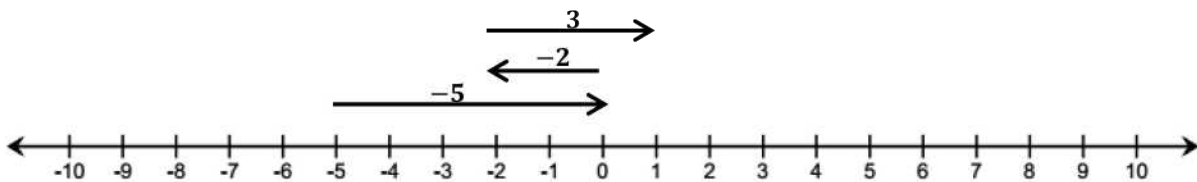


Name \_\_\_\_\_

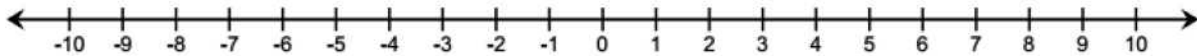
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## Using the Number Line to Model the Addition of Integers

Jessica made the addition model below of the expression  $(-5) + (-2) + 3$ .



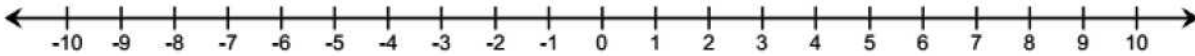
- Do the arrows correctly represent the numbers that Jessica is using in her expression?
- Jessica used the number line diagram above to conclude that the sum of the three numbers is 1. Is she correct?
- If she is incorrect, find the sum, and draw the correct model.



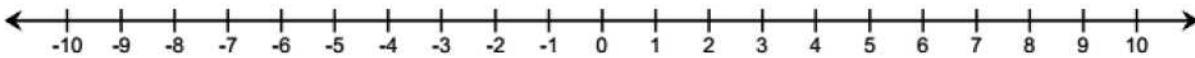
- Write a real-world situation that would represent the sum.

For Questions 1–3, represent each of the following problems using both a number line diagram and an equation.

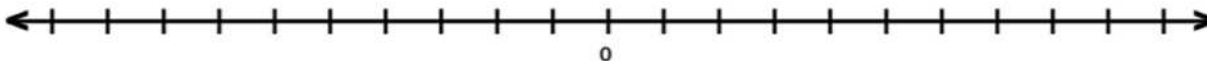
1. David and Victoria are playing the Integer Card Game. David drew three cards,  $-6$ ,  $12$ , and  $-4$ . What is the sum of the cards in his hand? Model your answer on the number line below.



2. In the Integer Card Game, you drew the cards,  $2$ ,  $8$ , and  $-11$ . Your partner gave you a  $7$  from his hand.  
a. What is your total? Model your answer on the number line below.



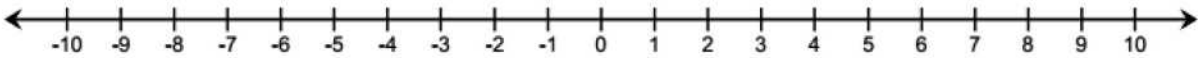
- b. What card(s) would you need to get your score back to zero? Explain. Use and explain the term “additive inverse” in your answer.
3. If a football player gains  $40$  yards on a play, but on the next play, he loses  $10$  yards, what would his total yards be for the game if he ran for another  $60$  yards? What did you count by to label the units on your number line?



4. Find the sums.

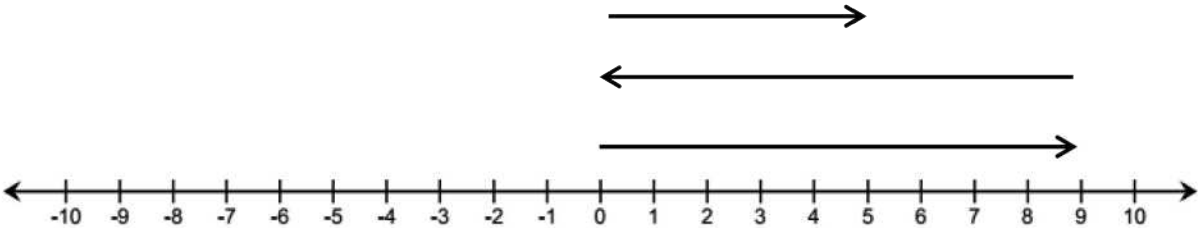
- a.  $-2 + 9$
- b.  $-8 + -8$
- c.  $-4 + (-6) + 10$
- d.  $5 + 7 + (-11)$

5. Mark an integer between 1 and 5 on a number line, and label it point Z. Then, locate and label each of the following points by finding the sums.

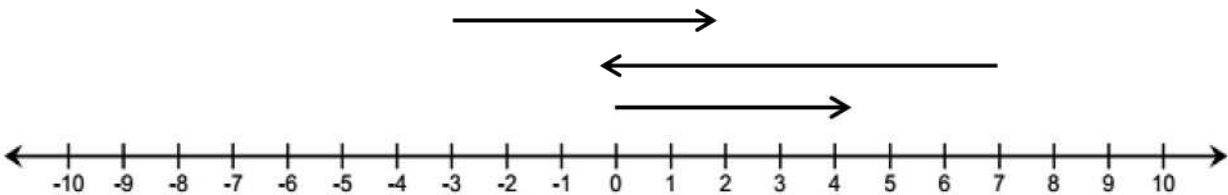


- a. Point A:  $Z + 5$
- b. Point B:  $Z + (-3)$
- c. Point C:  $(-4) + (-2) + Z$
- d. Point D:  $-3 + Z + 1$

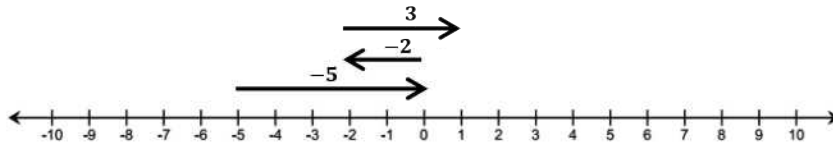
6. Write a story problem that would model the sum of the arrows in the number diagram below.



7. Do the arrows correctly represent the equation  $4 + (-7) + 5 = 2$ ? If not, draw a correct model below.



Jessica made the addition model below of the expression  $(-5) + (-2) + 3$ .



- a. Do the arrows correctly represent the numbers that Jessica is using in her expression?

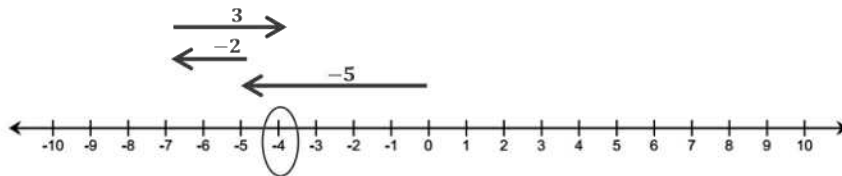
*No. Jessica started her first arrow at  $-5$  instead of  $0$ . Negative numbers should be shown as counting down, so the arrow should have started at  $0$  and pointed left, ending on  $-5$ . The other arrows are drawn correctly, but they are in the wrong places because the starting arrow is in the wrong place.*

- b. Jessica used the number line diagram above to conclude that the sum of the three numbers is  $1$ . Is she correct?

*Jessica is incorrect.*

- c. If she is incorrect, find the sum, and draw the correct model.

*The sum should be  $-4$ .  $-5 + (-2) + 3 = -4$ .*



- d. Write a real-world situation that would represent the sum.

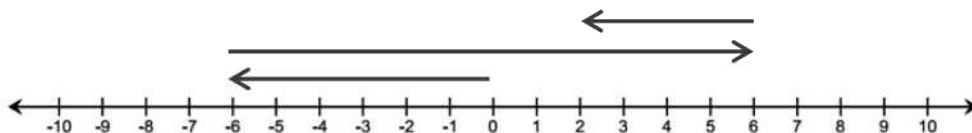
*Answers will vary. A football team lost 5 yards on the first play. On the second play, the team lost another 2 yards. Then, the team gained 3 yards. After three plays, the team had a total yardage of  $-4$  yards.*

The Problem Set provides students practice with integer addition using the Integer Game, number lines, and story problems. Students should show work with accuracy in order to demonstrate mastery.

For Questions 1–3, represent each of the following problems using both a number line diagram and an equation.

1. David and Victoria are playing the Integer Card Game. David drew three cards,  $-6$ ,  $12$ , and  $-4$ . What is the sum of the cards in his hand? Model your answer on the number line below.

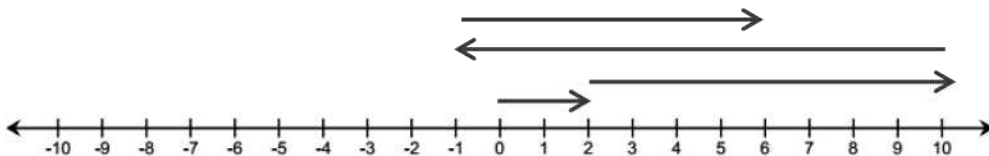
$$(-6) + 12 + (-4) = 2$$



2. In the Integer Card Game, you drew the cards, 2, 8, and  $-11$ . Your partner gave you a 7 from his hand.

a. What is your total? Model your answer on the number line below.

$$2 + 8 + (-11) + 7 = 6$$



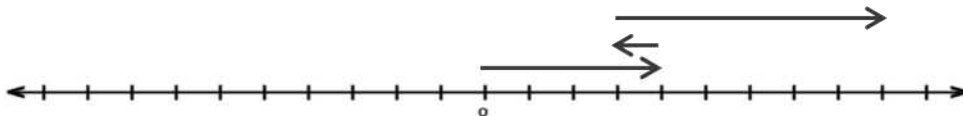
b. What card(s) would you need to get your score back to zero? Explain. Use and explain the term “additive inverse” in your answer.

*You would need any combination of cards that sum to  $-6$  because the additive inverse of 6 is  $-6$ .*

$$6 + (-6) = 0$$

3. If a football player gains 40 yards on a play, but on the next play, he loses 10 yards, what would his total yards be for the game if he ran for another 60 yards? What did you count by to label the units on your number line?

*90 yards because  $40 + (-10) + 60 = 90$ . Student answers may vary, but they should not choose to count by 1.*



4. Find the sums.

a.  $-2 + 9$

7

b.  $-8 + -8$

$-16$

c.  $-4 + (-6) + 10$

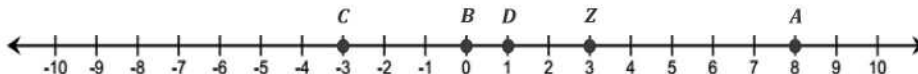
0

d.  $5 + 7 + (-11)$

1

5. Mark an integer between 1 and 5 on a number line, and label it point Z. Then, locate and label each of the following points by finding the sums.

*Answers will vary. Sample student response below.*



a. Point A:  $Z + 5$

*Point A:  $3 + 5 = 8$*

b. Point B:  $Z + (-3)$

Point B:  $3 + (-3) = 0$

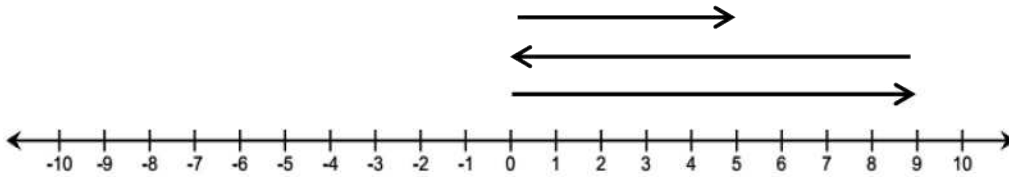
c. Point C:  $(-4) + (-2) + Z$

Point C:  $(-4) + (-2) + 3 = -3$

d. Point D:  $-3 + Z + 1$

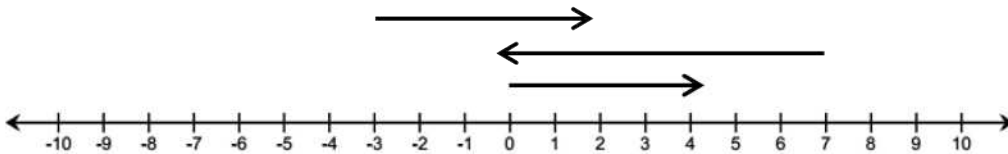
Point D:  $-3 + 3 + 1 = 1$

6. Write a story problem that would model the sum of the arrows in the number diagram below.



Answers will vary. Jill got on an elevator and went to the 9<sup>th</sup> floor. She accidentally pressed the down button and went back to the lobby. She pressed the button for the 5<sup>th</sup> floor and got off the elevator.

7. Do the arrows correctly represent the equation  $4 + (-7) + 5 = 2$ ? If not, draw a correct model below.



No, the arrows are incorrect. The correct model is shown.

