



THIRD SPACE
LEARNING

Mathematics

Paper 5

(Non-Calculator)

Higher Tier

OCR GCSE

SET 2

Mathematics Paper 5 (Non-Calculator) Higher Tier OCR

GCSE SET 2

Name

Total marks



Paper length: 1hr 30mins

Instructions

- Use black ink or ball-point pen.
- Fill in the boxes at the top of this page with your name, centre number and candidate number.
- Answer all questions.
- Answer the questions in the spaces provided
 - there may be more space than you need.
- You must show all your working.
- Diagrams are NOT accurately drawn, unless otherwise indicated.
- Calculators may not be used.

Information

- The total mark for this paper is 100
- The marks for each question are shown in brackets
 - use this as a guide as to how much time to spend on each question.

Advice

- Read each question carefully before you start to answer it.
- Keep an eye on the time.
- Try to answer every question.
- Check your answers if you have time at the end.

You must have: Ruler graduated in centimetres and millimetres, protractor, pair of compasses, pen, HB pencil, eraser. Tracing paper may be used.

Please note, this practice paper is an example to help revision, these topics can be tested in other ways and other topics may be included in the actual papers

1 (a) Work out $\frac{3}{4} - \frac{2}{5}$

(a) [2]

(b) By writing each number correct to 1 significant figure, use estimation to show that

$$\frac{37.1 + 209}{9.8^2} \approx 2.4$$

[3]

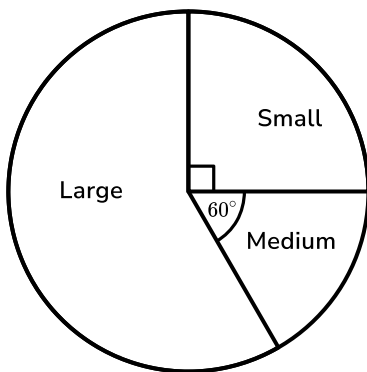
2 Find the highest common factor of 64 and 80

..... [2]

3 Lily has a bag of 60 marbles.

There are three different sizes of marbles.

The pie chart shows information about the size of the marbles.



Small marbles weigh 2.1g.

Medium marbles weigh 3.5g.

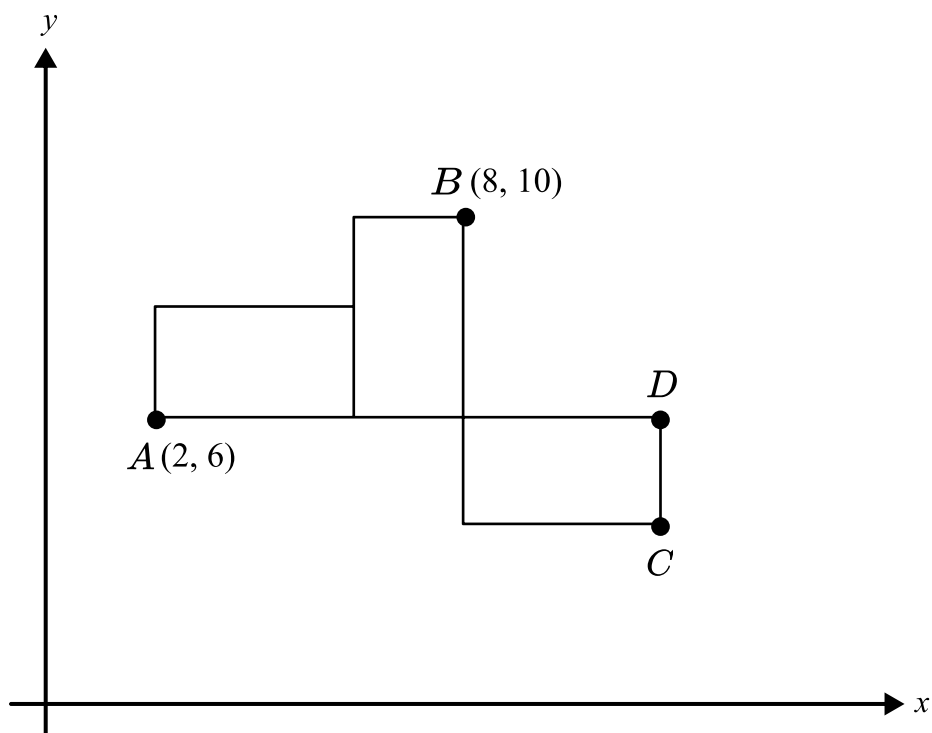
Large marbles weigh 4g.

Work out the total weight of the marbles in Lily's bag.

----- [4]

Turn over

- 4 A pattern is made from 3 congruent rectangles.



The line AD is parallel to the x -axis.

The point A has coordinates (2, 6) and the point B has coordinates (8, 10).

Work out the coordinates of point C.

(..... ,) [3]

- 5 (a)** Rachel is organising a school disco.

She buys 120 bags of sweets.

The bags of sweets cost 30p each and there is an offer of ‘buy 2 bags, get the 3rd free’ when she buys them.

Rachel wants to make a 25% profit. Assuming that Rachel will sell all the bags of sweets, how much does Rachel need to charge for each bag of sweets?

(a) **[4]**

- (b)** Rachel buys lights for the disco. The price of the lights has been reduced by 20%.

Rachel pays £64 for the lights. What was the original price of the lights?

(b) **[3]**

Turn over

- 6 You are given that $2a + 3b = 0.35$

Write $4a + 6b$ as a fraction in its simplest form.

..... [2]

- 7 (a) Write 38×10^3 in standard form.

(a) [1]

- (b) $2.62 \times 10^p + 4.1 \times 10^q = 262.41$

Write down the values of p and q .

(b) $p =$

$q =$ [2]

8 Oscar has designed a game.

Oscar has a set of 10 cards, numbered 1 to 10.

A player wins the game if they pick a card that is a prime number.

Olivia picks one card.

(a) Find the probability that Olivia wins.

(a) **[2]**

Oscar will charge 50p to play the game.

The prize for winning is £1.

200 people play the game.

(b) Work out an estimate for the amount of money Oscar will make.

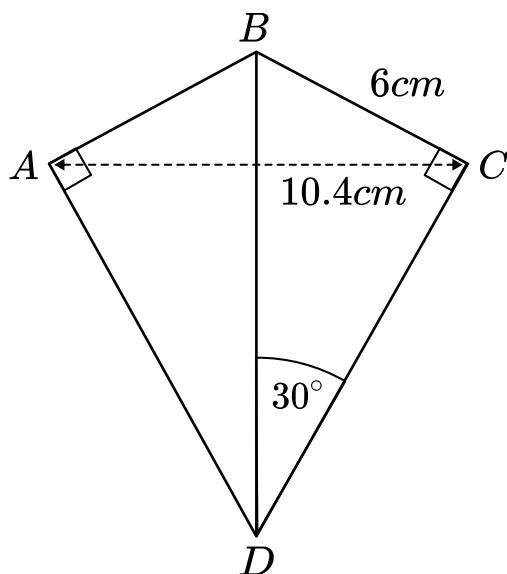
(b) **[3]**

Turn over

- 9 (a) Write down the exact value of $\sin 30$.

(a) [1]

- (b) ABCD is a kite.



$$BC = 6cm$$

$$AC = 10.4cm$$

Work out the area of ABCD.

(b) [4]

10 (a) Write down the value of 11^0

(a) [1]

(b) Find the value of $125^{\frac{2}{3}}$

(b) [2]

(c) Find the value of 3^{-2}

(c) [1]

11 (a) (i) Write $\frac{1}{9}$ as a recurring decimal.

(a) (i) [2]

(ii) Write $\frac{1}{90}$ as a recurring decimal.

a (ii) [1]

(b) Write these numbers in order of size.

Start with the smallest number.

0.51 $\dot{4}$

0.5 $\dot{1}4$

0. $\dot{5}14$

0.514

Smallest

Largest [1]

Turn over

- 12** The table gives information about the amount of money spent by the first 80 customers to visit a shop on Saturday.

Amount spent (£s)	Frequency
$0 \leq s < 20$	8
$20 \leq s < 40$	12
$40 \leq s < 60$	19
$60 \leq s < 80$	17
$80 \leq s < 100$	13
$100 \leq s < 120$	11

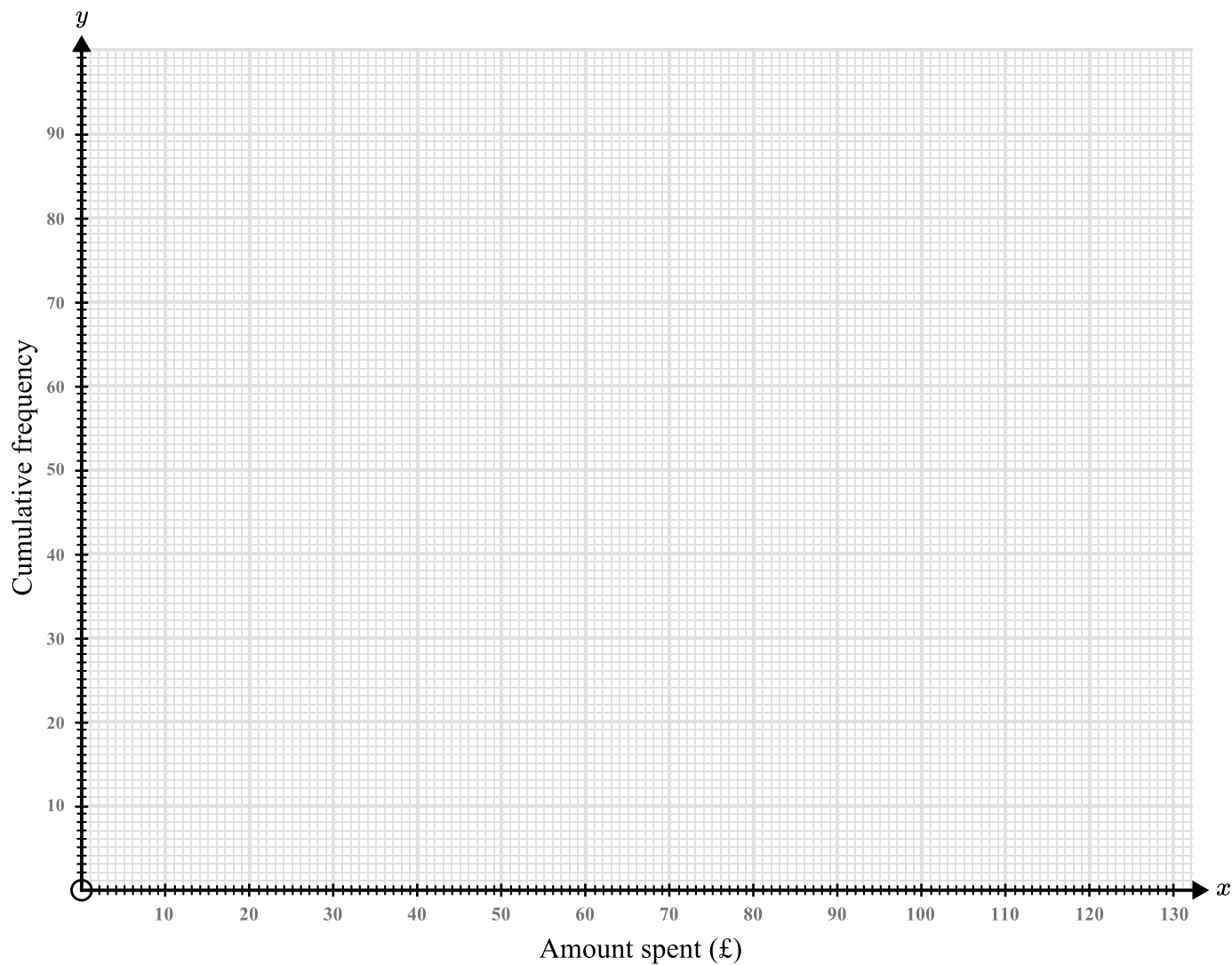
- (a)** Complete the cumulative frequency table.

Amount spent (£s)	Cumulative Frequency
$0 \leq s < 20$	
$20 \leq s < 40$	
$40 \leq s < 60$	
$60 \leq s < 80$	
$80 \leq s < 100$	
$100 \leq s < 120$	

[1]

(b) On the grid below, draw a cumulative frequency graph for your table.

[2]

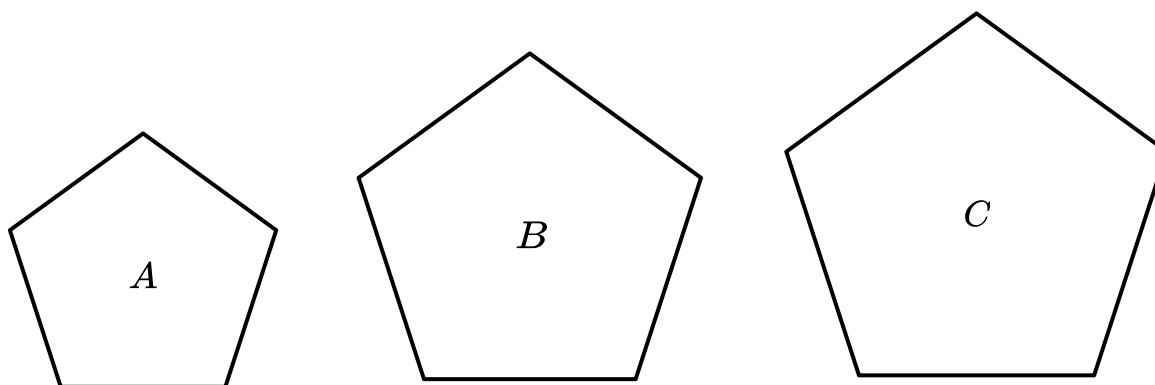


(c) On Sunday, the median spend of the first 80 customers was £25.
Compare this to the median spend of the first 80 customers on Saturday.

[2]

Turn over

13 Here are three pentagons.



The area of pentagon B is 50% greater than the area of pentagon A.

The area of pentagon C is 40% greater than the area of pentagon C.

Write down the ratio of

area of A : area of B : area of C

Give your answer in its simplest form.

----- : ----- : ----- [4]

- 14 The phone masts A, B and C are located as shown.

A ×

B ×

C ×

Use constructions to find the exact point which is equidistant from all three masts.

Mark the point with an X and label it D.

Show all of your construction lines.

[3]

Turn over

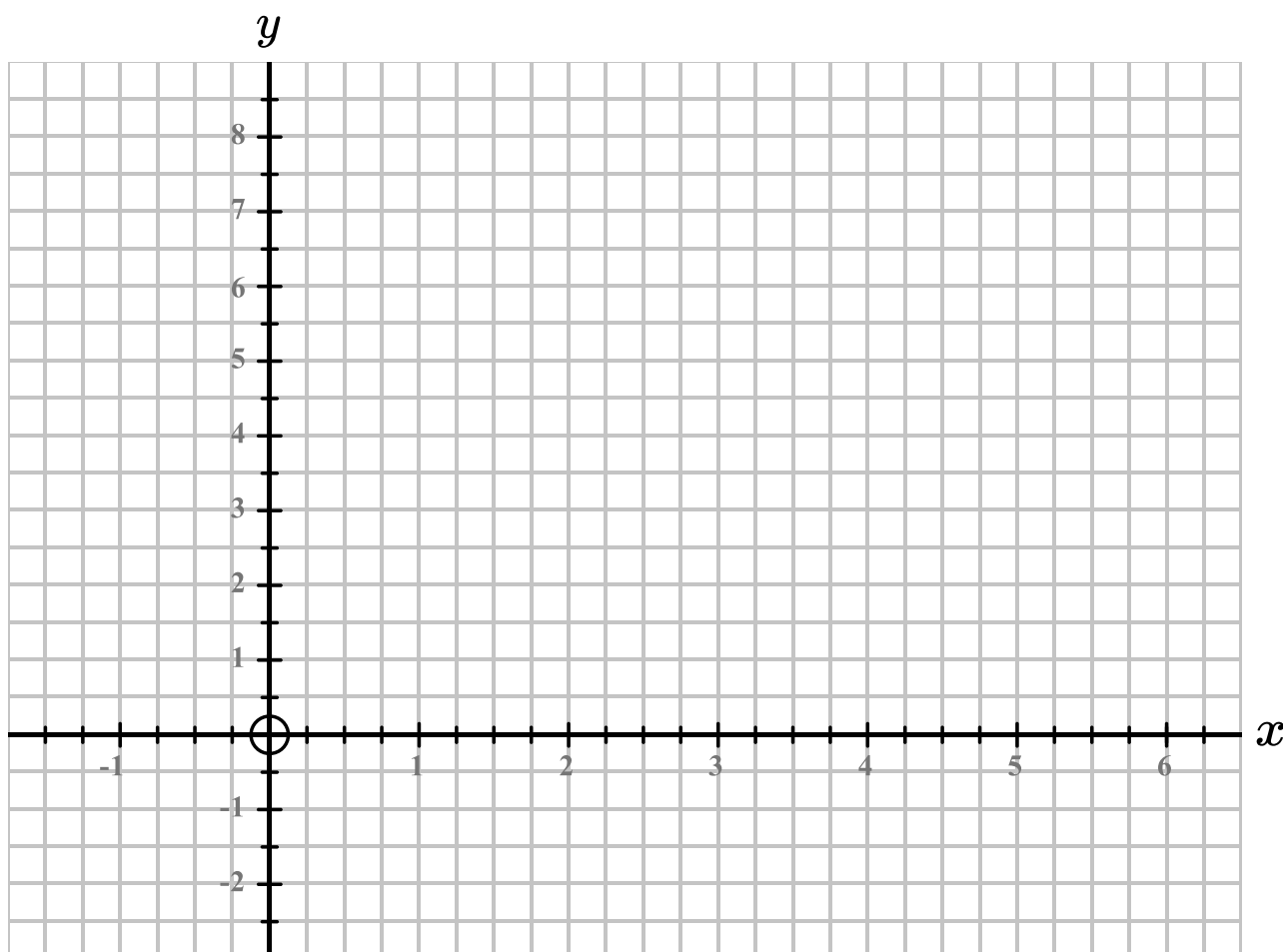
- 15 On the grid show, by shading, the region that satisfies all of these inequalities.

$$y > 1$$

$$2x + y \leq 6$$

$$y < 2x + 3$$

Label the region **R**.



[3]

16 There are 30 students in a class.

- 17 students have a sister
- 21 students have a brother
- 3 students have neither

Two students are chosen at random.

Find the probability that both students have both a sister and a brother.

----- **[5]**

17 (a) Write $\frac{6}{x+2} + \frac{5}{x-1}$ as a single fraction in its simplest form.

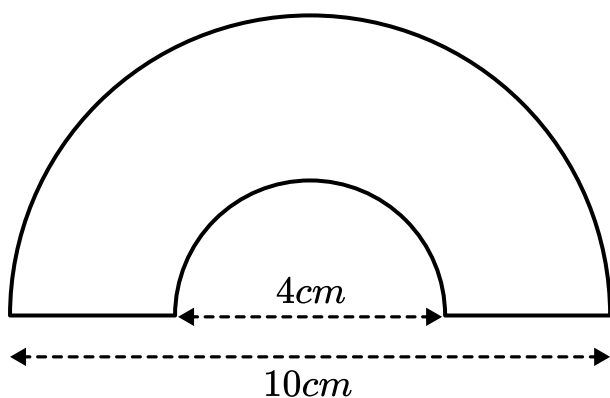
(a) ----- **[3]**

(b) Simplify fully $\frac{x^2 - 16}{x^2 - 3x - 28}$

(b) ----- **[3]**

Turn over

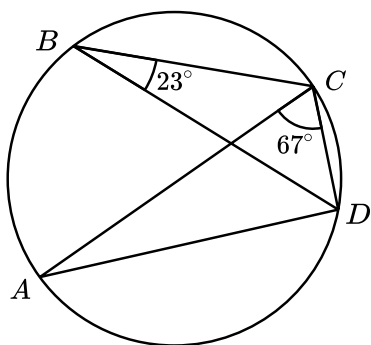
- 18** This shape has been made by removing a small semi-circular area from a larger semi-circle.



Work out the perimeter of the shape. Give your answer in terms of π .

----- [4]

- 19** Here is a circle.



Use circle theorems to show that AC is a diameter of the circle.

[3]

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