Exercise walk-through

1.2.2 Decimals

AQA · GCSE · Mathematics

Worked: recurring decimals

1. **Shift** $x = 0.\dot{2}\dot{7}$: $100x = 27.\dot{2}\dot{7}$
2. **Subtract** $99x = 27$: $x = \frac{27}{99} = \frac{3}{11}$
3. **With a prefix** $y = 0.1\dot{6}$: $100y - 10y = 15$, $y = \frac{15}{90} = \frac{1}{6}$

Decision

Higher only; Foundation converts terminating decimals.

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	$0.004786 \to 0.0048$

Exercises 2.1–2.3

2.1 (Foundation) Find the numerator when 0.375 is expressed over 8.

2.2 (Foundation) Find the denominator of 3.5 in lowest terms.

2.3 (Foundation) Find the denominator of 0.06 in lowest terms.

Exercises 2.1–2.3

2.1 (Foundation) Find the numerator when 0.375 is expressed over 8.

2.1 375/1000 reduces to 3/8.

2.2 (Foundation) Find the denominator of 3.5 in lowest terms.

2.2 35/10 reduces to 7/2, so the denominator is 2.

2.3 (Foundation) Find the denominator of 0.06 in lowest terms.

2.3 6/100 reduces to 3/50, so the denominator is 50.

Exercises 2.4·3.1

2.4 (Higher) Find the denominator of 0.272727... in lowest terms.

2.5 (Higher) Find the denominator of 0.16666... in lowest terms.

3.1 Decide whether this claim is true. Justify with a concrete calculation or counterexample: The finite decimal 0.375 equals 375/100.

Exercises 2.4·3.1

2.4 (Higher) Find the denominator of 0.272727... in lowest terms.

2.4 100x-x=27 gives 27/99=3/11.

2.5 (Higher) Find the denominator of 0.16666... in lowest terms.

2.5 100y-10y=15 gives 15/90=1/6.

3.1 Decide whether this claim is true. Justify with a concrete calculation or counterexample: The finite decimal 0.375 equals 375/100.

3.1 False. Three decimal places give 375/1000=3/8. The proposed fraction 375/100 is 3.75, ten times too large.

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