LESSON MAKER PRO

Decimals in Disguise

Turn repeating decimals into exact fractions.

GRADE 8 · 8.NS.1

8.NS.1 "Know that numbers that are not rational are called irrational. Understand informally that every number has a decimal expansion; for rational numbers show that the decimal expansion repeats eventually..."

NAME _____ DATE _____

MAKE THE REPEATS MATCH

Parentheses show which digits repeat: 0.2(7) means 0.2777.... A repeating decimal is rational because it can be written as a fraction. To find the fraction, call the decimal x, multiply by powers of 10 until the repeating parts line up, then subtract.

WORKED EXAMPLE

Write 0.1(6) as a fraction.

1. Let x = 0.1666....
2. Then 10x = 1.6666... and 100x = 16.6666....
3. Subtract: 100x - 10x = 15, so 90x = 15.

Answer: x = 1/6

PRACTICE 6 problems

1 Write 0.(3) as a fraction in simplest form.

ANSWER _____

2 Write 0.(45) as a fraction in simplest form.

ANSWER _____

3 Write 0.2(7) as a fraction in simplest form.

ANSWER _____

4 Write 0.0(8) as a fraction in simplest form.

ANSWER _____

5 Write 1.(2) as a fraction in simplest form.

ANSWER _____

6 Write -0.4(5) as a fraction in simplest form.

ANSWER _____

APPLY IT Show your work

1 A game guide says you have finished 0.(36) of all the quests in a game. Write this amount as a fraction in simplest form. If the game has 11 quests, how many have you finished?

WORK SPACE

ANSWER _____

2 A video editor writes the exact time spent trimming a clip as 0.4(6) hour. Write this time as a fraction of an hour in simplest form. How many minutes is it?

WORK SPACE

ANSWER _____

CHALLENGE One step up

Write 0.12(3) as a fraction in simplest form. Is it greater than or less than 1/8? Show how you know.

WORK SPACE AND ANSWER

ANSWER KEY

Decimals in Disguise

GRADE 8 · 8.NS.1

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Write 0.(3) as a fraction in simplest form.	**1/3**
2	Write 0.(45) as a fraction in simplest form.	**5/11**
3	Write 0.2(7) as a fraction in simplest form.	**5/18**
4	Write 0.0(8) as a fraction in simplest form.	**4/45**
5	Write 1.(2) as a fraction in simplest form.	**11/9**
6	Write -0.4(5) as a fraction in simplest form.	**-41/90**

PART 2 · APPLY IT

1. **4/11 of the quests; 4 quests** 0.(36) = 36/99 = 4/11. Since 4/11 of 11 is 4, the player has finished 4 quests.
2. **7/15 hour; 28 minutes** 0.4(6) = (46 - 4)/90 = 7/15 hour. Multiply by 60 to get 28 minutes.

CHALLENGE

0.12(3) = (123 - 12)/900 = 37/300. It is less than 1/8 because 37 × 8 = 296, which is less than 300.

Accept equivalent fractions if a student has not fully simplified them, but note that the prompts request simplest form. In the challenge, a correct comparison using decimals or a common denominator also shows sufficient reasoning.