Percentages - Lesson 2

Original Values (Reverse Percentages)

<u>LI</u>

- Work out original values when told the new value and percentage change.

<u>SC</u>

- Writing percentages as decimals.

- Proportion.

Jan 10-12:11

Reminders

$$100\% = 1$$

$$73\% = 100\% - 27\% = 0.73$$

$$128\% = 100\% + 28\% = 1.28$$

<u>Example 1</u>   (Calculator)

A property is currently worth £ 154 000. This is after a 3 % increase over a year. What was the original price ?

103 % of the original cost (£ C) corresponds to 154 000

$$103 \% \text{ of } C = 154\ 000$$

$$1.03 \times C = 154\ 000$$

$$C = 154\ 000 \div 1.03$$

$$\underline{C = 149\ 514.563\ldots}$$

Original price : £ 149 514 . 56

<u>Example 2</u>   (Calculator)

The current world record time for the men's 400 m is 43 . 03 seconds.

If this is a decrease of 9 . 6 % of the world record set in 1924, what was the world record in 1924 ?

(100 − 9 . 6) % of 1924 time corresponds to 43 . 03

$$90 . 4 \text{ % of } T = 43 . 03$$

$$0 . 904 \times T = 43 . 03$$

$$T = 43 . 03 \div 0 . 904$$

$$\underline{T = 47 . 599 . . .}$$

1924 record : 47 . 60 s

<u>Example 3</u>   (Non - Calc)

The value of a washing machine goes down by 25 %.
If it now costs £ 144, what was the original cost ?

75 % of the original cost (£ C) corresponds to 144

75 % of C = 144

(3/4) x C = 144

C = 144 ÷ (3/4)

C = 144 x (4/3)

C = 192

Original price : £ 192

<u>Example 4</u>   (Non - Calc)

A wise man buys a pencil. He then sells it for 20 p.
If this amount is 1 600 % of the original price, how much
did he buy it for ?

1 600 % of the original cost (£ C) corresponds to 20 p

$$1\,600\,\%\ of\ C\ =\ 20$$

$$16\ \times\ C\ =\ 20$$

$$C\ =\ \frac{20}{16}$$

$$C\ =\ \frac{5}{4}$$

$$\underline{C\ =\ 1\,.\,25}$$

Original price : 1 . 25 p

Questions (Calculator PERMITTED)

1   A painting has increased in value by 5% since it was bought in 2005. At auction in 2013 it was sold for £13 650. How much did it cost in 2005?

2   The average attendance at a football ground has decreased by 10% since last year. The average attendance this year is 36 800. What was the average attendance last year?

3   A TV costs £900 after VAT is added at 20%. What was the cost before VAT?

4   A house appreciated in value by 2% over the course of a year. At the end of the year it was worth £117 300. How much was it worth at the start of the year?

5   A car has depreciated by 40% since it was bought. It is currently worth £1800. How much did the car originally cost?

6   Michael received a 3% pay rise, increasing his annual wage to £26 780. What was his wage before the increase?

7   A 540g cereal box claims that it has 20% extra free. What does a normal box weigh?

8   The value of a car has decreased by 12%. It is currently worth £7480. What was the original value?

9   The population of a Scottish town has risen by 3.5% over the past 10 years. If the population now stands at 22 300, what was it 10 years ago? Answer to the nearest hundred.

10   The rate of inflation in a particular year was 2.8%. At the end of the year a TV was priced at £635.99. If the cost had risen in line with inflation, what did it cost at the start of the year?

11   John put money in an account offering compound interest at 3.2% per annum. After three years it was worth £604.51. How much did he initially place in the account?

Questions (Calculator FORBIDDEN)

1   A computer cost £240 after VAT at 20% was added. What was the cost before VAT?

2   Mike took his family out for dinner. He paid £132 for the meal including a 10% tip. What was the price of the meal without the tip?

3   A dress cost £72 in a sale where all items were reduced by 20%. What was the price of the dress before the sale?

4   Pensioners get 40% off of the price of a full adult train ticket. A pensioner pays £21 for a particular journey. What would be the cost of a full adult ticket for the same journey?

5   The population of a small village decreased by 25% last year. There are now 225 people. What was the population last year?

6   Jamie bought a computer last year. It depreciated by 12.5% over the course of the year and is now valued at £315. How much was it worth when he bought it?

7   The cost of LPG has increased by 15% since last year. This year it cost Heather £460 for a full tank of gas. How much would it have cost her last year?

Feb 4-12:58

<p style="color:red">Answers</p>

1) £ 13 000	1) £ 200
2) 40 888	2) £ 120
3) £ 750	3) £ 90
4) £ 115 000	4) £ 35
5) £ 3 000	5) £ 300
6) £ 26 000	6) £ 360
7) 450 *g*	7) £ 400
8) £ 8 500	
9) 21 500	
10) £ 618 . 67	
11) £ 550	

Dec 18-14:20