



Rational and irrational numbers

GRADE 8 MATH

Name _____

Date _____

Show your reasoning. For each number, decide whether the decimal terminates, repeats, or does neither.

WORKED EXAMPLE

Rational: terminates (0.125) or repeats (0.333...). **Irrational:** neither. 'Forever' is not the test — $\sqrt{3}$ goes on forever and is rational.

1. Write 0.6 and -0.125 as fractions.

FLUENCY

Show your thinking

Answer

2. Which of these are rational? 7, $-\sqrt[3]{4}$, 0.5, 0.121212...

FLUENCY

Show your thinking

Answer

3. Is $\sqrt{36}$ rational or irrational? What about $\sqrt{37}$?

APPLICATION

Show your thinking

Answer

4. Explain why 'the decimal goes on forever' does not make a number irrational. Give an example.

REASONING

Show your thinking

Answer

5. $\frac{1}{7} = 0.142857142857\dots$ Is it rational? Say how you know.

APPLICATION

Show your thinking

Answer

6. Give an example of an irrational number that is NOT π .

APPLICATION

Show your thinking

Answer

7. Between which two whole numbers does $\sqrt{20}$ lie? Is $\sqrt{20}$ rational?

APPLICATION

Show your thinking

Answer

8. A number's decimal starts 0.101001000100001... and never repeats. Rational or irrational?

REASONING

Show your thinking

Answer

9. True or false: every fraction of two integers is rational. Explain.

REASONING

Show your thinking

Answer