

GCSE (9-1) Mathematics
J560/02 Paper 2 (Foundation Tier)

Question Set 1

1. (a) (i) Work out.

(a) 0.7×0.3

$$0.7 \times 0.3$$

(a) 0.21 [1]

(b) (b) $0.48 \div 6$

$$0.48 \div 6 = 0.08$$

(b) 0.08 [1]

2. (a) (i) Complete each statement.

(i) $\frac{3}{7} = \frac{12}{28}$ $\times 4$

[1]

(ii)

$4\frac{1}{2} = \frac{9}{2}$ $\times 4$

$$\frac{(4 \times 2) + 1}{2} = \frac{9}{2}$$

[1]

(b)

$\frac{2}{3} = \frac{10}{15}$ $\times 5$

Work out.

$\frac{2}{3} - \frac{1}{5}$ $\times 3$

$$\frac{1}{5} = \frac{3}{15}$$

$\times 3$

LCM $\rightarrow 15$

$$\frac{10}{15} - \frac{3}{15} = \frac{7}{15}$$

(b) $\frac{7}{15}$ [2]

3. (a) (i) Complete the following.

(i) $5^2 = 25$

[1]

(ii) $\sqrt[3]{64} = 4$

[1]

(b) Work out $2^3 \times \sqrt{49}$.

$$2^3 \rightarrow 2 \times 2 \times 2 = \underline{8}$$

$$8 \times 7 = \underline{\underline{56}}$$

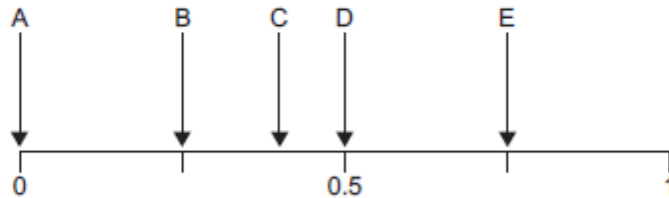
$$\sqrt{49} \rightarrow \underline{7}$$

(b) 56 [2]

4. (a) (i) Darren has these 20 crayons in a box:

- 8 blue
- 4 red
- 5 black
- 3 green.

(a) He chooses a crayon at random from the box.



Which arrow shows the probability that this crayon is

(i) blue, $8/20 = \underline{\underline{0.4}}$

(a)(i) Arrow C [1]

(ii) yellow,

○ chance

(ii) Arrow A [1]

(iii) (iii) not black.

$$\text{black} = \frac{5}{20}$$

$$1 - \frac{5}{20} = \frac{3}{4} = \underline{\underline{0.75}} = \underline{\underline{E}}$$

(iii) Arrow E [1]

- (b) Darren buys 16 more crayons that are either blue or red. He puts these in the box with the 20 crayons he already has.

He now picks a crayon at random from the box. The probability that he picks a **blue** crayon is evens.

How many **red** crayons did he buy? $20 + 16 = 36$

evens means 50% Now its 36 crayons and $50\% = 18$ blue

originally 8 blue now 18 blue so out of 16 new crayons 10 are blue

$$16 - 10 = \underline{\underline{6 \text{ red bought}}}$$

(b)6..... [3]

- 5 (a) (i) (a) Simplify fully.

(i) $3t + 5u - 2t + 3u$

$$\begin{array}{l} 3t - 2t = t \\ 5u + 3u = 8u \end{array} \rightarrow \underline{\underline{8u + t}}$$

(a)(i) $8u + t$ [2]

(ii) $6a \times 2a^2$

$$6 \times 2 = 12$$

$$a \times a^2 = a^3$$

$$12 \times a^3 = \underline{\underline{12a^3}}$$

(ii) $12a^3$ [2]

- (b) Make x the subject of the formula $y = x^2 - 1$.

$$y = x^2 - 1 \rightarrow y + 1 = x^2 \rightarrow \underline{\underline{\sqrt{y+1} = x}}$$

(b) $x = \sqrt{y+1}$ [2]

6 (a)

Rashid is making cupcakes using these ingredients.

| Cupcake ingredients | |
|---------------------|--------------|
| Makes 20 cupcakes | |
| 120g | flour |
| 140g | butter |
| 4 | eggs |
| 60g | cocoa powder |
| 50ml | of water |

(a) How many eggs does he need to make 60 cupcakes?

$\frac{60}{20} = 3 \rightarrow$ so need 3 times of each ingredient.
 $3 \times 4 \text{ eggs} = \underline{12}$ (a) 12 [1]

(b) How much butter is needed to make 5 cupcakes?

$\frac{20}{5} = 4 \rightarrow$ so needs 4 times less each ingredient.
 $\frac{140}{4} = \underline{35}$ grams (b) 35 g [2]

[2]

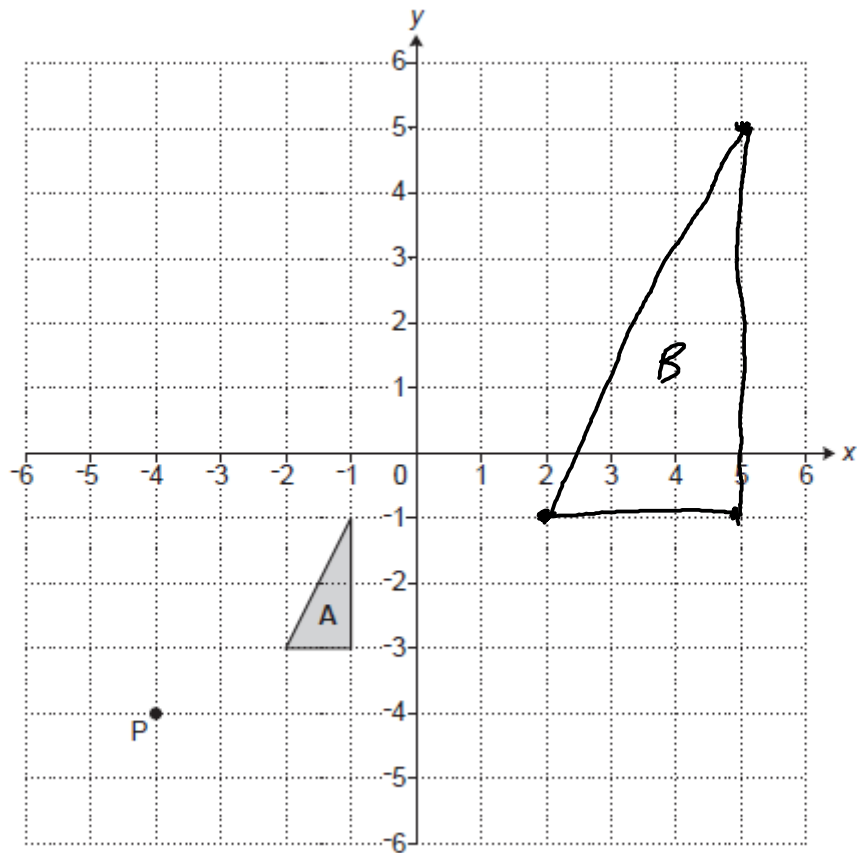
(c) Rashid has 210g of cocoa powder and plenty of the other ingredients. He says that he can make at least 75 cupcakes.

Is he correct?
Explain your reasoning.

20 cupcakes need 60 grams $\rightarrow \frac{60}{20} = \underline{3 \text{ grams per cupcake}}$
 $3 \times 75 \text{ cupcakes} = \underline{225 \text{ grams needed}}$
 $225 - 210 = \underline{\underline{15 \text{ grams short}}}$

Not correct because he needs 15g [3]
more.

- 7 (a) Triangle A is drawn on the grid below.



- (a) Enlarge triangle A with scale factor 3 from the centre of enlargement P. Label the image B.

[3]

- (b) Describe fully the **single** transformation that maps triangle B onto triangle A.

Enlarge triangle B scale factor $\frac{1}{3}$
from centre of enlargement P. [3]

- 8 (a) A sunflower grows at a rate of 4 cm each day.

How many days does it take to grow from a height of 80 cm to more than 1.06 m?

$$1.06 \text{ m} = 106 \text{ cm} \quad 106 - 80 = 26 \text{ cm}$$

$$\frac{26}{4} = 6.5 \text{ days to } 26$$

So 7 days for more than 26

(a) 7 [3]

(b)

If the sunflower grows at a faster rate, how would this affect your answer to part (a)?

would take less days so my answer [1]
would be smaller than 7

9.

Adam buys some theatre tickets in a sale.

The normal prices are:

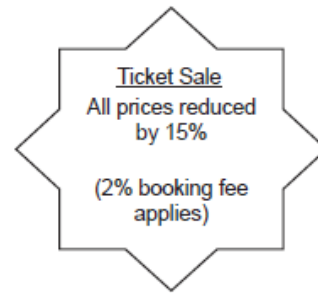
£80 for each adult
£40 for each child.

In the sale, the prices are reduced by 15%.

Adam buys 2 adult tickets and 1 child ticket at the sale price.

A 2% booking fee is then added to the total cost of the tickets.

Calculate the total amount that Adam must pay.



$$\underline{2} \text{ adult tickets} \rightarrow (\underline{2} \times 80 \times 0.85) = \underline{\underline{£136}}$$

$$\underline{1} \text{ child ticket} \rightarrow (\underline{1} \times 40 \times 0.85) = \underline{\underline{£34}}$$

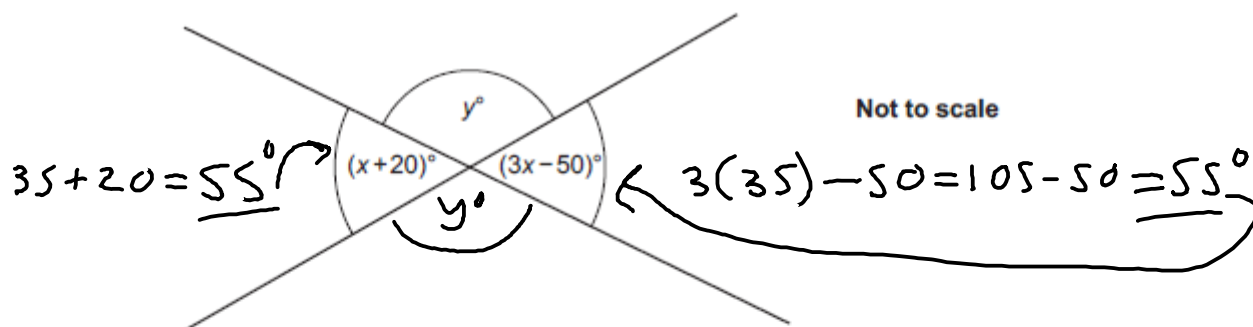
$$£34 + \underline{\underline{£136}} = \underline{\underline{£170}} \text{ total after sale}$$

$$\text{add 2\% to total} \rightarrow 170 \times 1.02 = \underline{\underline{\underline{£173.4}}}$$

£.....173.40.....[6]

10.

The diagram shows two intersecting straight lines.



Find the value of y .

In this case opposite angles are equal.

$$x + 20 = 3x - 50 \rightarrow 70 = 2x \rightarrow \underline{\underline{x = 35}}$$

Both angles on either side of y are 55° as shown by me in diagram.

$$\underline{\underline{35 + 20 = 55^\circ}} \quad \underline{\underline{3(35) - 50 = 55^\circ}}$$

$$360^\circ - (55 + 55) = 2y$$

$$250^\circ = 2y$$

$$\underline{\underline{y = 125^\circ}}$$

$$y = \dots\dots\dots 125^\circ \dots\dots\dots [6]$$

Total Marks for Question Set 1: 50

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