BASIC USE OF PERCENTAGES

1.   Equivalent fractions, percentages and decimals.

2.   Finding a percentage of a quantity.

3.   Increasing a quantity by a given percentage.

4.   Decreasing a quantity by a given percentage.

5.   Expressing one quantity as a percentage of another.

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1. Equivalent fractions, percentages and decimals

Fractions	Percentages	Decimals
1	100%	1.00
$\frac{1}{2}$	50%	0.50
$\frac{1}{4}$	25%	0.25
$\frac{1}{10}$	10%	0.10
$\frac{1}{100}$	1%	0.01
$\frac{19}{100}$	19%	0.19
$\frac{83}{100}$	83%	0.83
$\frac{7}{100}$	7%	0.07

2. Finding a percentage of a quantity

Non-Calculator

a)   Find 20% of £84

   $10\% = £8.40$

   $\Rightarrow 20\% = £16.80$

c)   Find 75% of 52m

   $50\% = 26m$

   $25\% = 13m$

   $\Rightarrow 75\% = 39m$

b)   Find 25% of 68kg

   25% is same as $\frac{1}{4}$

   so divide by 4

   $4\,\overline{\big|\,6\,{}^{2}8\,}$
   $\quad\ \ 17$

   $17 kg$

d)   Find 15% of £23

   $10\% = £2.30$

   $5\% = £1.15$

   $\Rightarrow 15\% = £3.45$

Calculator

e)   Find 17% of £84

   $£84 \times 0.17 = £14.28$

g)   Find 6% of 52m

   $52m \times 0.06 = 3.12m$

f)   Find 89% of 68 kg

   $68kg \times 0.89 = 60.52kg$

h)   Find 104% of £23

   $£23 \times 1.04 = £23.92$

3. Increasing a quantity by a given percentage

a) Increase £43 by 17%

First find 17% of £43

£43 × 0.17 = £7.31

Now add this to original

£43 + £7.31 = £50.31

b) Increase 28kg by 35%

First find 35% of 28 kg

28 kg × 0.35 = 9.8 kg

Now add this to original

28 kg + 9.8 kg = 37.8 kg

4. Decreasing a quantity by a given percentage

a) Decrease £43 by 22%

First find 22% of £43

£43 × 0.22 = £9.46

Now subtract this from original

£43 − £9.46 = £33.54

b) Decrease 73m by 8%

First find 8% of 73m

73m × 0.08 = 5.84m

Now subtract this from original

73m − 5.84m = 67.16 m

5. Expressing one quantity as a percentage of another

a) Express 9 as a percentage of 12

1 is $\frac{1}{12}$ of 12

so 9 is $\frac{9}{12}$ of 12

BASIC USE OF PERCENTAGES

To turn a fraction into a percentage we simply multiply by 100

$$\frac{\overset{3}{\cancel{9}}}{\underset{\cancel{4}_{1}}{12}} \times \cancel{100}^{25} = \frac{75}{1} = 75\%$$

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b) Express 42 as a percentage of 60

$$\frac{\overset{14}{\cancel{42}}}{\underset{\cancel{3}_{1}}{\cancel{60}}} \times \cancel{100}^{5} = 14 \times 5 = 70\%$$

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c) Of the 562 students in a school, 318 are girls. What percentage of the students are girls and what percentage are boys?

Girls $\frac{318}{562} \times 100 = 56.6\%$

Boys $100 - 56.6 = 43.4\%$

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d) In a football crowd of 55,000, there were 11,625 away fans. What percentage of the attendance were away fans?

$$\frac{11,625}{55,000} \times 100 = 21.1\%$$