

Topic: Percentages

11.01

$$80\% = 48000$$

$$\begin{array}{l} \div 80 \left\{ \right. \\ \left. \right\} \div 80 \\ 1\% = 600 \\ \left. \right\} \times 100 \\ \times 100 \left\{ \right. \\ \left. \right\} \times 100 \\ 100\% = \underline{\underline{60000}} \end{array}$$

11.02

$$130\% = \text{£}260$$

$$\begin{array}{l} \div 130 \left\{ \right. \\ \left. \right\} \div 130 \\ 1\% = \text{£}2 \\ \left. \right\} \times 100 \\ \times 100 \left\{ \right. \\ \left. \right\} \times 100 \\ 100\% = \underline{\underline{\text{£}200}} \end{array}$$

11.03

$$85\% = \text{£}297.50$$

$$1\% = 3.5$$

$$100\% = \underline{\underline{\text{£}350}}$$

11.04

$$\begin{aligned} 100 + 2.8 &= 102.8\% \\ &= 1.028 \end{aligned}$$

$$240000 \times (1.028)^2$$

$$= \underline{\underline{\text{£}253628.16}}$$

11.05

$$\begin{aligned} 100 - 15 &= 85\% \\ &= 0.85 \end{aligned}$$

$$964 \times (0.85)^3$$

$$= 592.0165$$

$$= 590 \text{ pupils to nearest } 10$$

11.06

Newtown: Year 1: 52500

Year 2: 55125

Year 3: 57881

Coaltown Year 1: 86400

Year 2: 69120

Year 3: 55296

After 3 years $N > C$

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11.07

$$100 + 2.5 = 102.5\% \\ = 1.025$$

$$77900 \times (1.025)^3$$

$$= \text{£}83889.78$$

$$= \text{£}83900 \text{ to 3sf}$$

11.08

$$8\text{pm} - 11\text{pm} = 3\text{hours}$$

$$100 - 4 = 96\% = 0.96$$

$$28 \times (0.96)^3$$

$$= 24.8^\circ\text{C to 1dp}$$

11.09

$$100 + 2.3 = 102.3\% \\ = 1.023$$

$$28400 \times (1.023)^3$$

$$= 30405.01634$$

$$= \text{£}30405 \text{ to nearest pound}$$

11.10

$$100 + 4.5 = 104.5\% \\ = 1.045$$

$$50000 \times (1.045)^4$$

$$= \text{£}59625.93$$

11.11

$$2007: 3000 \times (1.11) = 3330$$

$$2008: 3330 \times (0.90) = 2997$$

$$2006: 3000$$

Sales in 2008 were less than 2006 by 3 sales

11.12

$$100 - 4.25 = 95.75$$

$$= 0.9575$$

$$176500 \times (0.9575)^3$$

$$= \text{£}154939.11$$

$$= \text{£}155000 \text{ to 3sf}$$

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11.13

$$100 + 3 \cdot 15 = 103 \cdot 15\%$$

$$= 1 \cdot 0315$$

$$134750 \times (1 \cdot 0315)^3$$

$$= 147889 \cdot 2038$$

$$= \text{£}147900 \text{ to } 4 \text{ sf}$$

11.14

$$100 - 12 \cdot 5 = 87 \cdot 5\%$$

$$87 \cdot 5\% = \text{£}10500$$

$$1\% = 10500 \div 87 \cdot 5$$

$$(120)$$

$$100\% = \underline{\underline{\text{£}12000}}$$

11.15

$$2010 \rightarrow 2050 = 40 \text{ years}$$

every 10 years
= 4 times

$$100 - 50 = 50\% = 0 \cdot 5$$

$$1 \times (0 \cdot 85)^4 = 0 \cdot 522$$

no - since the greenhouse gases are still more than 0.5 of the original

11.16

$$1999 - 2002$$

$$= 3 \text{ years}$$

$$5000 \times (0 \cdot 88)^3$$

$$= 3407 \cdot 36$$

$$= 3410 \text{ to nearest } 10$$

11.17

$$1999 \rightarrow 2002 = 3 \text{ years}$$

house: $100 + 5 = 105\% = 1 \cdot 05$

$$90000 \times (1 \cdot 05)^3$$

$$= \text{£}104186 \cdot 25$$

contents: $100 - 8 = 92\% = 0 \cdot 92$

$$60000 \times (0 \cdot 92)^3$$

$$= \text{£}46721 \cdot 28$$

$$\text{Total} = \text{£}150907 \cdot 53$$

11.18

$$100 + 17 \cdot 5 = 117 \cdot 5\%$$

$$117 \cdot 5\% = \text{£}150$$

$$1\% = 150 \div 117 \cdot 5$$

$$(1 \cdot 2765 \dots)$$

$$100\% = \underline{\underline{\text{£}127 \cdot 66}}$$

to nearest penny

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$$11.19 \quad 12 - 3\text{pm} = 3\text{ hours}$$

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

$$5000 \times (1.006)^3$$

$$= 5090.54\dots$$

$$= 5090 \text{ to } 3 \text{ sf}$$

$$11.20 \quad 12 - 3\text{pm} = 3\text{ hours}$$

$$100 - 20 = 80\% = 0.8$$

$$250 \times (0.8)^3$$

$$= 128 \text{ mg}$$

$$11.21 \quad 100 + 8 = 108\%$$

$$108\% = \text{£}324$$

$$1\% = 3$$

$$100\% = \underline{\underline{\text{£}300}}$$

$$11.22 \quad 100 + 8 = 108\% = 1.08$$

$$42000 \times (1.08)^3$$

$$= 52907.904$$

$$= 52900 \text{ tonnes to } 3 \text{ sf}$$

$$11.23 \quad 100 - 20 = 80\%$$

$$80\% = \text{£}45$$

$$1\% = 0.5625$$

$$100\% = \text{£}56.25$$

$$11.24 \quad 100 - 20 = 80\% \\ = 0.8$$

$$90 \times (0.8)^3 = 46.08\text{g}$$

No, since their aim would have fat content a 45g after 3 years and they are still above that.

Topic: Percentages11.25 Non-calculator

$10\% = 14$

$5\% = 7$

$2.5\% = 3.5$

$12.5\% = 14$
 $+ 3.5$

£17.50

$12.5\% = \frac{1}{8}$

or
 $\frac{1}{8}$ of 140

$\frac{017.5}{8 \overline{)140.0}}$

£17.50

11.26

City Sq : already < 135

Albert Sq : already < 135

Wellgate Centre:

$161 \times (0.95)^3 = 138 \text{ units}$

Bus Station:

$146 \times (0.95)^3 = 125 \text{ units}$

High St : already < 135

No, Wellgate Centre still > 135

11.27 % increase = $\frac{56.3 - 54.9}{54.9} \times 100$

$= 2.55\%$

$100 + 2.55 = 102.55\% = 1.0255$

$56.3 \times (1.0255)^4$

$= 62.3p \text{ per Litre}$

in 2000

11.28 15th May: £400 to pay

Interest = 30th May 400×1.025

£410 to pay

15th June: £310 to pay

Interest: 310×1.025 30th June

£317.75 to pay

15th July: £217.75 to pay

Interest: 217.75×1.025

£223.19 to pay 1st Aug

11.29 $100 + 12.5 = 112.5\%$

~~$= 1.125$~~

$112.5\% = 450g$

$1\% = 4g$

$100\% = \underline{\underline{400g}}$