LESSON MAKER PRO

Decimal Detectives

Divide to find decimals that end or repeat.

GRADE 7 · 7A.NS.A.8.g

7A.NS.A.8.g "Convert a rational number to a decimal using long division, explaining that the decimal form of a rational number terminates or eventually repeats."

NAME _____ DATE _____

FOLLOW THE REMAINDER

To convert a fraction to a decimal, divide the numerator by the denominator. Add zeros after the decimal point so you can keep dividing. A remainder of 0 means the decimal ends. If a nonzero remainder returns, the digits from that point on repeat. Parentheses show repeating digits, so 0.(6) means 0.666...

WORKED EXAMPLE

Convert 7/16 to a decimal using long division.

1. Write 7 as 7.0000. Since 16 does not go into 7, write 0 and a decimal point in the quotient.
2. 16 goes into 70 four times: 70 - 64 = 6. Bring down 0.
3. 16 goes into 60 three times: 60 - 48 = 12. Bring down 0.
4. 16 goes into 120 seven times: 120 - 112 = 8. Bring down 0. Then 16 goes into 80 five times with remainder 0.

Answer: 7/16 = 0.4375. The decimal terminates.

PRACTICE 6 problems

1 Use long division to write 3/8 as a decimal.

ANSWER _____

2 Use long division to write 2/9 as a decimal. Put parentheses around any repeating digits.

ANSWER _____

3 Use long division to write -11/12 as a decimal. Put parentheses around any repeating digits.

ANSWER _____

4 Use long division to write 13/6 as a decimal. Put parentheses around any repeating digits.

ANSWER _____

5 Use long division to write 4/11 as a decimal. Put parentheses around any repeating digits.

ANSWER _____

6 Use long division to write -9/20 as a decimal.

ANSWER _____

APPLY IT Show your work

1 A skate route is 13/40 mile long. Use long division to write its length as a decimal in miles.

WORK SPACE

ANSWER _____

2 A gaming team wins 4 of its 9 matches. Use long division to write the fraction of matches it won as a decimal. Does the decimal end or repeat?

WORK SPACE

ANSWER _____

CHALLENGE One step up

Use long division to convert 5/18 to a decimal. Name the first remainder that repeats, and explain why the decimal repeats.

WORK SPACE AND ANSWER

ANSWER KEY

Decimal Detectives

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PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Use long division to write 3/8 as a decimal.	**0.375**
2	Use long division to write 2/9 as a decimal. Put parentheses around any repeating digits.	**0.(2)**
3	Use long division to write -11/12 as a decimal. Put parentheses around any repeating digits.	**-0.91(6)**
4	Use long division to write 13/6 as a decimal. Put parentheses around any repeating digits.	**2.1(6)**
5	Use long division to write 4/11 as a decimal. Put parentheses around any repeating digits.	**0.(36)**
6	Use long division to write -9/20 as a decimal.	**-0.45**

PART 2 · APPLY IT

1. **0.325 mile** Divide 13 by 40. The quotient is 0.325 with remainder 0.
2. **0.(4); it repeats.** Dividing 4 by 9 gives a quotient digit of 4 and a remainder of 4. That remainder returns each time, so the digit 4 repeats.

CHALLENGE

5/18 = 0.2(7). After the digit 2, the remainder is 14. Dividing again gives the digit 7 and remainder 14, so 7 repeats.

Accept an ellipsis in place of parentheses when the repeating digits are clear. Look for division work that tracks remainders, especially in the challenge.