

## Prior learning links

FDP Equivalence  
Percentages being out of 100  
Indices represent powers

## Essential knowledge

Know common fraction, decimal and percentage conversions (1%, 10%, 25%, 50%, 75%).  
Percentages Relationship to Multipliers  
Know multipliers for increases and decreases  
Standard form is written with a number greater or equal to 1 and less than 10 followed by a power of ten  
Know to convert between real numbers and numbers in standard form

## Key Vocabulary

**Percent:** parts per 100 written using the % symbol.  
**Decimal:** a number in our base 10 number system. Numbers to the right of the decimal place are called decimals.  
**Fraction:** a fraction represents how many parts of a whole value you have.  
**Equivalent:** of equal value.  
**Integer:** whole number, can be positive, negative or zero.

**Standard (index) Form:** A system of writing very big or very small numbers

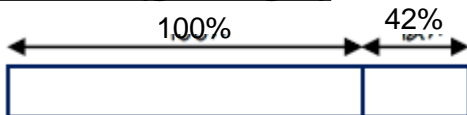
**Base:** The number that gets multiplied by a power  
**Power:** The exponent –or the number that tells you how many times to use the number in multiplication

## Percentages of Amounts

Find 60% of 90

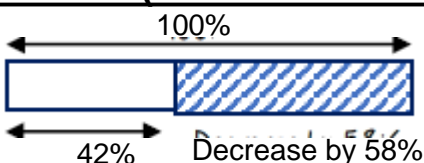
Non-Calculator:	Calculator:
Break down into chunks	Convert to a decimal
60% = 50% + 10%	60% = 0.6
50% of 90 = 45	Multiply by the amount
10% of 90 = 9	0.6 x 90
60% = 45 + 9	= 54
60% = 54	

**Multipliers:** decimal equivalent to a percentage used to find amounts  
**Increase (get larger)**



100% + 42% = 142%  
142% = 1.42 (Multiplier is more than 1)

**Decrease (become smaller)**



100% - 58% = 42%  
58% = 0.42 (Multiplier less than 1)

## Convert FDP

Percentage to fraction-  
Put percentage as numerator and make denominator 100 and simplify  
eg 50/100

Fraction to decimal-  
Divide the numerator by the denominator  
e.g. 1 ÷ 2

50% ← 1/2 → 0.5

Decimal to percentage-  
Multiply by 100 e.g. 0.5 x 100

Other key conversions:

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

$$1\% = \frac{1}{100} = 0.01$$

$$25\% = \frac{1}{4} = 0.25$$

## Standard Form

1 million = 1,000,000  
 $10 \times 10 \times 10 \times 10 \times 10 \times 10 = 10^6$

$$A \times 10^n$$

A number greater than 1 and less than 10

Any number

Example:  
 $35000 = 3.5 \times 10^4$

Example:  
 $5.07 \times 10^5 = 507,000$

We rewrite the real number as a number between 1 and 10, multiplied by a power of 10

We rewrite the standard form number by increasing the place value of 5.07 by the power.

## Prior learning links

What does the denominator tell us in a fraction?

What does the numerator tell us in a fraction?

What is a percentage out of?

Complete the following:

$$8 \times 100 = \quad 4.2 \times 10 = \quad 70 \div 100 =$$

## Percentages of Amounts

Calculate without a calculator:

- (a) 50% of 32
- (b) 10% of 130
- (c) 25% of 48
- (d) 21% of 160

Calculate using a calculator:

- (a) 70% of 280
- (b) 19% of 360
- (c) 6% of 84

## Multipliers:

What multipliers would we use to calculate:

- (a) 26% increase?
- (b) 14% decrease?
- (c) 30% decrease?
- (d) 3% increase?
- (e) 110% increase?
- (f) 2% decrease?

## Key Vocabulary

Define the following key words:

**Fraction:**

**Decimal:**

**Percentage:**

**Place value**

**Interval:**

## Converting FDP

Convert the following decimals to percentages

- (a) 0.5
- (b) 0.35
- (c) 0.7
- (d) 0.1

Convert the following percentages to fractions in their simplest form

- (a) 65%
- (b) 70%
- (c) 6%
- (d) 55%

Convert the following fractions to decimals

- (a)  $\frac{1}{2}$
- (b)  $\frac{3}{5}$
- (c)  $\frac{5}{8}$
- (d)  $\frac{3}{4}$

## Standard Form

Express the following numbers as a single power of 10:

1,000

One Hundred

100,000

Write the following numbers in standard form:

600

3400

5,002,000

41.5

Convert the following into ordinary numbers:

$$3 \times 10^4$$

$$5.9 \times 10^2$$

$$9.04 \times 10^7$$