

Ratio & Proportion questions

(Taken from 2016 GCSE exam sample papers: foundation tier)

12 In Scotland, squirrels are red or grey in the ratio red : grey = $1 : 2\frac{1}{2}$

12 (a) What fraction of the squirrels in Scotland are red?

[2 marks]

Answer _____

12 (b) In Scotland there are 120 000 red squirrels.

How many squirrels are there altogether in Scotland?

[2 marks]

Answer _____

5 Darren says

I can run 100m in 15 seconds, so I should be able to run 800m in 120 seconds.

Do you think that he would take more or less than 120 seconds to run 800m?
Explain your answer, with reference to any assumptions Darren has made.

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..... [3]

19 Asif is going on holiday to Turkey.

The exchange rate is $\text{£}1 = 3.5601$ lira.

Asif changes $\text{£}550$ to lira.

- (a) Work out how many lira he should get.
Give your answer to the nearest lira.

..... lira
(2)

Asif sees a pair of shoes in Turkey.
The shoes cost 210 lira.

Asif does not have a calculator.
He uses $\text{£}2 = 7$ lira to work out the approximate cost of the shoes in pounds.

- (b) Use $\text{£}2 = 7$ lira to show that the approximate cost of the shoes is $\text{£}60$

(2)

- (c) Is using $\text{£}2 = 7$ lira instead of using $\text{£}1 = 3.5601$ lira a sensible start to Asif's method to work out the cost of the shoes in pounds?

You must give a reason for your answer.

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(1)

(Total for Question 19 is 5 marks)

- 25 Three cups, A, B and C, contain only salt and water.
The different mixtures are

A salt : water = 3 : 22

B salt = $\frac{1}{8}$

C salt = 12.75%

Which cup has the greatest proportion of salt?

You **must** show your working.

[3 marks]

Answer _____

- 15 Sam and two friends put letters in envelopes on Monday.
The three of them take two hours to put 600 letters in envelopes.

(a) On Tuesday Sam has three friends helping.

Working at the same rate, how many letters should the **four** of them be able to put in envelopes in two hours?

(a) [2]

(b) Working at the same rate, how much longer would it take **four** people to put 1000 letters in envelopes than it would take **five** people?

(b) [4]

(c) Sam says

It took two hours for three people to put 600 letters in envelopes.

If I assume they work all day, then in one day three people will put 7200 letters in envelopes because $600 \times 12 = 7200$.

Why is Sam's assumption not reasonable?

What effect has Sam's assumption had on her answer?

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..... [2]

28. A statue is on display inside a glass cuboid.
A scale drawing of the plan view (bird's eye or aerial view) of the cuboid is shown below.

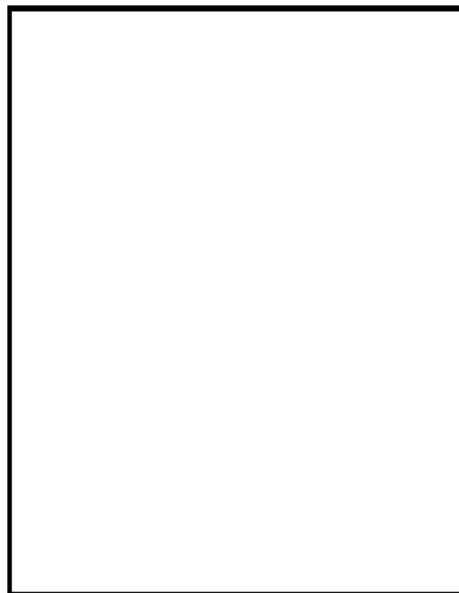
Scale 1 cm : 20 cm



A barrier is built around the cuboid so that no one can stand within 60 cm of the cuboid.

Using the given scale, draw accurately the barrier on the scale drawing shown below.

[4]



- 19 Peter makes a large amount of pink paint by mixing red and white paint in the ratio 2 : 3.

Red paint costs £80 per 10 litres.

White paint costs £5 per 10 litres.

Peter sells his pink paint in 10-litre tins for £60 per tin.

Calculate how much **profit** he makes for each tin he sells.

£ [5]

29. A building company used 24 workers to prepare a building site.
The site measured 30 acres and the work was completed in 10 days.

(a) The company is asked to prepare another site measuring 45 acres.
This work has to be completed in 15 days.
Calculate the least number of workers the company should employ
for this work.

[3]

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(b) State one assumption you have made in your answer to part (a).
How would your answer to part (a) change if you did not make this
assumption?

[2]

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28 At a school

number of boys : number of girls = 9 : 7

There are 116 **more** boys than girls.

Work out the total number of students at the school.

[3 marks]

Answer _____

15 The mass of 40 cm³ of copper is 356 grams.

Work out the mass of 90 cm³ of copper.

[2 marks]

Answer _____ grams