

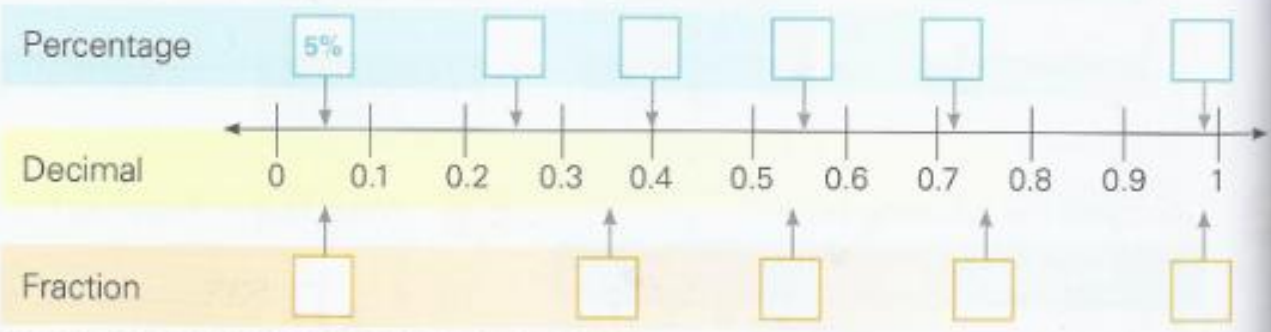
Group B – Maths

W/b 11.01.21

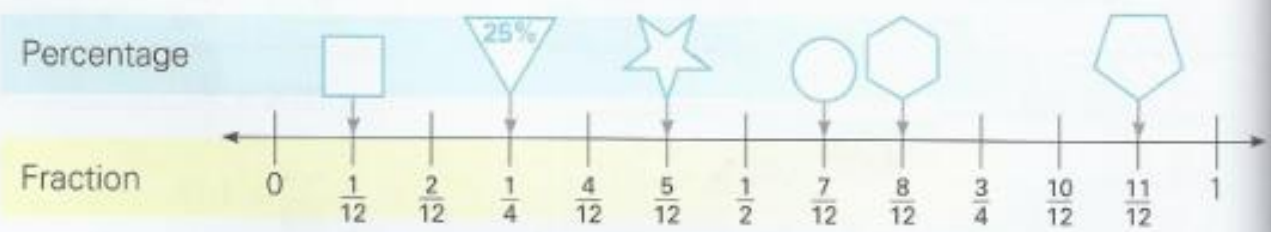
Monday - Can I fluently convert and compare fractions, decimals and percentages?

1.

2 Fill in the blanks according to their position on this number line. If an arrow does not point to an exact decimal on the line, estimate its position. The first blank has been filled in for you—it is 5% of the way along the number line.



3 The triangle is 25% of the way along the number line. Choose the best estimate for the positions of the following shapes:



- a** Square: 9%, 19%, 90% _____
- b** Star: 40%, 50%, 55% _____
- c** Circle: 48%, 58%, 68% _____
- d** Hexagon: 56%, 66%, 76% _____
- e** Pentagon: 81%, 91%, 99% _____

2.

a)

Write these numbers in order of size.
Start with the smallest number.

60% $\frac{1}{2}$ 0.3 $\frac{3}{4}$ 0.4

b)

Write these numbers in order of size.
Start with the smallest number.

$\frac{1}{4}$ 30% $\frac{3}{8}$ 0.2 0.17

c)

These are some of Brian's summer exam results.

Art	$\frac{14}{25}$
Biology	64%
German	49%
Latin	$\frac{25}{43}$
Music	$\frac{11}{15}$
Physics	54%

d)

18% is greater than 0.2



Is Greg correct?
Explain your answer.

Arrange the subjects in order, starting with the best result.

e) Here are six numbers. Two of these numbers are not equal to $\frac{3}{4}$. Put a circle around those two numbers.

75% $\frac{8}{10}$ $\frac{9}{12}$ 0.75 $66\frac{2}{3}\%$ $\frac{6}{8}$

f) Put the FDP below into the following groups:
50%, > 50% = 50%

$\frac{3}{2}$, 0.5, 1.25, $\frac{3}{8}$, 0.125,
75%

Tuesday – Can I recognise multiple fraction and decimal equivalences?

Challenge

1

- 1 Copy and complete, writing the fractions that are equivalent to each decimal. Look carefully for any patterns or relationships between the fractions in each question.

a $0.1 = \frac{1}{10} = \frac{1}{20} = \frac{1}{30} = \frac{1}{40} = \frac{1}{60} = \frac{1}{100} = \frac{1}{120} = \frac{1}{140}$

b $0.5 = \frac{50}{100} = \frac{1}{2} = \frac{2}{4} = \frac{1}{6} = \frac{1}{24} = \frac{1}{50} = \frac{1}{62} = \frac{1}{78} = \frac{1}{80}$

c $0.25 = \frac{25}{100} = \frac{1}{4} = \frac{1}{12} = \frac{1}{20} = \frac{1}{40} = \frac{1}{52} = \frac{1}{60} = \frac{1}{80}$

d $0.8 = \frac{80}{100} = \frac{1}{10} = \frac{1}{20} = \frac{1}{30} = \frac{1}{40} = \frac{1}{50} = \frac{1}{60} = \frac{1}{70}$

Hint

Think about the relationship between the numerator and the denominator; e.g. if a fraction is equivalent to 0.5 the numerator is half the denominator.



- 2 Check that all your fractions in Question 1 are equivalent.

Example

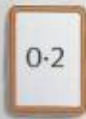
$$\frac{1}{10} = 1 \div 10 = 0.1$$

Challenge

2

- 1 Write eight fractions that are equivalent to each of these decimals. Check that all your fractions are equivalent to the decimal by dividing the numerator by the denominator.

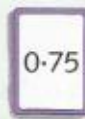
a



b



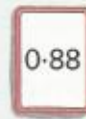
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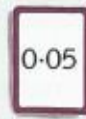
d



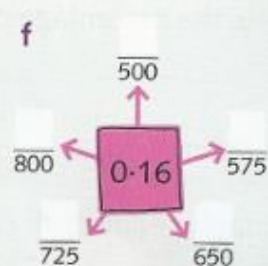
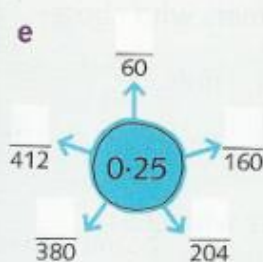
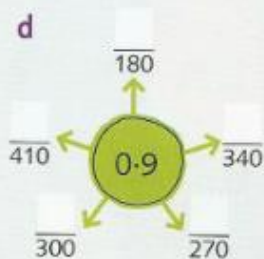
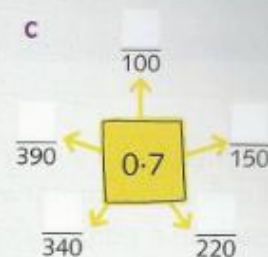
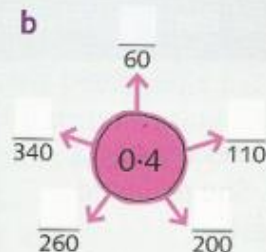
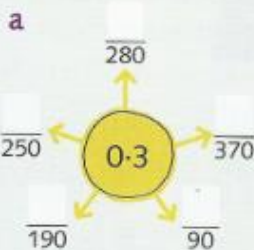
e



f



- 2 Find the missing numerators in these fractions. Check your answers using division.



TUESDAY – Optional extra challenge

Play this game with a partner. You will be converting fractions to decimals.

- Take turns to roll both the dice, e.g. 5 and 8.
- Make a fraction with the smaller number as the numerator and the larger number as the denominator, i.e. $\frac{5}{8}$.
- Use division to convert the fraction into a decimal rounded to 2 decimal places, i.e. 0.63.
- Check your answer using a calculator.
- If your answer is correct, this is your score for that round.
- If your answer is incorrect, you score zero.
- After 10 rounds each player adds up their scores.
- The winner is the player with the larger score.

You will need:

- 2 x 0–9 dice
- calculator



Wednesday – Can I use and apply my knowledge and understanding of converting between fractions, decimals and percentages to solve a range of problems?

1. There are 60 beads in a bag.
The beads are red, yellow or blue.
40% of the beads are blue.
 $\frac{5}{12}$ of the beads are red.
How many beads are yellow?

2. £54 inheritance money is split equally between Abi, Babs and Caz.
Abi gives 80% of her money to charity.
Babs gives 0.25 of her money to the same charity.
Caz also gives $\frac{2}{9}$ of her money to the charity.
 - a) How much money in total do the girls donate to charity?

 - b) Express the amount of money they give to charity as a percentage of the inherited amount to 1 decimal place.

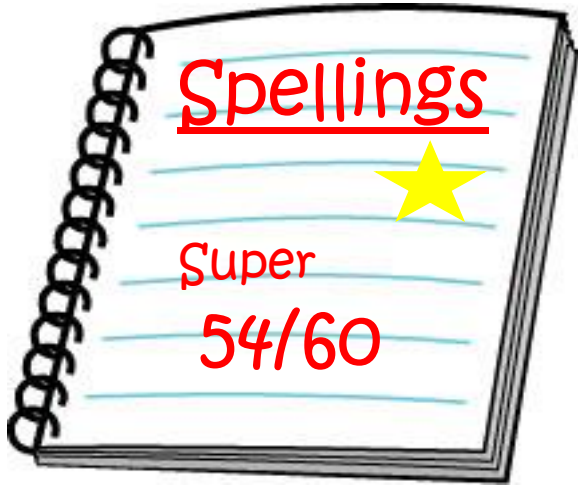
3. A train is late arriving into a station.
It should arrive at 5 pm
It arrives at 5.15 pm.
 - (a) How many minutes late is the train?
 - (b) Write your answer as a fraction of an hour.

4. For every £200 that Mrs Wallace earns, she saves £34.
 - (a) Work out £34 as a percentage of £200.
 - (b) Last month Mrs Wallace earns £1000.

How much of this does she save?

5. Convert 0.124 to a fraction.
Give your answer in its simplest form.

6.



How could you go about converting this test score to a percentage?

Show your working clearly.

7.

Jakob says to Peter, 'Last month I saved 0.5 of my pocket money and this month I saved $\frac{1}{3}$ of my pocket money, so altogether I've saved 40% of my pocket money'.

Do you think Peter should agree with Jakob?

Explain your decision.

Wednesday Optional Challenges:

(You may use a calculator for these questions)

Jules buys a washing machine.

20% VAT is added to the price of the washing machine.

Jules then has to pay a total of £600

What is the price of the washing machine with **no** VAT added?

Anil wants to invest £25 000 for 3 years in a bank.

<p>Personal Bank Compound Interest 2% for each year</p>
--

<p>Secure Bank Compound Interest 4.3% for the first year 0.9% for each extra year</p>
--

Which bank will give Anil the most interest at the end of 3 years?
You must show all your working.

13 The table gives information about Ali's spending last month.

Item	Percentage of total spending
rent	30%
food	15%
transport	12%
other	43%

Ali's total spending last month was £800

Next month Ali's rent, in pounds, is going to rise by 20%.

His total spending will still be the same.

Express the amount of money Ali will spend on rent next month as a percentage of £800

11 Ria is going to buy a caravan.

The total cost of the caravan is £7000 **plus** VAT at 20%.

Ria pays a deposit of £3000

She pays the rest of the total cost in 6 equal monthly payments.

Work out the amount of each monthly payment.

Thursday – Can I interpret pie charts and use them to solve problems?

Challenge 1

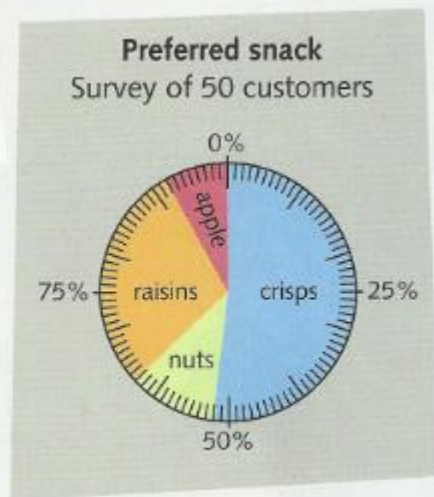
Carla carried out a survey of the sales of snacks from kiosk at the motorway cafe. She recorded her results in a percentage pie chart.

1 Write the percentage of customers who chose:

- a crisps
- b nuts
- c raisins
- d an apple

2 Write the number of customers who chose:

- a crisps
- b nuts
- c raisins
- d an apple



Challenge 2

1 The table shows the breakfast orders that Kevin took one morning.

Order	Tally	Frequency	Percentage
Cereal	###		
Bacon and egg	### ### ###		
Sausage and egg	### ###		
Full breakfast	### ### ###		

- Copy columns 1, 3 and 4 of the table. Complete the frequency column and find the total frequency. Then convert each frequency to a percentage.

- Using one of the empty pie charts, draw a percentage pie chart for the breakfast orders. Colour the sectors and make a key for your pie chart. The pie chart is divided into 100 equal notches around the edge to help you.

2 The table below shows the type of transport stopping at the cafe in one day.

- Copy and complete the table. Calculate the total frequency so you can convert each frequency to a percentage.
- Using one of the empty pie charts, draw a percentage pie chart for the type of transport using the café. Colour your sectors and make a key for your pie chart.

Transport	Frequency	Percentage
Lorry	54	
Bus	18	
Car	72	
Van	36	

3 The pie chart shows the sales of 500 hot and cold drinks in one day.

- a Write the percentage of sales for:
- i tea iii soft drinks v fresh orange
 - ii coffee iv milk
- b Write how many customers ordered:
- i tea iii soft drinks v fresh orange
 - ii coffee iv milk
- c How many more customers ordered hot drinks than cold drinks?

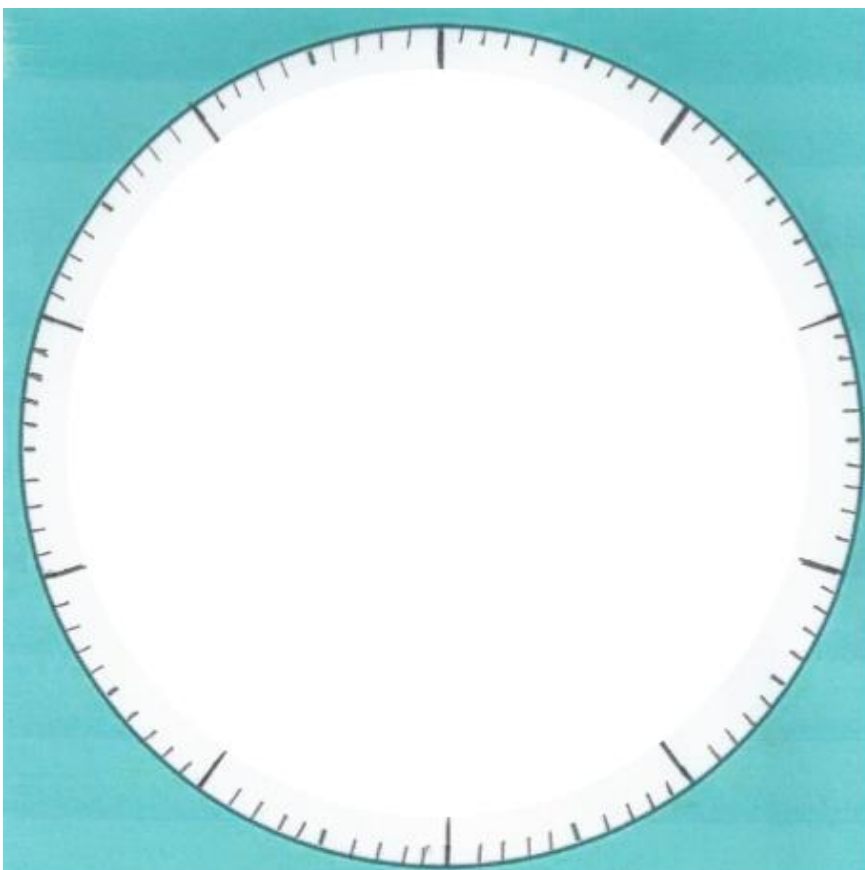


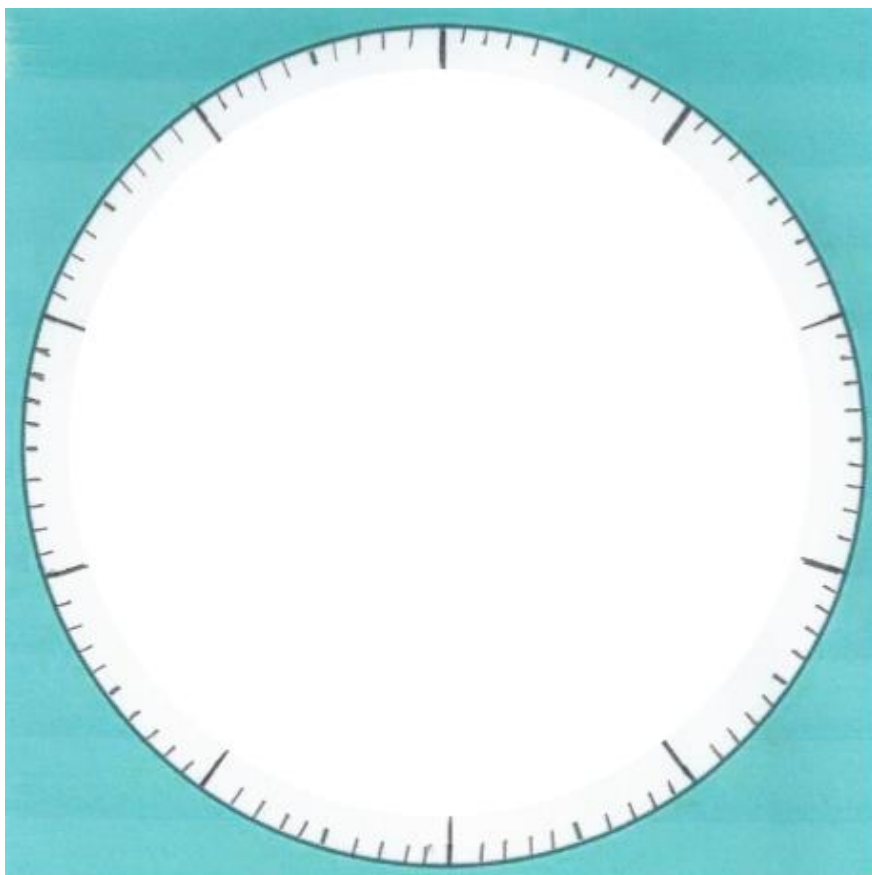
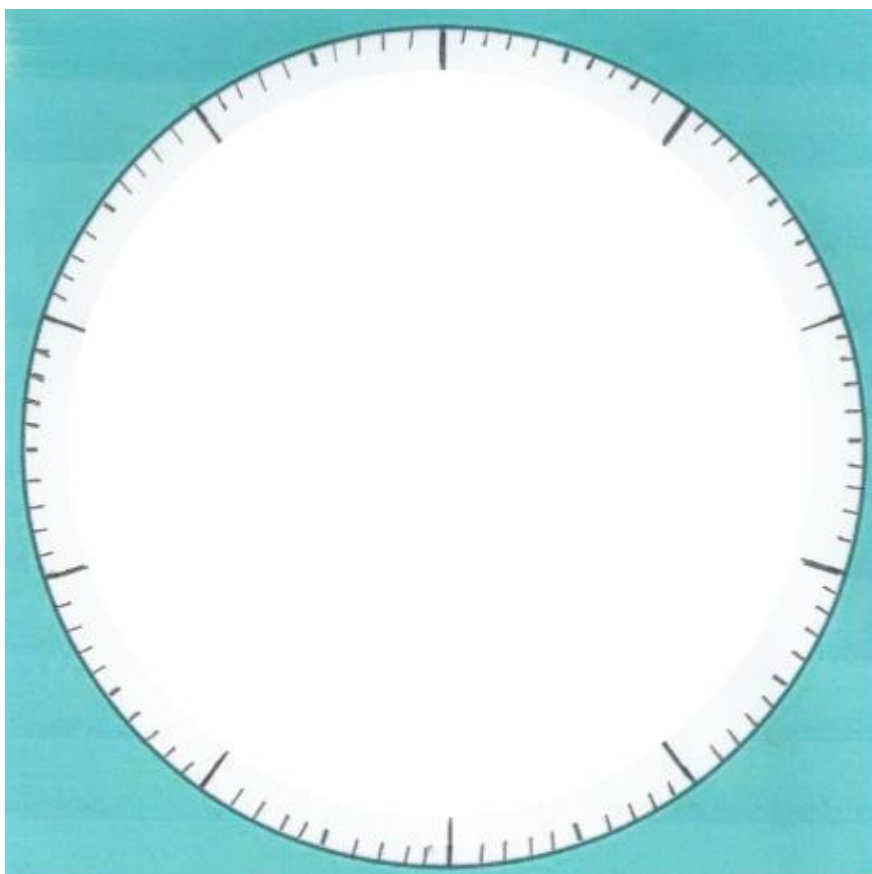
Challenge 3

The cafe manager gave each adult customer a questionnaire, asking: 'Do you usually order breakfast when you stop at the motorway cafe?'. He collected responses from an equal number of male and female customers.

- a. Using one of the empty pie charts, draw a percentage pie chart showing the combined male and female responses.
- b Write five facts that you can interpret from your pie chart.

Response	Male	Female
Never	12%	14%
Sometimes	16%	26%
Quite often	47%	39%
Very often	18%	16%
Always	7%	5%





Friday – Can I develop my Arithmetic and reasoning skills?

Complete the Week 2 Arithmetic Test, which can be found in the Lockdown Home Learning section of the Valley website. Please complete this test before the session on Friday.

Optional extra weekly challenge

(You can use a calculator for this challenge)

The table below shows the size of some of the world's largest countries. It also shows the area that is covered by forest, and the area of inland waterways in each country.



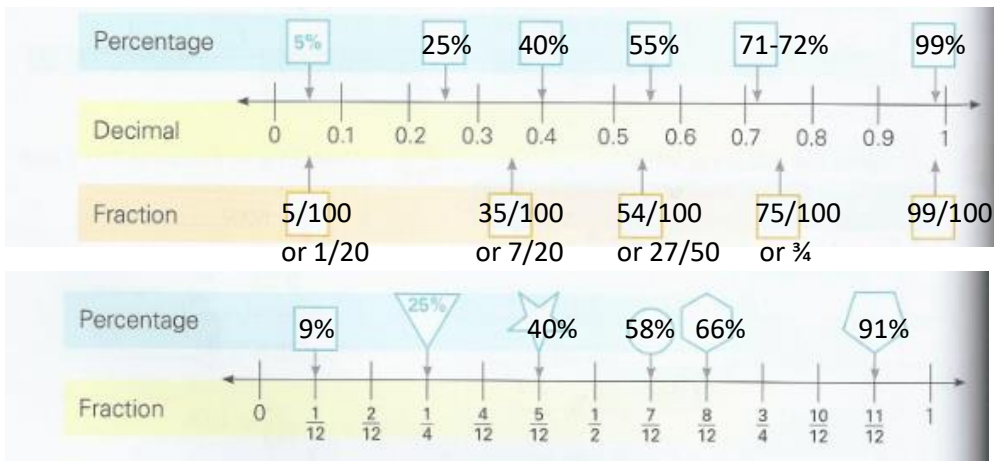
	Land area (to nearest $\frac{1}{2}$ million km ²)	Area which is forest (to nearest $\frac{1}{2}$ million km ²)	Area which is forest (to nearest 1%)	Area of inland water (to nearest 5000 km ²)	Area which is inland water (to nearest 0.1%)
Russia	17 million km ²	8 million km ²			0.5%
Brazil	8.5 million km ²	5 million km ²			0.7%
Canada	10 million km ²	3 million km ²			9%
USA	10 million km ²		30%	660 000 km ²	
China	9.5 million km ²		21%	270 000 km ²	
Australia	7.5 million km ²		20%	70 000 km ²	

1 From the table we can see that almost half of Russia is covered by forest. The actual fraction can be found by dividing 8 million by 17 million. Multiplying the answer by 100 will give the percentage.

- Fill in the percentage of forest area for Russia, Brazil and Canada. Round to the nearest 1%.
- Fill in the area of forest in the table for USA, China and Australia. Round to the nearest half million km².
- Fill in the percentage of inland water area in the table for USA, China and Australia. Round to the nearest 0.1%.
- Fill in the area of inland water for Russia, Brazil and Canada. Round to the nearest 5000 km².

2 The figures in the table above are all rounded. Research the actual figures for one or two countries. Find out how close the actual figures are to the figures in the table. Comment on how important it is to have true figures when showing information like this.

Answers- Monday-Thurs



A 0.3 0.4 $\frac{1}{2}$ 60% $\frac{3}{4}$	B 0.17 0.2 $\frac{1}{4}$ 30% $\frac{3}{8}$
C Music – 0.73 Biology – 0.64 Latin – 0.58 Art – 0.56 Physics – 0.54 German – 0.49	D No he is not. 18% = 0.18 which is smaller than 0.2
E $\frac{8}{10}$ & 66 $\frac{2}{3}$ %	F < 50% $\frac{0.125}{1}$ & $\frac{3}{8}$ > 50% $\frac{3}{2}$ 1.25 75% = 50% 0.5

TUESDAY

a $0.1 = \frac{1}{10} = \frac{2}{20} = \frac{3}{30} = \frac{4}{40} = \frac{6}{60} = \frac{10}{100} = \frac{12}{120} = \frac{14}{140}$

b $0.5 = \frac{50}{100} = \frac{1}{2} = \frac{2}{4} = \frac{3}{6} = \frac{12}{24} = \frac{25}{50} = \frac{31}{62} = \frac{39}{78} = \frac{40}{80}$

c $0.25 = \frac{25}{100} = \frac{1}{4} = \frac{3}{12} = \frac{5}{20} = \frac{10}{40} = \frac{13}{52} = \frac{15}{60} = \frac{20}{80}$

d $0.8 = \frac{80}{100} = \frac{8}{10} = \frac{16}{20} = \frac{24}{30} = \frac{32}{40} = \frac{40}{50} = \frac{48}{60} = \frac{56}{70}$

a $0.2 = \frac{1}{5} = \frac{20}{100}$

b $0.6 = \frac{3}{5} = \frac{60}{100}$

c $0.75 = \frac{3}{4} = \frac{75}{100}$

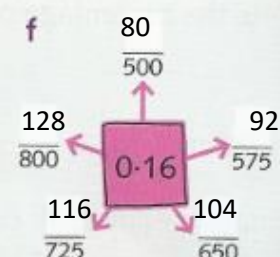
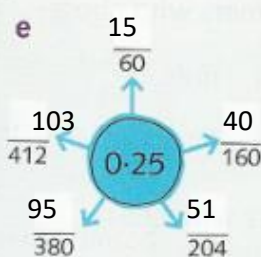
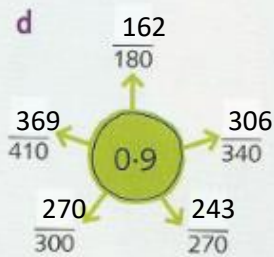
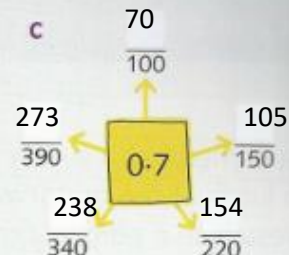
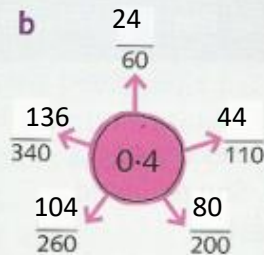
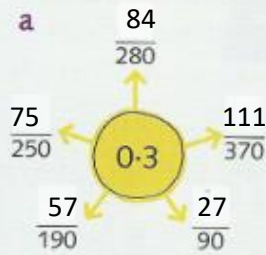
d $0.32 = \frac{8}{25} = \frac{32}{100}$

e $0.88 = \frac{22}{25} = \frac{88}{100}$

f $0.05 = \frac{1}{20} = \frac{5}{100}$

These are the fractions in their simplest form and as a fractions out of 100 – any eight equivalent fractions are acceptable.

2 Find the missing numerators in these fractions.
Check your answers using division.



WEDNESDAY

- 11 Yellow
- Abi - £14.40 Babs - £4.50 Caz - £4 Together £22.90 = 42.4%
- 15 mins = $15/60 = \frac{1}{4}$
- 17% £85
- $124/1000 = 62/500 = 31/250$
- $54 \div 60 = 0.9 = 90\%$
- I think he should agree. $50\% + 33\%$ (rounded) out of 200% would be 83. $83/200 = 41.5/100$ which if rounded to the nearest 10% would be 40%.

Challenges

- £500
- The secure bank is better as over three years she would gain a compound interest of £1525 in this account compared to £1500 in the Personal Bank.
- 36% - his rent would go up to £288. $288 \div 800 = 0.36$
- £900

THURSDAY

1 Write the percentage of customers who chose:

- a crisps 52% b nuts 12%
c raisins 28% d an apple 8%

2 Write the number of customers who chose:

- a crisps 26 b nuts 6
c raisins 14 d an apple 4

Order	Tally	Frequency	Percentage
Cereal		5	10%
Bacon and egg		15	30%
Sausage and egg		12	24%
Full breakfast		18	36%

Transport	Frequency	Percentage
Lorry	54	30%
Bus	18	10%
Car	72	40%
Van	36	20%

- a Write the percentage of sales for:
- i tea 50% iii soft drinks 15% fresh orange 5%
- ii coffee 20% iv milk 10%
- b Write how many customers ordered:
- i tea 250 iii soft drinks 75 v fresh orange 25
- ii coffee 100 iv milk 50
- c How many more customers ordered hot drinks than cold drinks?
- 200

	Land area (to nearest $\frac{1}{2}$ million km ²)	Area which is forest (to nearest $\frac{1}{2}$ million km ²)	Area which is forest (to nearest 1%)	Area of inland water (to nearest 5000 km ²)	Area which is inland water (to nearest 0.1%)
Russia	17 million km ²	8 million km ²	47%	85,000 km ²	0.5%
Brazil	8.5 million km ²	5 million km ²	59%	59,500 km ²	0.7%
Canada	10 million km ²	3 million km ²	30%	900,000 km ²	9%
USA	10 million km ²	3 million km ²	30%	660,000 km ²	6.6%
China	9.5 million km ²	2 million km ²	21%	270,000 km ²	2.9%
Australia	7.5 million km ²	1.5 million km ²	20%	70,000 km ²	0.9%