

Edexcel GCSE

Mathematics

Foundation Tier

Number: Proportion

Information for students

The marks for individual questions and the parts of questions are shown in round brackets: e.g. (2). There are 4 questions in this selection.

Advice for students

Show all stages in any calculations.

Work steadily through the paper. Do not spend too long on one question.

If you cannot answer a question, leave it and attempt the next one.

Return at the end to those you have left out.

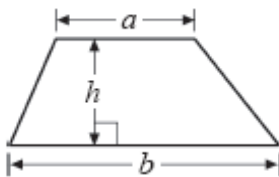
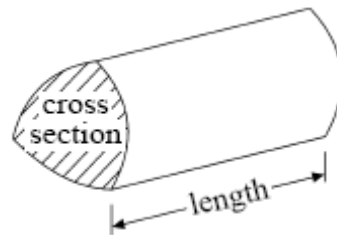
Information for teachers

The questions in this document are taken from the 2009 GCSE Exam Wizard and include questions from examinations set between January 2003 and June 2009 from specifications 1387, 1388, 2540, 2544, 1380 and 2381.

Questions are those tagged as assessing “Proportion” though they might assess other areas of the specification as well. Questions are those tagged as “Foundation” so could have (though not necessarily) appeared on either a Foundation or Intermediate tier paper.

GCSE Mathematics

Formulae: Foundation Tier

You must not write on this formulae page.**Anything you write on this formulae page will gain NO credit.****Area of trapezium** = $(a + b)h$ **Volume of prism** = area of cross section \times length

1. The cost of 4 kg of apples is £3.36

The total cost of 3 kg of apples and 2.5 kg of pears is £4.12

Work out the cost of 1 kg of pears.

Give your answer in pence.

..... p
(Total 3 marks)

2. There are 600 counters in a bag.

90 of the counters are yellow.

- (a) Work out 90 as a fraction of 600
Give your answer in its simplest form.

..... (2)

180 of the 600 counters in the bag are red.

(b) Work out 180 as a percentage of 600

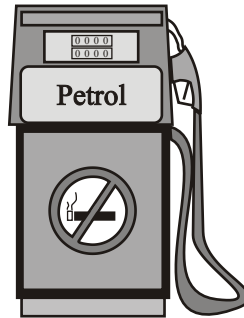
..... % (2)

The rest of the counters in the bag are blue or green.
There are twice as many blue counters as green counters.

(c) Work out the number of green counters in the bag.

..... (2)
(Total 6 marks)

3. The cost of 20 litres of petrol is £18
Work out the cost of 1 litre of petrol.



.....
(Total 3 marks)

4. 5 identical watches cost £20
(a) Work out the cost of 8 of these watches.

£
(2)

A pen costs 60p.

The cost of a pencil is $\frac{2}{3}$ of the cost of a pen.

(b) Work out the cost of a pencil.

..... p
 (2)
 (Total 4 marks)

01. 64p

3

1kg of apples is £3.36 – 4 = £0.84

Cost of 2.5kg of pears is £4.12 – 3 × £0.84 = £1.60

Cost of 1 kg of pears = £1.60 – 2.5

M1 for 3.36 – 4 or any of 0.84, 84, 2.52, 252 seen

M1 for 4.12 – 3 × “0.84” or 1.6(0), 160 seen

A1 cao

SC M2 A0 for 0.64

[3]

02. (a) $\frac{90}{600}$
 $\frac{3}{20}$

2

M1 $\frac{90}{600}$

A1 $\frac{3}{20}$ cao

[SC: B1 for 0.15 or 15% if M0 scored]

(b) $\frac{180}{600} \times 100$

$$M1 \frac{180}{600} \times 100$$

A1 cao

OR

$$\frac{180}{600} = \frac{30}{100}$$

30

2

$$M1 \frac{180}{600} = \frac{30}{100} \text{ or attempt to cancel to } 100$$

A1 cao

(c) $600 - (90 + 180) = 330$ blue or green

$330 \div 3$

110

2

$$M1 [“600 - (90 + 180)”] \div 3$$

A1 cao

[SC: B1 for an answer of 140 or 170 if M0 scored]

[6]

03. $18 \div 20 = 0.9$

90p or £0.90

3

M1 for $18 \div 20$ or valid partitioning method, allow one arithmetic error

A1 for sight of 0.9 or 90 or 0.90

B1 f.t. for their cost of one litre correctly written as money (SC B1 for £1.11)

[3]

04. (a) $20 \div 5 = \text{£}4$ per watch

£32

M1 for $\text{£}20 \div 5$ or 4 seen, or $\text{£}20 \times 8$ or 160 seen.

A1 for £32

2

(b) $60 \div 3 = 20$

$20 \times 2 = 40$

40

M1 for $60 \div 3$ or 60×2 or sight of 20 or 120

A1 cao

2

[4]

01. In this question the candidates had to organise several figures in a logical way, in the given context. Nearly half the candidates did so, and there is evidence that the context helped them understand the necessary process of calculations. A significant number got as far as 1.60, but then failed to finish correctly, divisions by 2 or 3 were common. There were a surprising number of trial and improvements which inevitably attracted few, if any marks. A small number neglected to consider units, giving 0.65p incorrectly as the answer. Evidence of working appears to suggest a surprising number of candidates either did not have, or chose not to use their calculator for this question.

02. In many cases in part (a), candidates gave a fraction of $\frac{90}{600}$ and then either failed to simplify it correctly or failed to complete the simplifying process.

Part (b) was quite poorly answered, many candidates misunderstanding the demand of the question and trying to find 180% of 600. Many tried partitioning methods and often statements like “10% = 60” were seen but solutions were unable to progress and no marks could be awarded.

In part (c), the most popular misconception was to divide 330 by 2 (instead of 3) and then to divide their answer by 2 again; 82.5 or similar being a common incorrect answer seen. Some candidates failed to take account of both the yellow and red counters already having been used, omitting usually just one of them, leading to an answer of 140 or 170. One mark was awarded in these cases.

03. It was disappointing to find that over 60% of the candidates were not able to score even one mark on this question. Candidates were able to score a mark for $18 \div 20$, either done in pounds or pence. A mark was also given to those candidates who were able to put whatever answer they reached, from correct or incorrect methods, into correct money form. Sadly, 0.9p was not an uncommon answer to $18 \div 20$.

04. In part (b), many understood they had to multiply and/or divide by the 2 and 3, but sometimes linked an incorrect operation with each of the numbers. A fundamental error was in not understanding that to find one third you have to divide by 3; this led to attempts to find $\frac{1}{4}$ and $\frac{1}{2}$ and then estimate a figure in between, or other alternative methods leading to some form of estimation.