Exercise walk-through

1.1.4 Estimation

AQA · GCSE · Mathematics

Foundation or Higher?

Skill	Foundation	Higher
integer indices, **standard form**	yes	yes
fractional indices, **surds**	—	yes
recurring decimals to fractions	—	yes
error intervals	yes	yes
bounds in calculations	—	yes

Terms with examples

Term	Example
prime factor	$60 = 2^2 \times 3 \times 5$
reciprocal	-4 and $-\frac{1}{4}$
surd	$\sqrt{12} = 2\sqrt{3}$
recurring decimal	$0.\dot{2}\dot{7} = \frac{3}{11}$
significant figure	$0.004786 \to 0.0048$

Check yourself

Question	Answer
HCF of 72 and 90?	18
$\frac{5}{6} - \frac{3}{4}$?	$\frac{1}{12}$
$27^{2/3}$?	9
3.6 kg to 1 d.p.: interval?	$3.55 \leq m < 3.65$
Original if 20% off gives 64?	80

Exercises 2.1–2.3

2.1 (Foundation) Find the rough estimate $50 \times 20 \div 10$.

2.2 (Foundation) Round 0.004786 to 2 significant figures.

2.3 (Foundation) Find the upper endpoint of the nearest-0.1 interval for 8.0.

Exercises 2.1–2.3

2.1 (Foundation) Find the rough estimate $50 \times 20 \div 10$.

2.1 $50 \times 20 / 10 = 100$.

2.2 (Foundation) Round 0.004786 to 2 significant figures.

2.2 Start at digit 4; the next digit after 7 is 8, so round to 0.0048.

2.3 (Foundation) Find the upper endpoint of the nearest-0.1 interval for 8.0.

2.3 Half of 0.1 is 0.05; $8.0 + 0.05 = 8.05$.

Exercise 3.1

3.1 Decide whether this claim is true. Justify with a concrete calculation or counterexample: Rounding a positive value and truncating it to the same decimal place always give the same error interval.

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3.1 Decide whether this claim is true. Justify with a concrete calculation or counterexample: Rounding a positive value and truncating it to the same decimal place always give the same error interval.

3.1 False. Rounding to 3.6 at one decimal gives $3.55 \leq x < 3.65$ under the usual rounding convention. Truncating a positive value to 3.6 gives $3.6 \leq x < 3.7$.

Local review guidance: show the chosen method; give the checked result; explain the condition or failed shortcut. This is authored classroom guidance.