

1.2.2 Decimals

Name: _____ Class: _____ Date: _____

KEY WORDS terminating decimal

<!-- Session 2 native-skill companion -->

Objective

Practise decimals within the labelled native lessons. Public original tasks; locally authored answer guidance.

1 Key knowledge and worked examples

■ Terminating decimals and fractions · Foundation

Use the place value of the last digit to write a power-of-ten denominator, then simplify. Compare numbers using matching decimal places or a common denominator.

$$0.375 = \frac{375}{1000} = \frac{3}{8}$$

$0.375 = 375/1000 = 3/8$. Also $3.5 = 35/10 = 7/2$ and $0.06 = 6/100 = 3/50$. To order $3/8$ and 0.4 , write 0.375 and 0.400 ; therefore $3/8 < 0.4$.

Keep the place value: 0.06 is six hundredths, not six tenths. A fraction may exceed 1. Simplify the entire numerator and denominator by the same common factor.

AQA N10 Foundation covers terminating decimals and fractions, including ordering. Recurring-decimal conversion is reserved for the Higher lesson.

■ Terminating and recurring decimal conversions · Higher

A finite decimal uses a power-of-ten denominator before simplifying. For a recurring decimal, multiply by powers of ten so the repeated tails align, then subtract. Use matching decimal places to compare numbers. A displayed rounded decimal need not be the exact fraction.

$$100x - x = 27, \quad x = \frac{27}{99} = \frac{3}{11}$$

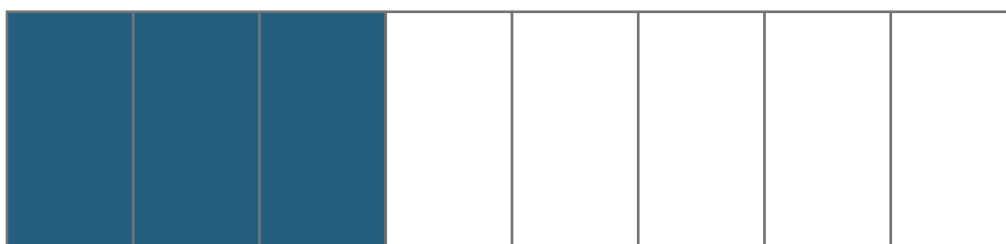
$0.375 = 375/1000 = 3/8$. For $x = 0.272727\dots$, $100x = 27.272727\dots$, so $99x = 27$ and $x = 27/99 = 3/11$. For $y = 0.16666\dots$, $100y - 10y = 16.666\dots - 1.666\dots = 15$, so $y = 15/90 = 1/6$. In a reduced fraction, a denominator containing only factors 2 and 5 gives a terminating decimal.

Align the recurring tails before subtracting. 0.333333 is finite and differs from 0.333333...
 . A non-recurring prefix needs a second power of ten; blindly dividing every digit block by 99 fails.

AQA N10 Higher includes recurring conversion. Both tiers convert and order terminating decimals and fractions. Check a conversion by long division; 3 divided by 8 gives 0.375.

Different exact forms, the same shaded fraction

$$\frac{3}{8} = 0.375 = \frac{375}{1000}$$



Original native-lesson illustration; labels belong to its worked example.

2 Practice

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.

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 Exam-style questions

3.1 Decide whether this claim is true. Justify with a concrete calculation or counterexample: The finite decimal 0.375 equals $\frac{375}{100}$.

Solutions

2.1 $375/1000$ reduces to $3/8$.

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

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

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

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

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.