

Accelerated 6 • Unit 7 Worksheet

Rational Numbers

Name: _____

Date: _____

Part A • Quick Computations

$-7 + 12$ _____	$-4 \cdot 5$ _____	$-8 - (-3)$ _____	$ -6 $ _____
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Part B • Negative Numbers and Absolute Value

1. Place these numbers on a number line and order them from LEAST to GREATEST: -2.5 , $\frac{1}{4}$, -1 , 1.5 , 0 , $-\frac{3}{4}$

Order from least to greatest:

Which two numbers have the SAME absolute value? _____ and _____. What does that mean about their positions on the number line?

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2. True or false. Defend each.

a. -10 is less than -5 . ☐ T ☐ F because:

b. $|-10|$ is less than $|-5|$. ☐ T ☐ F because:

c. If $a < 0$, then $-a > 0$. ☐ T ☐ F because:

d. The opposite of -0.5 is 0.5 . ☐ T ☐ F

e. $|x| = 7$ has only one solution. ☐ T ☐ F because:

Part C • Adding and Subtracting Rational Numbers

3. Compute each. Show how you'd think of it on a number line for parts (a) and (c).

a. $-7 + 12 =$ _____

b. $-\frac{2}{3} + (-\frac{1}{3}) =$ _____

c. $5 - (-3) =$ _____

d. $-4.5 - 2.5 =$ _____

e. $0 - (-7) - 7 =$ _____

4. Diego claims: "Subtracting a negative is the same as adding a positive." Test his rule on:

Examples: $5 - (-3)$; $0 - (-10)$; $-2 - (-6)$.

Is Diego right? Why does this rule work? Explain using a number line or with opposite-direction reasoning.

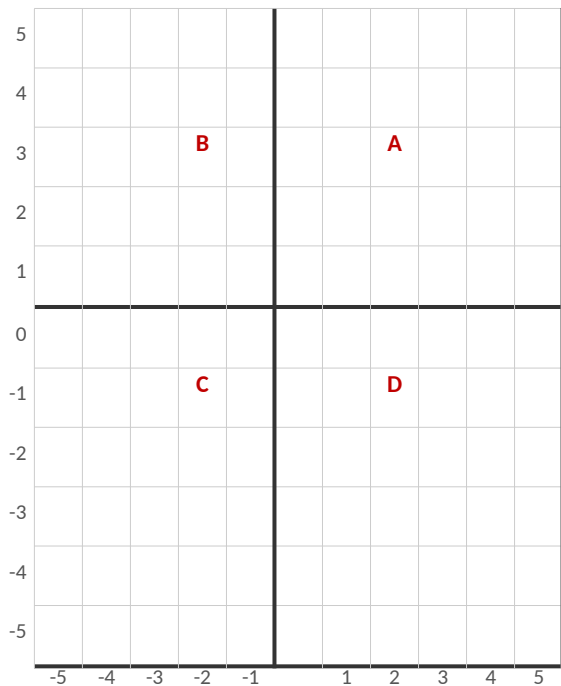
Part D • The Coordinate Plane (All 4 Quadrants)

5. Plot these points on the coordinate plane and connect them in order: A(2, 3), B(-2, 3), C(-2, -1), D(2, -1).

What shape is ABCD?

Find its dimensions and AREA. Show how you found each.

Now reflect point A across the y-axis. What are the new coordinates?



6. A point is at $(-4, 2)$. Describe (with new coordinates):

- Its reflection across the x-axis: _____
- Its reflection across the y-axis: _____
- Its reflection across BOTH (i.e., rotated 180°): _____

Part E • Multiplying and Dividing Rational Numbers

7. Compute. Pay attention to signs.

- $(-4) \cdot (-5) =$ _____
- $(-\frac{1}{3}) \cdot (\frac{3}{4}) =$ _____
- $(-12) \div 4 =$ _____
- $(-8) \div (-2) =$ _____
- $(-1)^5 =$ _____
- $(-2)^4 =$ _____

8. Lin says: "A negative number to an EVEN power is positive; to an ODD power is negative." Test her rule on $(-2)^1$, $(-2)^2$, $(-2)^3$, $(-2)^4$. Then explain WHY her rule works.

$$(-2)^1 = \text{_____} \quad (-2)^2 = \text{_____} \quad (-2)^3 = \text{_____} \quad (-2)^4 = \text{_____}$$

Why the pattern? (Hint: count factors of -1 .)

Part F • Thinking Deeply

9. Han claims: "A bigger absolute value means a bigger number." Use ONE example to support him and ONE to refute him.

Supports Han:

Refutes Han:

When IS Han's rule correct?

10. A sea-level diver descends 3 m, then 2 m more, then RISES 4 m. Then she descends 6 m. What is her final depth? Show as an integer expression and on a number line.

Expression:

Final depth: _____ m

If she started at the surface (0 m), she is now BELOW or ABOVE the surface? By how much?
