MATHEMATICS · GRADES 7-9

# Terminating and repeating decimals

### Difficulty level: Intermediate

### Mathematics: Grades 7-9

This document was made by AI and there may be mistakes. If a question or answer looks wrong, use the Flag a mistake button to let Brett know so he can fix it.

## *Overview of the concept*

This is how you tell whether a fraction turns into a decimal that stops, like a quarter of a dollar, or one that repeats forever, like a third of a pizza shared three ways. Some fractions divide out neatly and end, while others keep going with the same digits repeating again and again. Knowing which kind you have tells you whether the decimal is exact, or whether you will need to round it. That matters when you work with money, measurements, or any number that has to be written as a decimal.



## *Rule*

**Terminating and repeating decimals: a decimal that stops is a terminating decimal, and a decimal that goes on forever with the same digits repeating is a repeating decimal.**

If the division never ends, the decimal repeats.

© 2026 Brett Robbins. All Rights Reserved.

## Worked examples

**EXAMPLE 1**

**Q** Is the decimal for $\frac{1}{3}$ terminating or repeating?

**SOLUTION**

Divide: 1 ÷ 3 = 0.333 and the 3 never stops.

A decimal that repeats forever is a repeating decimal.

Write it as 0.3 with a dot above the 3, or 0.333...

**EXAMPLE 2**

**Q** Is the decimal for $\frac{3}{20}$ terminating or repeating?

**SOLUTION**

Divide: 3 ÷ 20 = 0.15, and the division ends.

A decimal that stops is a terminating decimal.

So $\frac{3}{20}$ = 0.15 exactly.

© 2026 Brett Robbins. All Rights Reserved.

## Practice questions

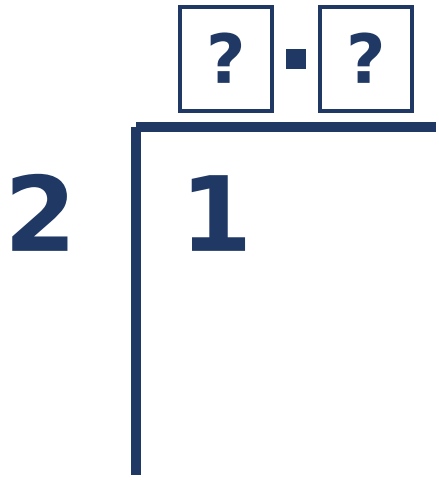
**1** Which of these fractions has a repeating decimal?

- **A** 1/4
- **B** 1/3
- **C** 3/8
- **D** 7/20

Understand It with Pulse | Flag a mistake

© 2026 Brett Robbins. All Rights Reserved.

**2** A pizza is shared equally between 2 friends. Is the decimal for $\frac{1}{2}$ terminating or repeating? Use the long division frame in the picture. Write terminating or repeating.




A Terminating

B Repeating

Understand It with Pulse | Flag a mistake

**3** Write 3/8 as a decimal.

Understand It with Pulse | Flag a mistake

© 2026 Brett Robbins. All Rights Reserved.

**4** A fraction in its simplest form has denominator 6. Is its decimal terminating or repeating?

- **A** Terminating
- **B** Repeating

Understand It with Pulse | Flag a mistake

**5** Which decimal is terminating?

- **A** 0.333…
- **B** 0.25
- **C** 0.1666…
- **D** 0.777…

Understand It with Pulse | Flag a mistake

© 2026 Brett Robbins. All Rights Reserved.

6

## Is 0.125 a terminating or repeating decimal?

A Terminating

B Repeating

Understand It with Pulse | Flag a mistake

7

## Which denominator guarantees a terminating decimal?

A 3

B 7

C 40

D 9

Understand It with Pulse | Flag a mistake

© 2026 Brett Robbins. All Rights Reserved.

8

## What fraction, in its simplest form, equals 0.25?

A 1/3

B 1/4

C 2/3

D 1/6

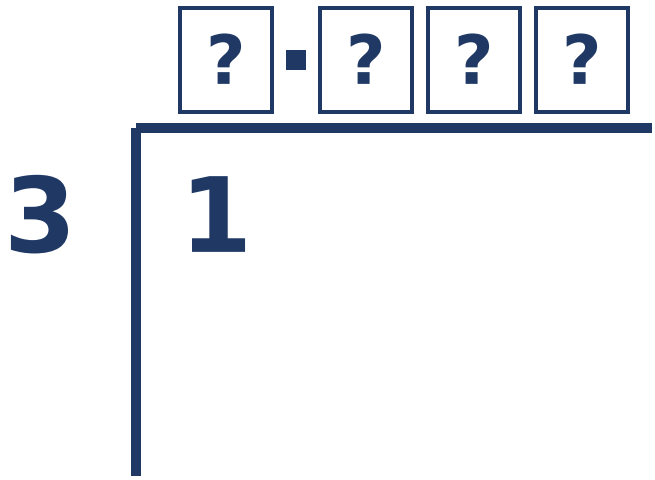
Understand It with Pulse

Flag a mistake

© 2026 Brett Robbins. All Rights Reserved.

9

Three friends share a pizza equally. One friend gets an equal share. Write that share as a decimal to three decimal places.




Understand It with Pulse

Flag a mistake

© 2026 Brett Robbins. All Rights Reserved.

**10** **Order these decimals from smallest to largest: 0.5, 0.333..., 0.25.**

- **A** 0.25, 0.333..., 0.5
- **B** 0.333..., 0.25, 0.5
- **C** 0.5, 0.333..., 0.25
- **D** 0.25, 0.5, 0.333...

Understand It with Pulse | Flag a mistake

© 2026 Brett Robbins. All Rights Reserved.

## ANSWER KEY

**1.** 1/3

**2.** Terminating

**3.** 0.375

**4.** Repeating

**5.** 0.25

**6.** Terminating

**7.** 40

**8.** 1/4

**9.** 0.333

**10.** 0.25, 0.333..., 0.5

© 2026 Brett Robbins. All Rights Reserved.