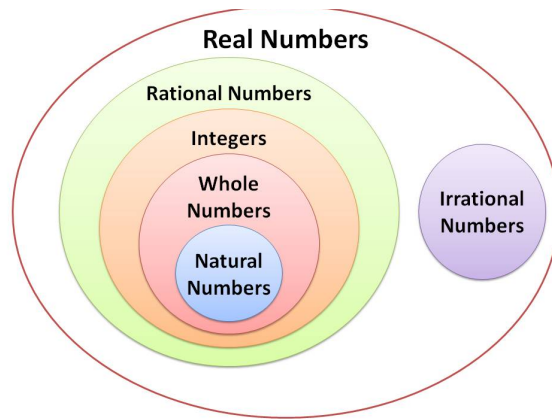


# Final Exam Review #1

## The Real Number System

### Properties

### Operations with Rational Numbers



### Practice Problem Set:

1. Using the words **natural**, **whole**, **integer**, **rational** and **irrational**, list all the subsets of real numbers that describe each number below.

A. 5 \_\_\_\_\_

B.  $\sqrt{15}$  \_\_\_\_\_

C. -1 \_\_\_\_\_

D. 0 \_\_\_\_\_

E.  $\sqrt{81}$  \_\_\_\_\_

F.  $\frac{2}{9}$  \_\_\_\_\_

G.  $1.\bar{3}$  \_\_\_\_\_

H.  $\pi$  \_\_\_\_\_

I. 0.353353335... \_\_\_\_\_

2. All the numbers below are **rational** *except*

A.  $-5\frac{6}{7}$

B.  $6.5\bar{1}$

C.  $\sqrt{200}$

D. 0.00009

3. Complete the table below with all equivalent forms of the number in each row.

Fraction	Decimal	Percent
$7\frac{3}{5}$		
	0.015	
		65%
$\frac{4}{9}$		

4. **Circle** all the numbers below that are equivalent to 2.75.

275%

$\frac{11}{4}$

$2\frac{3}{4}$

27.5%

$2\frac{6}{8}$

5. Simplify the following numerical expressions. **Show all work!**

A.  $\frac{1.5 - |-6|}{\left(\frac{1}{3}\right)(2.7)}$

B.  $\frac{1}{8} + \frac{17}{2} \div \frac{-10}{2.5}$

6. Evaluate the expressions below when  $a = -4$  and  $b = -5$ . **Show all work!**

A.  $a^2 - b$

B.  $\frac{b^2}{a+b}$

7. Which situation(s) below result in a final value of zero? **Select all that apply.**
- A. the overall change in temperature when the temperature goes from  $-15^{\circ}\text{F}$  to  $15^{\circ}\text{F}$
  - B. the overall change in depth of a submarine that descends 300 feet and an hour later, ascends 300 feet
  - C. the total profit made when a person buys an item for \$50 and sells it for \$50
  - D. the total distance a person travels when he drives 25 miles to work and then drives 25 miles back home
  - E. the overall change in an account if \$100 was withdrawn and the following day, \$100 was deposited
  - F. the overall score change of a player on Jeopardy who answers a \$400 question correctly and then answers two \$200 questions incorrectly
8. The temperature at 6:00 pm was  $15^{\circ}\text{C}$ . The temperature dropped  $3^{\circ}\text{C}$  per hour. Which numerical expression below can be used to calculate the temperature at 4:00 am?
- A.  $3(10) - 15$
  - B.  $15 - 3(10)$
  - C.  $(15 - 3)(10)$
  - D.  $(15 - 10)(3)$
9. An Uber driver used 59.5 gallons of gasoline during one week. Of the total amount of gasoline,  $\frac{3}{10}$  was used driving customers to the airport. How many gallons of gasoline did the driver use to transport people to the airport?

10. Write down the property illustrated by the statement.

**Commutative Property of Addition/Multiplication**

**Inverse of Property of Addition/Multiplication**

**Associative Property of Addition/Multiplication**

**Zero Product Property**

**Identity Property of Addition/Multiplication**

**Distributive Property**

A.  $(a)(b) = (b)(a)$

B.  $-9 + 0 = -9$

C.  $(-3 + 7) + 5 = -3 + (7 + 5)$

D.  $5(b - c) = 5b - 5c$

E.  $\frac{2}{9} \cdot \frac{9}{2} = 1$

F.  $x + y = y + x$

G.  $17 \cdot 0 = 0$

H.  $(-25)(1) = -25$

I.  $8 + (-8) = 0$

J.  $(11 \cdot 4) \cdot 2 = 11 \cdot (4 \cdot 2)$

11. Which numerical statement(s) represent an *inverse* property? Select all that apply.

\_\_\_\_\_ A.  $3 + (-3) = 0$

\_\_\_\_\_ B.  $-9 \cdot 0 = 0$

\_\_\_\_\_ C.  $27 = 0 + 27$

\_\_\_\_\_ D.  $\frac{1}{4} \cdot 4 = 1$

\_\_\_\_\_ E.  $-15 \cdot 1 = -15$

\_\_\_\_\_ F.  $-\frac{5}{2} \cdot \frac{2}{5} = -1$

12. Which expression(s) below represent the associative property? Select all that apply.

\_\_\_\_\_ A.  $(a + b) + c = a + (b + c)$

\_\_\_\_\_ B.  $a(b + c) = a(b) + a(c)$

\_\_\_\_\_ C.  $(ab)c = a(bc)$

\_\_\_\_\_ D.  $(ab) + c = c + (ab)$