

WA8MNAC1

Calculating with number

Core + Challenge

Percentage Change and Original Amounts — Marking Key

I can calculate percentage change, profit and loss percentages, and work backwards to find an original amount.

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: 22 Section C Reasoning: 9 Section D Challenge: 11 **Total: 58**

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	20% increase	$\frac{10}{50} \times 100\%$
2	25% decrease	$\frac{20}{80} \times 100\%$
3	15% increase	$\frac{6}{40} \times 100\%$
4	10% increase	$\frac{25}{250} \times 100\%$
5	15% decrease	$\frac{18}{120} \times 100\%$
6	20% increase	$\frac{0.50}{2.50} \times 100\%$
7	25%	$\frac{5}{20} \times 100\%$
8	15%	$\frac{12}{80} \times 100\%$
9	70	$77 \div 1.1$
10	\$80	$64 \div 0.8$
11	\$50	$55 \div 1.1$
12	\$10	$110 \div 1.1 = 100; 110 - 100$
13	120	$150 \div 1.25$
14	\$70	$49 \div 0.7$
15	25% increase	$\frac{4}{16} \times 100\%$
16	20% decrease	$\frac{4}{20} \times 100\%$

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B

Core answers, working and marks

/ 22 marks

Q	Answer	Working / sample response	Marks
1	10%	Increase = 572 000 – 520 000 = 52 000 $\frac{52000}{520000} \times 100\% = 10\%$ 1 mark: 52 000 ÷ 520 000 1 mark: 10%	2
2	30% loss	Loss = 450 – 315 = \$135 $\frac{135}{450} \times 100\% = 30\%$ 1 mark: \$135 1 mark: 30%	2
3	\$90	Sale price = 75% of original $67.50 \div 0.75 = \$90$ 1 mark: ÷ 0.75 1 mark: \$90	2
4	\$135 before GST; GST \$13.50	$148.50 \div 1.1 = \$135$ $148.50 - 135 = \$13.50$ 1 mark each	2
5	8%	Increase 92 $\frac{92}{1150} \times 100\% = 8\%$ 1 mark: 92 ÷ 1150 1 mark: 8%	2
6	\$600	$672 \div 1.12 = \$600$ 1 mark: ÷ 1.12 1 mark: \$600	2
7	53.3%	Cost: 40 × 6 = \$240 Sales: 32 × 10.50 + 8 × 4 = 336 + 32 = \$368; profit \$128 $\frac{128}{240} \times 100\% = 53.33\ldots\% \approx 53.3\%$ 1 mark: cost and sales 1 mark: profit \$128 1 mark: 53.3%	3
8	12.5%	Decrease = \$0.23 $\frac{0.23}{1.84} \times 100\% = 12.5\%$ 1 mark: 0.23 ÷ 1.84 1 mark: 12.5%	2
9	\$1300	$1352 \div 1.04 = \$1300$ 1 mark: ÷ 1.04 1 mark: \$1300	2

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Q	Answer	Working / sample response	Marks
10	(a) 25% (b) 20% (c) different originals	(a) $\frac{8}{32} \times 100\% = 25\%$ (b) $\frac{8}{40} \times 100\% = 20\%$ (c) The change is \$8 both times, but it is compared with a different original amount (\$32, then \$40). <i>1 mark each</i>	3

C

Reasoning *sample answers and marking criteria*

/ 9 marks

Q	Answer	Working / sample response	Marks
1	\$100	The 20% was taken off the original price, not the sale price. \$80 is 80% of the original, so original = $80 \div 0.8 = \\$100$. Check: $100 \times 0.8 = 80$ (but $96 \times 0.8 = 76.80$). <i>1 mark: identifies the wrong base</i> <i>1 mark: $\div 0.8$</i> <i>1 mark: \$100</i>	3
2	Priya	Percentage change divides by the ORIGINAL amount: $\frac{10}{50} = 20\%$. Jai divided by the new amount: $\frac{10}{60} \approx 16.7\%$. <i>1 mark: Priya</i> <i>1 mark: explanation</i>	2
3	False	$\\$110 - 10\% = \\$99$, but the price before GST is $110 \div 1.1 = \\$100$. GST is 10% of the pre-GST price, which is $\frac{1}{11}$ of the total, not 10% of it. <i>1 mark: false with the \$99 vs \$100 example</i> <i>1 mark: $\div 1.1$ (or $\frac{1}{11}$)</i>	2
4	It becomes \$0; no	A 100% decrease removes the whole amount, so the price becomes 0. A decrease of more than 100% would make the price negative, which is not possible for a price. <i>1 mark: price becomes 0</i> <i>1 mark: no, with reason</i>	2

D

Challenge *solutions and marking criteria*

/ 11 marks

Q	Answer	Working / sample response	Marks
1	\$1500	Combined multiplier $0.8 \times 0.85 = 0.68$ Original $\times 0.68 = 1020$ $1020 \div 0.68 = \\$1500$ <i>1 mark: 0.68</i> <i>1 mark: division</i> <i>1 mark: \$1500</i>	3

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Q	Answer	Working / sample response	Marks
2	Loss of \$10 (4%)	Cost of the first: $120 \div 1.2 = \$100$; cost of the second: $120 \div 0.8 = \$150$ Total cost \$250, total sales \$240 Loss \$10; $\frac{10}{250} \times 100\% = 4\%$ <i>1 mark: both costs</i> <i>1 mark: \$10 loss</i> <i>1 mark: 4%</i>	3
3	20 000; 1% decrease	Original $\times 0.9 \times 1.1 = 19\,800 \rightarrow$ original $= 19\,800 \div 0.99 = 20\,000$ $0.99 = 99\%$, so an overall 1% decrease <i>1 mark: 20 000</i> <i>1 mark: 1% decrease</i>	2
4	\$11.70	Discounted price: $143 \times 0.9 = \$128.70$ Price before GST: $128.70 \div 1.1 = \$117$ GST $= 128.70 - 117 = \$11.70$ <i>1 mark: \$128.70</i> <i>1 mark: $\div 1.1$</i> <i>1 mark: \$11.70</i>	3