Percentages Revision

8 How long will it take to accumulate one million pounds in the following situations?

a An investment of £100 000 at a rate of 12% compound interest.

b An investment of £50 000 at a rate of 16% compound interest.

a) $100000 \times 1.12^{20} = 964629$

$100000 \times 1.12^{21} = 1080384$

so 21 years

b) $50000 \times 1.16^{20} = 973037$

$50000 \times 1.16^{21} = 1,128,724$

so 21 years

Reverse Percentages

5 Tina's weekly pay is increased by 5% to £315. What was Tina's pay before the increase?

6 The number of workers in a factory fell by 5% to 228. How many workers were there originally?

5) Original $\times$ 1.05 = £315

Original = £315 ÷ 1.05 = £300

6) Original $\times$ 0.95 = 228

Original = $\frac{228}{0.95}$ = 240

8 If 38% of plastic bottles in a production line are blue and the remaining 7750 plastic bottles are brown, how many plastic bottles are blue?

Brown = 100% − 38% = 62%

62% is 7750

1% is $\frac{7750}{62}$

38% is $\frac{7750}{62} \times 38$ = 4750 Blue

A computer costs £540 including VAT

Find the ex-VAT price if VAT is 20%

ex-VAT Price × 1.2 = £540

ex-VAT Price = £540 ÷ 1.2

= £450

I sell 800 items

27% for £4 each

$\frac{2}{5}$ for £5 each

The rest at £3 each

I buy the items for £2 each

What is my percentage profit?

Cost Price $800 \times £2 = £1600$

Sales

$800 \times 27\% = 216$	$216 \times £4 = £864$
$800 \times \frac{2}{5} = 320$	$320 \times £5 = £1600$
$800 - 320 - 216 = 264$	$264 \times £3 = £792$
	$£3256$

$$\frac{3256}{1600} = 2.035$$

Percentage Profit = 103.5 %

or Profit : $3256 - 1600 = £1656$

Percentage profit $= \frac{1656}{1600} \times 100 = 103.5\%$