DECIMAL REPRESENTATIONS

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There are generally considered to be two different types of decimal representations

Terminating

Repeating

There are generally considered to be two different types of decimal representations of fractions

Terminating

- Decimals end
- But really, they have a repeating 0
- Examples:

$$\frac{1}{2} = 0.5$$

$$\frac{3}{8} = 0.375$$

Repeating

- Decimals keep going
- But really, they repeat in some pattern other than 0
- Examples:

$$\frac{1}{3} = 0.\overline{3}$$

$$\frac{5}{11} = 0.\overline{45}$$

$$\frac{9}{14} = 0.6\overline{428571}$$

QUESTION 1:
FIND THE DECIMAL REPRESENTATIONS FOR:

$$\frac{1}{11}, \frac{2}{11}, \frac{3}{11}, \cdots \frac{9}{11}, \frac{10}{11}$$

WHAT PATTERNS DO YOU NOTICE?

QUESTION 2:
FIND THE DECIMAL REPRESENTATIONS FOR:

$$\frac{1}{9}, \frac{2}{9}, \frac{3}{9}, \cdots \frac{7}{9}, \frac{8}{9}$$

WHAT PATTERNS DO YOU NOTICE?

QUESTION 3:
HOW DO THE TWO PATTERNS ABOVE COMPARE WITH ONE ANOTHER?

QUESTION 4:
FIND THE DECIMAL REPRESENTATIONS FOR:

$$\frac{1}{4}, \frac{2}{4}, \frac{3}{4}$$

WHAT PATTERNS DO YOU NOTICE?

QUESTION 5:
FIND THE DECIMAL REPRESENTATIONS FOR:

$$\frac{1}{8}, \frac{2}{8}, \frac{3}{8}, \cdots \frac{6}{8}, \frac{7}{8}$$

WHAT PATTERNS DO YOU NOTICE?

QUESTION 6:
FIND THE DECIMAL REPRESENTATIONS FOR:

$$\frac{1}{16}, \frac{2}{16}, \frac{3}{16}, \cdots \frac{14}{16}, \frac{15}{16}$$

WHAT PATTERNS DO YOU NOTICE?

QUESTION 7:
HOW DO THE THREE PATTERNS ABOVE COMPARE WITH ONE ANOTHER?

QUESTION 8:
FIND THE DECIMAL REPRESENTATIONS FOR:

$$\frac{1}{7}, \frac{2}{7}, \frac{3}{7}, \frac{4}{7}, \frac{5}{7}, \frac{6}{7}$$

WHAT PATTERNS DO YOU NOTICE?

QUESTION 9:
FIND THE DECIMAL REPRESENTATIONS FOR:

$$\frac{1}{14}, \frac{2}{14}, \frac{3}{14}, \cdots \frac{12}{14}, \frac{13}{14}$$

WHAT PATTERNS DO YOU NOTICE?

QUESTION 10:
FIND THE DECIMAL REPRESENTATIONS FOR:

$$\frac{1}{28}, \frac{2}{28}, \frac{3}{28}, \ldots \frac{26}{28}, \frac{27}{28}$$

WHAT PATTERNS DO YOU NOTICE?

QUESTION 11:
HOW DO THE THREE PATTERNS ABOVE COMPARE WITH ONE ANOTHER?

Question 12:
Which fractions have decimal representations that terminate and which have ones that repeat? Can you find a way to predict their pattern?

Question 13:
Explore the decimal representations for 13^{ths}. How many digits repeat for each of them? What sequences of digits get repeated?

Question 14:
Explore the decimal representations for 19^{THS}. How many digits repeat for each of them? What sequences of digits get repeated?

QUESTION 15:
SOME REPEATING DECIMALS REPEAT ONE DIGIT, OTHERS TWO DIGITS, AND OTHERS LOTS OF DIGITS. CAN YOU FIND A PATTERN?