GCSE Mathematics - Paper 1 (Foundation tier)

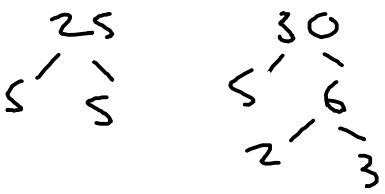
J560/01 Paper 1 Mathematics (Foundation tier)

Question Set 3

1 **(a)** Complete this list to show all the factors of 30.

1 2 3 5 6 10 15 30 **[2]**

(b) Write down the highest common factor (HCF) of 25 and 30.

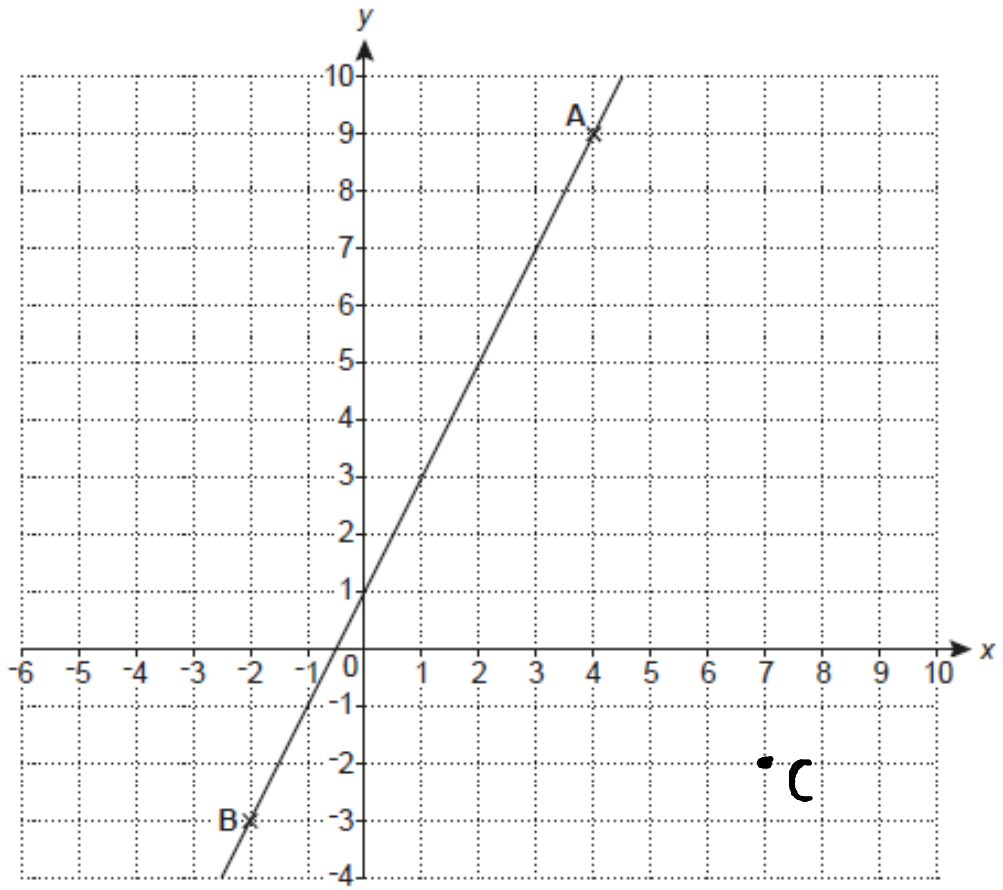


$5 \times 5 = 25$

$5 \times 2 \times 3 = 30$

(b) 5 **[1]**

2 Line AB is shown on this coordinate grid.



(a) Write down the coordinates of

(i) point A,

(a)(i) (4 , 9) **[1]**

(ii) point B.

(ii) (−2 , −3) **[1]**

(b) Plot point C on the grid at (7, −2). **[1]**

(c) The equation of line AB is $y = 2x + 1$.
A line parallel to AB goes through the point (0, 4).

Write down the equation of the parallel line.

Parallel so same gradient of $2x \rightarrow y = 2x + c$

Substitute (0, 4) in $y = 2x + c$

$4 = 2(0) + c \rightarrow c = 4$

$y = 2x + 4$

(c) $y = 2x + 4$ **[2]**

3 A theme park asked 900 people to choose their favourite activity from a list of five.
The pictogram shows the results for four of the activities.

Thrill rides	100+100+50 = 250
Family rides	100+25 = 125
Entertainment	100+100 = 200
Children's rides	= 50
Water rides	100+100+75=275

Key: represents 100 people

(a) **(i)** How many people chose entertainment?

(a)(i) 200 **[1]**

(ii) How many **more** people chose water rides than family rides?

275 − 125 = 150

(ii) 150 **[2]**

(iii) All 900 people chose one of the five activities.

Complete the pictogram for children's rides. **[3]**

900 − (250 + 200 + 275 + 125) = 50

Will plays a game al the theme park.
There are 20 cards numbered from 1 to 20.
Will takes a card at random.
He wins if the card he chooses shows a prime number.

Work out the probability That Will wins.
Give your answer as a fraction in its Simplest form.

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

8 prime numbers out of 20 → $\frac{8}{20} = \frac{2}{5}$

(b) $\frac{2}{5}$ [4]

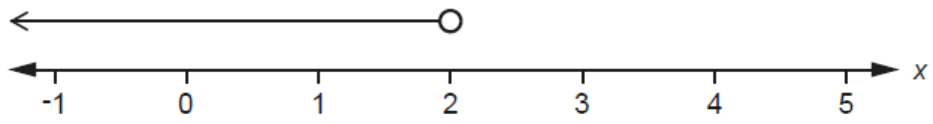
A family Ticket for the theme park costs £68.
If the ticket is bought online it costs 15% less.

How much does it cost to buy a family ticket online?

$\frac{68}{100} \times 15 = 10.2$ $\quad 68 - 10.2 = £57.8$

(c) £ 57.8 [3]

4 Write down the inequality shown on this number line.



$x < 2$

$x < 2$ ..... [2]

5 Mr and Mrs Jones buy cinema tickets for themselves and their three children.
The cost of an adult ticket is £6 more than a child ticket.
The total cost of the **five** tickets is £45.

Work out the cost of an adult ticket.

Child ticket $= x$ Adult ticket $= x + 6$

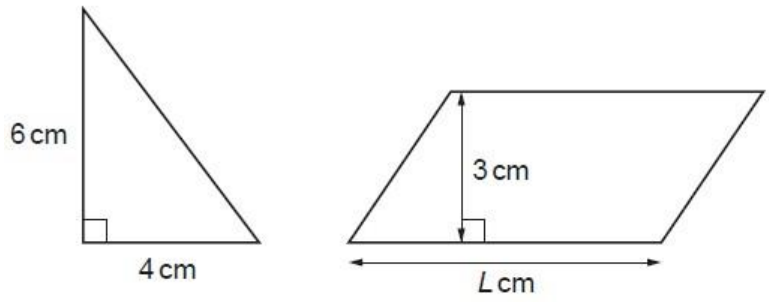
$3x + 2(x+6) \rightarrow 3x + 2x + 12 \rightarrow 5x + 12 = 45$

$5x + 12 = 45 \rightarrow 5x = 33 \rightarrow x = 6.60$

Adult ticket $= (x) + 6 \rightarrow (6.6) + 6 = 12.60$

An adult ticket costs £ 12.60 [5]

6 The area of the parallelogram is four times the area of the triangle.



Not to scale

Calculate the length, L, of the parallelogram.

area of triangle $= \frac{1}{2} \times 6 \times 4 = 12\,cm^2$

Parallelogram area $= 4 \times 12 = 48\,cm^2$

$48 = 3L \rightarrow L = \frac{48}{3} = 16\,cm$

16 cm [5]

7 The volume of a cube is $125\,cm^3$.

Calculate the total surface area of the cube.
Give the units of your answer.

Cube volume $= x \times x \times x = (x)^3$

$125 = x^3 \rightarrow x = \sqrt[3]{125} = 5\,cm$ each length

Cube has 6 faces Each face area $= 5 \times 5 = 25\,cm^2$

$25 \times 6 = 150\,cm^2$

150 cm^2 [5]

8 Dean drives a distance of 760 km in 9 hours.
Robert drives a distance of 559 km in 6 hours 30 minutes.

Who has the highest average speed?
Show how you decide.

Dean 9 hours

Robert 6 hours 30 mins = 6.5 hours

Dean speed → $\frac{760}{9} = 84.\dot{4}$ km/h

Robert speed → $\frac{559}{6.5} = 86$ km/h

Robert because does more kilometers per hour

[4]

9 Bob makes dry concrete by mixing cement, sand and stone in the ratio 1 : 2 : 3 by weight.
He buys the cement, sand and stone in bags as shown in this table.

	Weight of bag (kg)	Cost per bag (£)
Cement	25	5.50
Sand	20	2.00
Stone	15	3.90

He packs the dry concrete into 30 kg bags.

Bob buys just enough cement, sand and stone to make 50 bags of dry concrete.

(a) Show that Bob buys 500 kg of sand. **[3]**

50 bags → 50 × 30 kg = 1500 kg dry concrete

cement : sand : stone
1 : 2 : 3 → 1 + 2 + 3 = 6 total parts

sand is 2/6 parts of total → 2/6 × 1500 = 500 kg

(b) Bob sells the 50 bags of dry concrete for a total of £396.

Calculate Bob's percentage profit.

50 Bags sold for → £396

materials → Cement + sand + stone
= (1/6 × 1500) + (2/6 × 1500) + (3/6 × 1500) =
250 kg cement 500 kg sand 750 kg stone

cost = (10 × 5.50) + (25 × 2) + (50 × 3.90) = £300

396 / 300 = 1.32 = 32 % profit

(b) 32 % **[5]**

Total Marks for Question Set 3: 50