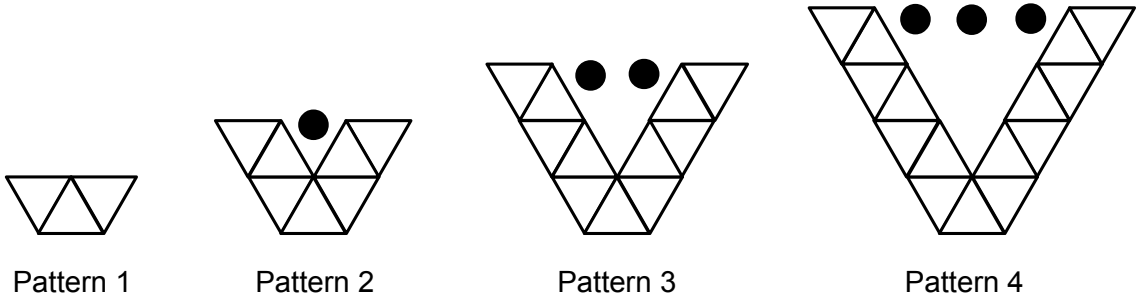
The lengths AB , AC , BC and CD are all equal.

Angle $ACD = 90^\circ$.

Prove that angle $ADB = 30^\circ$.

[4 marks]

17 A sequence of patterns is made up of white triangles and black circles.



17 (a) How many circles are there in Pattern 8 ?

[1 mark]

Answer _____

17 (b) Write down an expression for the number of circles in Pattern N .

[1 mark]

Answer _____

17 (c) Work out the number of triangles in the pattern with 16 circles.

[3 marks]

Answer _____

18 (a) Work out

$$3\frac{1}{5} \div 1\frac{1}{5}$$

Give your answer as a simplified mixed number.

[3 marks]

Answer _____

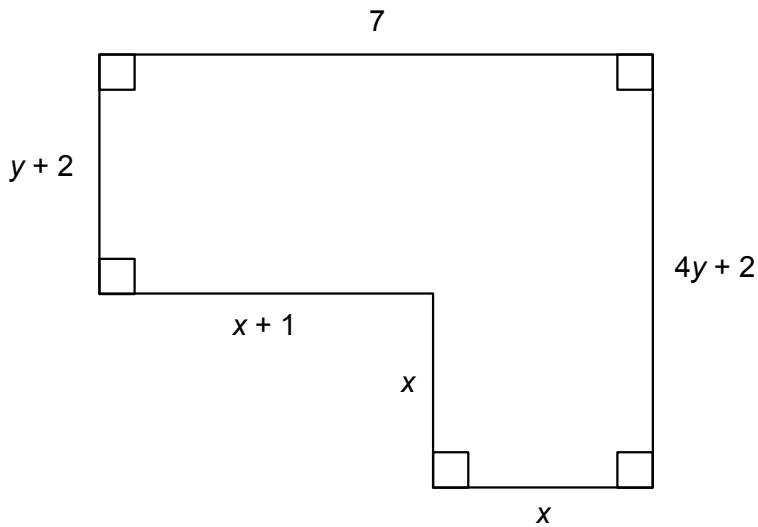
18 (b) Work out

$$0.24 \times 5.3$$

[3 marks]

Answer _____

19



Not drawn accurately

The diagram shows the dimensions of a room.

All the corners are right angles and the measurements given are in metres.

19 (a) Show that $y = 1$

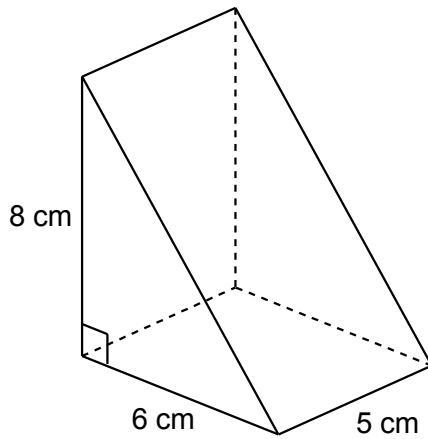
[3 marks]

19 (b) Work out the floor area of the room.

[2 marks]

Answer _____ m^2

20



Not drawn accurately

The diagram shows a prism.

The cross-section of the prism is a right-angled triangle.
Two of the sides of the triangle are 6 cm and 8 cm long as shown.

20 (a) Show that the third side of the triangle is 10 cm long.

[2 marks]

The prism is 5 cm wide.

20 (b) Work out the surface area of the prism.

[3 marks]

Answer _____ cm^2

21 (a) A snail is travelling at 0.4 millimetres per second.

Work out the snail's speed in metres per hour.

[2 marks]

Answer _____ m/h

21 (b) A car is travelling at x kilometres per hour.

Find the car's speed, in terms of x , in metres per second.

Give your answer in its simplest form.

[2 marks]

Answer _____ m/s

22 A solid plastic cube has a side length of 4 cm.

The mass of the cube is 80 g.

Circle the density of the plastic in grams per cubic centimetre.

[1 mark]

0.2

0.8

1.25

5

23 Hayfa bought 3 boxes of *Cornpops* and 1 box of *Wheatrings* for a total cost of £8.
Jim bought 2 boxes of *Cornpops* and 4 boxes of *Wheatrings* for a total cost of £14.

Work out the difference in price between a box of *Cornpops* and a box of *Wheatrings*.

[4 marks]

Answer _____

24 (a) Write 1 000 000 000 in standard form.

[1 mark]

Answer _____

24 (b) Write 6000^3 in standard form.

[2 marks]

Answer _____

24 (c) The radius of the Earth is approximately 6371 km.

Work out an approximate value for the volume of the Earth.

[The volume of a sphere of radius r is $\frac{4}{3} \pi r^3$]

[2 marks]

Answer _____ km³

END OF QUESTIONS