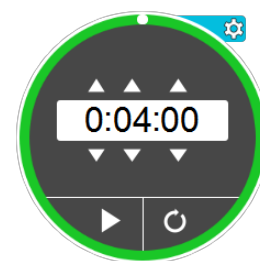


If you have your disclosure signed, hand it in the basket - be sure to cut off and only hand in bottom section. Keep the rest.

Pull out your ws from yesterday :)

fill out all you can (front and back) in 4 minutes



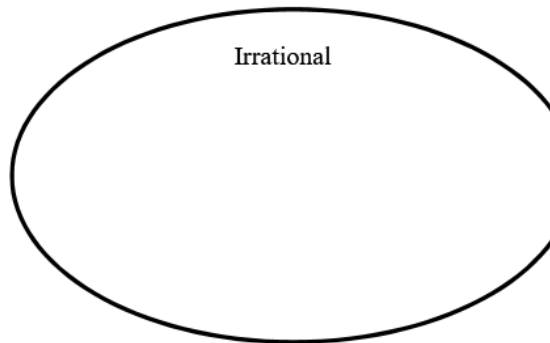
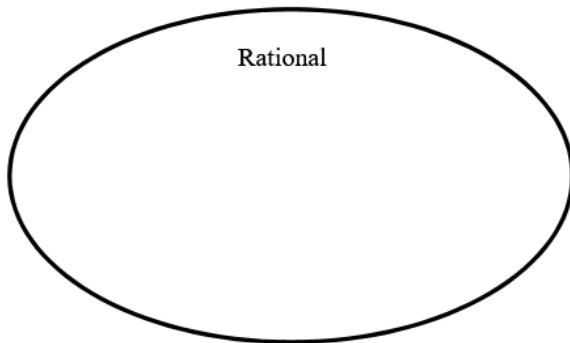
* if you were absent, grab a disclosure and white ws out of the Math 2 bin, "Day 1" folder

Name _____

Rational and Irrational Numbers Worksheet

1. Sort the numbers into 2 groups, rational or irrational. Write the numbers in the appropriate bubble.

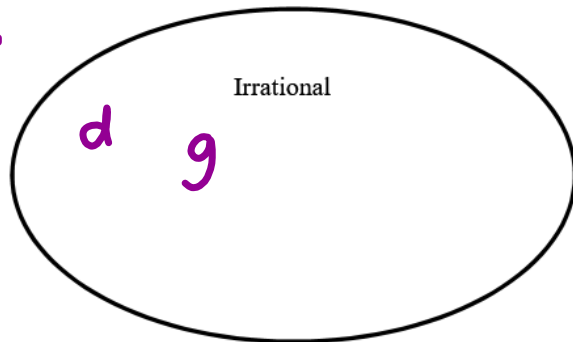
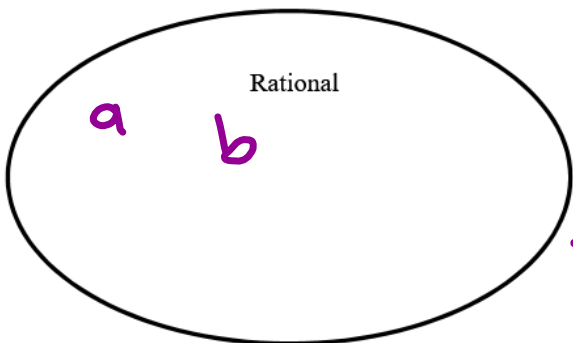
- | | | | | | | |
|---------------|-------------|----------------|--------------------|--------------|----------------|----------------|
| 0.8 | $\sqrt{64}$ | 0 | $\sqrt{32}$ | -19 | $-\sqrt{100}$ | 2.343443444... |
| $\frac{3}{7}$ | $\sqrt{75}$ | $6\frac{2}{7}$ | $12.\overline{67}$ | $\sqrt{121}$ | $\frac{12}{5}$ | π |



2. Sort the numbers into 2 groups, rational or irrational. Write the letter of the problem in the appropriate bubble.

- | | | |
|---------------------------------|-------------------------------------------------------------|--------------------------------------|
| (a) $\frac{5}{8} + \frac{3}{5}$ | (b) $\sqrt{2} \cdot \sqrt{8}$ <i>$\sqrt{16}$</i> | (c) $-\frac{1}{2} + \sqrt{2}$ |
| (d) $\sqrt{6} + \sqrt{3}$ | (e) $\sqrt{2} \cdot \frac{2}{5}$ | (f) $-\frac{3}{4} \cdot \frac{2}{9}$ |
| (g) $\frac{\pi}{2}$ | (h) $5\sqrt{6} \cdot \sqrt{6}$ | (i) $1 - \pi$ |

$\sqrt{3} + 4\sqrt{3} = 5\sqrt{3}$
 $x + y = x + y$
 $x \cdot y = xy$



STATEMENT	ALWAYS, SOMETIMES, OR NEVER TRUE	EXAMPLE JUSTIFICATION
The sum of a rational number and an irrational number is irrational.		
The sum of two rational numbers is rational.		
The product of a rational number and an irrational number is irrational.		
The sum of two irrational numbers is irrational.		
The product of two rational numbers is irrational.		
The product of two irrational numbers is irrational.		

Name _____

Rational and Irrational Numbers Worksheet Answer Key

1. Sort the numbers into 2 groups, rational or irrational. Write the numbers in the appropriate bubble.

0.8 $\sqrt{64}$ 0 $\sqrt{32}$ -19 $-\sqrt{100}$ 2.343443444...
 $\frac{3}{7}$ $\sqrt{75}$ $6\frac{2}{7}$ $12.\overline{67}$ $\sqrt{121}$ $\frac{12}{5}$ π

Rational

0.8 $\sqrt{64}$ 0 -19 $12.\overline{67}$
 $-\sqrt{100}$ $\frac{3}{7}$ $6\frac{2}{7}$ $\sqrt{121}$ $\frac{12}{5}$

Irrational

2.343443444... $\sqrt{32}$ $\sqrt{75}$
 π

2. Sort the numbers into 2 groups, rational or irrational. Write the letter of the problem in the appropriate bubble.

- (a) $\frac{5}{8} + \frac{3}{5}$ (b) $\sqrt{2} \cdot \sqrt{8}$ (c) $-\frac{1}{2} + \sqrt{2}$
 (d) $\sqrt{6} + \sqrt{3}$ (e) $\sqrt{2} \cdot \frac{2}{5}$ (f) $-\frac{3}{4} \cdot \frac{2}{9}$
 (g) $\frac{\pi}{2}$ (h) $5\sqrt{6} \cdot \sqrt{6}$ (i) $1 - \pi$

Rational

a, b, f, h

Irrational

c, d, e, g, i

STATEMENT	ALWAYS, SOMETIMES, OR NEVER TRUE	EXAMPLE JUSTIFICATION
The sum of a rational number and an irrational number is irrational.	Always	$3 + \sqrt{3} = 3 + \sqrt{3}$
The sum of two rational numbers is rational.	Always	$2 + 3 = 5$
The product of a rational number and an irrational number is irrational.	Sometimes	$0 \cdot \sqrt{3} = 0$ but $3 \cdot \sqrt{2} = 3\sqrt{2}$
The sum of two irrational numbers is irrational.	Sometimes	$\sqrt{2} + (-\sqrt{2})$
The product of two rational numbers is irrational.	Never	$5 \cdot 4 = 20$
The product of two irrational numbers is irrational.	Sometimes	$\sqrt{2} \cdot \sqrt{4} = \sqrt{8}$ but $\sqrt{2} \cdot \sqrt{18} = 6$

Hand in ws - did you put your name?!

Pass out Books!!!!

- Take off plastic wrap
- Keep "Volume I" and put name inside front cover and /or along outer edge
- Put "Volume II" in cupboard (no name)

Section 1.1 Exponential Rule of Multiplication (pg. 4)

**Problem 1** Multiplying Powers

What is each expression written using each base only once?

A $12^4 \cdot 12^3$

$$12 \cdot 12 \cdot 12 \cdot 12 \cdot 12 \cdot 12 \cdot 12 = 12^7$$

B $(-5)^{-2}(-5)^7$

$$(-5)^5$$

Now you try Got It? (pg. 4)



Got It? What is each expression written using each base only once?

a. $8^3 \cdot 8^6$

$$8^9$$

b. $(0.5)^{-3} (0.5)^{-8}$

$$\frac{(0.5)^{-11}}{(0.5)^{-11}}$$

c. $9^{-3} \cdot 9^2 \cdot 9^6$

$$9^5$$

(pg. 5)

**Problem 2****Multiplying Powers in Algebraic Expressions**

A What is the simplified form of the expression $4z^5 \cdot 9z^{-12}$?

$$4 \cdot 9 \cdot z^5 \cdot z^{-12}$$
$$36z^{-7} = \frac{36}{z^7}$$

B What is the simplified form of the expression $2a \cdot 9b^4 \cdot 3a^2$?

Now you try Got It? (pg. 5)

Got It? What is the simplified form of each expression in parts (a)–(c)?

a. $\underline{5x^4} \cdot \underline{x^9} \cdot \underline{3x^1}$

$$15x^{14}$$

b. $-4c^3 \cdot 7d^2 \cdot 2c^{-2}$

$$-56cd^2$$

c. $j^2 \cdot k^{-2} \cdot 12j$

$$12j^3k^{-2}$$

$$\frac{12j^3}{k^2}$$

(pg. 8)

**Problem 4****Simplifying Expressions With Rational Exponents**

Simplify the expression $81^{\frac{1}{4}}$.

Now you try Got It? (pg. 8)

Got It? Simplify each expression.

a. $16^{\frac{1}{2}} = 2$

Handwritten solution for $16^{\frac{1}{2}}$: A square root symbol is drawn over the number 16. Below 16, an arrow points to the number 4, with the expression $4 \cdot 4$ written below it. Below $4 \cdot 4$, an arrow points to the expression $2 \cdot 2 \cdot 2 \cdot 2$, which is circled.

b. $27^{\frac{1}{3}} = 3$

Handwritten solution for $27^{\frac{1}{3}}$: A cube root symbol is drawn over the number 27. Below 27, an arrow points to the number 3, with the expression $3 \cdot 3 \cdot 3$ written below it.

c. $64^{\frac{1}{2}}$

Handwritten solution for $64^{\frac{1}{2}}$: A square root symbol is drawn over the number 64. Below 64, an arrow points to the number 8, with the expression $8 \cdot 8$ written below it. The number 8 is circled, and the expression $8 \cdot 8$ is also circled.

(pg. 9)

**Problem 5****Simplifying Expressions With Rational Exponents**Simplify the expression $8^{\frac{3}{2}}$.

$$\begin{aligned}
 (8^2)^{\frac{3}{2}} &= 8^3 = 512 & \sqrt[2]{64}^3 &= 8^3 = 512 \\
 & & & 8 \wedge 3 \\
 & \frac{2}{1} \left(\frac{3}{2} \right) & \frac{6}{2} &= 3
 \end{aligned}$$

Now you try Got It? (pg. 9)

Got It? Simplify each expression.

a. $25^{\frac{3}{2}}$

$$\begin{aligned} & \sqrt{25^3} \\ &= 5^3 \\ &= 125 \end{aligned}$$

$$25^{\wedge}(3/2)$$

b. $27^{\frac{2}{3}}$

$$\begin{aligned} & \sqrt[3]{27^2} \\ & 3^2 = 9 \end{aligned}$$

c. $16^{\frac{3}{4}}$

$$\begin{aligned} & \sqrt[4]{16^3} \\ & \begin{array}{c} 4 \cdot 4 \\ \uparrow \quad \uparrow \\ 2 \cdot 2 \quad 2 \cdot 2 \end{array} \\ & 2^3 = 8 \end{aligned}$$

(pg. 10)

**Problem 6****Simplifying Expressions With Rational Exponents**

Simplify the expression $(2a^{\frac{2}{3}} \cdot 3b^{\frac{1}{4}})(a^{\frac{1}{3}} \cdot 5b^{\frac{1}{2}})$.

Now you try Got It? (pg. 10)

Got It? Simplify each expression.

a. $2c^{\frac{3}{5}} \cdot 2c^{\frac{1}{5}}$

b. $n^{\frac{1}{3}} \cdot n^{\frac{4}{3}}$

c. $(b^{\frac{2}{3}} \cdot c^{\frac{3}{5}})(b^{\frac{4}{9}} \cdot c^{\frac{9}{10}})$

Handwritten work for problem c:

$(\frac{2}{3} + \frac{4}{9})b$ $(\frac{3}{5} + \frac{9}{10})c$
 $\frac{2}{3} + \frac{4}{9} = \frac{4}{3} + \frac{4}{9} = \frac{4 \cdot 3}{3 \cdot 3} + \frac{4}{9} = \frac{12}{9} + \frac{4}{9} = \frac{16}{9}$
 $\frac{3}{5} + \frac{9}{10} = \frac{6}{10} + \frac{9}{10} = \frac{15}{10} = \frac{3}{2}$
 $b^{\frac{16}{9}} \cdot c^{\frac{3}{2}}$

d. $(3j^{\frac{2}{3}} \cdot 7m^{\frac{1}{3}})(3j^{\frac{1}{6}} \cdot 7m^{\frac{2}{3}})$

What could x be?

$$5^2 \cdot 5^x = 5^{11}$$

$$3^{-2} \cdot 3^x = 3$$

Hw: Section 1.1 #'s 1-4, 7-14, 19-25
all all odds