

Unit 1-TEST

Number System - Real Numbers and Exponents

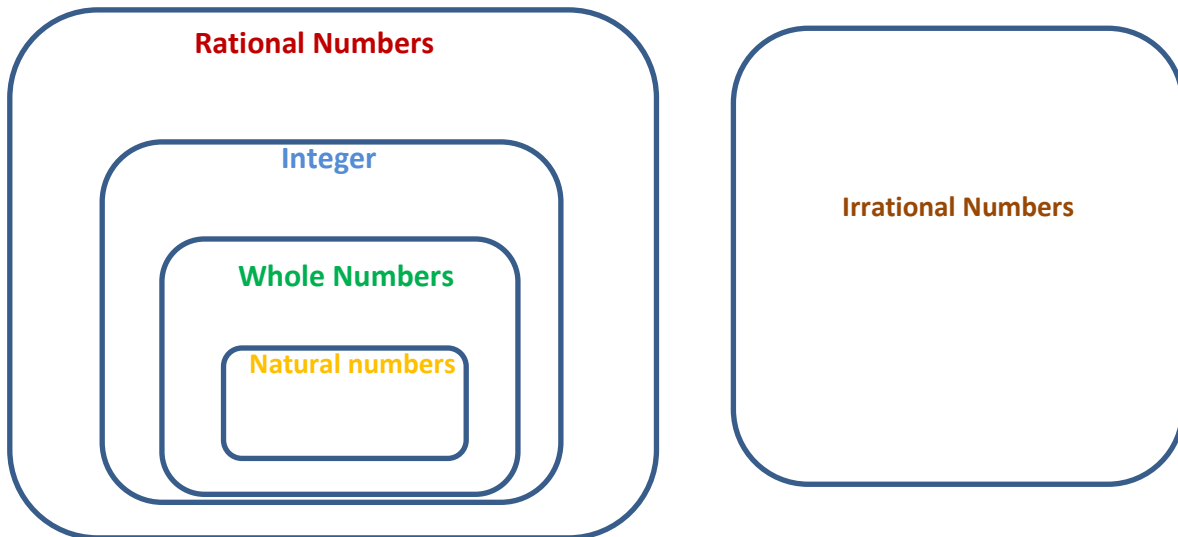
Math 8

1. Classify these numbers as rational or irrational and give your reason.

Number	Rational/Irrational	Explanation
89		
23.569034		
-45.321321321		

2. Classify the numbers by writing them in the appropriate section of the Venn Diagram.

$\frac{1}{2}$, $\sqrt{211}$, 12, $\sqrt{10}$, -15, 0, $\sqrt{81}$, -116, $-3.\overline{6}$, 78, $\frac{0}{3}$, $\frac{36}{12}$



Name: _____ Period: _____ Date: _____

Unit 1-TEST

Number System - Real Numbers and Exponents

Math 8

Evaluate the expression for the given replacement values.

3. $2x + y(x - y)$
 $x = -0.11$ $y = 2.22$

4. $x^2 + y^2 \div (x - y)$
 $x = \frac{1}{3}$, $y = \frac{2}{5}$

Name: _____ Period: _____ Date: _____

Unit 1-TEST

Number System - Real Numbers and Exponents

Math 8

5. Write $0.\overline{023}$ as a fraction.

6. Write 0.045 as a fraction.

7. Classify each number below as either rational or irrational.

If you believe your number is rational, prove your answer by writing it as a fraction.

Number	Rational/Irrational	Fraction
$0.\overline{3}$		
0.12		
-4		
$-\sqrt{66}$		
45.3567120...		

Unit 1-TEST

Number System - Real Numbers and Exponents

Math 8

8. Find the value of each square root and then classify them accordingly.

Number	Value	Perfect square	Irrational Number
$-\sqrt{100}$			
$\sqrt{78}$			
$\sqrt{36}$			
$-\sqrt{7}$			
$\sqrt{14,884}$			

Approximate the following square roots to the nearest hundredths.

9. $\sqrt{14}$

10. $\sqrt{110}$

Approximate the following cube roots to the nearest integer.

11. $\sqrt[3]{199}$

12. $\sqrt[3]{(-1,220)}$

Unit 1-TEST

Number System - Real Numbers and Exponents

Math 8

Solve each expression. Identify if the answer will be rational or irrational.

13. If $x = \sqrt{2}$ and $y = 4$, what is the value of $x^2 + 2y - 3\sqrt{y}$?

14. If $x = 11$ and $y = \sqrt{5}$, what is the value of $x^2 y^2 - (5y + 2\sqrt{x})$?

Evaluate each expression.

15. $(\sqrt[3]{1,000} + \sqrt{256}) \times ((\sqrt{289})^2 - \sqrt[3]{216})$

Unit 1-TEST**Number System - Real Numbers and Exponents****Math 8**

16. $(\sqrt{36})^2 \div (\sqrt[3]{64} - \sqrt{9}) \times (\sqrt[3]{343} - \sqrt[3]{216})$

17. $\left(\frac{12^2}{3} - \frac{3^{-2}}{9^{-2}}\right) \div \left(\frac{36 - 4^2}{5} - \frac{3^{-2}}{12^{-2}}\right)$

18. $\left(\frac{x^2}{5} + \frac{3x^2}{15}\right)^2 \times \left(\frac{12}{8x^2 + 7x^2}\right)^{-1}$

19. $\left(\frac{3ab}{b^{-2}} - \frac{2b^3}{a^{-1}}\right) \times \left(\frac{ab}{b^{-2}} + 3 \times \frac{ab}{b^{-2}}\right)$

Name: _____ Period: _____ Date: _____

Unit 1-TEST

Number System - Real Numbers and Exponents

Math 8

Evaluate the expression. Write your answer in scientific notation.

20.
$$\frac{\left((4 \times 10^3) - (1 \times 10^2) \right) \times (6 \times 10^4)}{200,000}$$