

1. Find the sum. Show your work to justify your answer.

a. $4 + 17$

b. $-6 + (-12)$

c. $2.2 + (-3.7)$

d. $-3 + (-5) + 8$

e. $\frac{1}{3} + \left(-2\frac{1}{4}\right)$

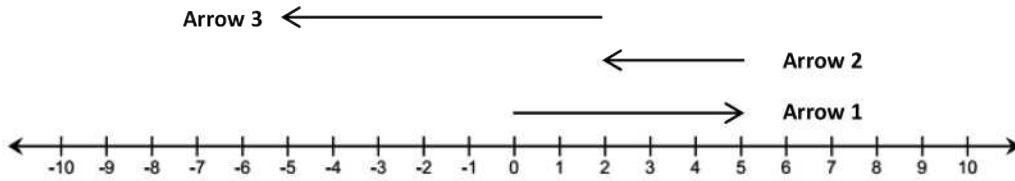
2. Which of these story problems describes the sum $19 + (-12)$? Check all that apply. Show your work to justify your answer.

_____ Jared's dad paid him \$19 for raking the leaves from the yard on Wednesday. Jared spent \$12 at the movie theater on Friday. How much money does Jared have left?

_____ Jared owed his brother \$19 for raking the leaves while Jared was sick. Jared's dad gave him \$12 for doing his chores for the week. How much money does Jared have now?

_____ Jared's grandmother gave him \$19 for his birthday. He bought \$8 worth of candy and spent another \$4 on a new comic book. How much money does Jared have left over?

3. Use the diagram below to complete each part.



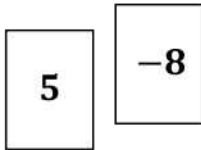
- Label each arrow with the number the arrow represents.
- How long is each arrow? What direction does each arrow point?

Arrow	Length	Direction
1		
2		
3		

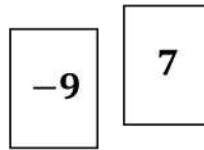
- Write an equation that represents the sum of the numbers. Find the sum.

4. Jennifer and Katie were playing the Integer Game in class. Their hands are represented below.

Jennifer's Hand



Katie's Hand



- What is the value of each of their hands? Show your work to support your answer.
- If Jennifer drew two more cards, is it possible for the value of her hand not to change? Explain why or why not.
- If Katie wanted to win the game by getting a score of 0, what card would she need? Explain.
- If Jennifer drew a -1 and a -2 , what would be her new score? Show your work to support your answer.

1. Write an addition problem that has a sum of $-4\frac{4}{5}$ and
- Both addends (p -value and q -value) have the same sign.
Answers will vary. $-1\frac{4}{5} + (-3) = -4\frac{4}{5}$.
 - The two addends (p -value and q -value) have different signs.
Answers will vary. $1.8 + (-6.6) = -4.8$.
2. In the Integer Game, what card would you need to draw to get a score of 0 if you have a -16 , -35 , and 18 in your hand?
- $-16 + (-35) + 18 = -33$, so I would need to draw a 33 because 33 is the additive inverse of -33 .
 $-33 + 33 = 0$.

Students must understand the rules for addition of rational numbers with same and opposite signs. The Problem Set presents multiple representations of these rules including diagrams, equations, and story problems. Students are expected to show their work or provide an explanation where necessary to justify their answers. Answers can be represented in fraction or decimal form.

1. Find the sum. Show your work to justify your answer.
- $4 + 17$
 $4 + 17 = 21$
 - $-6 + (-12)$
 $-6 + (-12) = -18$
 - $2.2 + (-3.7)$
 $2.2 + (-3.7) = -1.5$

d. $-3 + (-5) + 8$

$-3 + (-5) + 8 = -8 + 8 = 0$

e. $\frac{1}{3} + \left(-2\frac{1}{4}\right)$

$\frac{1}{3} + \left(-2\frac{1}{4}\right) = \frac{1}{3} + \left(-\frac{9}{4}\right) = \frac{4}{12} + \left(-\frac{27}{12}\right) = -\frac{23}{12} = -1\frac{11}{12}$

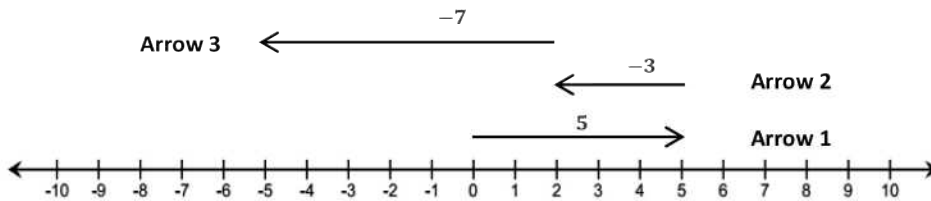
2. Which of these story problems describes the sum $19 + (-12)$? Check all that apply. Show your work to justify your answer.

Jared's dad paid him \$19 for raking the leaves from the yard on Wednesday. Jared spent \$12 at the movie theater on Friday. How much money does Jared have left?

Jared owed his brother \$19 for raking the leaves while Jared was sick. Jared's dad gave him \$12 for doing his chores for the week. How much money does Jared have now?

Jared's grandmother gave him \$19 for his birthday. He bought \$8 worth of candy and spent another \$4 on a new comic book. How much money does Jared have left over?

3. Use the diagram below to complete each part.



a. Label each arrow with the number the arrow represents.

b. How long is each arrow? What direction does each arrow point?

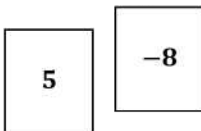
Arrow	Length	Direction
1	5	right
2	3	left
3	7	left

c. Write an equation that represents the sum of the numbers. Find the sum.

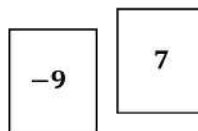
$5 + (-3) + (-7) = -5$

4. Jennifer and Katie were playing the Integer Game in class. Their hands are represented below.

Jennifer's Hand



Katie's Hand



a. What is the value of each of their hands? Show your work to support your answer.

Jennifer's hand has a value of -3 because $5 + (-8) = -3$. Katie's hand has a value of -2 because $-9 + 7 = -2$.

- b. If Jennifer drew two more cards, is it possible for the value of her hand not to change? Explain why or why not.

It is possible for her hand not to change. Jennifer could get any two cards that are the exact opposites such as a -2 and 2 . Numbers that are exact opposites are called additive inverses, and they sum to 0 . Adding the number 0 to anything will not change the value.

- c. If Katie wanted to win the game by getting a score of 0 , what card would she need? Explain.

Katie would need to draw a 2 because the additive inverse of -2 is 2 . $-2 + 2 = 0$.

- d. If Jennifer drew a -1 and a -2 , what would be her new score? Show your work to support your answer.

Jennifer's new score would be -6 because $-3 + (-1) + (-2) = -6$.