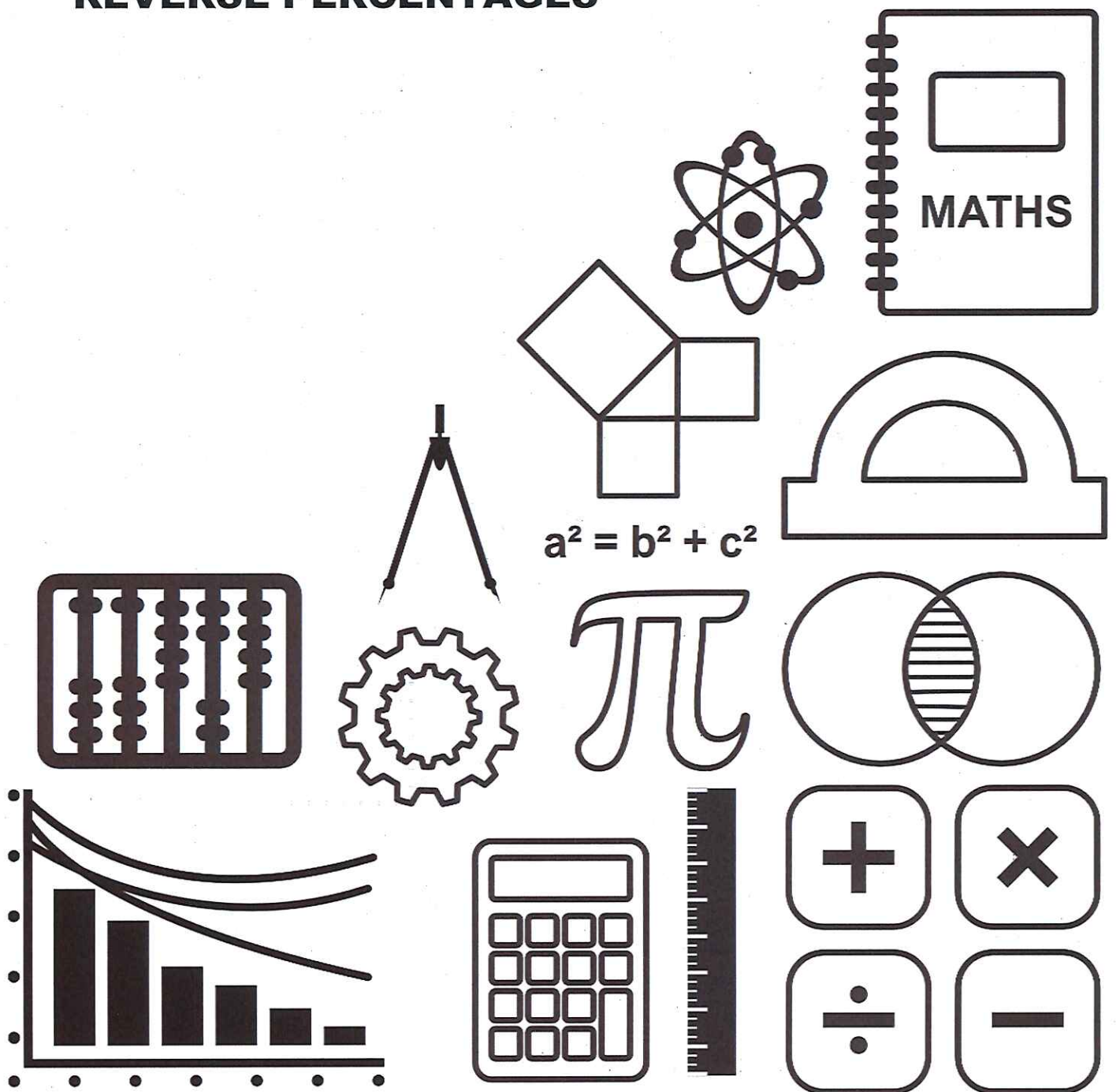


GCSE TOPIC BOOKLET REVERSE PERCENTAGES

SOLUTIONS



1. A gas bill was £99.75 inclusive of V.A.T. at 5%. What was the cost of the gas before V.A.T. was added?

$$100\% + 5\% = 105\%$$

$$105\% \times \text{original} = 99.75$$

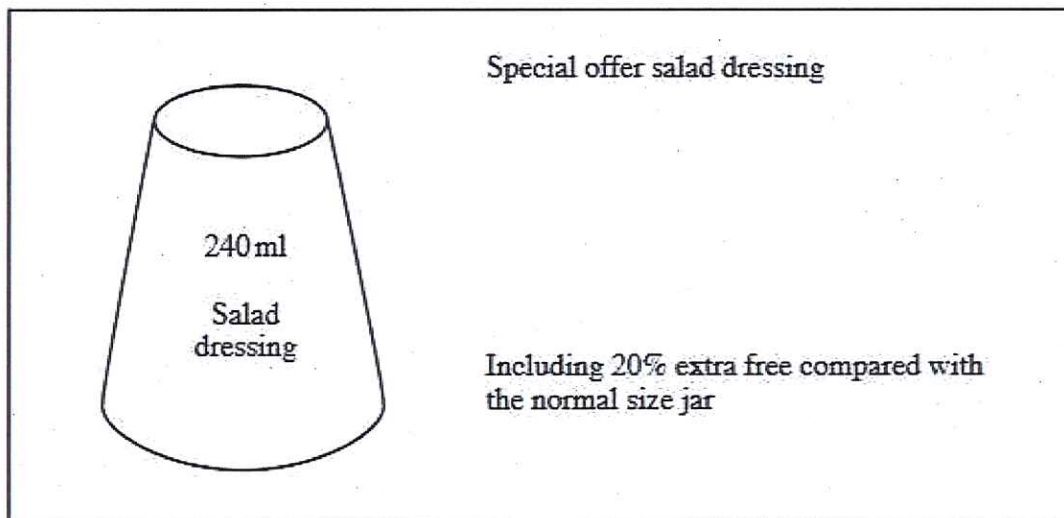
$$1.05 \times \text{original} = 99.75$$

$$\text{original} = 99.75 \div 1.05$$

$$= \underline{\underline{£95}}$$

[3]

2. The label on a jar of salad dressing states "includes 20% extra free". This special offer jar contains 240 ml of salad dressing.



$$100\% + 20\% = 120\%$$

Find the volume of the normal size jar of salad dressing.

$$120\% \times \text{original} = 240$$

$$1.2 \times \text{original} = 240$$

$$\text{original} = 240 \div 1.2$$

$$= \underline{\underline{200\text{ml}}}$$

[2]

3. The cost of a meal for a group of people, including an 8% service charge, is £203.04. Calculate the cost of the meal before the service charge was added.

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

$$108\% \times \text{original} = 203.04$$

$$1.08 \times \text{original} = 203.04$$

$$\text{original} = 203.04 \div 1.08$$

$$= \underline{\underline{£188}}$$

[3]

4. The weight of fruit collected from an orchard decreases by 8% each year.

This year, 2116 kg of fruit was collected.

What weight of fruit was collected one year ago?

$$100\% - 8\% = 92\%$$

$$92\% \times \text{original} = 2116$$

$$0.92 \times \text{original} = 2116$$

$$\text{original} = 2116 \div 0.92$$

$$\text{original} = \underline{\underline{2300 \text{ kg}}}$$

[3]

5. A shop has reduced the price of a bicycle by 40% of its original price.

The sale price of the bicycle is £192.

Calculate the original price of the bicycle.

$$100\% - 40\% = 60\%$$

$$60\% \times \text{original} = 192$$

$$0.6 \times \text{original} = 192$$

$$\text{original} = 192 \div 0.6$$

$$\text{original} = \underline{\underline{£320}}$$

[3]

6. An electricity bill was £89.46 inclusive of V.A.T. at 5%. What was the cost of the electricity bill before V.A.T. was added?

$$100\% + 5\% = 105\%$$

$$105\% \times \text{original} = 89.46$$

$$1.05 \times \text{original} = 89.46$$

$$\text{original} = 89.46 \div 1.05$$

$$= \underline{\underline{£85.20}}$$

[3]

7. The price of a watch bought on holiday abroad includes 5% tax. The tax can be reclaimed at the airport when returning to the United Kingdom. The watch costs 68.25 dollars including the tax. Calculate how much tax can be reclaimed at the airport.

$$100\% + 5\% = 105\%$$

$$105\% \times \text{original} = 68.25$$

$$\text{original} = 68.25 \div 1.05$$

$$\text{original} = \underline{\underline{65 \text{ dollars}}}$$

$$\underline{\underline{\text{Tax back}}} = 68.25 - 65 = \underline{\underline{3.25 \text{ dollars}}}$$

[3]

8. In a sale the price of a shed is reduced by 30% of its original price.

The sale price of the shed is £182.

Calculate the original price of the shed.

$$100\% - 30\% = 70\%$$

$$70\% \times \text{original} = 182$$

$$0.7 \times \text{original} = 182$$

$$\text{original} = 182 \div 0.7$$

$$= \underline{\underline{£260}}$$

[3]

9. Carys invested some money in a new bank account that paid interest at 4% per annum. No further deposits or withdrawals were made. At the end of one year she had £884 in this account.

How much money did Carys originally invest?

$$100\% + 4\% = 104\%$$

$$104\% \times \text{original} = 884$$

$$1.04 \times \text{original} = 884$$

$$\text{original} = 884 \div 1.04$$

$$= \underline{\underline{£850}}$$

[3]

10. This year a conservation group counted the number of trees in a park and recorded a total of 1144 trees.

They claim that there has been a reduction of 35% in the number since they last counted the trees in 2006.

How many trees were there in the park in 2006?

$$100\% - 35\% = 65\%$$

$$65\% \times \text{original} = 1144$$

$$0.65 \times \text{original} = 1144$$

$$\text{original} = 1144 \div 0.65$$

$$= \underline{\underline{1760 \text{ trees}}}$$

[3]

11. A major high street store employs 3655 people. This is a reduction of 14% in the number of people it employed last year.

How many people were employed by the store last year?

[3]

$$100\% - 14\% = 86\%$$

$$86\% \times \text{original} = 3655$$

$$0.86 \times \text{original} = 3655$$

$$\text{original} = 3655 \div 0.86$$

$$\text{original} = \underline{\underline{4250 \text{ people}}}$$

12. The financial press has just published the following headline.

PURKOZI Ltd.

Annual profit £4,760,000

Down 13% from last year

What was the profit made by this company last year?
Give your answer to the nearest ten thousand pounds.

$$100\% - 13\% = 87\%$$

$$87\% \times \text{original} = 4,760,000$$

$$0.87 \times \text{original} = 4,760,000$$

$$\text{original} = 4,760,000 \div 0.87$$

$$= 5,471,264.368$$

$$= \underline{\underline{£5,470,000}} \text{ (nearest ten thousand [4])}$$

13. Miriam lives in France.

Recently, she visited the UK and bought a watch for £211.50, which included VAT at 17.5%.

When Miriam returned home she claimed back the VAT in euros.

The exchange rate was £1 = 1.24 euros.

How many euros did Miriam receive?

$$100\% + 17.5\% = 117.5\%$$

$$117.5\% \times \text{original} = 211.50$$

$$1.175 \times \text{original} = 211.50$$

$$\text{original} = 211.50 \div 1.175$$

$$= \underline{\underline{£180}}$$

$$\underline{\underline{\text{VAT back}}} = \underline{\underline{£211.50}} - \underline{\underline{£180}} = \underline{\underline{£31.50}}$$

$$\underline{\underline{\text{VAT back in euros}}} = \underline{\underline{£31.50}} \times 1.24$$

$$= \underline{\underline{39.06 \text{ euros}}}$$

[6]