LESSON MAKER PRO

Decimals in Disguise

Turn repeating decimals into exact fractions.

GRADE 7 · 7A.NS.B.10

7A.NS.B.10 "Define the real number system as composed of rational and irrational numbers. a. Explain that every number has a decimal expansion; for rational numbers, the decimal expansion repeats in a pattern or terminates. b..."

NAME _____ DATE _____

THE BIG IDEA

Every real number has a decimal expansion. A rational number's decimal either ends or repeats in a pattern. To write a repeating decimal as a fraction, multiply it so the repeating digits line up, then subtract to remove them.

WORKED EXAMPLE

Write 0.363636... as a fraction in simplest form.

1. Let x = 0.363636...
2. Multiply by 100: 100x = 36.363636...
3. Subtract x from 100x: 99x = 36.
4. Divide: x = 36/99 = 4/11.

Answer: 4/11

PRACTICE 6 problems

1 Write 0.444... as a fraction in simplest form.

ANSWER _____

2 Write 0.818181... as a fraction in simplest form.

ANSWER _____

3 Write 0.05555... as a fraction in simplest form.

ANSWER _____

4 Write 0.006006006... as a fraction in simplest form.

ANSWER _____

5 Write 0.272727... as a fraction in simplest form.

ANSWER _____

6 Is 0.23333... rational? Write it as a fraction to explain.

ANSWER _____

APPLY IT Show your work

1 A playlist tracker shows that songs by one artist make up 0.121212... of a playlist. What fraction of the playlist is by that artist?

WORK SPACE

ANSWER _____

2 During a basketball season, a player makes 0.8333... of her free throws. What fraction of her attempts does she make?

WORK SPACE

ANSWER _____

CHALLENGE One step up

Find 0.1666... + 0.909090... . Write the sum as a fraction in simplest form, and show how you converted each decimal.

WORK SPACE AND ANSWER

ANSWER KEY

Decimals in Disguise

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PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Write 0.444... as a fraction in simplest form.	**4/9**
2	Write 0.818181... as a fraction in simplest form.	**9/11**
3	Write 0.05555... as a fraction in simplest form.	**1/18**
4	Write 0.006006006... as a fraction in simplest form.	**2/333**
5	Write 0.272727... as a fraction in simplest form.	**3/11**
6	Is 0.23333... rational? Write it as a fraction to explain.	**Yes. It is rational because 0.23333... = 7/30.**

PART 2 · APPLY IT

1. **4/33** Let x = 0.121212... . Then 100x - x = 12, so x = 12/99 = 4/33.
2. **5/6** Let x = 0.8333... . Then 100x - 10x = 75, so x = 75/90 = 5/6.

CHALLENGE

0.1666... = 1/6 and 0.909090... = 10/11, so the sum is 1/6 + 10/11 = 71/66.

Accept equivalent fractions only where the prompt does not require simplest form. For the challenge, accept any valid conversion method that shows both decimals equal the stated fractions.