

# SOL HW 3.1

September 22, 2020 9:05 AM

Name: \_\_\_\_\_

Date: \_\_\_\_\_

**Math 9 Section 3.1 What are Rational Numbers?**

1. Given each of the following numbers below, indicate whether it is a Rational or Irrational Number:

a) $\frac{5}{3}$ R	b) 0 R	c) $\frac{\sqrt{4}}{6}$ R $\frac{2}{3}$	d) $\frac{-100}{101}$ R	e) $\pi$ I	f) $\frac{\sqrt{65}}{20}$ I
g) $4\sqrt{3}$ I	h) 21 R	i) $\frac{2}{3} + \frac{4}{3}$ R	j) $9^3$ R	k) 0.35 R $\frac{35}{99}$	l) $12.\bar{5}$ R $12\frac{5}{9}$ ✓
m) $\frac{2+\sqrt{3}}{4}$ I	n) $\frac{4+\sqrt{9}}{7}$ R	o) $1.\overline{111}$ R $1\frac{1}{9}$	p) 1.1213141516... I	q) 3.12112111211112... I	r) $1.42857\overline{1}$ $\frac{428571}{999999} = \frac{1}{7}$

2. For each of the following rational numbers, draw it on a number line:

a) $3\frac{2}{5}$ 	b) $4\frac{1}{6}$ 	c) $-2\frac{1}{4}$ 
d) $1\frac{7}{9}$ 	e) $11\frac{10}{30}$ 	f) $7\frac{8}{24} = 7\frac{1}{3}$ 

3. Indicate whether if each of the following statements is either TRUE or FALSE:

- i) All rational numbers can be written as a fraction except when the denominator is a prime number: **F**
- ii) All rational numbers must be in a form where the decimal form terminates **F**  $1.\overline{35}$
- iii) The square root of any number that is not a perfect square is irrational **T**
- iv) All whole numbers are rational numbers **T**
- vii) The product of two irrational numbers can be rational  $\sqrt{5} \times \sqrt{5} = 5$  **T**
- vi) The product of two irrational numbers will always be rational **F**  $\sqrt{5} \times \sqrt{6} = \sqrt{30}$
- vii) The sum of a rational number and an irrational number will be irrational **T**
- viii) An integer divided by another integer will always be rational

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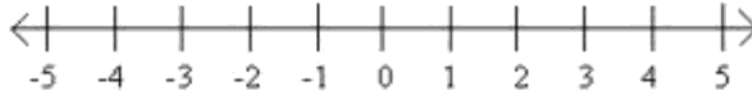
$\frac{10}{0}$   
→

**F**

$1.\overline{357454678}$   
 $\frac{10}{10} = 1$

4. Place each of the following rational numbers on the number line:

a) $\frac{13}{4}$	b) $-\frac{16}{5}$	c) $\frac{\sqrt{9}}{2}$	d) 1.9090	e) $1.\overline{777}$	f) $-2.\overline{999}$	g) $3\frac{2}{5}$
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5. Arrange each of the following rational numbers from LEAST to GREATEST:

a) 2.09,  $\frac{5}{2}$ , 2.0909,  $2\frac{1}{10}$ , 2.00999

b)  $\frac{7}{2}$ ,  $\frac{9}{3}$ ,  $\frac{11}{4}$ ,  $\frac{13}{5}$ ,  $\frac{15}{6}$

$\frac{15}{6} = \frac{5}{2} + \frac{1}{2}$

$\frac{2.09}{2}$ ,  $\frac{2.5}{5}$ ,  $\frac{2.0909}{3}$ ,  $\frac{2.1}{4}$ ,  $\frac{2.00999}{1}$

$\frac{3.5}{5}$ ,  $\frac{3}{4}$ ,  $\frac{2.75}{3}$ ,  $\frac{2.\overline{66}}{2}$ ,  $\frac{2.5}{1}$

c)  $\frac{2}{3}$ ,  $\frac{3}{4}$ ,  $\frac{8}{9}$ ,  $\frac{33}{36}$ ,  $\frac{11}{12}$

d)  $-\frac{7}{2}$ ,  $-3.\overline{999}$ ,  $-\frac{3}{7}$ ,  $\frac{8}{10}$ ,  $\frac{4}{5}$

$\frac{0.\overline{66}}{1}$ ,  $\frac{0.75}{2}$ ,  $\frac{0.\overline{88}}{3}$ ,  $\frac{0.916}{4}$ ,  $\frac{0.916\dots}{4}$

$\frac{-3.5}{2}$ ,  $\frac{-3.\overline{999}}{1}$ ,  $\frac{-0.\overline{428571}}{3}$ ,  $\frac{0.8}{4}$ ,  $\frac{0.8}{4}$

e)  $\frac{4.09}{1}$ ,  $\frac{4.\overline{09}}{3}$ ,  $\frac{4.\overline{090}}{2}$ ,  $\frac{4.099}{4}$ ,  $\frac{4.1}{5}$

4.09  
4.090909  
4.0909090  
4.099  
4.1

6. Given the list of numbers below, indicate which of them are equal to each other:

$\sqrt{9}$ ,  $\frac{3}{4}$ ,  $\sqrt{\frac{9}{16}}$ ,  $\frac{12}{4}$ ,  $\frac{75}{100}$ ,  $\frac{\sqrt{45}}{5}$ ,  $3^{-1}$ ,  $\left(\frac{1}{3}\right)^{-1}$ ,  $\left(1\frac{1}{3}\right)^{-1}$

7. The value of  $0.\overline{1} + 0.\overline{12} + 0.\overline{123}$  is:

(A)  $0.\overline{343}$

(B)  $0.\overline{355}$

(C)  $0.3\overline{5}$

(D)  $0.355446$

(E)  $0.355445$

0.11111111111111111111  
0.121212121212121212  
0.1231231231231231

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$0.3554463554463554$

$0.\overline{1} = \frac{1}{9}$

$0.\overline{12} = \frac{12}{99} = \frac{12}{9 \times 11}$

$0.\overline{123} = \frac{123}{999} = \frac{41}{9 \times 37}$

$\frac{1}{9} + \frac{12}{9 \times 11} + \frac{41}{9 \times 37}$

$\frac{1 \times 11 \times 37}{9 \times 11 \times 37} + \frac{12 \times 37}{9 \times 11 \times 37} + \frac{41 \times 11}{9 \times 11 \times 37}$