

January 12, 2015
 * Quiz #1 - Friday

Jan 12-10:55 AM

Sets

- ① $N = \{1, 2, 3, \dots\}$
- ② $W = \{0, 1, 2, \dots\}$
- ③ $Z = \{\dots, -1, 0, 1, \dots\}$
- ④ $Q = \left\{ \frac{m}{n} \mid m \text{ \& n are Integers and } n \neq 0 \right\}$
- ⑤ $Q^- \leftarrow \text{prime (opposite of)}$
 $(\text{Irrational}) = \{ \text{all numbers not rational} \}$
- ⑥ $R = \{ x \mid x \text{ is in } Q \text{ or in } Q^- \}$
 (Real)

Jan 12-11:04 AM

Q $\frac{1}{2} = 0.5$ Terminating
 $\frac{2}{3} = 0.\overline{66}$ Settles in to a pattern

Jan 12-11:10 AM

$0.\overline{76}$ ^{10th math} ^{100th math} \rightarrow Convert to a fraction

- ① $\frac{76}{100}$ * always Reduce!
- $\frac{76}{100} = \frac{2 \cdot 2 \cdot 19}{2 \cdot 2 \cdot 5 \cdot 5} = 1 \cdot 1 \cdot \frac{19}{25} = \frac{19}{25}$
- $76 = 2 \cdot 2 \cdot 19$ | $100 = 2 \cdot 2 \cdot 5 \cdot 5$
- ② $\cdot 38$ | ② 50
 $(2 \cdot 19)$ | $(2 \cdot 25)$
 $(3 \cdot 3)$

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$\frac{5}{8}$ of some whole $\frac{8}{8} = 1$

$8 \overline{) 5.000}$
 $\underline{-48}$
 20
 $\underline{-16}$
 40
 $\underline{-40}$
 0

$\frac{5}{8} = 0.625$
 $\frac{625}{1000} = \frac{5}{8}$

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$\frac{5}{11} = 0.4\overline{54}$ Convert to fraction

- ① Let $x = 0.4\overline{54}$
- ② $100x = 100(0.4\overline{54})$
 $100x = 45.\overline{454}$
- ③ $\underline{-x} = 0.4\overline{54}$
 $99x = 45.0$
 $\frac{99x}{99} = \frac{45.0}{99}$
 $x = \frac{45}{99} = \frac{5}{11}$

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$$\frac{2x}{2} = \frac{4}{2}$$

$$1 \cdot x$$

$$x = 2$$

$$100 \left[0.4\overline{34} \right] = 45.4\overline{34}$$

$$\frac{2}{3} = .6\overline{6} \approx .67$$

Jan 12-11:33 AM

#21) $0.\overline{84}$

$$\textcircled{1} \text{ Let } x = 0.\overline{84}$$

$$\textcircled{2} 100x = 84.\overline{84}$$

$$\textcircled{3} \begin{array}{r} 100x = 84.\overline{84} \\ - x = 0.\overline{84} \\ \hline 99x = 84.0 \end{array}$$

$$x = \frac{84}{99} = \frac{28}{33}$$

Jan 12-11:39 AM

\mathbb{Q}^- = Irrationals
 $\sqrt{5}$ is \mathbb{Q}^-

* Proof by Contradiction

$$\textcircled{1} \text{ Assume } \sqrt{5} \text{ is rational.}$$

$$\textcircled{2} \text{ So, if } \textcircled{1} \text{ is true,}$$

$$\text{then } \sqrt{5} = \frac{m}{n}$$

Jan 12-11:43 AM

Start assignment
 1.1 COR

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