

INTEGER ADDITION AND SUBTRACTION (IN2)

Essentials Pre-Assessment **Answer Key**

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

A. + + - - - - -
 C. + + + + + - -

B. + + + + - - - -
D. - - - - -

2. Record drawings of counters to show each value. *Answers may vary.*

a. A value of 6 using <i>exactly</i> 8 counters <div style="text-align: center; margin-top: 10px;"> $++++++-$ </div>	b. A value of -5 using <i>exactly</i> 9 counters <div style="text-align: center; margin-top: 10px;"> $+- - - - -$ </div>
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3. Compute each sum or difference. Use drawings of counters if needed.

a. $6 + (-4) =$ _____ <div style="text-align: center; margin-top: 5px;">2</div>	b. $-3 + 3 =$ _____ <div style="text-align: center; margin-top: 5px;">0</div>	c. $-2 + (-3) =$ _____ <div style="text-align: center; margin-top: 5px;">-5</div>
d. $-3 - (-3) =$ _____ <div style="text-align: center; margin-top: 5px;">0</div>	e. $-3 - 7 =$ _____ <div style="text-align: center; margin-top: 5px;">-10</div>	f. $2 - (-6) =$ _____ <div style="text-align: center; margin-top: 5px;">8</div>

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

a. Adding two negative numbers must always result in a negative sum. <i>Answers will vary. One possibility: Start with negative counters and add more negative counters. The result must have all negative counters.</i>	b. $1 - 6$ and $1 + (-6)$ must have the same result. <i>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.</i>
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5. Compute.

a. $30 + (-90)$ <div style="text-align: center; margin-top: 10px;">-60</div>	b. $-60 - (-40)$ <div style="text-align: center; margin-top: 10px;">-20</div>
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INTEGER MULTIPLICATION AND DIVISION (IN3)
Essentials Pre-Assessment Answer Key

6. Compute. Draw diagrams as needed.

a. $(5) \cdot (-3)$ <div style="text-align: center; color: red; font-weight: bold;">-15</div>	b. $(-2) \cdot (5)$ <div style="text-align: center; color: red; font-weight: bold;">-10</div>	c. $(-3) \cdot (-4)$ <div style="text-align: center; color: red; font-weight: bold;">12</div>
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7. Explain why the result for part a above must be negative.

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

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

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

9. Compute.

d. $(60) \cdot (-4)$ <div style="text-align: center; color: red; font-weight: bold;">-240</div>	e. $(-20) \cdot (-30)$ <div style="text-align: center; color: red; font-weight: bold;">600</div>	f. $(-27) \div (-3)$ <div style="text-align: center; color: red; font-weight: bold;">9</div>	g. $\frac{-42}{7}$ <div style="text-align: center; color: red; font-weight: bold;">-6</div>
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10. 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.

PROPORTIONAL REASONING APPLICATIONS (PR3)
Essentials Pre-Assessment Answer Key

11. Jenny biked 3 miles in 15 minutes. Use a table or a double number line to answer the following questions.

- a. At that rate, how far could she go in 2 hours?
24 miles
- b. At that rate, how long would it take her to go 15 miles?
75 minutes

12. Circle ALL equations for which $x = 5$ is a solution.

$$\frac{1}{x} = \frac{12}{60}$$

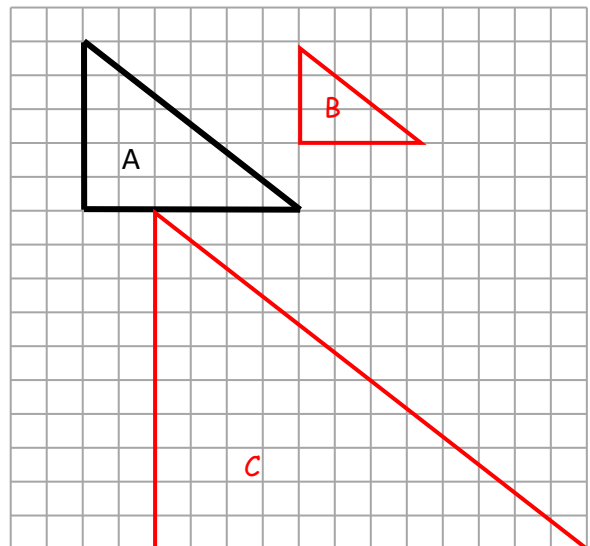
$$\frac{x}{3} = \frac{25}{21}$$

$$\frac{x}{6} = \frac{12}{15}$$

$$\frac{10}{15} = \frac{x}{6}$$

13. Use the grid and triangle to the right.

- a. Draw a scale drawing of the triangle using a scale factor of 2 : 1. Label the triangle B.
- b. Draw a scale drawing of the triangle using a scale factor of 1 : 2. Label the triangle C.



PROPORTIONAL REASONING APPLICATIONS (PR3)
Essentials Pre-Assessment Continued *Answer Key*

14. Chris bought 3 pounds of cheese at Store A for \$6.75 and 5 pounds of cheese at Store B for \$12.50.

Table entries, graph scaling, and explanations may vary.

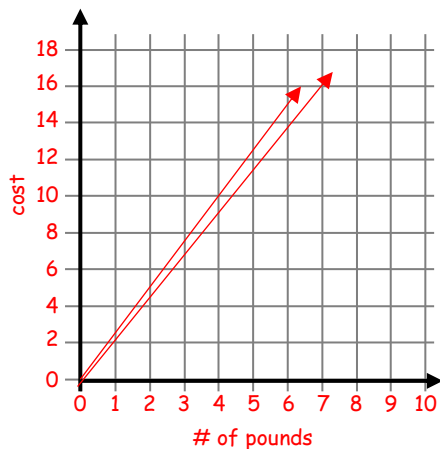
- a. Complete the table to show the costs at Store A.

# of pounds (x)	Cost (y)
3	6.75
1	2.25
2	4.50
4	9.00
0	0

- b. Complete the table to show the costs at Store B.

# of pounds (x)	Cost (y)
5	6.75
1	2.50
2	5.00
3	7.50
0	0

- c. Graph the data for both stores. Label and scale the axes.



- d. Which store offers the better buy? Explain.

Store A has the better buy because it cost \$2.25 per pound while Store B cost \$2.50 per pound.

- e. Using the graph, fill in the ordered pair (1, 2.25) for Store A. What does this point represent?

It represents the unit price.

EXPRESSIONS AND BALANCE (EE2)
Essentials Pre-Assessment Answer Key

15. Choose ALL expressions below that are equivalent to $2(5 + w)$.

A. $10 + w$

B. $2w + 10$

C. $2w - 10$

D. $w + 5 + w + 5$

16. Choose ALL expressions below that are equivalent to $12y + 8x$.

A. $4(3y + 2x)$

B. $3(4y + 3x)$

C. $4(3y + 8x)$

D. $4(3y + x)$

17. Choose ALL expressions below that are equivalent to $5g - 9 + 2 + 7g$

A. $12g + 11$

B. $-2g + 11$

C. $12g + (-7)$

D. $12g - 7$

18. Write and solve equations for each problem below.

- a. The perimeter of a triangle is 103 cm. The second side is 2 cm shorter than the first side. The third side is 5 cm longer than twice the length of the first side. How long is each side?

$$103 = x + x - 2 + 2x + 5$$

$$103 = 4x + 3$$

$$25 = x$$

The side lengths are 25 cm, 23 cm, and 55 cm.

- b. Deni says, "I'm thinking of a number. When you add 8 to my number, multiply the sum by 4, and then subtract 11, the result is 77." What is Deni's number?

$$(n + 8)4 - 11 = 77$$

$$4n + 21 = 77$$

$$n = 14$$

Deni's number is 14.