Do Now

1 Express each percentage as a fraction in simplest form.

a 51%	**b** 89%	**c** 47%	**d** 61%	**e** 97%
f 42%	**g** 65%	**h** 75%	**i** 18%	**j** 45%
k 50%	**l** 36%	**m** 54%	**n** 98%	**o** 66%

2 Express each percentage as a whole or mixed numeral in simplest form.

a 100%	**b** 400%	**c** 250%	**d** 375%	**e** 190%
f 620%	**g** 554%	**h** 236%	**i** 708%	**j** 1230%

3 Express each percentage as a fraction in simplest form.

a $9\frac{1}{3}\%$	**b** $15\frac{1}{4}\%$	**c** $10\frac{4}{5}\%$	**d** $5\frac{1}{6}\%$	**e** $8\frac{2}{3}\%$

Check your answers

1 **a** $\frac{51}{100}$ **b** $\frac{89}{100}$ **c** $\frac{47}{100}$

d $\frac{61}{100}$ **e** $\frac{97}{100}$ **f** $\frac{42}{100} = \frac{21}{50}$

g $\frac{65}{100} = \frac{13}{20}$ **h** $\frac{75}{100} = \frac{3}{4}$ **i** $\frac{18}{100} = \frac{9}{50}$

j $\frac{45}{100} = \frac{9}{20}$ **k** $\frac{50}{100} = \frac{1}{2}$ **l** $\frac{36}{100} = \frac{9}{25}$

m $\frac{54}{100} = \frac{27}{50}$ **n** $\frac{98}{100} = \frac{49}{50}$ **o** $\frac{66}{100} = \frac{33}{50}$

2 **a** 1 **b** 4 **c** $2\frac{1}{2}$ **d** $3\frac{3}{4}$ **e** $1\frac{9}{10}$

f $6\frac{1}{5}$ **g** $5\frac{27}{50}$ **h** $2\frac{9}{25}$ **i** $7\frac{2}{25}$ **j** $12\frac{3}{10}$

3 **a** $\frac{7}{75}$ **b** $\frac{61}{400}$ **c** $\frac{27}{250}$ **d** $\frac{31}{600}$ **e** $\frac{13}{150}$

WALT Express one quantity as a percentage of another quantity.
Success Criteria I know …..

- I need to change both the quantities to same unit eg kg to kg and gm to kg cents to dollars both should be either cents or dollars
- Replace 'by' x (multiplication)
- Write quantities as a fraction in a simplest form and then multiply by 100

To express one quantity as a percentage of another:

- change both quantities to the same unit (if necessary)
- write $\frac{\text{first quantity}}{\text{second quantity}} \times 100\%$.

To find a percentage of a quantity:

- express each percentage as a fraction in simplest form
- replace 'of' by '×' and calculate the answer.

EXAMPLE 1

Express the first quantity as a percentage of the second quantity.

a 38 cm, 40 cm **b** 42 cm, 1.2 m **c** 2 weeks, 20 days

Use $\frac{\text{first quantity}}{\text{second quantity}} \times 100\%$

a So $\frac{38}{40} \times \frac{100}{1}\% = 95\%$

$\therefore$ 38 cm is 95% of 40 cm.

b Convert to cm: that is, 42 cm, 120 cm.

So $\frac{42}{120} \times \frac{100}{1}\% = 35\%$

$\therefore$ 42 cm is 35% of 1.2 m.

c Convert to days: that is, 14 days, 20 days.

So, $\frac{14}{20} \times \frac{100}{1}\% = 70\%$

$\therefore$ 2 weeks is 70% of 20 days.

1 Express the first quantity as a percentage of the second quantity.

a \$6, \$15	**b** 10 km, 50 km	**c** 4 h, 25 h
d 18 min, 50 min	**e** 70 m, 125 m	**f** \$88, \$440
g 60 L, 200 L	**h** 27 kg, 50 kg	**i** 54 min, 75 min
j 25 h, 100 h	**k** 32 L, 64 L	**l** 45 m, 180 m

2 What percentage is the first quantity of the second?

a 28 cm : 1.4 m	**b** 72 cm : $1\frac{1}{2}$ m	**c** 1.8 m : 60 cm
d 810 g : 4.05 kg	**e** 156 g : 0.24 kg	**f** 3.62 kg : 400 g
g \$0.60 : \$2	**h** 85c : \$5	**i** 5.4 L : 600 mL
j 18 h : 1 day	**k** 12 h : 2 days	**l** \$2.55 : \$1.25
m 6 months : 2 years	**n** 21 months : $3\frac{1}{2}$ years	**o** 24 months : 5 years

Do Now

4 Express each percentage as a decimal.

a 8%	**b** 9%	**c** 46%	**d** 65%	**e** 58%
f 2%	**g** 26%	**h** 4%	**i** 77%	**j** 84%

5 Express each percentage as a decimal.

a 306%	**b** 154%	**c** 263%	**d** 856%	**e** 287%
f 742%	**g** 733%	**h** 113%	**i** 922%	**j** 569%

Check your answers

4 **a** 0.08	**b** 0.09	**c** 0.46	**d** 0.65
e 0.58	**f** 0.02	**g** 0.26	**h** 0.04
i 0.77	**j** 0.84		
5 **a** 3.06	**b** 1.54	**c** 2.63	**d** 8.56
e 2.87	**f** 7.42	**g** 7.33	**h** 1.13
i 9.22	**j** 5.69		

WALT Calculate percentage of an amount

Success Criteria I know …

- I can write a percentage as a fraction
- Change" by " or "of" to x (Multiply)

Calculate the following.

a 20% of 40 m

a $20\% \text{ of } 40 \text{ m} = \frac{20}{100} \times \frac{40}{1}$

$= \frac{800}{100}$

$= 8 \text{ m}$

b $12\frac{1}{2}\% \text{ of } \$40$

b $12\frac{1}{2}\% = \frac{25}{200}$

$12\frac{1}{2}\% \text{ of } \$40 = \frac{25}{200} \times \frac{40}{1}$

$= \frac{1000}{200}$

$= 5 \text{ m}$

3 Calculate:

a 45% of \$260	**b** 64% of 500 L	**c** 75% of \$240
d 17% of 50	**e** 12% of 64 kg	**f** 18% of 80 m
g $62\frac{1}{2}$% of \$320	**h** $66\frac{2}{3}$% of 180 m	**i** 32% of 308 kg
j 72% of 210 L	**k** 21% of \$544	**l** 13% of \$126

4 Convert each percentage to a decimal, then calculate:

a 4% of \$120	**b** 9% of 220 L	**c** 6% of 40 m
d 15% of 600 kg	**e** 13% of \$160	**f** 52% of 1600 km

Check your answers

EXERCISE 7D

1	**a** 40%	**b** 20%	**c** 16%	**d** 36%
	e 56%	**f** 20%	**g** 30%	**h** 54%
	i 72%	**j** 25%	**k** 50%	**l** 25%
2	**a** 20%	**b** 48%	**c** 300%	**d** 20%
	e 65%	**f** 905%	**g** 30%	**h** 17%
	i 900%	**j** 75%	**k** 25%	**l** 204%
	m 25%	**n** 50%	**o** 40%	

3 **a** \$117	**b** 320 L	**c** \$180
d 8.50	**e** 7.68 kg	**f** 14.4 m
g \$200	**h** 120 m	**i** 98.56 kg
j 151.2 L	**k** \$114.24	**l** \$16.38
4 **a** \$4.80	**b** 19.8 L	**c** 2.4 m
d 90 kg	**e** \$20.80	**f** 832 km