Name: _____ Period: _____ Date: _____

Rational Numbers

Assignment

Answers:

Part A: Are the numbers rational or irrational? Place the numbers in the appropriate box.

1. $\frac{1}{8}$ 2. -5 3. 0 4. $\frac{0}{100}$

5. $\sqrt{10}$ 6. $\frac{5}{4}$ 7. $\frac{-10}{5}$ 8. $\sqrt{5}$

RATIONAL	IRRATIONAL
$\frac{1}{8}, \quad -5 \quad , 0,$ $\frac{0}{100}, \frac{5}{4}, \frac{-10}{5}$	$\sqrt{10}, \quad \sqrt{5}$

Part B: Express the following fractions as decimals and determine whether it is terminating or repeating.

1. $\frac{16}{20} = 0.8$

Terminating

$$20\overline{)160}\ 0.8,\ -160,\ 0$$

2. $\frac{9}{20} = 0.45$

Terminating

$$20\overline{)900}\ 0.45,\ -80,\ 100,\ -100,\ 0$$

3. $\frac{7}{8} = 0.875$

Terminating

$$8\overline{)7000}\ 0.875,\ -64,\ 60,\ -56,\ 40,\ -40,\ 0$$

4. $\frac{8}{11} = 0.72\ldots$

Non-terminating and repeating

$$11\overline{)80000}\ 0.7272\ldots,\ -77,\ 30,\ -22,\ 80,\ -77,\ 30,\ -22,\ 8$$

5. $\frac{14}{11} = 1.27\ldots$

Non-terminating and repeating

$$11\overline{)140000}\ 1.2727\ldots,\ -11,\ 30,\ -22,\ 80,\ -77,\ 30,\ -22,\ 80,\ -77,\ 3$$

6. $\frac{10}{12} = 0.833\ldots$

Non-terminating and repeating

$$12\overline{)100000}\ 0.8333\ldots,\ -96,\ 40,\ -36,\ 40,\ -36,\ 40,\ -36,\ 4$$

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Part C: Express the following decimals as fractions.

1. 0.142

$$\frac{142}{1000} = \frac{71}{500}$$

2. 0.65

$$\frac{65}{100} = \frac{13}{20}$$

3. 0.175

$$\frac{175}{1000} = \frac{7}{40}$$

3. $0.\overline{07}$

$$x = 0.\overline{07}$$
$$100x = 0.\overline{07}\ (100)$$
$$100x = 7.\overline{07}$$

$$\begin{array}{r} 100x = 7.\overline{07} \\ x = 0.\overline{07} \\ \hline 99x = 7 \end{array}$$

$$\frac{99x}{99} = \frac{7}{99}$$
$$x = \frac{7}{99}$$

$$0.\overline{07} = \frac{7}{99}$$

4. $0.93\ldots$

$$x = 0.93\ldots$$
$$100x = 0.93\ldots\ (100)$$
$$100x = 93.93\ldots$$

$$\begin{array}{r} 100x = 93.93\ldots \\ x = 0.93\ldots \\ \hline 99x = 93 \end{array}$$

$$\frac{99x}{99} = \frac{93}{99}$$
$$x = \frac{93}{99}$$

$$0.93\ldots = \frac{93}{99} = \frac{31}{33}$$

6. $0.\overline{612}$

$$x = 0.93\ldots$$
$$100x = 0.93\ldots\ (100)$$
$$100x = 93.93\ldots$$

$$\begin{array}{r} 100x = 93.93\ldots \\ x = 0.93\ldots \\ \hline 99x = 93 \end{array}$$

$$\frac{99x}{99} = \frac{93}{99}$$
$$x = \frac{93}{99}$$

$$0.93\ldots = \frac{93}{99} = \frac{31}{33}$$