

Credit Percentages - Solutions

1. 2010 Paper 2 Q.1

- $100\% - 25\% = 75\% = 0.75$ ✓
- weight after 3 days = $(0.75)^3 \times 84000$ ✓
= 35437.5 ✓
weight = 35400 t (3 sig figs) ✓

or

- 25% of 84000 = 21000
 $84000 - 21000 = 63000$ ✓
- 25% of 63000 = 15750
 $63000 - 15750 = 47250$ ✓
- 25% of 47250 = 11812.5
weight = $47250 - 11812.5$ ✓
weight = 35437.5 ✓
weight = 35400 t (3 sig figs) ✓ (4kw)

2. 2009 Paper 2 Q.8

- $100\% - 20\% = 80\% = 0.8$ ✓
- fat content after 3 yrs = $(0.8)^3 \times 90$ ✓
= 46.08 g. ✓
- 50% of 90 = 45g so the company is still 1.08g over the target fat content. ✓

or

- 20% of 90 = 18
 $90 - 18 = 72$ ✓
- 20% of 72 = 14.4
 $72 - 14.4 = 57.6$ ✓
- 20% of 57.6 = 11.52
 $57.6 - 11.52 = 46.08$ g ✓
- see method 1 for answer.

(4RE)

3. 2008 Paper 2 Q.1

- $100\% + 8\% = 108\% = 1.08$ ✓
- Amount of waste after 3 yrs = $(1.08)^3 \times 42000$ ✓
= 52907.904 ✓
waste recycled = 52900 (3 sig figs) ✓

or

- 8% of 42000 = 3360
 $42000 + 3360 = 45360$ ✓
- 8% of 45360 = 3628.8
 $45360 + 3628.8 = 48988.8$ ✓
- 8% of 48988.8 = 3919.104
weight = $48988.8 + 3919.104$ ✓
= 52907.904
weight = 52900 t (3 sig figs) ✓

(4kw)

4. 2008 Paper 2 Q.3. (calculating original amount)

$$100\% - 20\% = 80\%$$

$$80\% \text{ of original} = 45$$

$$1\% \text{ of original} = 45 \div 80$$

$$100\% \text{ of original} = 45 \div 80 \times 100$$

$$\text{original cost} = \underline{\underline{\pounds 56.25}}$$

5. 2007 Paper 2 Q1

- $100\% + 4.5\% = 104.5\% = 1.045$ ✓
- value after 3 years = $(1.045)^3 \times 600$ ✓
- Value = $\pounds 684.70$ ✓
(nearest penny)

or

- 4.5% of $600 = 27$
- $600 + 27 = 627$ ✓
- 4.5% of $627 = 28.215$
- $627 + 28.215 = 655.215$ ✓
- 4.5% of $655.215 = 29.484675$
- $655.215 + 29.484675 = \pounds 684.70$ ✓
nearest penny.

note: rounding to nearest penny throughout working will give the same answer.

(3kw)

6. 2006 Paper 2 Q3 (calculate original amount).

$100\% + 8\% = 108\%$ ✓

108% of bid price = 324

1% of bid price = $324 \div 108$ ✓

100% of bid price = $324 \div 108 \times 100$

bid price = $\pounds 300$ ✓

(3kw)

note: You could guess & check but will need to show evidence of how you decided on final answer.

• An answer of $\pounds 300$ with no working will get no marks.

7. 2004 Paper 2 Q4

- $100\% - 20\% = 80\% = 0.8$ ✓
- $12\text{ noon} - 3\text{ pm} = 3\text{ hrs}$
- Amount of drug at 3pm = $(0.8)^3 \times 250$ ✓
= 128 mg ✓

or

- 20% of $250 = 50$
- $250 - 50 = 200$ ✓
- 20% of $200 = 40$
- $200 - 40 = 160$ ✓
- 20% of $160 = 32$
- $160 - 32 = 128\text{ mg}$ ✓

(3kw)

8. 2007 Paper 2 Q5 (calculating original amount)

$100\% + 10\% = 110\%$

110% of price = 148.50

1% of price = $148.50 \div 110$

100% of price = $148.50 \div 110 \times 100$

Price = $\pounds 135$

9. 2003 Paper 2 Q1

• $100\% + 0.6\% = 100.6\%$
 $= 1.006$ ✓

• At 3pm = $(1.006)^3 \times 5000$ ✓
 $= 5090.54$ ✓
 $= \underline{5090 \text{ bacteria}}$ ✓
(3 sig figs)

or

• 0.6% of 5000 = 30
 $5000 + 30 = 5030$ ✓

• 0.6% of 5030 = 30.18
 $5030 + 30.18 = 5060.18$ ✓

• 0.6% of 5060.18 = 30.36
 $5060.18 + 30.36 = 5090.54$ ✓

At 3pm = 5090 bacteria (3 sig figs)

(4ku)

10. 2002 Paper 2 Q2 (calculating the original amount)

• $100\% + 17.5\% = 117.5\%$ ✓

• 117.5% of price = 150

1% of price = $150 \div 117.5$ ✓

100% of price = $150 \div 117.5 \times 100$ ✓

price without VAT = £127.66 (nearest penny) (3ku)

11. 2001 Paper 2 Q3

house: $100\% + 5\% = 105\% = 1.05$

1999-2002 = 3yrs

value of house = $(1.05)^3 \times 90000$ ✓
 $= \underline{£104186}$ (nearest £)

contents: $100\% - 8\% = 92\% = 0.92$

value of contents = $(0.92)^3 \times 60000$

$= \underline{£46721}$ ✓
(nearest £)

Total value in 2002 = $104186 + 46721$

$= \underline{£150,907}$ ✓

(3ku)

note: This can be done using the 'long' method i.e. work out the % then + or - , do this 3 times.

12. 2000 Paper 2 Q1

- $100\% - 12\% = 88\% = 0.88$ ✓
- $1999 - 2002 = 3\text{ yrs.}$
- no of monkeys = $(0.88)^3 \times 5000$ ✓
 $= 3407.36$ ✓
 $= \underline{3410}$ (nearest 10) ✓

or

- 12% of $5000 = 600$
- $5000 - 600 = 4400$ ✓
- 12% of $4400 = 528$
- $4400 - 528 = 3872$ ✓
- 12% of $3872 = 464.64$
- $3872 - 464.64 = 3407.36$ ✓
 $= \underline{3410}$ (nearest 10) ✓

(4ku)

13. 1999 Paper 2 Q1 (calculate the original amount)

• $100\% - 12\frac{1}{2}\% = 87.5\% = 0.875$

✓ for method.

87.5% of original price = $10,500$

1% of original price = $10,500 \div 87.5$

100% of original price = $10,500 \div 87.5 \times 100$

original price = £12,000 ✓

(2ku)

note: correct answer, no working, will get no marks.

14. 1997 Q5

15th may $\Rightarrow 500 - 100 = 400$

End may $\Rightarrow 1.025 \times 400 = 410$ ✓ ($100\% + 2.5\% = 102.5\%$
 $= 1.025$)

15th June $\Rightarrow 410 - 100 = 310$

End June $\Rightarrow 1.025 \times 310 = 317.75$ ✓

15th July $\Rightarrow 317.75 - 100 = 217.75$

End July $\Rightarrow 1.025 \times 217.75 = 223.19$ (nearest penny)

The amount outstanding at the beginning
of August is £223.19 ✓

(3ku)

15. 1996 Q.12

• $56.3 - 54.9 = 1.4$ ✓

% increase = $\frac{1.4}{54.9} \times 100 = 2.55\%$ ✓

• $100\% + 2.55\% = 102.55\% = 1.0255$ ✓

• Price in 2000 = $(1.0255)^4 \times 56.3$ (4RE)
= 62.3p (1dp) ✓

note: you can use the 'long' method i.e. work out 2.55%, add it on, do this 4 times in total. Rounding to 1 decimal place throughout working will give an answer of 62.2p.

16. 1995 Q.8

• City Square, Albert sq., High st are already below 135 units, further reduction will mean they are still less than 135 units. ✓

• $100\% - 5\% = 95\% = 0.95$

• Wellgate Centre:

$(0.95)^3 \times 161 = 138$ ✓

• Bus Station:

$(0.95)^3 \times 146 = 125$ ✓

⇒ All the places except Wellgate centre will meet the health regulations. ✓ (4RE)

17. 1994 Q.2

$100\% + 5\% = 105\% = 1.05$ ✓

no of people = $(1.05)^3 \times 12$ million ✓

= 13.8915 million ✓ (3kw)

18. 1992 Paper 1.03 (KV - use a calculator)

Purchase price = 16000. Van will be replaced when value is below £8000.

$$\text{First year} \Rightarrow 0.7 \times 16000 = 11200 \quad \checkmark$$

$$\text{2nd yr} \Rightarrow 0.85 \times 11200 = 9520 \quad \checkmark$$

$$\text{3rd yr} \Rightarrow 0.85 \times 9520 = 8092 \quad \checkmark$$

The van will be replaced at the end of the 4th yr as its value will fall below £8000 during the 4th year. (4KV)

19. 1990 Paper 1.02 (KV - use a calculator)

$$\text{height on 3rd bounce} = (0.7)^3 \times 200 \quad \checkmark$$

$$= 68.6 \text{ cm} \quad \checkmark$$

$$= \underline{\underline{69 \text{ cm}}} \text{ (nearest cm)} \quad \checkmark \quad (4KV)$$