Lesson 14: Converting Rational Numbers to Decimals Using Long Division

Problem Set

1. Convert each rational number into its decimal form.

|  |  |  |
| --- | --- | --- |
|  |  | $\frac{1}{9}=$ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
|  | $\frac{1}{6}=$ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |  |
|  |  | $\frac{2}{9}=$ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
|  |  |  |
| $\frac{1}{3}=$ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | $\frac{2}{6}=$ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | $\frac{3}{9}=$ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
|  |  |  |
|  |  | $\frac{4}{9}=$ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
|  | $\frac{3}{6}=$ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |  |
|  |  | $\frac{5}{9}=$ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
|  |  |  |
| $\frac{2}{3}=$ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | $\frac{4}{6}=$ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | $\frac{6}{9}=$ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
|  |  |  |
|  |  | $\frac{7}{9}=$ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
|  | $\frac{5}{6}=$ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |  |
|  |  | $\frac{8}{9}=$ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
|  |  |  |

One of these decimal representations is not like the others. Why?

Enrichment:

1. Chandler tells Aubrey that the decimal value of $-\frac{1}{17}$ is not a repeating decimal. Should Aubrey believe him? Explain.
2. Complete the quotients below without using a calculator, and answer the questions that follow.
	1. Convert each rational number in the table to its decimal equivalent.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| $$\frac{1}{11}=$$ | $$\frac{2}{11}=$$ | $$\frac{3}{11}=$$ | $$\frac{4}{11}=$$ | $$\frac{5}{11}=$$ |
| $$\frac{6}{11}=$$ | $$\frac{7}{11}=$$ | $$\frac{8}{11}=$$ | $$\frac{9}{11}=$$ | $$\frac{10}{11}=$$ |

Do you see a pattern? Explain.

* 1. Convert each rational number in the table to its decimal equivalent.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| $$\frac{0}{99}=$$ | $$\frac{10}{99}=$$ | $$\frac{20}{99}=$$ | $$\frac{30}{99}=$$ | $$\frac{45}{99}=$$ |
| $$\frac{58}{99}=$$ | $$\frac{62}{99}=$$ | $$\frac{77}{99}=$$ | $$\frac{81}{99}=$$ | $$\frac{98}{99}=$$ |

Do you see a pattern? Explain.

* 1. Can you find other rational numbers that follow similar patterns?