Compare FDP (R)

Comparisons are easier in the same format

$\frac{70}{100}$ → This also means 70 ÷ 100 → 70 out of 100 squares → 70 "hundredths" = 7 "tenths" = 0.7 → 70 hundredths = 70%

Using a calculator

$\frac{\square}{\square}$ → S⇌D Convert to a decimal

This will give you the answer in the simplest form

× 100 converts to a percentage

Be careful of recurring decimals

eg $\frac{1}{3}$ = 0.3333333 = $0.\dot{3}$

The dot above the 3

Find the percentage of an amount

The whole represents 100%

10% = $\frac{1}{10}$ of the whole

0% 20% 40% 60% 80% 100%

Find 65% of 80

80

8 8 8 8 8 8 8 8 8 8

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

Method 1:
65% = 10% x 6 + 5%
= (8 x 6) + 4
= 52

Method 2:
65% = 50% + 10% + 5%
= 40 + 8 + 4
= 52

Percentage increase and decrease non-calculator

Increase £3400 by 15%

100% - 3400
÷10 ↓ 10% - 340
÷2 ↓ 5% - 170
15% - 510

3400 + 510 = £3910

Decrease 490g by 11%

100% - 490
÷10 ↓ 10% - 49
÷10 ↓ 1% - 4.9
11% - 53.9

490 - 53.9 = 436.1g

Express as a percentage (R)

27 per every 50 shaded → $\frac{27}{50}$

54 per every 100 shaded → $\frac{54}{100}$

54%

$\frac{13}{30}$ → $\frac{\square}{\square}$ → $\frac{13.}{30}$ → × 100

43.3333...%

43%

Can't use equivalence easily to find 'per hundred'

Decimal percentages are still a percentage.

Find the original value

Percentage calculations

Original amount × Multiplier = Final Value

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

Original x 0.6 = 24

24 ÷ 0.6 = 40 marks

10% = 6

100% = 40

60%

24

Total questions on test

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

100% 20%

£3000

Original x 1.2 = 3000

120% = £3000

10% = £250

100% = £2500

Reverse Percentages

40% of my number is 16. What am I thinking of?

Original Number (100%)

4 4 4 4 4 4 4 4 4 4

16

40% - 16

10% - 4

100% = 40

140% of my number is 84. What is the original number?

Original Number (100%)

6 6 6 6 6 6 6 6 6 6 6 6 6 6

84

140% = 84

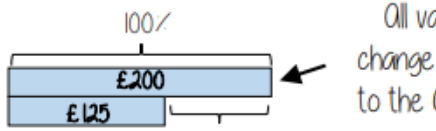
10% - 6

100% = 60

Try to scale down to 10% or 1% and then scale back up to 100%

Percentage change (R)

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



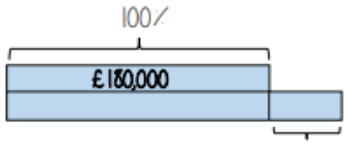
All values of change compare to the ORIGINAL value

Percentage loss

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

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

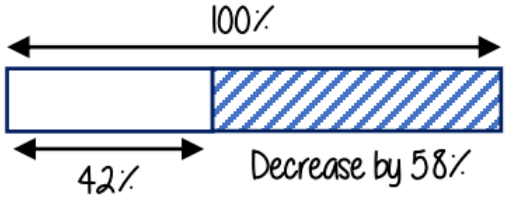
I bought a house for £180,000. I later sold it for £216,000.



Percentage profit

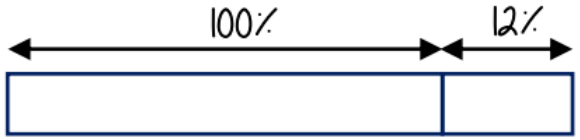
Money made (profit value) → $\frac{36000}{180000} \times 100 = 20\%$

Percentage increase/decrease (R)



100% − 58% = 42%

100 − 0.58 = 0.42 ← Multiplier: Less than 1



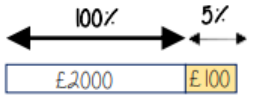
100% + 12% = 112%

100 + 0.12 = 1.12 ← Multiplier: More than 1

Simple and compound interest

Simple Interest

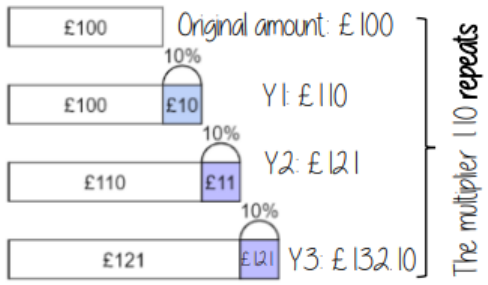
James invests £2000 at 5% simple interest



The original value increases by this amount every year

Compound Interest

Tess invests £100 at 10% compound interest for 3 years



Repeated percentage change

Compound Interest

Tess invests £100 at 10% compound interest for 3 years

£100 × 1.10 × 1.10 × 1.10

£100 × 1.10 (3)

- £100: Original amount
- 1.10: Repeated multiplier
- 3: Number of occurrences

Depreciation

Depreciation calculations use multipliers **less than 1**

Multipliers are commutative – an overall multiplier effect can be calculated by combining the multipliers separately

e.g. Increase of 10% then a reduction of 10%

1.10 × 0.9 = 0.99 The multiplier