

Exercise walk-through

1.6

Percentages

Pearson Edexcel · International GCSE · Mathematics A

1. Topic 1 at a glance

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Foundation 1.1-1.11: integers and the four rules, fractions, decimals, indices, sets, percentages, ratio, bounds, standard form, everyday number. Higher adds recurring decimals, surds, algebraic sets, repeated percentage change and bound problems.

Must-know: multipliers $1 \pm r/100$ with reverse division; bounds $v \pm$ half the accuracy unit; standard form $a \times 10^n$ with $1 \leq a < 10$; share by parts over total.

7. Percentages

Percentages

Multipliers: $+12\%$ is $\times 1.12$, -20% is $\times 0.8$; reverse percentage DIVIDES: 6225 after -17% means $6225 / 0.83 = 7500$ rupees (June 2024 2HR Q8).

Compound change $A = P(1 \pm r/100)^n$: $2000 \times 1.03^4 = 2251.02$; depreciation $12000 \times 0.85^3 = 7369.50$.

Check yourself

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Directed numbers and BIDMAS; fractions with common denominators and reciprocals; FDP conversions including recurring decimals by algebra.

Indices, prime factorisation, HCF and LCM from Venns; surds simplified and rationalised; sets with complements and counts; percentages with multipliers, reverse and compound; ratio sharing and proportion; bounds chosen per question; standard form; units and calculator discipline.

Exercises 2.1·2.3

2.1 Find 35% of 240

[2]

2.2 Increase 65 by 20%

[2]

2.3 Write 0.35 as a fraction in its simplest form

[2]

Exercises 2.1·2.3

2.1 Find 35% of 240 [2]

2.1 $0.35 \times 240 = 84.$

2.2 Increase 65 by 20% [2]

2.2 $65 \times 1.2 = 78.$

2.3 Write 0.35 as a fraction in its simplest form [2]

2.3 $\frac{35}{100} = \frac{7}{20}.$

Exercises 2.4·3.1

2.4 A jumper priced £28 is reduced by 25%. Find the sale price. [2]

2.5 After a 10% rise a ticket costs £22. Find the original price. [3]

3.1 (*Edexcel 4MA1 2HR June 2024 Q8, adapted.*) In a sale, all normal prices are reduced by 17%. The sale price of a fridge is 6225 rupees. Work out the normal price. [3]

Exercises 2.4·3.1

2.4 A jumper priced £28 is reduced by 25%. Find the sale price. [2]

2.4 $28 \times 0.75 = £21.$

2.5 After a 10% rise a ticket costs £22. Find the original price. [3]

2.5 $22 \div 1.1 = £20.$

3.1 (*Edexcel 4MA1 2HR June 2024 Q8, adapted.*) In a sale, all normal prices are reduced by 17%. The sale price of a fridge is 6225 rupees. Work out the normal price. [3]

3.1 Normal price = $6225 \div 0.83 = 7500$ rupees.

Exercises 3.2·3.3

3.2 (*Original.*) £2000 is invested at 3% compound interest for 4 years. Find the final amount and the total interest earned. [3]

3.3 (*Original.*) A car bought for £12000 depreciates by 15% each year. (a) Find its value after 3 years. (b) Find the percentage of the original value lost. [4]

Exercises 3.2·3.3

3.2 (*Original.*) £2000 is invested at 3% compound interest for 4 years. Find the final amount and the total interest earned. [3]

3.2 $2000 \times 1.03^4 = £2251.02$; interest = $2251.02 - 2000 = £251.02$.

3.3 (*Original.*) A car bought for £12000 depreciates by 15% each year. (a) Find its value after 3 years. (b) Find the percentage of the original value lost. [4]

3.3 (a) $12000 \times 0.85^3 = £7369.50$. (b) Lost: $12000 - 7369.50 = £4630.50$, which is $\frac{4630.50}{12000} = 38.6\%$ (1 d.p.) – note $1 - 0.85^3 = 0.3859$.

Local review guidance: the multiplier stated before the calculation; money to 2 d.p.; reverse-percentage answers found by DIVIDING, not subtracting the percent. This is authored classroom guidance.