

Exercise walk-through

1.3

FDP operators, percentage change and compound interest

OxfordAQA · International GCSE · Mathematics

1. Unit 3.1 at a glance

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Core N1-N20: ordering, four operations, factors and indices, standard form, sets, calculator use, rounding, FDP operators, percentage change, ratio and proportion.

Extension additions: index-form factors, fractional powers, exact surds, bounds calculations, recurring decimals, reverse percentage, the compound interest formula, exponential growth and decay.

NO formulae sheet in 9260 - the recall list is the specification itself. Spec lines with no specimen marks are taught as specification originals and labelled.

8. Percentage change and compound interest

Percentage change and compound interest

Multipliers: +12% is $\times 1.12$; -17% is $\times 0.83$. Reverse percentage divides: 92 after +15% means 80 originally.

Compound interest formula (Extension, not sampled): $A = P(1 + r/100)^n$ - 2000 at 3% for 4 years gives 2251.02.

Check yourself

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Ordering and formal methods; inverse cancellation; index-form factors with HCF and LCM; fractional powers; exact surds and rationalising; standard form; sets with counts; rounding.

Bounds choosing the right extremes; FDP operators; recurring decimals; reverse percentage; compound interest; ratio sharing and rates; direct and inverse proportion; exponential models fitted and solved.

Exercises 2.1·2.3

2.1 Find 35% of 240

[2]

2.2 Find $\frac{3}{5}$ of 85

[2]

2.3 Express 7 as a percentage of 28

[2]

Exercises 2.1·2.3

2.1 Find 35% of 240

[2]

2.1 84.

2.2 Find $\frac{3}{5}$ of 85

[2]

2.2 51.

2.3 Express 7 as a percentage of 28

[2]

2.3 25%.

Exercises 2.4·3.1

2.4 Convert $0.\overline{45}$ to a fraction [3]

2.5 Increase 65 by 20% [2]

3.1 (*Original, specification line not sampled: reverse percentage.*) After a 15% increase a jumper costs £92. Find the original price. [3]

Exercises 2.4·3.1

2.4 Convert $0.\overline{45}$ to a fraction [3]

2.4 $x = 0.\overline{45}$: $100x = 45.\overline{45}$, so $99x = 45$ and $x = \frac{45}{99} = \frac{5}{11}$.

2.5 Increase 65 by 20% [2]

2.5 $65 \times 1.2 = 78$.

3.1 (*Original, specification line not sampled: reverse percentage.*) After a 15% increase a jumper costs £92. Find the original price. [3]

3.1 $92 \div 1.15 = £80$.

Exercises 3.2·3.3

3.2 (*Original, specification line not sampled: compound interest formula.*) £2000 is invested at 3% compound interest. (a) Find the value after 4 years. (b) Find the interest earned. [4]

3.3 (*Original.*) A car worth £12000 depreciates 20% per year. Its value first falls below £2500 during which year? (Use logarithms or trial and improvement.) [4]

Exercises 3.2-3.3

3.2 (*Original, specification line not sampled: compound interest formula.*) £2000 is invested at 3% compound interest. (a) Find the value after 4 years. (b) Find the interest earned. [4]

3.2 (a) $2000 \times 1.03^4 = £2251.02$. (b) £251.02.

3.3 (*Original.*) A car worth £12000 depreciates 20% per year. Its value first falls below £2500 during which year? (Use logarithms or trial and improvement.) [4]

3.3 $V = 12000 \times 0.8^t < 2500$ needs $0.8^t < 0.2083$, so $t > \ln 0.2083 / \ln 0.8 \approx 7.0$: during the 8th year.

Local review guidance: the multiplier stated before use; money to 2 d.p.; reverse-percentage answers found by division. This is authored classroom guidance.