

Seating chart on front middle desk :)  
Find and sit in assigned seat!



Pull out rational/irrational ws to grade

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...  
 $\frac{3}{7}$        $\sqrt{75}$        $6\frac{2}{7}$        $12.\overline{67}$        $\sqrt{121}$        $\frac{12}{5}$        $\pi$

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...     $\sqrt{32}$      $\sqrt{75}$   
 $\pi$

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 $\sqrt{2} \cdot \sqrt{18} = 6$

Questions from hw yesterday?

1.1 # 1-4, 7-14, 19-25 odds

## Section 1.2 More Multiplication Rules for Exponential Rule (pg. 15)

**Problem 1****Simplifying a Power Raised to a Power**

**A** What is the simplified form of  $(n^4)^7$ ?

$$n^4 \cdot n^4 \cdot n^4 \cdot n^4 \cdot n^4 \cdot n^4 \cdot n^4 = n^{28}$$

$n \cdot n \cdot n \cdot n$

**B** What is the simplified form of  $(x^{\frac{2}{3}})^{\frac{1}{2}}$ ?

$$x^{\frac{2}{3}} \cdot \frac{1}{2} = \frac{2}{6} = \frac{1}{3}$$

$x^{\frac{1}{3}}$

Now you try Got It? (pg. 15)

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

a.  $(p^5)^4$

$$p^{20}$$

b.  $(p^4)^5$

$$p^{20}$$

c.  $(p^{\frac{1}{2}})^{\frac{1}{4}}$

$$\frac{1}{2} \cdot \frac{1}{4} = \frac{1}{8}$$
$$p^{\frac{1}{8}}$$

d.  $(p^{\frac{1}{4}})^{\frac{1}{2}}$

$$p^{\frac{1}{8}}$$

(pg. 16)

**Problem 2****Simplifying an Expression With Powers**

What is the simplified form of  $y^3(y^{\frac{5}{2}})^{-2}$ ?

$$y^3(y^{-5}) \quad \frac{5}{2} \cdot \frac{-2}{1} = \frac{-10}{2} = -5$$
$$y^{3+(-5)}$$
$$\frac{y^{-2}}{1} = \frac{1}{y^2}$$

Now you try Got It? (pg. 16)

**Got It?** What is the simplified form of each expression?

a.  $x^2(x^6)^{-4}$

$$x^2 \cdot x^{-24}$$

$$49x^{-22}$$


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$$\frac{1}{x^{22}}$$

b.  $w^{-2}(w^5)^3$

$$w^{-2} \cdot w^5 \cdot w^5 \cdot w^5 = w^3$$

c.  $(s^{-5})^{-\frac{1}{2}}(s^{\frac{3}{2}})$

$$s^{\frac{5}{2}} + s^{\frac{3}{2}} = s^4$$



(pg. 17)

Write the simplified form of the expression

$$(3y^2)^3$$

$$3y^2 \cdot 3y^2 \cdot 3y^2$$

$$3y \cdot y \cdot 3y \cdot y \cdot 3y \cdot y$$

$$3^3 y^6$$

$$27y^6$$

$$(5a)^{-4}$$

$$5^{-4} a^{-4}$$

$$\frac{1}{5^4 a^4} = \frac{1}{625 a^4}$$

Now you try Got It? (pg. 17)

**Got It?** What is the simplified form of each expression?

a.  $(7m^9)^3$

Handwritten work for (a):

$$\begin{aligned} & \rightarrow 3 \quad 27 \\ & \quad m \\ & \text{---} \\ & 343m^{27} \end{aligned}$$

Handwritten work for (b):

$$\begin{aligned} & 2^{-4} 2^{-4} \\ & \frac{1}{2^4 2^4} = \frac{1}{16z^8} \end{aligned}$$

b.  $(2z)^{-4}$

c.  $(3g^4)^{-2}$

Handwritten work for (c):

$$\begin{aligned} & 3^{-2} g^{-8} \\ & \frac{1}{9g^8} \end{aligned}$$

(pg. 18)

**Problem 4****Simplifying an Expression With Products**

What is the simplified form of  $(n^{\frac{1}{2}})^{10} (4mn^{-\frac{2}{3}})^3$ ?

Now you try Got It? (pg. 18)

**Got It?** What is the simplified form of each expression?

a.  $(x^{-2})^2 (3xy^5)^4$

$$\begin{aligned} & \cancel{x^{-4}} \cdot 3^4 \cdot \cancel{x^4} \cdot y^{20} \\ x^0 & \quad 3^4 y^{20} \\ & 81y^{20} \end{aligned}$$

b.  $(3c^5)^4 (c^2)^3$

$$\begin{aligned} & 3^4 c^{20} c^6 \\ & 81c^{26} \end{aligned}$$

$$\frac{5}{2} \cdot \frac{4}{1} = \frac{20}{2} = 10$$

What value of  $x$  makes the equation true?

$$(r^2)^5 = r^{10} \quad x = \underline{5}$$

$$(a^{-6})^x = a^5 \quad x = \underline{-\frac{5}{6}}$$

$$\frac{-6x}{-6} = \frac{5}{-6}$$

hw 1.2 #s 1-14 (skip 9-10), 20-28 evens  
due Tues 8/28 <sup>at</sup> (do on separate paper, not in book!)



