

# REVIEW: RATIONAL NUMBERS AND THE COORDINATE PLANE

The Unit Test is scheduled for \_\_\_\_\_ Use this review to help you prepare for these assessments. Make sure you are familiar with the following vocabulary.

**VOCABULARY:** integer, whole number, opposites, rational number, irrational number, negatives, positives, horizontal, vertical, number line, coordinate plane, x-axis, y-axis, origin, quadrants, ordered pair, x-coordinate, y-coordinate, line of symmetry, absolute value, debt, charge, credit, debit, withdrawal, deposit, inequality statement, least common multiple, numerator, denominator, terminating decimal, repeating decimal, perimeter, area, vertex

**DIRECTIONS:** FIRST FILL IN THE HINT BOXES FIRST TO HELP YOU BEGIN THINKING ABOUT EACH PROBLEM. THEN ANSWER THE FOLLOWING QUESTIONS REFERRING TO YOUR CLASS NOTES, IF NEEDED.

**PART 1: RATIONAL NUMBERS**

1.) Give a value that makes the statement below true.

50.4 < \_\_\_\_\_ < 50.48

*Answers vary. Anything between 50.40 and 50.48*

2.) Determine if each of the following values is rational or irrational. Provide a reason for each.

Value	Rational or Irrational?	Reason
-0.92	<i>Rational</i>	<i>Can be written as a fraction</i>
$\sqrt{7}$	<i>Irrational</i>	<i>cannot be a fraction</i>
-5.3	<i>Rational</i>	
1	<i>Rational</i>	

3.) Determine the opposite of -2.57

*2.57*

4.) Evaluate -(-10).

*10*

Hint Box:

What makes a number rational?  
*The number can be written as a fraction.*

What types of numbers can be rational?  
*Whole numbers  
Integers  
terminating and repeating decimals  
Mixed numbers & fractions*

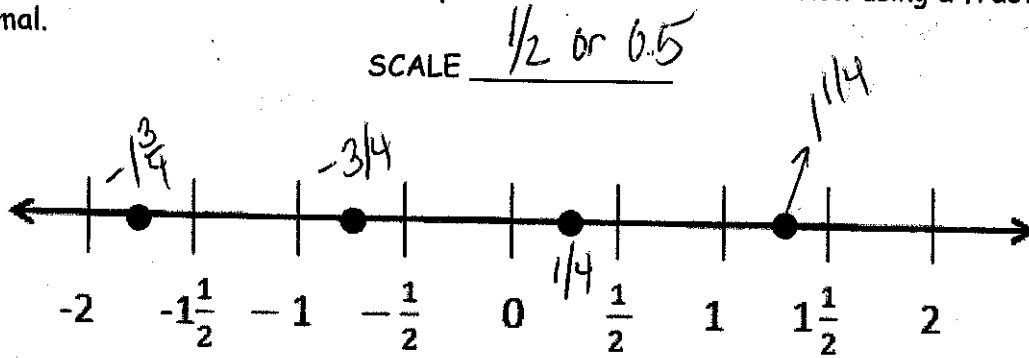
Give an example of an integer that is NOT a whole number.  
*Any negative integer*

List the integers between 0 and -5.  
*-1, -2, -3, -4*



**PART 2: RATIONAL NUMBERS ON THE NUMBER LINE**

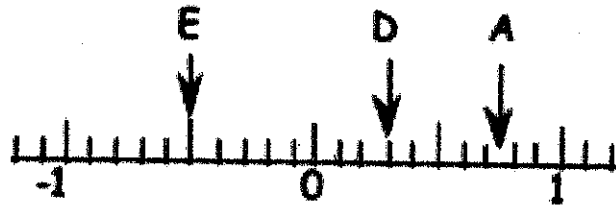
- 5.) Label the approximate value of each point on the number line below using a fraction or a decimal.



- 6.) Label each letter with a point on the number line below.

- a. Determine the scale of the number line below. 0.1 or  $\frac{1}{10}$   
 b. What is the value of each of the points E and D as a fraction and a decimal?

E -0.5  
 D 0.3



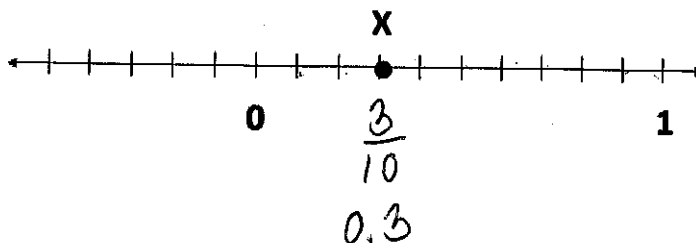
- 7.)



- a. Determine the scale of the number line above.  $\frac{1}{4}$   
 b. Write the value of point A as a mixed number.

A  $-1\frac{1}{4}$

- 8.) On the number line below, point X can be represented using fractions and decimals. List all the possible answers to represent the value of X.



**PART 3: COMPARING AND ORDERING RATIONAL NUMBERS**

Compare the following using  $<$ ,  $>$  or  $=$ . Show your thinking by using either the number line, LCD, or changing the values to the same form (that is changing fractions to decimals.)

9.)

a.  $-0.75 > -0.8$

b.  $-0.8 < -0.75$



*Needs to have some work shown for each of these*

10.)

$-2.6 > -3 \frac{1}{2}$



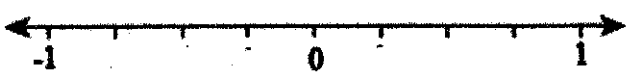
11.)

$-\frac{5}{10} > -\frac{3}{4}$

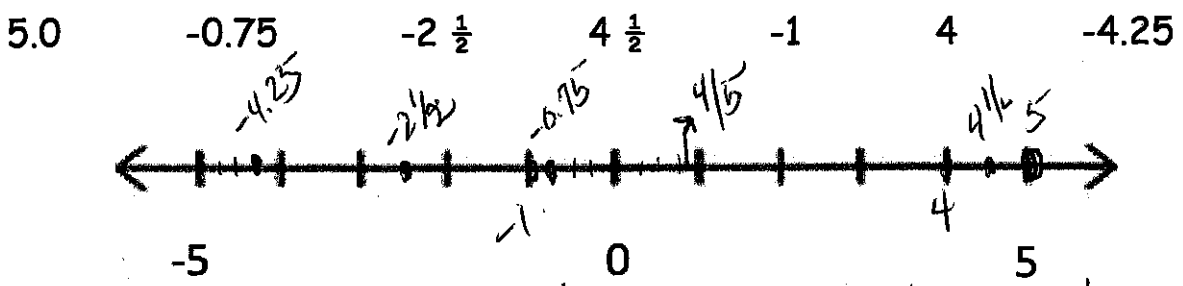


12.)

$0.6 = \frac{6}{10}$



13.) Graph and order the following rational numbers from least to greatest.



Order:  $-4.25, -2 \frac{1}{2}, -1, -0.75, \frac{4}{5}, 4, 4 \frac{1}{2}, 5$

**Hint Box:**

What methods can be used to order and compare fractions and decimals?

*Change the fractions to decimals and then compare.*

What methods can be used to order and compare decimals?

*Think of alphabetical order*

What does LCD stand for?

*least common denominator*

What is the LCM of 8 and 12? Show thinking below.

*8 12 or birthday cake*

$LCM = 24$

**PART 4: ABSOLUTE VALUE**

14.) Find the absolute value.

a.  $|-105.4| = \underline{105.4}$

b.  $|-8 \frac{1}{4}| = \underline{\frac{8}{4}}$

c.  $|5.328| = \underline{5.328}$

15.) Compare the following using  $<$ ,  $>$  or  $=$ .

a.  $|-4.7| \underline{<} |5|$

b.  $|9 \frac{1}{2}| \underline{<} 9.9$

c.  $|6.5| \underline{>} -6 \frac{1}{2}$

d.  $|3.852| \underline{>} |-3.85|$

16.) Find the missing value(s).

a.  $|\square| = 7$

$\square = 7 \text{ or } -7$

b.  $|\square| = 3.27$

$\square = 3.27 \text{ or } -3.27$

17.) Write a rational number to describe the following situations.

a.) Credit Card Debt of \$89

$\underline{-89}$

b.) Credit of \$145.32

$\underline{145.32}$

c.) Debit of \$104.56

$\underline{-104.56}$

18.) Which has the greatest impact on an account balance - a withdrawal of \$45.87 or a deposit of \$40.23?  
*Withdrawal of \$45.87.*

19.) Sarah has an account balance of less than  $-\$98$ . Fill in the blanks below to best describe the size of her debt.

Sarah has a debt of more than (more than, less than, or equal to) \$98.

**Hint Box:**

Define absolute value.

*A number's distance from zero.*

When comparing values containing the absolute value bars, what must you do first before you compare?

*First find the absolute value and then compare*

**Hint Box:**

List the monetary terms that describe positive rational numbers.

*Credit  
deposit*

List the monetary terms that describe negative rational numbers.

*Charge  
debit  
debt  
withdrawal*

*\*Need to show work here*

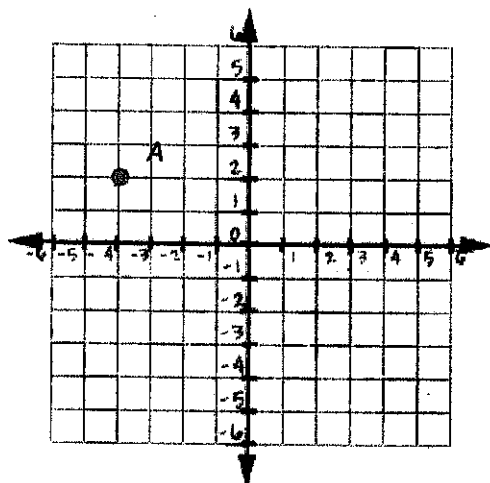
*\*Need both answers in order to be correct.*

## PART 5: REFLECTIONS

Use the coordinate plane below to answer the following questions.

20.) Reflect point A over the x-axis.  $(-4, -2)$   
Write the coordinates: \_\_\_\_\_

21.) Reflect point A over the y-axis.  $(4, 2)$   
Write the coordinates: \_\_\_\_\_



### Hint Box:

What is a line of symmetry?

A line that divides a picture into 2 equal parts

What happens to the coordinates when you reflect a point over the x-axis?

x coord: stays the same  
y coord: becomes its opposite

What happens to the coordinates when you reflect a point over the y-axis?

x coord: becomes its opposite  
y coord: stays the same

22.) Reflect  $(-7, 3)$  across the y-axis. Write the coordinates:  $(7, 3)$

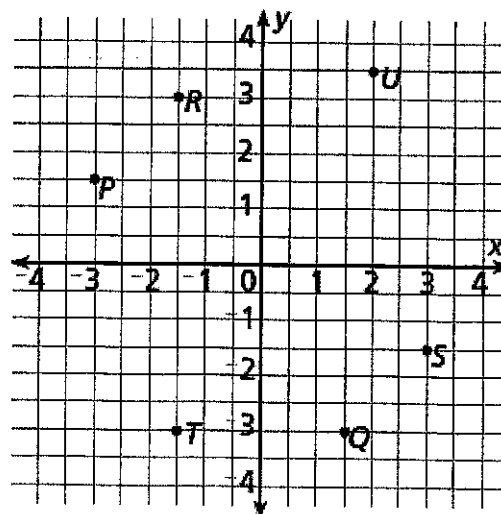
23.) The points  $(-13, 16)$  and  $(13, 16)$  are reflected over which axis? y axis

24.) The points  $(4, -20)$  and  $(-4, -20)$  are reflected over which axis? y axis

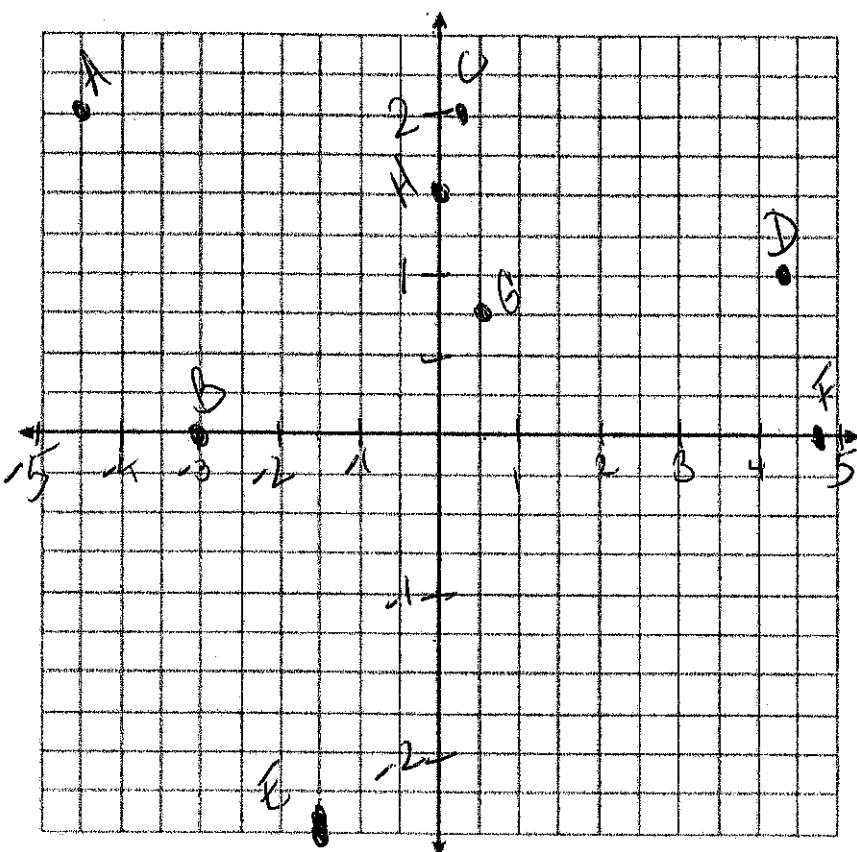
## PART 6: THE COORDINATE PLANE

25.) Name the ordered pair of the following points. Then state the quadrant or axis of its location.

Point	Ordered Pair	Quadrant or Axis
P	$(-3, 1\frac{1}{2})$	2 <sup>nd</sup> or II
Q	$(1\frac{1}{2}, -3)$	4 <sup>th</sup> or IV
R	$(-1\frac{1}{2}, 3)$	2 <sup>nd</sup> or II
S	$(3, -1\frac{1}{2})$	4 <sup>th</sup> or IV
T	$(-1\frac{1}{2}, -3)$	3 <sup>rd</sup> or III
U	$(2, 3\frac{1}{2})$	1 <sup>st</sup> or I



26.) Plot the following points A through H on the coordinate plane below. Use a scale of  $\frac{1}{2}$  on the x-axis and a scale of  $\frac{1}{4}$  on the y-axis.



- |                       |                        |
|-----------------------|------------------------|
| A(-4.5, 2)            | E(-1.5, -2.5)          |
| B(-3, 0)              | F( $4\frac{3}{4}$ , 0) |
| C( $\frac{1}{2}$ , 2) | G(0.5, 0.75)           |
| D(4.25, 1)            | H( $0, 1\frac{1}{2}$ ) |

**Hint Box:**

When plotting a point, list 3 steps to follow:

1. Start at the origin
2. Move ← or → depending on the x coord.
3. Move ↑ or ↓ depending on the y coord.

What does an ordered pair look like when the point falls on the x or y axis?

if one of the coordinates is a 0.

**PART 7: DISTANCE ON THE COORDINATE PLANE**

27.) Use the coordinate plane below to find the following distances. (A scale of 1 is being used on both axes.)

a. The distance between (0, -6) and (0, 9)

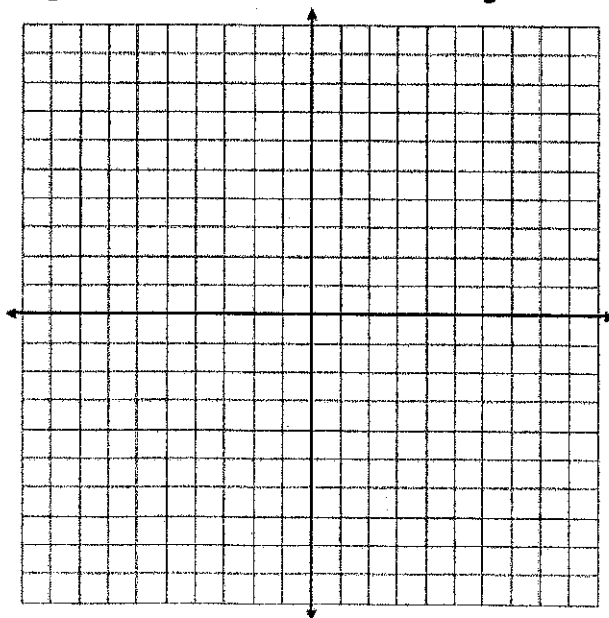
15 units

b. The length of the segment with endpoints (2, -3) and (-6, -3).

8 units

c. Find the distance between (-3, -4) and (-3, 6).

10 units



- 28.) Find the length of the line segment with endpoints (5, 9) and (5, -11).

20 units

- 29.) Find the distance between the points (2, -7) and (10, -7).

8 units

- 30.) The point below that is 6 units away from (8, -3). Find the missing coordinate.

(8, 3)  
or (8, -9)

### Hint Box:

What mathematical concept do you use to find the distance between two points?

Absolute value

When finding the distance between two points, when do you add the absolute values and when do you subtract?

- : same sides of zero  
+ : different sides of zero

What is a line segment?

has a straight edge with 2 endpoints

If two points don't fall on an axis, how do you know if points are on the same side or different sides of zero?

Same Side: Same quadrant  
Different Sides: Different quadrants

## PART 8: GEOMETRIC FIGURES IN THE COORDINATE PLANE

- 31.) Plot the vertices of the figure below to answer the following questions.

A(-4, 3), B(1, 3), C(1, -2), D(-4, -2)

What type of figure is formed? Square

Length of  $\overline{BC}$  = 5 units

Perimeter of ABCD = 20 units

Area of ABCD = 25 sq. units

