Rational Numbers

Rational Number - a number that can be written as a quotient of two integers.

$\frac{1}{2}$ $\frac{12}{1}$ $\frac{-3}{1}$ $.25 = \frac{1}{4}$ $\frac{1}{3}$ $.\overline{6} = \frac{2}{3}$

$2\frac{1}{2} = \frac{5}{2}$ $\sqrt{25} = 5$ ($5 \cdot 5$) $\sqrt{100} = 10$ ($10 \cdot 10$)

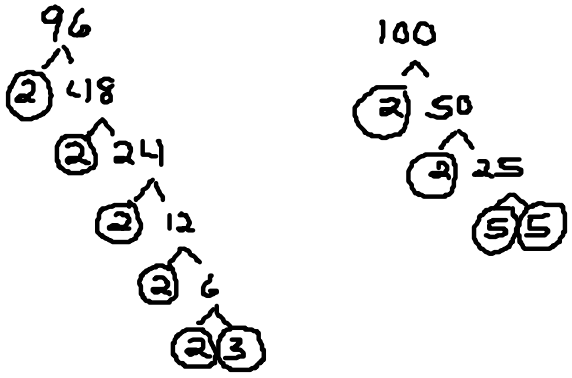
Irrational Number - a number that can not be written as a quotient of two integers.

$\sqrt{24}$ $\sqrt{2}$ $\pi \approx 3.14159\ldots\ldots$

Directions: Write each number as a quotient of two integers.

1. .96

$.96 = \frac{96}{100} = \frac{2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 3}{2 \cdot 2 \cdot 5 \cdot 5} = \boxed{\frac{24}{25}}$



2. $-3\frac{4}{7}$

$-3\frac{4}{7} = \boxed{-\frac{25}{7}}$

3. $.\overline{4}$

$x = .\overline{4}$

$10x = 4.\overline{4}$

$-\ (x = .\overline{4})$

$10x = 4.\overline{4}$

$-x = -.\overline{4}$

$\frac{9x}{9} = \frac{4}{9}$

$\boxed{x = \frac{4}{9}}$

4. $.\overline{12}$

$x = .\overline{12}$

$100x = 12.\overline{12}$

$-\ (x = .\overline{12})$

$100x = 12.\overline{12}$

$-x = -.\overline{12}$

$\frac{99x}{99} = \frac{12}{99}$

$x = \frac{12}{99}$

$x = \frac{12}{99}$

$x = \frac{2 \cdot 2 \cdot 3}{11 \cdot 3 \cdot 3}$

$\boxed{x = \frac{4}{33}}$

12 = 3 · 4 = 3 · 2 · 2

99 = 11 · 9 = 11 · 3 · 3

5. $.\overline{45}$

$x = .\overline{45}$

$100x = 45.\overline{45}$

$-\ (x = .\overline{45})$

$100x = 45.\overline{45}$

$-x = -.\overline{45}$

$\frac{99x}{99} = \frac{45}{99}$

$x = \frac{45}{99}$

$x = \frac{45}{99}$

$x = \frac{5 \cdot 3 \cdot 3}{11 \cdot 3 \cdot 3}$

$\boxed{x = \frac{5}{11}}$

45 = 5 · 9 = 5 · 3 · 3

99 = 11 · 9 = 11 · 3 · 3

6. $.1\overline{6}$

$x = .1\overline{6}$

$10x = 1.\overline{6}$

$-(x = .1\overline{6})$

$10x = 1.\overline{6}$

$-x = -.1\overline{6}$

$10x = 1.6\overline{6}$

$-x = -.1\overline{6}$

$\frac{9x}{9} = \frac{1.5}{9}$

$x = \frac{1.5}{90}$

$x = \frac{15}{90}$

$x = \frac{15}{90}$

$x = \frac{3 \cdot 5}{5 \cdot 2 \cdot 3 \cdot 3}$

$x = \frac{1}{6}$

15 = 3 · 5

90 = 5 · 18 = 5 · 2 · 9 = 5 · 2 · 3 · 3

7. $.01\overline{6}$

$x = .01\overline{6}$ *

$100x = 1.\overline{6}$
$-(x = .01\overline{6})$

$100x = 1.\overline{6}$ ←
$-x = -.01\overline{6}$

$100x = 1.66\overline{6}$
$-x = -.01\overline{6}$
$\frac{99x}{99} = \frac{1.65}{99}$

$x = \frac{165}{9900}$

$x = \frac{165}{9900}$

165
5 33
3 11

9900
5 1980
5 396
11 36
2 18
2 9
3 3

$x = \frac{5 \cdot 3 \cdot 11}{5 \cdot 5 \cdot 11 \cdot 2 \cdot 2 \cdot 3 \cdot 3}$

$x = \frac{1}{60}$