LESSON MAKER PRO

Decimal Detective

Use long division to find decimals that stop or repeat.

GRADE 7 · 7.NS.A.4.g

7.NS.A.4.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 _____

WATCH THE REMAINDER

To write a fraction as a decimal, divide the numerator by the denominator. Add zeros after the decimal point when you need to keep dividing. A remainder of 0 means the decimal terminates. If a remainder repeats, the decimal digits eventually repeat. Parentheses show repeating digits, so 0.(45) means 0.454545...

WORKED EXAMPLE

Use long division to write 13/30 as a decimal.

1. Set up 13.000... ÷ 30. Since 30 is greater than 13, write 0 before the decimal point.
2. 30 goes into 130 four times. Write 4 in the tenths place; 130 - 120 = 10.
3. Bring down a 0. 30 goes into 100 three times; 100 - 90 = 10.
4. The remainder is 10 again, so each next digit is also 3.

Answer: 13/30 = 0.4(3), a repeating decimal.

PRACTICE 6 problems

1 Use long division to convert 3/8 to a decimal. State whether it terminates or repeats.

ANSWER _____

2 Use long division to convert 2/9 to a decimal. State whether it terminates or repeats.

ANSWER _____

3 Use long division to convert -1/6 to a decimal. State whether it terminates or repeats.

ANSWER _____

4 Use long division to convert 4/11 to a decimal. State whether it terminates or repeats.

ANSWER _____

5 Use long division to convert -7/16 to a decimal. State whether it terminates or repeats.

ANSWER _____

6 Use long division to convert 7/40 to a decimal. State whether it terminates or repeats.

ANSWER _____

APPLY IT Show your work

1 A music app lets you play 7/20 of an hour of a new playlist for free. Use long division to write that time as a decimal number of hours. Does the decimal terminate or repeat?

WORK SPACE

ANSWER _____

2 A school esports team won 5 of its 18 matches this season. Use long division to write the fraction of matches won as a decimal. Does it terminate or repeat?

WORK SPACE

ANSWER _____

CHALLENGE One step up

Divide 1 by 7 until a remainder repeats. Write 1/7 as a decimal, then explain how the repeated remainder shows that the decimal digits repeat forever.

WORK SPACE AND ANSWER

ANSWER KEY

Decimal Detective

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PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Use long division to convert 3/8 to a decimal. State whether it terminates or repeats.	**0.375; terminates.**
2	Use long division to convert 2/9 to a decimal. State whether it terminates or repeats.	**0.(2); repeats.**
3	Use long division to convert -1/6 to a decimal. State whether it terminates or repeats.	**-0.1(6); repeats.**
4	Use long division to convert 4/11 to a decimal. State whether it terminates or repeats.	**0.(36); repeats.**
5	Use long division to convert -7/16 to a decimal. State whether it terminates or repeats.	**-0.4375; terminates.**
6	Use long division to convert 7/40 to a decimal. State whether it terminates or repeats.	**0.175; terminates.**

PART 2 · APPLY IT

1. **0.35 hour; terminates.** Divide 7 by 20: 20 goes into 70 three times with 10 left over, then into 100 five times with no remainder.
2. **0.2(7); repeats.** Divide 5 by 18. The first decimal digit is 2 with a remainder of 14; each later division of 140 by 18 gives 7 with a remainder of 14.

CHALLENGE

1/7 = 0.(142857). The remainders are 3, 2, 6, 4, 5, then 1. When the remainder returns to 1, the same six digits begin again.

Accept a bar over repeating digits in place of parentheses. Look for long-division work that shows a zero remainder for terminating decimals or a repeated remainder for repeating decimals.