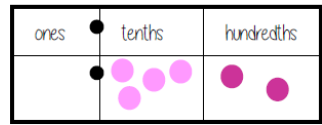
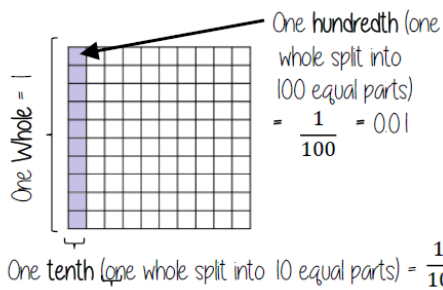


Knowledge Organiser: Year 8 Maths; Percentages (Part 1)



Tenths and hundredths



0 ones, 5 tenths and 2 hundredths

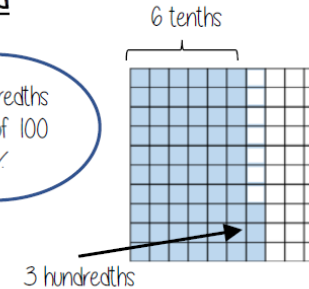
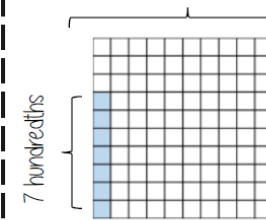
$$0 + 0.1 + 0.1 + 0.1 + 0.1 + 0.1 + 0.01 + 0.01$$

$$= 0 + 0.5 + 0.02$$

$$= 0.52$$

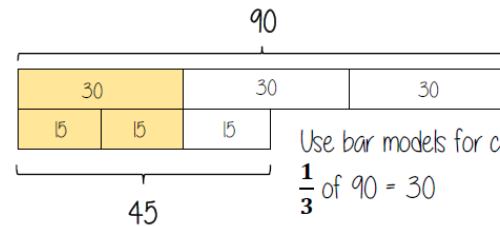
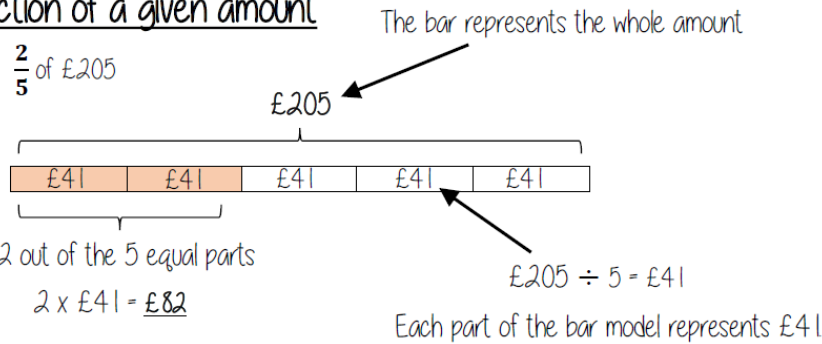
Percentages on a hundred grid

100% = a whole = 100 hundredths



Fraction of a given amount

Find $\frac{2}{5}$ of £205



Use bar models for comparisons

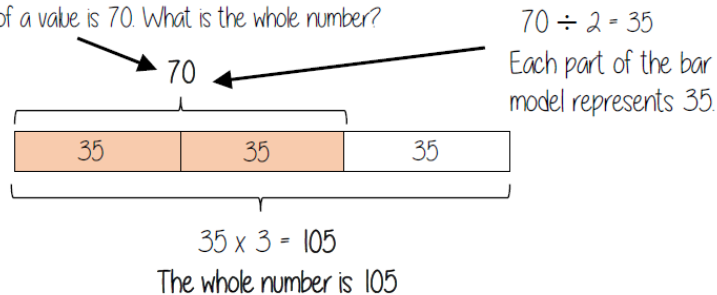
$$\frac{1}{3} \text{ of } 90 = 30$$

$$\frac{2}{3} \text{ of } 45 = 30$$

$$\therefore \frac{1}{3} \text{ of } 90 = \frac{2}{3} \text{ of } 45$$

Use a fraction of amount

$\frac{2}{3}$ of a value is 70. What is the whole number?

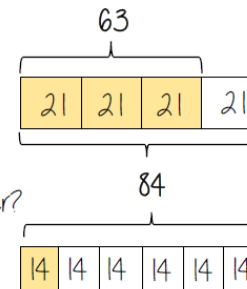


The wording of the question is important to setting up the bar model

$\frac{3}{4}$ of a number is 63.

What is $\frac{1}{6}$ of the number?

$$= 14$$



Find the whole

Use the whole to find a given part

Keywords

Fraction: how many parts of a whole we have

Equivalent: of equal value

Whole: a number with no fractional or decimal part

Percentage: parts per 100 (uses the % symbol)

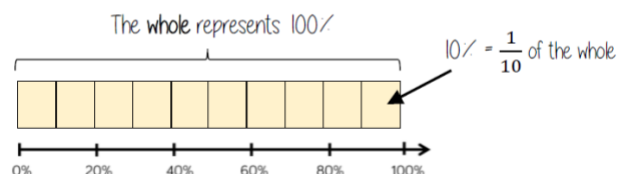
Place Value: the value of a digit depending on its place in a number. In our decimal number system, each place is 10 times bigger than the place to its right

Convert: change into an equivalent representation, often fraction to decimal to a percentage cycle.

Knowledge Organiser: Year 8 Maths; Percentages (Part 2)

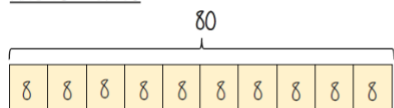


Find the percentage of an amount (Mental methods)



10% = $\frac{1}{10}$ of the whole 50% = $\frac{5}{10} = \frac{1}{2}$ of the whole
 20% = $\frac{2}{10} = \frac{1}{5}$ of the whole 5% = $\frac{1}{20}$ of the whole

Find 65% of 80



Method 1

$$65\% = 10\% \times 6 + 5\% \\ = (8 \times 6) + 4 \\ = 52$$

Method 2

$$65\% = 50\% + 10\% + 5\% \\ = 40 + 8 + 4 \\ = 52$$

For bigger percentages it is sometimes easier to take away from 100%

Find the percentage of an amount (Calculator methods)



Using a multiplier

Find 65% of 80

Fraction, decimal, percentage conversion

$$65\% = \frac{65}{100} = 0.65 \leftarrow \text{The multiplier}$$

$$0.65 \times 80 = 52$$

Using the percent button

Find 65% of 80

This brings up the % button on screen
You will see 65%

Type 65

Press **SHIFT** **(%)**

Press **x** 80 and then press =

You can also use the calculator to support non calculator methods and find 1% or 10% then add percentages together

"of" can represent 'x' in calculator methods

Find the original value

Percentage calculations

$$\text{Original amount} \times \text{Multiplier} = \text{Final Value}$$

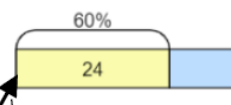
In a test Lucy scored 60% of her questions correctly. Her score was 24. How many questions were on the test?

$$\text{Original} \times 0.6 = 24$$

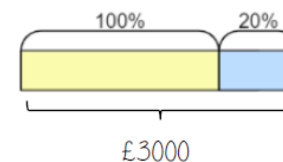
$$24 \div 0.6 = 40 \text{ marks}$$

$$10\% = 6$$

$$100\% = 40$$



A car sold for a profit £3000 with a profit of 20%. How much was the car originally?



$$\text{Original} \times 1.2 = 3000$$

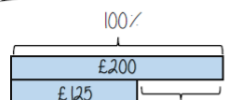
$$120\% = £3000$$

$$10\% = £250$$

$$100\% = £2500$$

Percentage change

I bought a phone for £200.
A year later sold it for £125.



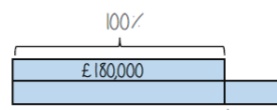
All values of change compare to the ORIGINAL value

Percentage loss

$$\frac{75}{200} \times 100 = 37.5\%$$

$$\frac{\text{Difference in value}}{\text{Original value}} \times 100$$

I bought a house for £180,000, I later sold it for £216,000.



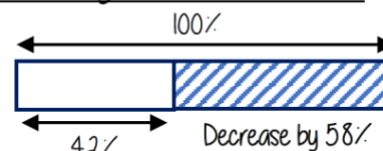
Percentage profit

$$\frac{36000}{180000} \times 100 = 20\%$$

Money made (profit value)

Percentage increase/decrease

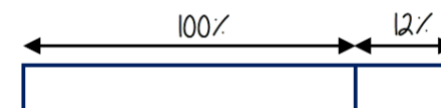
R



$$100\% - 58\% = 42\%$$

$$100 - 0.58 = 0.42$$

Multiplier
Less than 1



Increase by 12%

$$100\% + 12\% = 112\%$$

$$100 + 0.12 = 1.12$$

Multiplier
More than 1



How do we use Knowledge Organisers in Mathematics?

How can you use knowledge organisers at home to help us?

- **Retrieval Practice:** Read over a section of the knowledge organiser, cover it up and then write down everything you can remember. Repeat until you remember everything.
- **Flash Cards:** Using the Knowledge Organisers to help on one side of a piece of paper write a question, on the other side write an answer. Ask someone to test you by asking a question and seeing if you know the answer.
- **Mind Maps:** Turn the information from the knowledge organiser into a mind map. Then reread the mind map and on a piece of paper half the size try and recreate the key phrases of the mind map from memory.
- **Sketch it:** Draw an image to represent each fact; this can be done in isolation or as part of the mind map/flash card.
- **Teach it:** Teach someone the information on your knowledge organiser, let them ask you questions and see if you know the answers.

How will we use knowledge organisers in Mathematics?

Knowledge organisers will be used before I complete a Learning Check or Common Assessment. I will spend part of the lesson looking over each of the key topics of the half term before completing the Learning Check or Common Assessment.

I will also use these at home to complete my own independent learning and revision of these key topics.

GLUE HERE