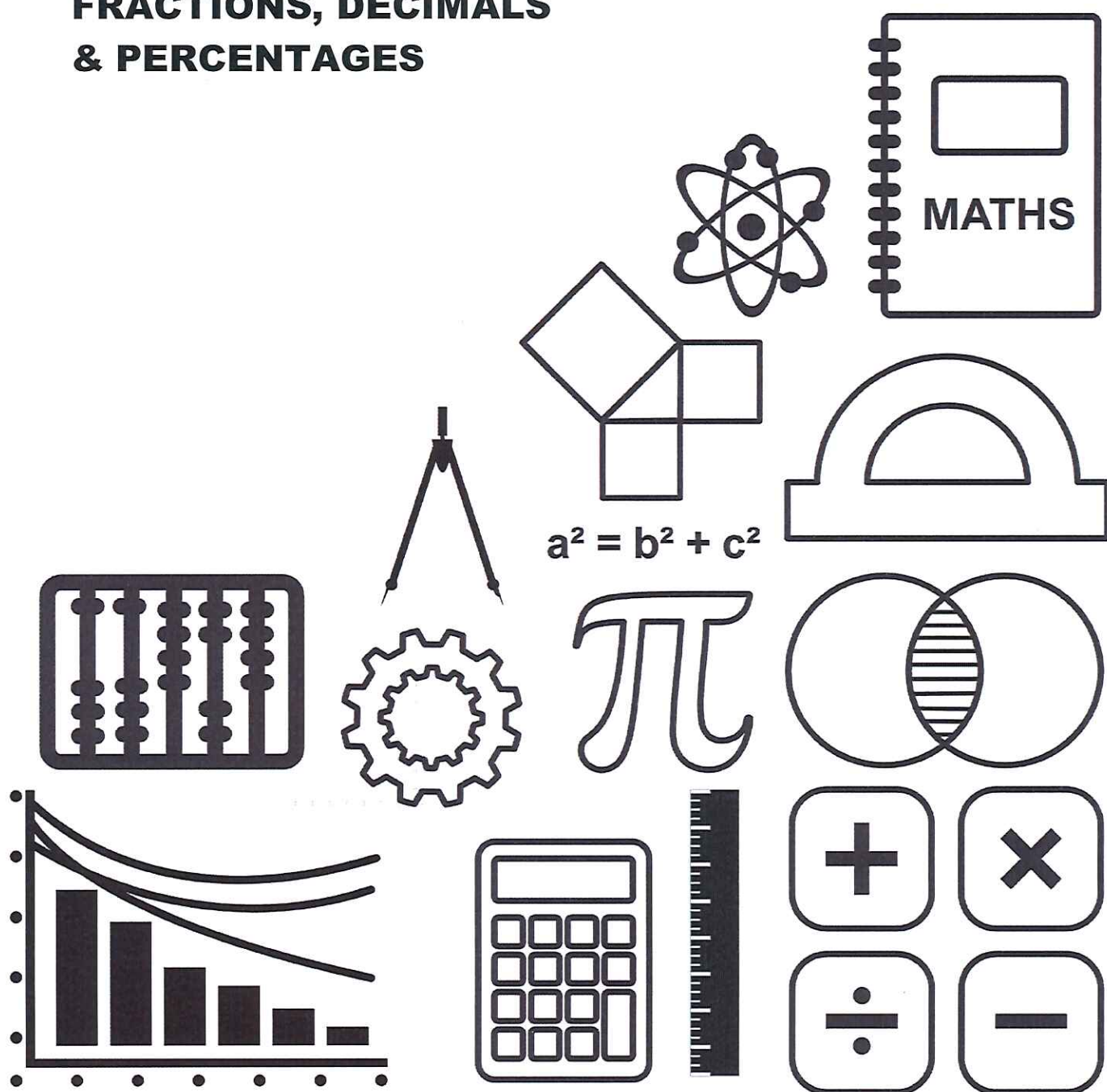


SOLUTIONS

GCSE TOPIC BOOKLET FRACTIONS, DECIMALS & PERCENTAGES

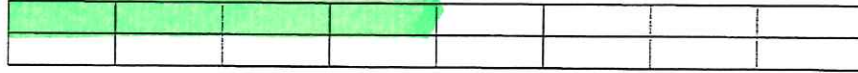


1.

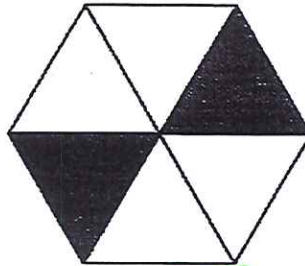
- (a) Draw a circle around all of the following that have the same value as $\frac{3}{10}$. [2]

30% 3% $\frac{3}{100}$ 0.3 0.03

- (b) (i) Shade 25% of the following shape. [1]



- (ii) What fraction of the following shape is shaded? Write down your answer in its simplest form. [2]



$\frac{2}{6} = \frac{1}{3}$ (must be cancelled)

- (c) Write 12%, 0.012 and $\frac{3}{20}$ in ascending order. Write them all as a percentage. [3]

You must show all your working.

$0.012 \times 100 = 1.2\%$

$\frac{3}{20} \times \frac{5}{5} = \frac{15}{100} = 15\%$ 1.2%, 12%, 15%

0.012, 12%, $\frac{3}{20}$

2.

- (a) Arrange the following in ascending order. Write them all as 3dp first. It makes it easier. [1]

0.750 0.500 0.070 0.507

= 0.07, 0.5, 0.507, 0.75

- (b) Express each of the following as eighths. [3]

(i) $\frac{1}{4} = \frac{2}{8}$

(ii) $\frac{1}{2} = \frac{4}{8}$

Now, write $\frac{1}{4}$, $\frac{1}{2}$ and $\frac{3}{8}$ in order, starting with the largest.

$\frac{1}{2}$, $\frac{3}{8}$, $\frac{1}{4}$

3.

Abbie, Beatrice, Catrin and Debbie all sat the same test.

Name	Test results
Abbie	23 out of 84 marks awarded
Beatrice	Scored approximately 31%
Catrin	Total given was $\frac{1}{3}$ of marks available
Debbie	$\frac{27}{84}$

Compare their test results and complete the table below.
You must show all your working.

[3]

$$\frac{1}{3} \times 28 = \frac{28}{3} = 9\frac{2}{3} = 9.66$$

Test is out of 84

$$10\% \text{ of } 84 = 8.4$$

$$30\% \text{ of } 84 = 8.4 \times 3 = 25.2$$

$$1\% \text{ of } 84 = 0.84$$

$$31\% \text{ of } 84 = 25.2 + 0.84 = 26.04 \approx 26$$

Position	Name
First 	Catrin
Second 	Debbie
Third 	Beatrice
Fourth 	Abbie

So, Abbie scored 23, Beatrice scored 26, Catrin scored 28 and Debbie scored 27.

4.

A band hired a concert hall for two nights.
They would only hire the hall for a third night if at least 0.9 of the tickets were sold for either of the first two nights.

On the first night, 82% of the tickets were sold.

On the second night, $\frac{3}{4}$ of the tickets were sold. = 75%

Did the band hire the concert hall for a third night?

You must show all your working, explaining clearly how you decided.

[3]

No. $0.9 = 90\%$

On both nights less than 90% (0.9) of the tickets were sold.

$$75\% < 0.9 \text{ and } 82\% < 0.9$$

5.

(a) Complete the following table to show equivalent fractions, decimals and percentages.

Fraction	Decimal	Percentage
$\frac{3}{4}$	0.75	75%
$\frac{3}{10}$	0.3	30%

[4]

(b) Find 42% of 630.

$$100\% = 630$$

$$10\% = 63$$

$$40\% = 63 \times 4$$

$$2\% = 6.3 \times 2 = 12.6$$

$$\begin{array}{r} 63 \\ \times 4 \\ \hline 252 \end{array}$$

$$252 + 12.6 = 264.6$$

[2]

(c) Find $\frac{3}{7}$ of 364.

$$\frac{1}{7} \rightarrow 7 \overline{)364} \begin{array}{r} 52 \end{array}$$

$$\frac{3}{7} = 52 \times 3 \quad \begin{array}{r} 52 \\ \times 3 \\ \hline 156 \end{array}$$

[2]

If 5b was on a calculator exam

$$\text{just do } 0.42 \times 630 = 264.6$$

6.

Three companies have three different bonus payment schemes for their sales team.

- Company A offers a bonus payment equal to 25% of all sales made
- Company B offers a bonus payment equal to $\frac{3}{10}$ of all sales made
- Company C offers a bonus payment equal to 0.2 times all sales made

Which company offers the best bonus payment scheme for their sales team?
You must show all your working.

Write them all as percentages

$$\text{Company A} = 25\%$$

$$\text{Company B} = \frac{3}{10} \overset{\times 10}{=} \frac{30}{100} = 30\%$$

$$\text{Company C} = 0.2 \times 100 = 20\%$$

Company B offers the best scheme.

[3]

7.

Calculate the value of $\frac{3}{8}$ as a decimal.

[2]

$$\frac{3}{8} = 3 \div 8 = 8 \overline{) 3.375} = 0.375$$

8.

Showing all your working, write 76%, 0.7 and $\frac{3}{4}$ in descending order.

[3]

$$0.7 \times 100 = 70\%$$

$$\frac{3}{4} \overset{\times 25}{=} \frac{75}{100} = 75\%$$

76%, $\frac{3}{4}$, 70%

9.

- (a) Draw a circle around all of the following quantities that are equal to $\frac{2}{5}$. [2]

$$\frac{10}{15}$$

$$0.4$$

$$\frac{6}{15}$$

$$\frac{8}{10}$$

$$\frac{4}{10}$$

- (b) One thousand apples are put into crates.
Each crate can hold 72 apples.
How many crates can be filled and how many apples will be left over? [2]

$$72 \overline{)1000} \quad 13 \text{ r } 64$$

$$\begin{array}{r} 100 \\ - 72 \\ \hline 28 \end{array}$$

$$\begin{array}{r} 72 \\ \times 3 \\ \hline 216 \end{array}$$

$$\begin{array}{r} 280 \\ - 216 \\ \hline 64 \end{array}$$

13 crates and 64 left over

- (c) What is 7% written as a decimal? [1]

$$0.07$$

- (d) Calculate 48% of 82.5. [2]

$$\begin{aligned} 50\% &= 41.25 \\ 10\% &= 8.25 \\ 2\% &= 1.65 \end{aligned}$$

$$\begin{array}{r} 48\% = 41.25 \\ - 1.65 \\ \hline 39.60 \end{array} = 39.6$$

- (e) Calculate $\frac{3}{7}$ of 84. [2]

$$\frac{1}{7} \text{ of } 84 = 7 \overline{)84} \quad 12$$

$$\begin{aligned} \frac{3}{7} \text{ of } 84 &= 12 \times 3 \\ &= 36 \end{aligned}$$

9b on a calculator exam, just do

$$0.48 \times 82.5 = 39.6$$

10.

(a) Complete the following table to show equivalent fractions, decimals and percentages.

Fraction	Decimal	Percentage
$\frac{25}{100}$ or $(\frac{1}{4})$	0.25	25%
$\frac{70}{100}$ or $(\frac{7}{10})$	0.7	70%

(b) Find 38% of 790.

$$100\% = 790$$

$$10\% = 79$$

$$30\% = 79 \times 3$$

$$30\% = 237$$

$$1\% = 7.9$$

$$8\% = 7.9 \times 8$$

$$8\% = 63.2$$

$$\begin{array}{r} 79 \\ \times 3 \\ \hline 237 \end{array}$$

$$\begin{array}{r} 7.9 \\ \times 8 \\ \hline 63.2 \end{array}$$

[4]

(c) Find $\frac{4}{9}$ of 117.

$$38\% = 237 + 63.2 = 300.2$$

$$\frac{1}{9} \text{ of } 117 = 13$$

$$\frac{4}{9} \text{ of } 117 = 13 \times 4 = 52$$

[2]

[2]

(d) Faye had 40 scarves, she gave $\frac{1}{4}$ of them to a charity shop and gave 20% of the remaining scarves to friends. How many scarves did Faye have left?

$$\frac{1}{4} \text{ of } 40 = 10, \text{ therefore } 30 \text{ scarves left}$$

$$20\% \text{ of } 30 = \frac{1}{5} \times 30 = 6$$

$$10 + 6 = 16$$

$$40 - 16 = 24$$

[4]

(e) What is the reciprocal of 8?

$$\frac{1}{8}$$

[1]

on a calculator paper

$$10b) \quad 0.38 \times 790 = 300.2$$

$$c) \quad \frac{4}{9} \times 117 = 52$$

use fraction button

11.

0.27 x 830
on calc paper
(a) Find 27% of 830.

$$100\% = 830$$

$$10\% = 83$$

$$20\% = 83 \times 2 = 166$$

$$1\% = 8.3, 7\% = 8.3 \times 7$$

$$= 166$$

$$+ 58.1$$

$$\hline 224.1$$

$$58.1$$

[2]

(b) Daniel was given £1500.

He spent $\frac{1}{3}$ of the money on his car and $\frac{1}{5}$ of the money going out with friends.

He saved the rest of the money.

How much money did he save?

$$\frac{1}{3} \text{ of } 1500 = 3 \overline{)1500} \quad 500$$

$$\frac{1}{5} \text{ of } 1500 = 5 \overline{)1500} \quad 300$$

$$500 + 300 = 800$$

$$\text{He saved } £1500 - 800 = \underline{£700}$$

[4]

(c) Write 0.3 as a percentage.

$$30\%$$

Write $\frac{17}{50}$ as a percentage.

$$34\%$$

Write 0.3, $\frac{17}{50}$ and 28% in ascending order.

$$28\%, 0.3, \frac{17}{50}$$

[3]

12.

(a) Arrange the following in ascending order.

$$0.340 \quad 0.300 \quad 0.040 \quad 0.403$$

Tip:- easier to compare the decimals if they all have 3 dp.

$$0.04 \quad 0.3 \quad 0.34 \quad 0.403$$

[1]

(b) Evaluate $\frac{3}{8} + \frac{1}{2}$.

$$= \frac{3}{8} + \frac{4}{8} = \underline{\underline{\frac{7}{8}}}$$

[2]

13.

Megan has some blocks.

10% of the blocks are white.

$\frac{3}{5}$ of the blocks are red. = 60%

The rest of the blocks are green.

There are 33 green blocks.

How many blocks are there altogether?

[5]

$$10\% + 60\% = 70\%$$

$$100\% - 70\% = 30\%$$

so 30% are green

$$30\% = 33$$

$$10\% = 33 \div 3 = 11$$

$$100\% = 110 \text{ blocks altogether}$$

14.

(a) Draw a circle around all of the following fractions that are equal to 40%.

[2]

$$\frac{8}{20}$$

$$\frac{1}{4}$$

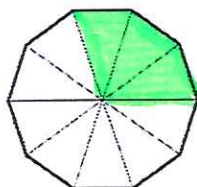
$$\frac{2}{5}$$

$$\frac{10}{40}$$

$$\frac{5}{20}$$

(b) Shade 30% of the following figure.

[1]



(c) Find, in its simplest form, $\frac{5}{6} - \frac{1}{3}$.

$$\frac{5}{6} - \frac{2}{6} = \frac{3}{6} = \frac{1}{2}$$

[2]