

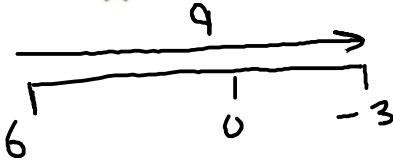
GCSE (9-1) Mathematics
J560/02 Paper 2 (Foundation Tier)

Question Set 4

1. The table shows some temperatures, in °C.

Monday	Tuesday	Wednesday	Thursday	Friday
-5	-1	5	6	-3

(a) Find the difference between the temperatures on Thursday and Friday.



(a)⁹..... °C [1]

(b) On Saturday the temperature was 7 °C higher than on Friday.

Find the temperature on Saturday.

$$-3 + 7 = 4$$

(b)⁴..... °C [1]

2. Work out.

(a) $\frac{5}{6}$ of 18 kg

$$\frac{18}{6} = 3 \quad 3 \times 5 = 15 \text{ kg}$$

(a) 15 kg [2]

(b) £5 - £1.49

$$5 - 1.49 = \underline{\underline{3.51}}$$

(b) £ 3.51 [1]

(c) $0.15 \div 5$

$$\frac{0.15}{5} = \underline{\underline{0.03}}$$

(c) 0.03 [1]

3. Write the following in order of size, smallest first.

5.9 0.61 5.977 5.099 5.98

0.61 5.099 5.9 5.977 5.98 [2]
smallest

4. Work out the following, giving each answer as a fraction.

(a) $1\frac{3}{4} + \frac{1}{2}$

$$1\frac{3}{4} \rightarrow \frac{7}{4} \quad \frac{7}{4} + \frac{2}{4} = \underline{\underline{\frac{9}{4}}}$$

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

(a) $\frac{9}{4}$ [1]

(b) $\frac{3}{8} \div 2$

$$\frac{3}{8} \div \frac{2}{1} \rightarrow \frac{3}{8} \times \frac{1}{2} = \underline{\underline{\frac{3}{16}}}$$

(b) $\frac{3}{16}$ [1]

(c) $\frac{1}{3} \times \frac{1}{2}$

$$\frac{1}{3} \times \frac{1}{2} = \frac{1}{6}$$

(c) $\frac{1}{6}$ [1]

5. (a) Alice buys a picture for £180 and later sells it for £216.

Find the percentage profit that she made.

$$216 - 180 = \pounds 36 \text{ profit}$$

$$\frac{36}{180} \times 100 = \underline{\underline{20\%}}$$

(a) 20 % [3]

- (b) Rashid wants to increase £345 by 17% in one step by using a decimal multiplier.

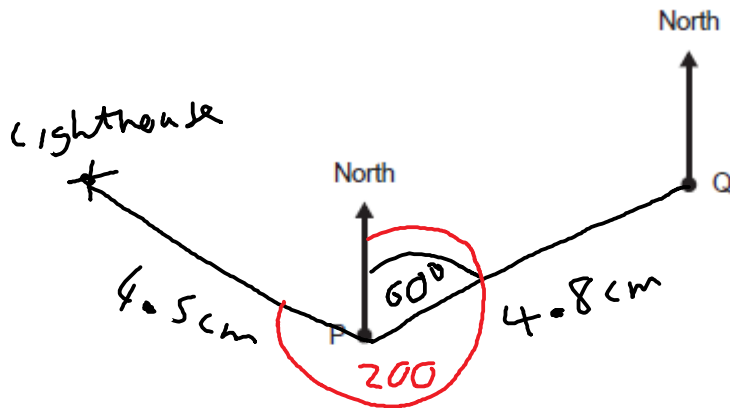
Write the decimal multiplier to complete Rashid's calculation.

$$345 \times \dots \underline{1.17} \dots$$

[1]

6. The scale drawing shows the positions of two boats, P and Q.

Scale: 1 cm represents 4 km



- (a) Find the actual distance between boat P and boat Q.

$$4.8 \times 4 = \underline{\underline{19.2 \text{ km}}}$$

(a) 19.2 km [2]

- (b) Measure the bearing of boat Q from boat P.

(b) 60 ° [1]

- (c) A lighthouse is

- 18 km from boat P
- on a bearing of 200° from boat Q.

On the scale drawing, mark a possible position of the lighthouse with a cross.

[2]

$$18 \div 4 = 4.5 \text{ cm}$$

7. In an exam, Adam scored the following marks.

Paper 1	17 out of 20
Paper 2	19 out of 25

- (a) Show that he scored a higher percentage in Paper 1 than Paper 2.

[2]

$$17/20 \times 100 = \underline{85\%} \text{ paper 1}$$

$$\frac{19}{25} \times 100 = \underline{76\%} \text{ paper 2}$$

$$\underline{\underline{85}} > 76$$

- (b) The two marks are added together.

Work out Adam's overall percentage for the two papers.

$$\frac{17+19}{25+20} = \frac{36}{45} \times 100 = \underline{\underline{80\%}}$$

(b) 80 % [3]

8. A bag contains 100 pencils that are either red or green.

Describe a method you could use to estimate the number of red pencils in the bag without looking into the bag or having more than one of the pencils out of the bag at any one time.

Take one pencil out and note its colour. Then
 place back into bag. Do this 15 times
 and write amount of red pencils you got
 out of 15. Times the fraction by 100 [4]

9. (a) Write each of the following ratios in their simplest form. *to find out how many red out of 100.*

(i) 8 : 10 HCF = 2

$$\begin{array}{c} \div 2 \\ \div 2 \end{array} \left(\begin{array}{c} 8 \\ : \\ 10 \end{array} \right) \begin{array}{c} \div 2 \\ \div 2 \end{array} = \begin{array}{c} 4 \\ : \\ 5 \end{array}$$

(a)(i) 4 : 5 [1]

(ii) 300 ml : 2.1 litres

$$\begin{array}{c} \div 300 \\ \div 300 \end{array} \left(\begin{array}{c} 300 \text{ ml} \\ : \\ 2100 \text{ ml} \end{array} \right) \begin{array}{c} \div 300 \\ \div 300 \end{array} = \begin{array}{c} 1 \\ : \\ 7 \end{array} \quad \text{HCF} = 300$$

(ii) 1 : 7 [3]

- (b) The ratio $\sin 30^\circ : \tan 45^\circ$ can be written in the form 1 : n .

Find the value of n .

$$\begin{array}{c} \sin 30 \\ : \\ \tan 45 \end{array} = \begin{array}{c} 1/2 \\ : \\ 1 \end{array} \begin{array}{c} \times 2 \\ \times 2 \end{array} = \begin{array}{c} 1 \\ : \\ 2 \end{array}$$

(b) $n = 2$ [3]

10. Martina has answered some questions on algebra. In each question, she has made an error.

Describe her error and give the correct answer to each problem.

- (a) Question 1 Simplify. $2a \times a \times a$

$$2a \times a = 2a^2 \quad 2a^2 \times a = \underline{\underline{2a^3}}$$

Martina's answer $4a$

Martina's error is ... She has done $2a \times 2$
 Wasnt included other a's

Correct answer = $2a^3$ [2]

- (b) Question 2 Simplify. $\frac{x^{10}}{x^2}$

Martina's answer x^5

Martina's error is ... She lens done $10 \div 2 = 5$
 It is $10 - 2 = 8$ using indices law

Correct answer = x^8 [2]

- (c) Question 3 $s = ut + \frac{1}{2}at^2$

Find s when $u = 0$, $t = 5$ and $a = 6$.

Martina's solution $s = 0 \times 5 + \frac{1}{2} \times 6 \times 5^2$

$$s = 0 + 15^2$$

$$s = 225$$

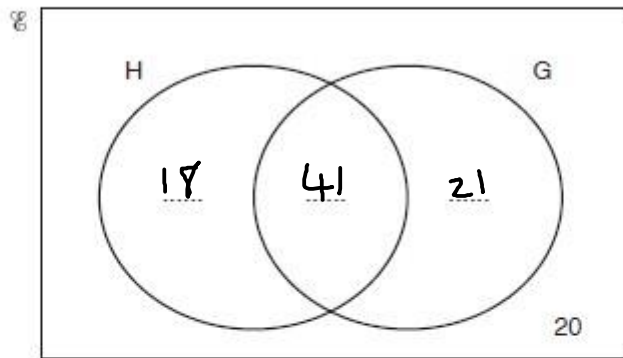
Martina's error is ... she done $1/2 \times 6 = 3 \rightarrow 3 \times 5^2 = 15^2$
 Should be $3 \times 5^2 = 3 \times 25 = 75$

Correct answer = $\underline{\underline{75}}$ [2]

11. In a group of 100 students

- 59 study History (H)
- 62 study Geography (G)
- 20 do not study either subject.

(a) Complete the Venn diagram.



[3]

(b) One of the 100 students is selected at random.

Find the probability that this student studies exactly one of the two subjects.

$$(18/100) + (21/100) = \underline{\underline{39/100}}$$

(b) 39/100 [2]

12. A straight line with gradient 4 passes through the point (1, 5).

Find the equation of the line in the form $y = mx + c$.

$$y = 4x + c$$
$$5 = 4 + c \rightarrow c = 1$$

$$\underline{\underline{y = 4x + 1}}$$

..... $y = 4x + 1$ [3]

Total Marks for Question Set 4: 50

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