GCSE Mathematics - Paper 3 (Foundation tier)

J560/03 Paper 3 Mathematics (Foundation Tier)

Question Set 6

1 Alex has a number game.
He must put down tiles to make two calculations with the same answer.

Here is what Alex put down.

Is he correct?
Show how you decide.

Alex is incorrect because if you do the right steps using BIDMAS on the left side we get −4 and on the right side we get −2. [2]

2 (a) Jo walks every day.
This week she walked an average of 2300 steps a day.
Next week she plans to increase this by 15%.

Work out how many steps she plans to walk **in total** next week?

2300 × 7 days × 1.15 increase = 18515 steps

(a) ..... 18515 ..... [4]

(b) Jo buys a pair of walking boots for £63 in a sale.
She saves $\frac{1}{10}$ of the original price of the boots.

Work out how much money Jo saves.

1/10 = 10%

original price × 0.9 = 63

$\frac{63}{0.9}$ = original price = £70

70 − 63 = £7 saved

(b) £ ..... 7 ..... [3]

3 Mia has knitted 3 left-hand gloves: 1 blue, 1 green, and 1 red.
She has knitted 2 right-hand gloves: 1 green and 1 red.

She chooses a left-hand glove and a right-hand glove at random to make a pair of gloves.

Mia says

I have a probability of $\frac{2}{3}$ of choosing a pair of gloves of the same colour as there is a red pair and a green pair and there are three colours.

Is she correct?
Show how you decide.

Possibilities →

Right	Left
G	B
G	G
G	R
R	G
R	R
R	B

total 6 possibilities
and only 2 are same colour.
So 2/6 = 1/3 chance not 2/3

Mia is wrong because the probability of choosing 2 gloves of the same colour is 1/3 not 2/3. [3]

4 $5(2x+1)+c(x+d)=12x-1$

Work out the value of c and the value of d.

$10x+5+c(x+d)=12x-1$

$c(x+d)=2x-6$

$c(x+d)=2(x-3)$

$c=2$

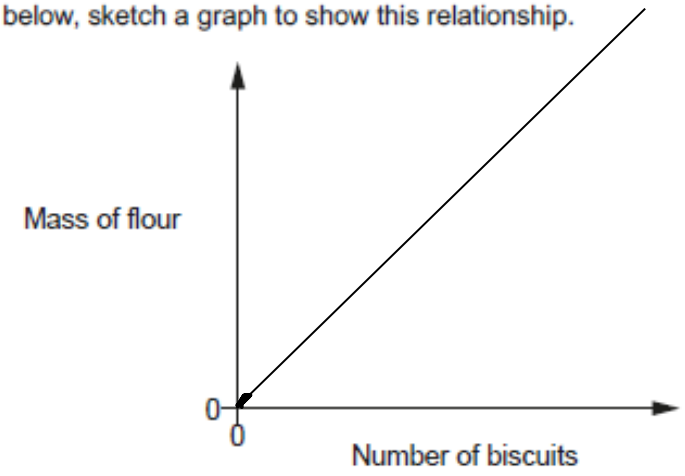
$d=-3$

$c =$ 2

$d =$ −3 **[5]**

5 **(a)** The mass of flour used in a recipe doubles as the number of biscuits made doubles.

On the axes below, sketch a graph to show this relationship.



[2]

(b) Here are some of the ingredients for a recipe to make 10 biscuits.

To make 10 biscuits:	
120g	butter
100g	sugar

Jane followed the recipe and used 432g of butter.
All of the sugar used came from a new 2kg bag.

(i) Find the number of biscuits she made.

1 Biscuit → 12g butter and 10g sugar

432 ÷ 12 = 36 biscuits worth of butter

(b)(i) ..... 36 ..... **[3]**

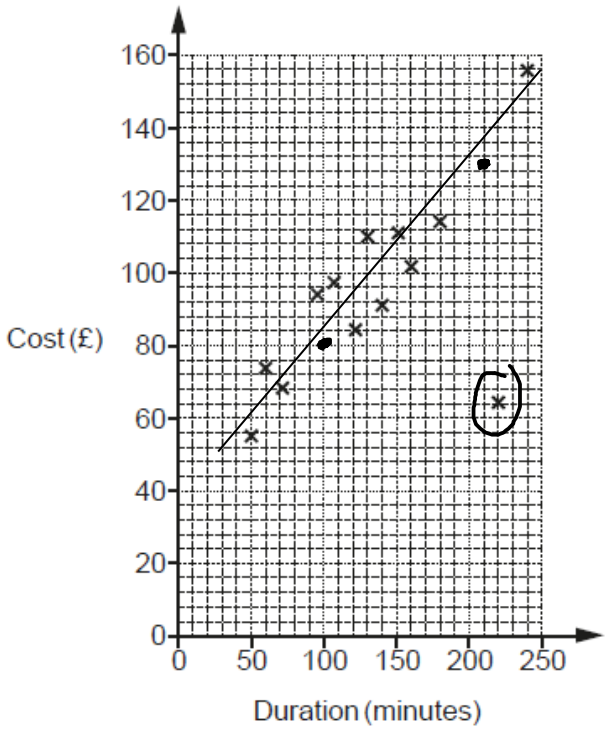
(ii) Find the mass of the sugar, in grams, that Jane has left in the bag.

36 biscuits so 36 × 10 = 360 grams sugar used

2000 − 360 = 1640 grams left

(ii) ..... 1640 ..... g **[3]**

6 A travel agent records the duration and cost of the 15 flights he sold on one day.
The data for the first 13 flights are plotted on the scatter diagram.



(a) The data for the final two flights is:

Duration	210 minutes	1 hour 40 minutes
Cost	£130	£80

Plot these flights on the scatter diagram. **[2]**

(b) The cost of one of the 15 flights had been discounted in a sale.

Circle the most likely flight on the scatter diagram. **[1]**

(c) **(i)** Draw a line of best fit on the scatter diagram. **[1]**

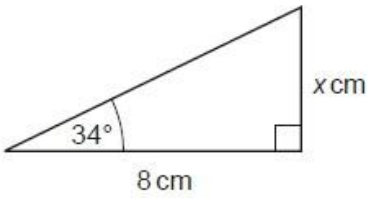
(ii) Use your line of best fit to estimate the duration of a flight costing £90.

(c)(ii) 110 minutes **[1]**

(d) Explain why the travel agent should not use his records to estimate the cost of a 7 hour flight.

It is extrapolation. He doesn't have any data in that region so can't make a good enough estimate. **[1]**

7 18 Here is a right-angled triangle.



Not to scale

Use trigonometry to work out the value of x.

$\tan 34 = \frac{x}{8}$ $x = 8 \times \tan 34 = 5.396$

$= 5.4\text{ cm}$

$x =$ 5.4 [3]

8 (a) Work out the size of the exterior angle of a regular 12-sided polygon.

$\frac{360}{12} = 30^\circ$

(a) 30 ° [2]

(b) Use your answer to part (a) to write down the size of the interior angle of a regular 12-sided polygon.

$180 - 30 = 150$

(b) 150 ° [1]

9 A truck is used to transport some wood panels.
Each wood panel is a cuboid measuring 2.4 m by 1.2 m by 1.8 **cm**.
The density of each wood panel is 750 kg/m^3.

The truck can carry 15 tonnes of these wood panels.

Calculate the maximum number of wood panels that the truck can carry.
Show how you decide.

$2.4 \times 1.2 \times 1.8 = 5.184\ m^3$ volume

$750\ kg/m^3$ = density

mass = D x V = $750 \times 5.184 = 3888\ kg$

15 tonnes = 15,000 kg

$\frac{15,000}{3888} = 3.85802$

So maximum wood panels is 3

3 ..... [6]

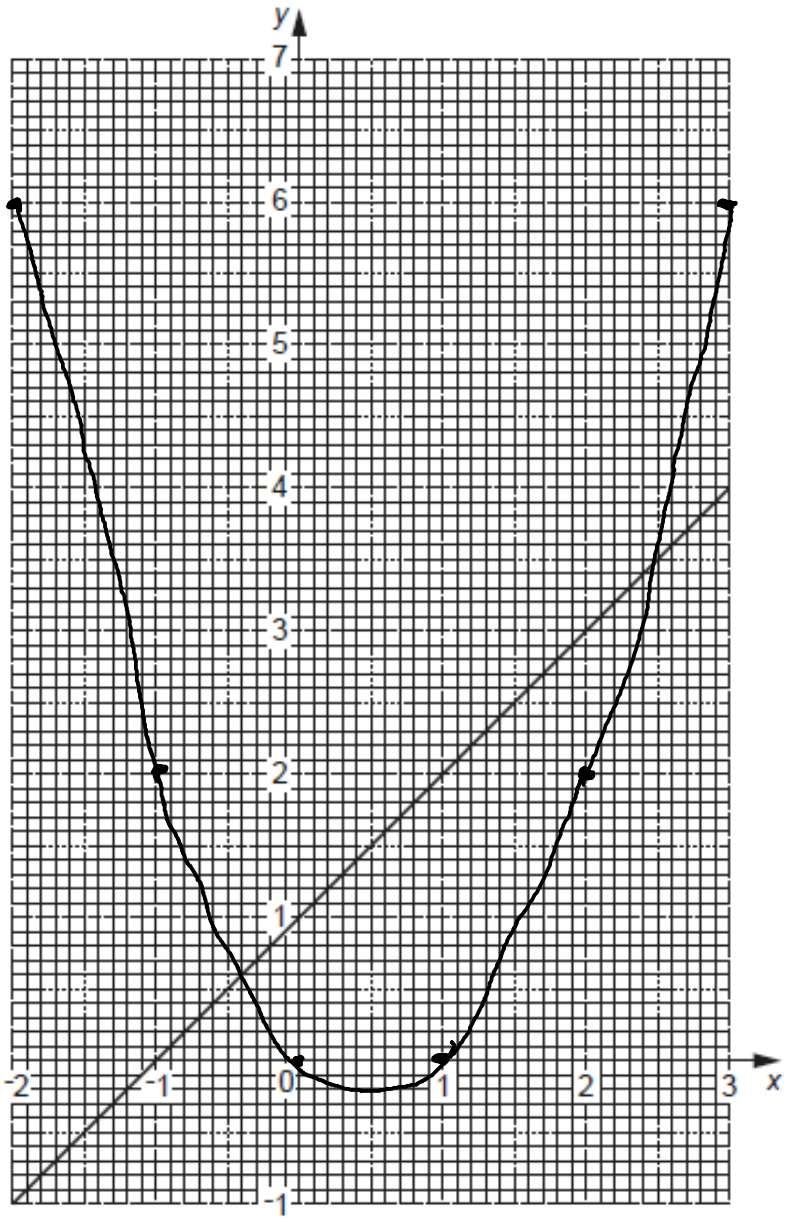
10 **(a)** Complete this table for $y = x^2 - x$.

x	-2	-1	0	1	2	3
y	6	2	0	0	2	6

[2]

(b) The graph of $y = x + 1$ is shown on the grid.

On the same grid, use part **(a)** to draw the graph of $y = x^2 - x$ for values of x from -2 to 3.



[3]

(c) Write down the x-coordinates of the points where $y = x^2 - x$ and $y = x + 1$ cross.

(c) $x =$ -0.4 and $x =$ 2.5 **[2]**

Total Marks for Question Set 6: 50