

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.

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|---------------|---------------|---------------|---------------|----------------|
| 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 $\frac{38}{40} \times \frac{100}{1}\% = 95\%$

∴ 38 cm is 95% of 40 cm.

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

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

∴ 42 cm is 35% of 1.2 m.

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

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

∴ 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

$$\begin{aligned} \mathbf{a} \quad 20\% \text{ of } 40 \text{ m} &= \frac{20}{100} \times \frac{40}{1} \\ &= \frac{800}{100} \\ &= 8 \text{ m} \end{aligned}$$

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

$$\begin{aligned} \mathbf{b} \quad 12\frac{1}{2}\% &= \frac{25}{200} \\ 12\frac{1}{2}\% \text{ of } \$40 &= \frac{25}{200} \times \frac{40}{1} \\ &= \frac{1000}{200} \\ &= 5 \text{ m} \end{aligned}$$

[Video on percentage of an amount](#)

3 Calculate:

a 45% of \$260

d 17% of 50

g $62\frac{1}{2}\%$ of \$320

j 72% of 210 L

b 64% of 500 L

e 12% of 64 kg

h $66\frac{2}{3}\%$ of 180 m

k 21% of \$544

c 75% of \$240

f 18% of 80 m

i 32% of 308 kg

l 13% of \$126

4 Convert each percentage to a decimal, then calculate:

a 4% of \$120

d 15% of 600 kg

b 9% of 220 L

e 13% of \$160

c 6% of 40 m

f 52% of 1600 km

Check your answers

1 a 40%	b 20%	c 16%	d 36%	3 a \$117	b 320 L	c \$180
e 56%	f 20%	g 30%	h 54%	d 8.50	e 7.68 kg	f 14.4 m
i 72%	j 25%	k 50%	l 25%	g \$200	h 120 m	i 98.56 kg
2 a 20%	b 48%	c 300%	d 20%	j 151.2 L	k \$114.24	l \$16.38
e 65%	f 905%	g 30%	h 17%	4 a \$4.80	b 19.8 L	c 2.4 m
i 900%	j 75%	k 25%	l 204%	d 90 kg	e \$20.80	f 832 km
m 25%	n 50%	o 40%				