

WA7MNAC2

Calculating with number

Core + Challenge

Expressing One Quantity as a Percentage of Another — Marking Key

I can express one quantity as a percentage of another, converting to the same units first.

For tutors and parents. Award method marks for correct working even if the final answer is wrong.

Marks summary

Section A Fluency: 16 Section B Core: 21 Section C Reasoning: 9 Section D Challenge: 10 **Total: 56**

Fluency: 1 mark each; accept an equivalent unsimplified answer for half credit at tutor's discretion.

A Fluency *answers and working*

/ 16 marks

Q	Answer	Working
1	24%	$\frac{12}{50} = \frac{24}{100}$
2	90%	$\frac{18}{20} = \frac{90}{100}$
3	28%	$\frac{7}{25} = \frac{28}{100}$
4	75%	$\frac{45}{60} = \frac{3}{4}$
5	62.5%	$\frac{5}{8} = 5 \times 12.5\%$
6	24%	$0.48 \div 2 = \frac{48}{200} = 0.24$
7	82.5%	$\frac{33}{40} = 0.825$
8	60%	$\frac{9}{15} = \frac{3}{5}$
9	125%	$\frac{150}{120} = \frac{5}{4}$
10	25%	$\frac{250}{1000} = \frac{1}{4}$
11	37.5%	$\frac{45}{120} = \frac{3}{8}$
12	40%	$\frac{80}{200} = \frac{2}{5}$
13	25%	$\frac{120}{480} = \frac{1}{4}$
14	37.5%	$\frac{750}{2000} = \frac{3}{8}$
15	25%	$\frac{13}{52} = \frac{1}{4}$
16	160%	$2.4 \div 1.5 = 1.6$

Expressing One Quantity as a Percentage of Another · WA7MNAC2

B

Core answers, working and marks

/ 21 marks

Q	Answer	Working / sample response	Marks
1	Ella 85%, Jack 84% – Ella	$\frac{34}{40} = 85\%$; $\frac{42}{50} = 84\%$ 1 mark: both % 1 mark: Ella	2
2	40%	$\frac{12}{30} = \frac{2}{5} = 40\%$ 1 mark: working 1 mark: 40%	2
3	25%	Discount \$20; $\frac{20}{80} = 25\%$ 1 mark: \$20 over \$80 1 mark: 25%	2
4	25%	Increase 0.8 kg; $0.8 \div 3.2 = \frac{1}{4} = 25\%$ 1 mark: 0.8 kg 1 mark: 25%	2
5	59.1%	$13 \div 22 = 0.5909\dots$ 1 mark: division 1 mark: 59.1%	2
6	75%	$1.8 \div 2.4 = \frac{18}{24} = \frac{3}{4}$ 1 mark: working 1 mark: 75%	2
7	58.1%	$18 \div 31 = 0.5806\dots$ 1 mark: division 1 mark: 58.1%	2
8	AFL 35%, soccer 25%, netball 30%, other 10%	$\frac{42}{120} = 35\%$, $\frac{30}{120} = 25\%$, $\frac{36}{120} = 30\%$, $\frac{12}{120} = 10\%$ (total 100%) 2 marks: all four (1 mark for two) 1 mark: checks total is 100%	3
9	60%	Profit \$15; $\frac{15}{25} = 60\%$ 1 mark: \$15 1 mark: 60%	2
10	37.5%	Still needed \$225; $\frac{225}{600} = \frac{3}{8} = 37.5\%$ 1 mark: \$225 or 62.5% saved 1 mark: 37.5%	2

Expressing One Quantity as a Percentage of Another · WA7MNAC2

C

Reasoning *sample answers and marking criteria*

/ 9 marks

Q	Answer	Working / sample response	Marks
1	$\frac{45}{120} = 37.5\%$, not $\frac{45}{2}$	Without converting you would get $\frac{45}{2} = 2250\%$, which makes no sense – 45 minutes is less than 2 hours. <i>1 mark: explanation</i> <i>1 mark: 37.5%</i>	2
2	25%	15% means 15 out of 100, not 60. $\frac{15}{60} = \frac{1}{4} = 25\%$. <i>1 mark: explains</i> <i>1 mark: 25%</i>	2
3	Up 10 percentage points = 25% increase	The score rose by 10 percentage points. As a percentage of the original: $\frac{10}{40} = 25\%$. <i>1 mark: percentage points</i> <i>1 mark: $\frac{10}{40}$</i> <i>1 mark: 25%</i>	3
4	Yes	e.g. 150 compared with 120 is $\frac{150}{120} = 125\%$. It happens when the first quantity is larger. <i>1 mark: yes</i> <i>1 mark: example</i>	2

D

Challenge *solutions and marking criteria*

/ 10 marks

Q	Answer	Working / sample response	Marks
1	B (86.7%), C (86%), A (85%)	$\frac{17}{20} = 85\%$; $\frac{26}{30} \approx 86.7\%$; $\frac{43}{50} = 86\%$ <i>1 mark each correct percentage (order must match)</i>	3
2	(a) 25% (b) 20% (c) different starting amounts	$\frac{10}{40} = 25\%$; $\frac{10}{50} = 20\%$ The same \$10 change is compared with different original prices. <i>1 mark each part</i>	3
3	37.5%	Girls are $\frac{3}{8}$ of the class = 37.5% <i>1 mark: $\frac{3}{8}$</i> <i>1 mark: 37.5%</i>	2
4	29	Test 1 = 72%; 72% of 40 = 28.8, so he needs more than 28.8 → 29 <i>1 mark: 72% and 28.8</i> <i>1 mark: 29</i>	2