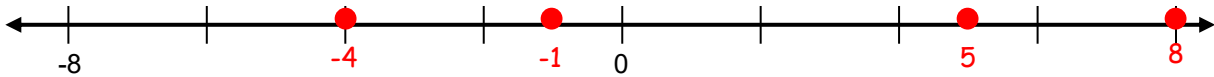


GRADE 7: INTRODUCTION TO INTEGERS (IN1)

Essentials Problem Set Answer Key

1. Graph and label each of the following numbers on the number line below: 5, -4, -1, 8



Use the number line to the right to help you complete problems 12–14.

2. Choose ALL the statements below that result in a temperature of 20° .

- | | |
|--|--|
| <p>A. Start at 50°, fall 30°</p> <p>C. Start at -10°, rise 30°</p> | <p>B. Start at -20°, rise 50°</p> <p>D. Start at -5°, rise 25°</p> |
|--|--|

- | | |
|--|---|
| <p>3. A freezer is kept at a temperature of -15° F. The electricity went out and 5 hours later the temperature had risen to 55° F. How much did the temperature change? 70°</p> | <p>4. A cooler was -10° F but Frank left the lid open and the temperature rose 25° F. What is the temperature of the cooler now? 15°</p> |
|--|---|

5. Write $<$, $=$, or $>$ in the blanks to make each statement true. Then choose one and explain how you know your answer is correct.

a. $|-25|$ $=$ $|25|$

b. the opposite of 5 $<$ $|-5|$

c. 7 $>$ $|-7|$

d. $|-15-7|$ $<$ $|-6|$

6. Each small square on the grid below is one square unit.

- a. Label the axes. Graph the origin at the point $(0, 0)$ and label it O.
- b. Graph and label the ordered pairs below.

A $(5, -4)$

B $(-2, 0)$

C $(5, 3)$

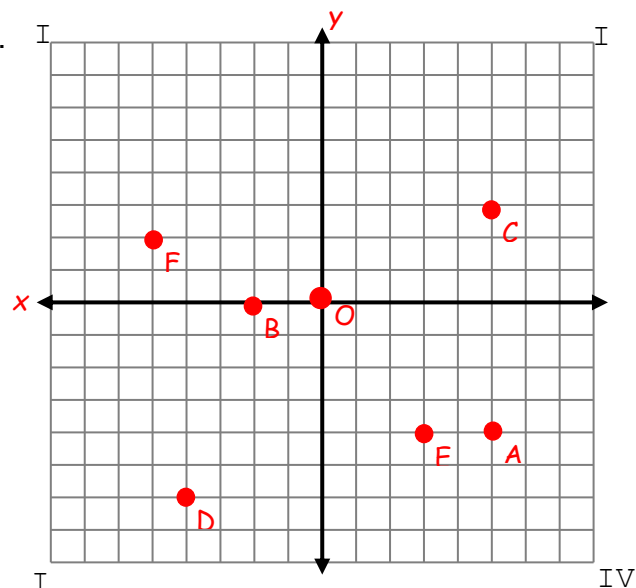
D $(-4, -6)$

E $(3, -4)$

F $(-5, 2)$

- c. Explain how you located point F on the coordinate plane.

Start at $(0,0)$. Move 5 units to the left then 2 units up.



7. List all ordered pairs (integer coordinates only) that could fit on the grid above and whose coordinates satisfy the conditions that $x > 3$ and $y < -7$.

$(4, -8), (5, -8), (6, -8), (7, -8), (8, -8)$

INTEGER ADDITION AND SUBTRACTION (IN2)

Essentials Problem Set **Answer Key**

1. Choose all counter diagrams that represent a value of - 4.

A. + + - - - - - C. + + + + + - -	B. + + + + - - - - D. - - - -
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2. Record drawings of counters to show each value. **Answers may vary.**

a. A value of 6 using <i>exactly</i> 8 counters + + + + + + + -	b. A value of -5 using <i>exactly</i> 9 counters + + - - - - -
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3. Compute each sum or difference. Use drawings of counters if needed.

a. $6 + (-4) =$ _____ 2	b. $-3 + 3 =$ _____ 0	c. $-2 + (-3) =$ _____ -5
d. $-3 - (-3) =$ _____ 0	e. $-3 - 7 =$ _____ -10	f. $2 - (-6) =$ _____ 8

4. Show or explain why each statement below is true.

a. Adding two negative numbers must always result in a negative sum. Answers will vary. One possibility: Start with negative counters and add more negative counters. The result must have all negative counters.	b. $1 - 6$ and $1 + (-6)$ must have the same result. Answers will vary. One possibility: For $1 - 6$, start with one positive counter, add five zero pairs, and now six positive counters may be taken away, leaving five negative counters. For $1 + (-6)$, start with one positive counter, add six negative counters, remove the zero pair, leaving a result of five negative counters.
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5. Compute.

a. $30 + (-90)$ -60	b. $-60 - (-40)$ -20
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INTEGER MULTIPLICATION AND DIVISION (IN3)

Essentials Problem Set **Answer Key**

1. Compute. Draw diagrams as needed.

a. $(5) \cdot (-3)$ -15	b. $(-2) \cdot (5)$ -10	c. $(-3) \cdot (-4)$ 12
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2. Explain why the result for part a above must be negative.

Placing in groups of negative counters must result in all negative counters.

3. Write two division statements, with the same three numbers, that directly relate to $(-6) \cdot (5) = -30$

$-30 \div (-6) = 5$ and $-30 \div (5) = -6$

4. Compute.

d. $(60) \cdot (-4)$ -240	e. $(-20) \cdot (-30)$ 600	f. $(-27) \div (-3)$ 9	g. $\frac{-42}{7}$ -6
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5. Draw a circle around the expression below that is equal to zero and a square around the one that is undefined. Then explain why the undefined expression does not make mathematical sense.

$$\frac{0}{4}$$

$$\frac{4}{0}$$

Answers will vary. One possibility:

Consider a situation where we are trying to divide 4 sandwiches among 0 people. How many sandwiches does each person get? The situation makes no sense.