



Grade 7 General

EOT2 Coverage 2023-2024



AL Hemma School C2



# Part 1

## Multiple Choice Questions



**Use different methods to subtract linear expressions.**

- 13. Open Response** The table shows the scores of two teams in a trivia challenge at the end of the first half. How many more points did the Huskies score than the Bobcats?

Team	Points Scored
Bobcats	$2x - 7$
Huskies	$5x - 3$

$$= (5x - 3) - (2x - 7)$$

$$= (5x - 3) + - (2x - 7)$$

$$= (5x - 3) + (-2x + 7)$$

$$= (5x + -2x) + (-3 + 7)$$

$$= (5 + -2)x + (-3 + 7)$$

$$= 3x + 4$$

## Use different methods to subtract linear expressions.

**14.** The table shows the sales of plain and Asiago cheese bagels at a bakery for  $h$  hours. After 6 hours, how much more will the bakery have made in sales of Asiago cheese bagels than the sales of plain bagels ?

Bagel Sales		
Bagel	Cost (\$)	Number Sold After $h$ hours
Asiago Cheese	1.50	$12h + 7$
Plain	1.50	$7h - 4$

$$= (12h + 7) - (7h - 4)$$

$$= (12h + 7) + - (7h - 4)$$

$$= (12h + 7) + (-7h + 4)$$

$$= (12h + -7h) + (7 + 4)$$

$$= (12 + -7)h + (7 + 4)$$

$$= 5h + 11$$

$$= 5(6) + 11$$

$$= 30 + 11$$

$$= 41$$

$$41 \times \$1.50 = \$61.50$$

In 6 hours, they sold 41 more Asiago bagels.

They made \$61.50 more in Asiago bagel sales.

## Use different methods to subtract linear expressions.

**15.** Derek owns a snack shop where he sells tins of buttered and caramel popcorn. The table shows the number of each type of popcorn sold over  $w$  weeks. After 12 weeks, how much more will he have made in sales of buttered popcorn than the sales of caramel popcorn ?

Popcorn Sales		
Popcorn	Cost (\$)	Number Sold Over $w$ weeks
Buttered	11	$8w + 9$
Caramel	11	$6w - 1$

$$= (8w + 9) - (6w - 1)$$

$$= (8w + 9) + - (6w - 1)$$

$$= (8w + 9) + (-6w + 1)$$

$$= (8w + -6w) + (9 + 1)$$

$$= (8 + -6)w + (9 + 1)$$

$$= 2w + 10$$

$$= 2(12) + 10$$

$$= 24 + 10$$

$$= 34$$


$$34 \times \$11 = \$374$$

In 12 weeks, he sold 34 more buttered popcorn.

He made  $\$11 \times 34 = \$374$  more in buttered popcorn.

**Use inverse operations to solve two-step equations of the form  $p(x + q) = r$ .**

- 16.** Write a real-world problem that could be represented by the equation  $6(x + 3.5) = 57$ . Then solve the equation.

- 17.**  **Find the Error** A student is solving  $-2(x - 5) = 12$ . Find the student's mistake and correct it.

$$-2(x - 5) = 12$$


$$-2x - 5 = 12$$

$$-2x - 5 + 5 = 12 + 5$$

$$-2x = 17$$

$$x = -8.5$$

**Use inverse operations to solve two-step equations of the form  $p(x + q) = r$ .**

18.  **Justify Conclusions** Suppose for some value of  $x$  the solution to the equation  $2.5(y - x) = 0$  is  $y = 6$ . What must be true about  $x$ ? Justify your conclusion.

19.  **Persevere with Problems** Solve each equation.

a.  $2.5(x + 4) + x = 38$

b.  $6.1(x - 2) + x = 51.7$

Write one-step addition and subtraction inequalities from real-world situations and use inverse operations to solve the inequalities.

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1. Gabe went to the amusement park with \$40 to spend. His ticket cost \$26.50. Determine how much Gabe can spend on souvenirs and snacks. Then interpret the solution. (Example 1)
2. Drew practices piano at least 45 minutes per day. He has already practiced 18.5 minutes today. Determine how much longer he will have to practice. Then interpret the solution. (Example 1)
3. A dolphin is swimming at a depth of  $-50$  feet and then ascends a certain number of feet to a depth above  $-35$  feet. Determine the number of feet the dolphin ascended. Then interpret the solution. (Example 1)
4. Elena's account balance with her parents is  $-\$5.50$ . She adds a certain amount of money to her balance by mowing the lawn. Elena now has an account balance less than \$20. Determine a possible amount she earned mowing the lawn. Then interpret the solution. (Example 1)



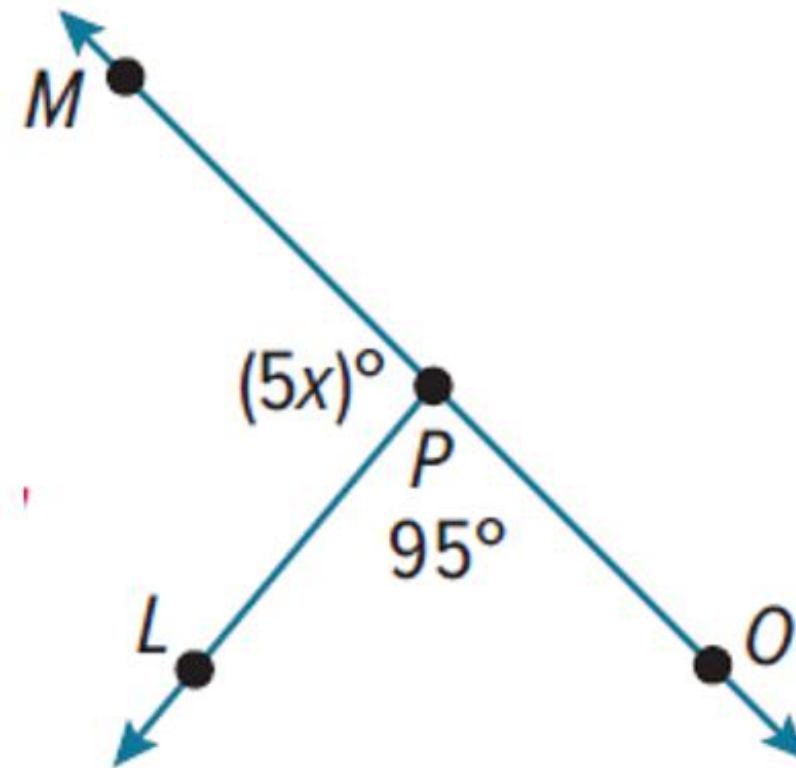
Write one-step addition and subtraction inequalities from real-world situations and use inverse operations to solve the inequalities.

5. Linda has two cats. The difference in weight of her Maine Coon and Siberian is at least 6 pounds. Linda's Siberian has a weight of  $8\frac{3}{4}$  pounds. Determine the possible weight of the Maine Coon. Then interpret the solution. (Example 2)

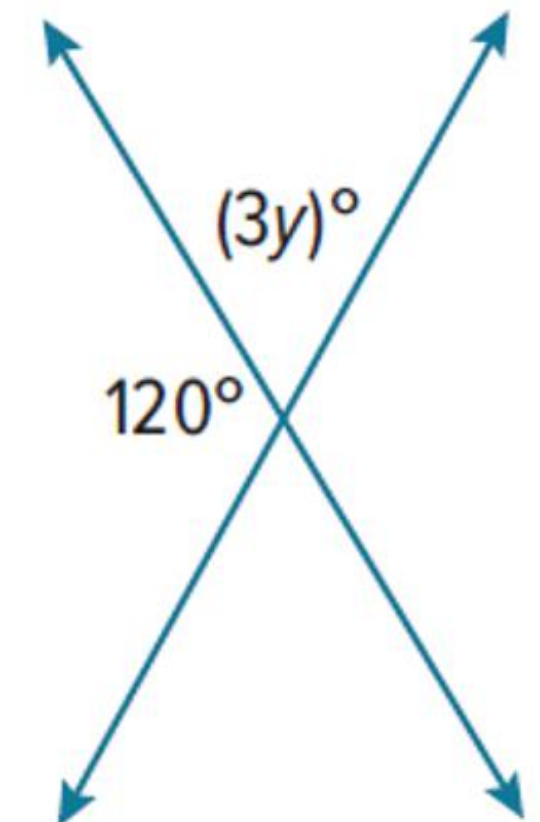
6. The Hendersons have a sedan and a minivan. The difference in mileage of the two vehicles is greater than 4,500 miles. The minivan has 12,755.25 miles. Determine the possible number of miles on the sedan. Then interpret the solution. (Example 2)

Identify vertical and adjacent angles and use them to write and solve equations to find unknown angle measures.

7. Write and solve an equation to find the value of  $x$ . (Example 5)

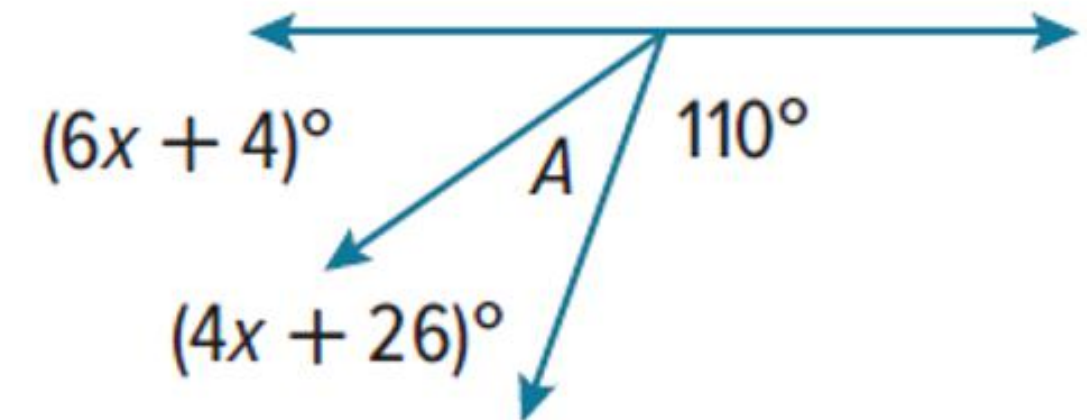


8. **Open Response** Write and solve an equation to find the value of  $y$ .

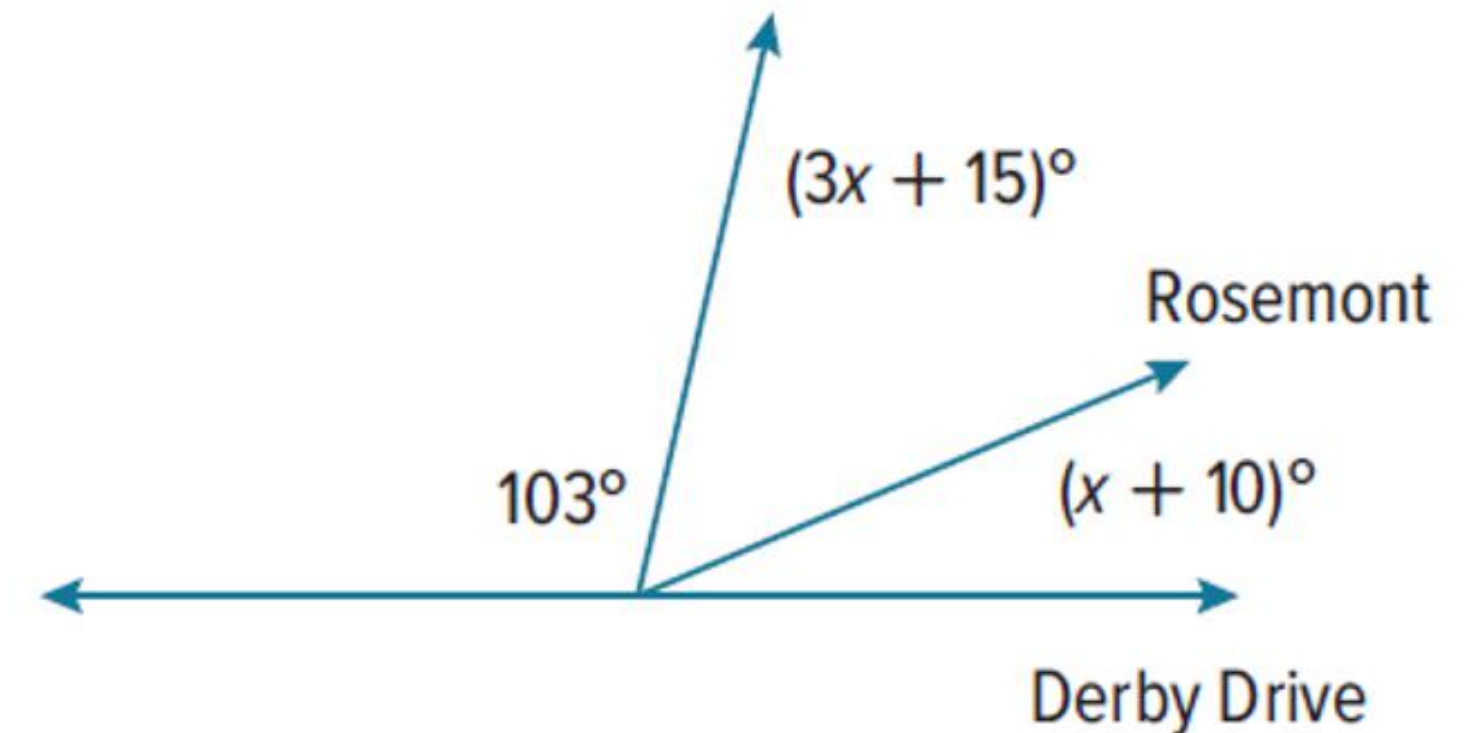


Identify vertical and adjacent angles and use them to write and solve equations to find unknown angle measures.

9. Levi was designing a kite. He needs to determine the measure of  $\angle A$  before cutting the fabric. What is the measure of angle  $A$ ?



10. Jess was drawing a map of her neighborhood. What is the measure of the angle of the intersection between Derby Drive and Rosemont?



**Combine operations to simplify linear expressions.**

**Simplify each expression. For Exercises 1–4 and 9–12, write your answer in factored form. (Examples 1–3)**

**1.  $3(x + 4) + 5x$**

$$= 3(x) + 3(4) + 5x$$

$$= 3x + 12 + 5x$$

$$= 3x + 5x + 12$$

$$= 8x + 12$$

$$= 4(2x + 3)$$

**2.  $-4(x + 1) + 6x$**

$$= -4(x) + -4(1) + 6x$$

$$= -4x + -4 + 6x$$

$$= -4x + 6x + -4$$

$$= 2x - 4$$

$$= 2(x - 2)$$

**3.  $-5(2x - 6) + 25x$**

$$= -5(2x) + -5(-6) + 25x$$

$$= -10x + 30 + 25x$$

$$= -10x + 25x + 30$$

$$= 15x + 30$$

$$= 15(x + 2)$$

**Combine operations to simplify linear expressions.**

4.  $2(-8x - 3) + 18x$

$$\begin{aligned} &= 2(-8x) + 2(-3) + 18x \\ &= -16x + -6 + 18x \\ &= -16x + 18x + -6 \\ &= 2x + -6 \\ &= 2(x - 3) \end{aligned}$$

5.  $\frac{1}{6}x + \frac{3}{4}\left(\frac{1}{2}x - 4\right)$

$$\begin{aligned} &= \frac{1}{6}(x) + \frac{3}{4}\left(\frac{1}{2}x\right) + \frac{3}{4}(-4) \\ &= \frac{1}{6}x + \frac{3}{8}x + -3 \\ &= \frac{8}{48}x + \frac{18}{48}x + -3 \\ &= \frac{26}{48}x + -3 \\ &= \frac{13}{24}x - 3 \end{aligned}$$

6.  $\frac{2}{3}\left(6x - \frac{1}{6}\right) + 3x$

$$\begin{aligned} &= \frac{2}{3}(6x) - \frac{2}{3}\left(\frac{1}{6}\right) + 3x \\ &= 4x - \frac{2}{18} + 3x \\ &= 4x - \frac{1}{9} + 3x \\ &= 4x + 3x - \frac{1}{9} \\ &= 7x - \frac{1}{9} \end{aligned}$$

**Combine operations to simplify linear expressions.**

$$7. \frac{5}{8}x + \frac{1}{2}\left(\frac{1}{4}x + 10\right)$$

$$\begin{aligned} &= \frac{5}{8}x + \frac{1}{2}\left(\frac{1}{4}x\right) + \frac{1}{2}(10) \\ &= \frac{5}{8}x + \frac{1}{8}x + 5 \\ &= \frac{6}{8}x + 5 \\ &= \frac{3}{4}x + 5 \end{aligned}$$

$$8. \frac{2}{5}\left(10x + \frac{3}{4}\right) - 2x$$

$$\begin{aligned} &= \frac{2}{5}(10x) + \frac{2}{5}\left(\frac{3}{4}\right) - 2x \\ &= 4x + \frac{6}{20} - 2x \\ &= 4x + \frac{3}{10} - 2x \\ &= 4x - 2x + \frac{3}{10} \\ &= 2x + \frac{3}{10} \end{aligned}$$

$$9. \frac{3}{4}(24x + 28) - (4x - 1)$$

$$\begin{aligned} &= \frac{3}{4}(24x + 28) + (-4x + 1) \\ &= \frac{3}{4}(24x) + \frac{3}{4}(28) + -4x + 1 \\ &= 18x + 21 + -4x + 1 \\ &= 18x + -4x + 21 + 1 \\ &= 14x + 22 \\ &= 2(7x + 11) \end{aligned}$$

Write two-step inequalities from real-world situations and use inverse operations to solve inequalities

Use inverse operations to solve two-step equations of the form  $px + q = r$ ,

Write two-step inequalities from real-world situations and use inverse operations to solve inequalities.

**Solve each equation. Check your solution.** (Examples 1–4)

1.  $5x + 2 = 17$

2.  $19 = 4x + 3$

3.  $-18 = 6 + 6x$

4.  $-3x - 9 = -15$

5.  $-6x - 7 = 17$

6.  $-5 = 3x - 14$

7.  $3.8 = 2x - 11.2$

8.  $5x - 3.3 = 7.2$

9.  $1.3x + 1.5 = 5.4$

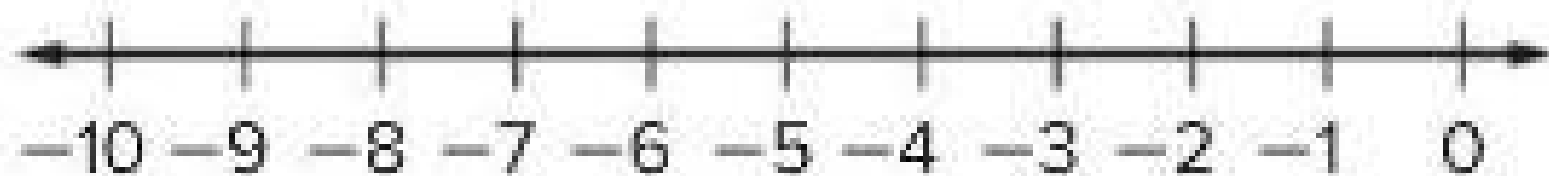
Write two-step inequalities from real-world situations and use inverse operations to solve inequalities

Use inverse operations to solve two-step equations of the form  $px + q = r$ ,

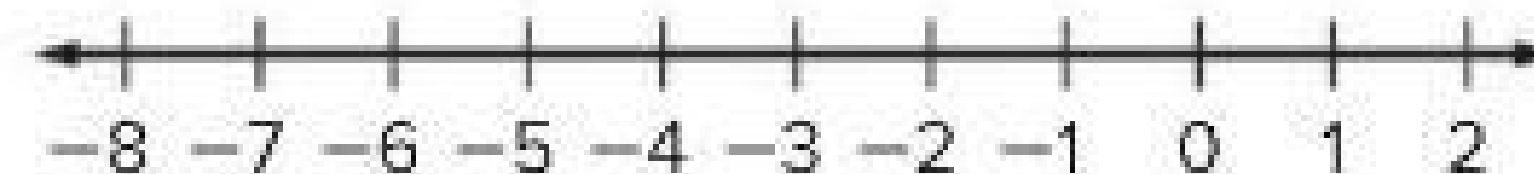
Write two-step inequalities from real-world situations and use inverse operations to solve inequalities.

**Solve each inequality. Graph the solution set on a number line.** (Examples 1–3)

1.  $-3x - 3 > 12$



2.  $-4 \leq 4x + 8$



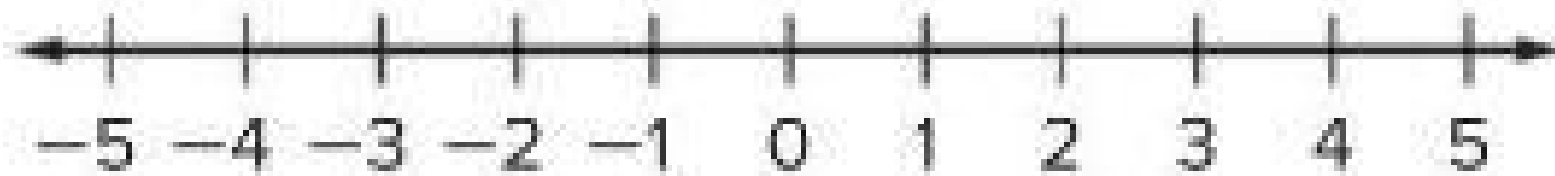


Write two-step inequalities from real-world situations and use inverse operations to solve inequalities

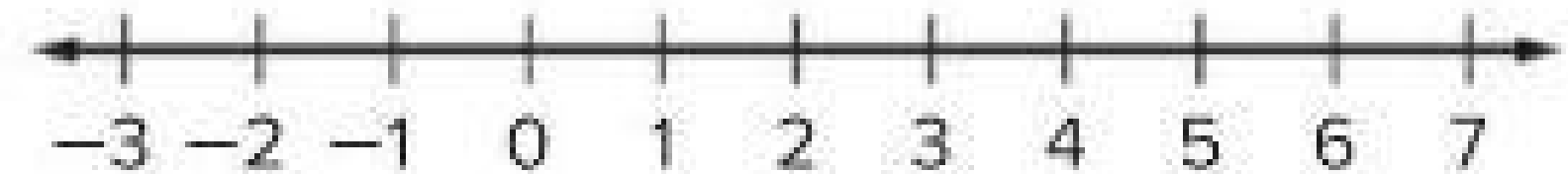
Use inverse operations to solve two-step equations of the form  $px + q = r$ ,

Write two-step inequalities from real-world situations and use inverse operations to solve inequalities.

3.  $6.5x - 11.3 \leq 8.2$



4.  $-2.45x + 3.2 < -6.6$

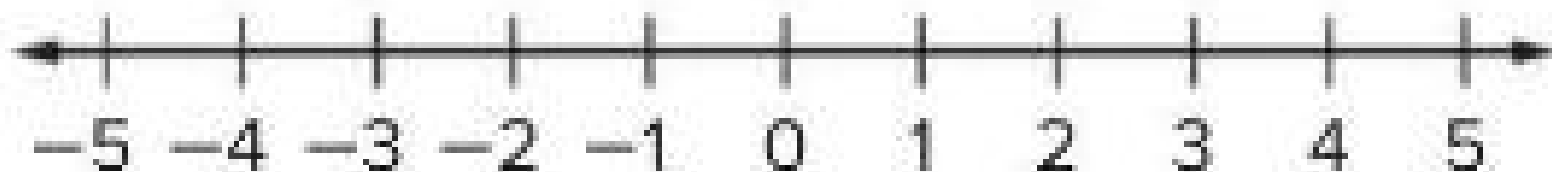


Write two-step inequalities from real-world situations and use inverse operations to solve inequalities

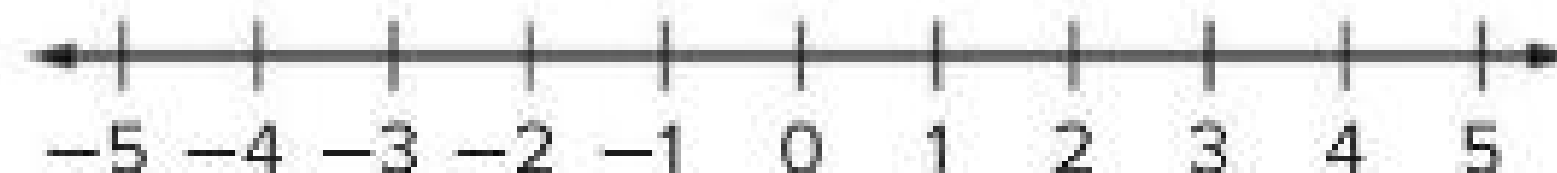
Use inverse operations to solve two-step equations of the form  $px + q = r$ ,

Write two-step inequalities from real-world situations and use inverse operations to solve inequalities.

5.  $\frac{1}{2}x - \frac{1}{4} < \frac{5}{8}$



6.  $\frac{x}{10} + \frac{1}{4} \geq \frac{1}{5}$



## Simplify algebraic expressions by identifying and combining like terms.

Simplify each expression. (Examples 2 and 3)

$$3. -y + 9z - 16y - 25z + 4$$

$$\begin{aligned} &= -y + 9z + (-16y) + (-25z) + 4 \\ &= -y + (-16y) + 9z + (-25z) + 4 \\ &= (-1 + -16)y + (9 + -25)z + 4 \\ &= -17y + -16z + 4 \end{aligned}$$

$$4. 8z + x - 5 - 9z + 2$$

$$\begin{aligned} &= 8z + x + (-5) + (-9z) + 2 \\ &= 8z + (-9z) + x + (-5) + 2 \\ &= (8 + -9)z + x + (-5 + 2) \\ &= -z + x - 3 \end{aligned}$$

$$5. 5c - 3d - 12c + d - 6$$

$$\begin{aligned} &= 5c + (-3d) + (-12c) + d - 6 \\ &= 5c + (-12c) + (-3d) + d - 6 \\ &= (5 + -12)c + (-3 + 1)d - 6 \\ &= -7c + -2d - 6 \end{aligned}$$

$$6. -\frac{3}{4}x - \frac{1}{3} + \frac{7}{8}x - \frac{1}{2}$$

$$\begin{aligned} &= -\frac{3}{4}x + (-\frac{1}{3}) + \frac{7}{8}x + (-\frac{1}{2}) \\ &= -\frac{3}{4}x + \frac{7}{8}x + (-\frac{1}{3}) + (-\frac{1}{2}) \\ &= (-\frac{3}{4} + \frac{7}{8})x + (-\frac{1}{3} - \frac{1}{2}) \\ &= \frac{1}{8}x - \frac{5}{6} \end{aligned}$$

$$7. \frac{1}{4} + \frac{9}{10}y - \frac{3}{5}y + \frac{7}{8}$$

$$\begin{aligned} &= \frac{1}{4} + \frac{9}{10}y + (-\frac{3}{5}y) + \frac{7}{8} \\ &= \frac{9}{10}y + (-\frac{3}{5}y) + \frac{1}{4} + \frac{7}{8} \\ &= (\frac{9}{10} + -\frac{3}{5})y + (\frac{1}{4} + \frac{7}{8}) \\ &= \frac{3}{10}y + 1\frac{1}{8} \end{aligned}$$

$$8. -\frac{1}{2}a + \frac{2}{5} + \frac{5}{6}a - \frac{1}{10}$$

$$\begin{aligned} &= -\frac{1}{2}a + \frac{2}{5} + \frac{5}{6}a + (-\frac{1}{10}) \\ &= -\frac{1}{2}a + \frac{5}{6}a + \frac{2}{5} + (-\frac{1}{10}) \\ &= (-\frac{1}{2} + \frac{5}{6})a + (\frac{2}{5} + -\frac{1}{10}) \\ &= \frac{1}{3}a + \frac{3}{10} \end{aligned}$$

**Use different methods to add linear expressions.****Add.** (Examples 1 and 2)

1.  $(8x + 9) + (-6x - 2)$

$$\begin{aligned} &= (8x + 9) + (-6x + -2) \\ &= (8x + -6x) + (9 + -2) \\ &= (8 + -6)x + (9 + -2) \\ &= 2x + 7 \end{aligned}$$

2.  $(5x + 4) + (-8x - 2)$

$$\begin{aligned} &= (5x + 4) + (-8x + -2) \\ &= (5x + -8x) + (4 + -2) \\ &= (5 + -8)x + (4 + -2) \\ &= -3x + 2 \end{aligned}$$

3.  $(-7x + 1) + (4x - 5)$

$$\begin{aligned} &= (-7x + 1) + (4x + -5) \\ &= (-7x + 4x) + (1 + -5) \\ &= (-7 + 4)x + (1 + -5) \\ &= -3x - 4 \end{aligned}$$

4.  $(-3x - 9) + (4x + 8)$

$$\begin{aligned} &= (-3x + -9) + (4x + 8) \\ &= (-3x + 4x) + (-9 + 8) \\ &= (-3 + 4)x + (-9 + 8) \\ &= x - 1 \end{aligned}$$

5.  $(-5x + 4) + (-9x - 3)$

$$\begin{aligned} &= (-5x + 4) + (-9x + -3) \\ &= (-5x + -9x) + (4 + -3) \\ &= (-5 + -9)x + (4 + -3) \\ &= -14x + 1 \end{aligned}$$

6.  $(-2x + 10) + (-8x - 1)$

$$\begin{aligned} &= (-2x + 10) + (-8x + -1) \\ &= (-2x + -8x) + (10 + -1) \\ &= (-2 + -8)x + (10 + -1) \\ &= -10x + 9 \end{aligned}$$

# Use different methods to add linear expressions.

7.  $\left(\frac{1}{4}x - 3\right) + \left(\frac{3}{16}x + 5\right)$

$$\begin{aligned} &= \frac{1}{4}x + (-3) + \frac{3}{16}x + 5 \\ &= \frac{1}{4}x + \frac{3}{16}x + (-3) + 5 \\ &= \left(\frac{1}{4} + \frac{3}{16}\right)x + (-3 + 5) \\ &= \left(\frac{4}{16} + \frac{3}{16}\right)x + (2) \\ &= \frac{7}{16}x + 2 \end{aligned}$$

8.  $\left(\frac{1}{2}x - 3\right) + \left(\frac{1}{6}x + 1\right)$

$$\begin{aligned} &= \frac{1}{2}x + (-3) + \frac{1}{6}x + 1 \\ &= \frac{1}{2}x + \frac{1}{6}x + (-3) + 1 \\ &= \left(\frac{1}{2} + \frac{1}{6}\right)x + (-3 + 1) \\ &= \left(\frac{3}{6} + \frac{1}{6}\right)x + (-2) \\ &= \frac{2}{3}x - 2 \end{aligned}$$

9.  $\left(4x + \frac{3}{4}\right) + \left(-3x - \frac{5}{12}\right)$

$$\begin{aligned} &= 4x + \frac{3}{4} + -3x + -\frac{5}{12} \\ &= 4x + -3x + \frac{3}{4} + -\frac{5}{12} \\ &= (4 + -3)x + \left(\frac{3}{4} + -\frac{5}{12}\right) \\ &= x + \left(\frac{9}{12} + -\frac{5}{12}\right) \\ &= x + \frac{1}{3} \end{aligned}$$

**Use different methods to add linear expressions.**

$$10. \left(-9x - \frac{4}{5}\right) + \left(2x + \frac{2}{3}\right)$$

$$\begin{aligned} &= -9x + \left(-\frac{4}{5}\right) + \left(2x + \frac{2}{3}\right) \\ &= -9x + 2x + \left(-\frac{4}{5}\right) + \frac{2}{3} \\ &= (-9 + 2)x + \left(-\frac{4}{5} + \frac{2}{3}\right) \\ &= -7x + \left(-\frac{12}{15} + \frac{10}{15}\right) \\ &= -7x - \frac{2}{15} \end{aligned}$$

$$11. \left(\frac{1}{3}x - 3\right) + \left(-\frac{3}{4}x - 5\right)$$

$$\begin{aligned} &= \frac{1}{3}x + (-3) + \left(-\frac{3}{4}x + -5\right) \\ &= \frac{1}{3}x + -\frac{3}{4}x + (-3) + -5 \\ &= \left(\frac{1}{3} + -\frac{3}{4}\right)x + (-3 + -5) \\ &= \left(\frac{4}{12} + -\frac{9}{12}\right)x + (-3 + -5) \\ &= -\frac{5}{12}x - 8 \end{aligned}$$

$$12. \left(-5x - \frac{2}{3}\right) + \left(-4x - \frac{1}{9}\right)$$

$$\begin{aligned} &= -5x + \left(-\frac{2}{3}\right) + -4x + \left(-\frac{1}{9}\right) \\ &= -5x + -4x + \left(-\frac{2}{3}\right) + \left(-\frac{1}{9}\right) \\ &= (-5 + -4)x + \left(-\frac{2}{3} + -\frac{1}{9}\right) \\ &= -9x + \left(-\frac{6}{9} + -\frac{1}{9}\right) \\ &= -9x - \frac{7}{9} \end{aligned}$$

**Use GCFs to factor linear expressions.**

**Factor each expression. If the expression cannot be factored, write *cannot be factored*.**

(Examples 3–5)

**7.**  $5x + 35$

**8.**  $8x - 14$

**9.**  $3x + 11y$

**10.**  $32x - 15$

**11.**  $72x - 18xy$

**12.**  $45xy - 81y$

**13.**  $25x + 14y$

**14.**  $\frac{1}{3}x - \frac{1}{3}$

**15.**  $\frac{1}{2}x + \frac{1}{2}$

**Use GCFs to factor linear expressions.**

**Factor each expression. If the expression cannot be factored, write *cannot be factored*.**  
(Examples 3–5)

**7.**  $5x + 35$

$$5x = 5 \cdot x$$

$$35 = 5 \cdot 7$$

**Common Factors:** 5

**Greatest Common Factor:** 5

$$\begin{aligned} 5x + 35 &= 5(x) + 5(7) \\ &= 5(x + 7) \end{aligned}$$

**8.**  $8x - 14$

$$8x = 2 \cdot 2 \cdot 2 \cdot x$$

$$14 = 2 \cdot 7$$

**Common Factors:** 2

**Greatest Common Factor:** 2

$$\begin{aligned} 8x - 14 &= 2(4x) - 2(7) \\ &= 2(4x - 7) \end{aligned}$$

**9.**  $3x + 11y$

$$3x = 3 \cdot x$$

$$11y = 11 \cdot y$$

**There are no Common Factors.**

**$3x + 11y$  can not be factored.**



**Use GCFs to factor linear expressions.**

**10.**  $32x - 15$

$$32x = 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot x$$

$$15 = 3 \cdot 5$$

There are no Common Factors.

$32x - 15$  can not be factored.

**11.**  $72x - 18xy$

$$72x = 2 \cdot 2 \cdot 2 \cdot 3 \cdot 3 \cdot x$$

$$18xy = 2 \cdot 3 \cdot 3 \cdot x \cdot y$$

Common Factors:  $2 \cdot 3 \cdot 3 \cdot x$

Greatest Common Factor:  $18x$

$$\begin{aligned} 72x - 18xy &= 18x(4) - 18x(y) \\ &= 18x(4 - y) \end{aligned}$$

**12.**  $45xy - 81y$

$$45xy = 3 \cdot 3 \cdot 5 \cdot x \cdot y$$

$$81y = 3 \cdot 3 \cdot 3 \cdot 3 \cdot y$$

Common Factors:  $3 \cdot 3 \cdot y$

Greatest Common Factor:  $9y$

$$\begin{aligned} 45xy - 81y &= 9y(5x) - 9y(9) \\ &= 9y(5x - 9) \end{aligned}$$

# Use GCFs to factor linear expressions.

**13.**  $25x + 14y$

$$25x = 5 \cdot 5 \cdot x$$

$$14y = 2 \cdot 7 \cdot y$$

There are no Common Factors.

$25x + 14y$  can not be factored.

**14.**  $\frac{1}{3}x - \frac{1}{3}$

$$\frac{1}{3}x = \frac{1}{3} \cdot x$$

$$\frac{1}{3} = \frac{1}{3}$$

Common Factors:  $\frac{1}{3}$

Greatest Common Factor:  $\frac{1}{3}$

$$\begin{aligned} \frac{1}{3}x - \frac{1}{3} &= \frac{1}{3}(x) - \frac{1}{3}(1) \\ &= \frac{1}{3}(x - 1) \end{aligned}$$

**15.**  $\frac{1}{2}x + \frac{1}{2}$

$$\frac{1}{2}x = \frac{1}{2} \cdot x$$

$$\frac{1}{2} = \frac{1}{2}$$

Common Factors:  $\frac{1}{2}$

Greatest Common Factor:  $\frac{1}{2}$

$$\begin{aligned} \frac{1}{2}x + \frac{1}{2} &= \frac{1}{2}(x) + \frac{1}{2}(1) \\ &= \frac{1}{2}(x + 1) \end{aligned}$$

**Simplify algebraic expressions by identifying and combining like terms.**

Use the Distributive Property to expand each expression. (Examples 4–6)

$$\begin{aligned} 9. \quad & 2(-3x + 5) \\ &= 2(-3x) + 2(5) \\ &= -6x + 10 \end{aligned}$$

$$\begin{aligned} 10. \quad & 6(-4x + 3y) \\ &= 6(-4x) + 6(3y) \\ &= -24x + 18y \end{aligned}$$

$$\begin{aligned} 11. \quad & (3y - 2z)5 \\ &= 5(3y) - 5(2z) \\ &= 15y - 10z \end{aligned}$$

$$\begin{aligned} 12. \quad & (-2x - 7)4 \\ &= 4(-2x) - 4(7) \\ &= -8x - 28 \end{aligned}$$

$$\begin{aligned} 13. \quad & -7(x - 2) \\ &= -7(x) - -7(2) \\ &= -7x + 14 \end{aligned}$$

$$\begin{aligned} 14. \quad & -3(8x - 4) \\ &= -3(8x) - 3(-4) \\ &= -24x + 12 \end{aligned}$$

Write one-step equations involving integers and rational numbers and use inverse operations to solve the equations.

Solve each equation. Check your solution. (Examples 1–7)

1.  $6 + y = -8$

2.  $-12 = 4 + c$

3.  $p - 11 = -5$

4.  $12 = z - 8$

$$\begin{array}{rcl} 6 + y & = & -8 \\ -6 & & \\ \hline y & = & -14 \end{array}$$

Write the equation.  
Subtract 6 from each side.  
Simplify.

Check:

$$\begin{array}{rcl} 6 + y & = & -8 \\ 6 + -14 & \stackrel{?}{=} & -8 \\ -8 & = & -8 \checkmark \end{array}$$

Write the equation.  
Replace y with -14.

This sentence is true.

The solution is -14.

**Write one-step equations involving integers and rational numbers and use inverse operations to solve the equations.**

**13.**  $c - 5.3 = -6.4$

**14.**  $-\frac{1}{3} = -\frac{5}{6} + w$

**15.**  $n + 7.1 = 8.6$

$$c - 5.3 = -6.4$$

$$+ 5.3 = + 5.3$$

$$c = -1.1$$

**Write the equation.**

**Add 5.3 to each side.**

**Simplify.**

**Check:**

$$c - 5.3 = -6.4$$

**Write the equation.**

$$-1.1 - 5.3 \stackrel{?}{=} -6.4$$

**Replace c with -1.1**

$$-6.4 = -6.4 \checkmark$$

**This sentence is true.**

**The solution is  $-1.1$**

**Write one-step equations involving integers and rational numbers and use inverse operations to solve the equations.**

7.  $\frac{d}{-9} = -6$

8.  $15 = \frac{z}{-8}$

9.  $2\frac{4}{5}x = -1\frac{1}{4}$

$$\frac{d}{-9} = -6$$

**Write the equation.**

$$\frac{d}{-9} (-9) = -6 (-9)$$

**Multiply each side by -9.**

$$d = 54$$

**Simplify.**

**Check:**

$$\frac{d}{-9} = -6$$

**Write the original equation.**

$$\frac{54}{-9} \stackrel{?}{=} -6$$

**Replace d with 54.**

$$-6 = -6 \checkmark$$

**This is a true sentence.**

**The solution is 54.**

Write one-step equations involving integers and rational numbers and use inverse operations to solve the equations.

$$10. -6 = \frac{3}{5}y$$

$$11. -6 = 0.2b$$

$$12. -0.8n = 2.8$$

$$\begin{aligned} -6 &= \frac{3}{5}y \\ -6 \left(\frac{5}{3}\right) &= \frac{3}{5}y \left(\frac{5}{3}\right) \\ -10 &= y \end{aligned}$$

Write the equation.

Multiply each side by  $\frac{5}{3}$ .  
Simplify.

Check:

$$\begin{aligned} -6 &= \frac{3}{5}y \\ -6 &\stackrel{?}{=} \frac{3}{5}(-10) \\ -6 &= -6 \checkmark \end{aligned}$$

Write the original equation.

Replace  $y$  with  $-10$ .

This is a true sentence.

The solution is  $-10$ .

**Write two-step equations of the form  $px + q = r$  and use inverse operations to solve the equations.**

1. Easton went to a concert with some of his friends. The tickets cost \$29.50 each, and they spent a total of \$15 on parking. The total amount spent was \$133. Determine how many people went to the concert. (Example 1)

$$29.50p + 15 = 133$$

$$- 15 \quad - 15$$

$$29.50p = 117$$

$$p = \frac{117}{29.5}$$

$$p = 3.966$$

3. A taxi service charges \$1.50 plus \$0.60 per mile for a trip to the airport. The total charge is \$13.50. Determine how many miles it is to the airport. (Example 1)

$$p \approx 4$$

2. Ishi bought a \$6.95 canvas and 8 tubes of paint. She spent a total of \$24.95 on the canvas and paints. Determine the cost of each tube of paint. (Example 1)

4. At the market, Meyer buys a bunch of bananas for \$0.65 per pound and a frozen pizza for \$4.99. The total for his purchase was \$6.94, without tax. Determine how many pounds of bananas Meyer bought. (Example 1)



**Write two-step equations of the form  $px + q = r$  and use inverse operations to solve the equations.**

5. A hot air balloon is at an altitude of  $100\frac{1}{5}$  yards. The balloon's altitude decreases by  $10\frac{4}{5}$  yards every minute. Determine the number of minutes it will take the balloon to reach an altitude of 57 yards. (Example 2)

7. Mariko and her friend spent \$24.50 on lunch. Their lunches cost the same amount, and they used a \$4 off coupon. Determine the cost of each lunch. (Example 2)

6. The current temperature is  $48^{\circ}\text{F}$ . It is expected to drop  $1.5^{\circ}\text{F}$  each hour. Determine in how many hours the temperature will be  $36^{\circ}\text{F}$ . (Example 2)

8. **Open Response** The table shows the amount of water Joel had in his bathtub to wash his dog and his desired water level. If the water drains at a rate of 14 gallons per minute, how many minutes will it take the tub to drain to his desired level?

Starting Water Level	42 gallons
Desired Water Level	28 gallons

**Write two-step equations of the form  $p(x + q) = r$  and use inverse operations to solve the equations.**

- |   |  |
|---|--|
| <p><b>1.</b> Ayana is making 6 scarves that each require <math>1\frac{1}{4}</math> yards of purple fabric and a certain amount of blue fabric. She will use 10 yards in all. Determine how many yards of blue fabric are needed for each scarf. (Example 1)</p> | <p><b>2.</b> Sara is making 3 batches of chocolate chip cookies and 3 batches of oatmeal cookies. Each batch of chocolate chip cookies uses <math>2\frac{1}{4}</math> cups of flour. She will use <math>12\frac{3}{4}</math> cups of flour for all six batches. Determine how many cups of flour are needed for each batch of oatmeal cookies. (Example 1)</p> |
| <p><b>3.</b> Pete is making 8 identical fruit baskets as gifts. Each basket contains some apples and 12 oranges. Pete uses a total of 168 pieces of fruit to make the baskets. Determine the number of apples that are in each basket. (Example 1)</p>          | <p><b>4.</b> A teacher is making 7 identical supply boxes for each table in her classroom. Each box contains some pencils and 11 pens. The teacher uses a total of 182 pencils and pens. Determine the number of pencils that are in each box. (Example 1)</p>   |

**Write two-step equations of the form  $p(x + q) = r$  and use inverse operations to solve the equations.**

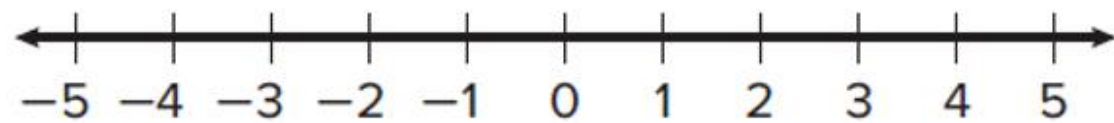
5. Javier bought 3 bags of balloons for a party. He used 8 balloons from each bag. Determine how many balloons were originally in each bag if there were 21 balloons left over. (Example 2)
7. Zak buys 6 gallons of fruit punch. He has coupons for \$0.55 off the regular price of each gallon of fruit punch. After using the coupons, the total cost of the fruit punch is \$8.70. Determine the regular price of a gallon of fruit punch. (Example 2)

6. Vera and her three sisters received the same amount of money to go to the school festival. Each girl spent \$12. Afterward, the girls had \$24 altogether. Determine the amount of money each girl received. (Example 2)
8. **Open Response** Mrs. James buys 5 hat and glove sets for charity. She has coupons for \$1.50 off the regular price of each set. After using the coupons, the total cost is \$48.75. Determine the regular price of a hat and glove set.

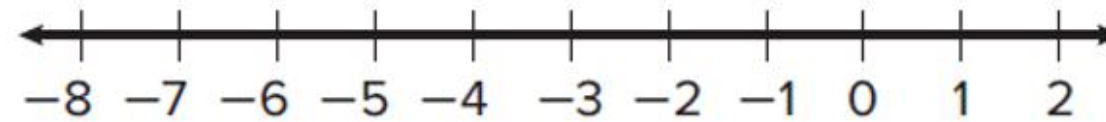
Item	Cost (\$)
Hat and glove set	$p$
Scarf	9.99

**Use inverse operations to solve one-step addition and subtraction inequalities.**

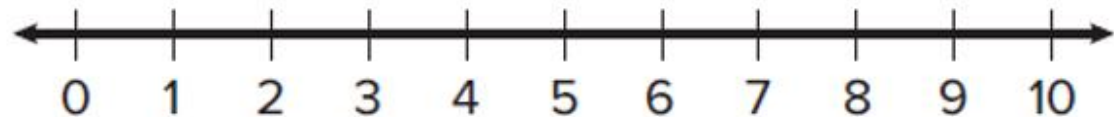
**1.**  $x + 5 < 7$



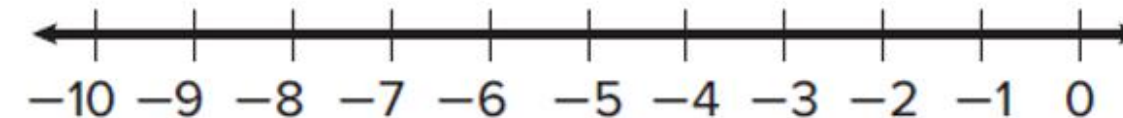
**2.**  $1 > x + 6$



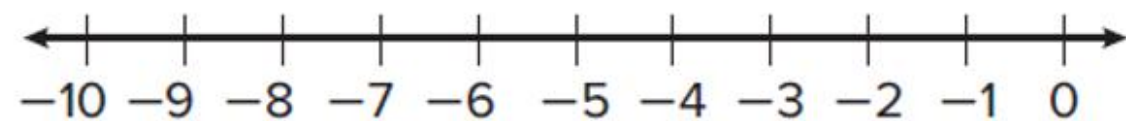
**3.**  $x + 8 \geq 14$



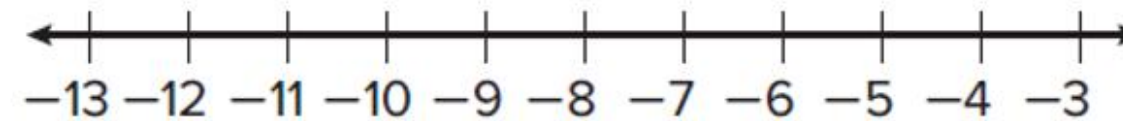
**4.**  $5 \leq x + 12$



**5.**  $x + 5.4 < -1.6$



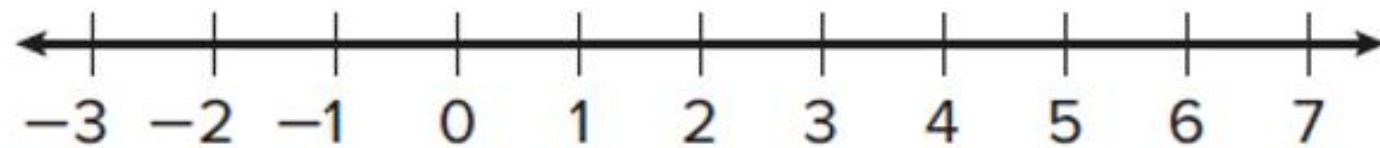
**6.**  $x + 7.5 > -2.5$



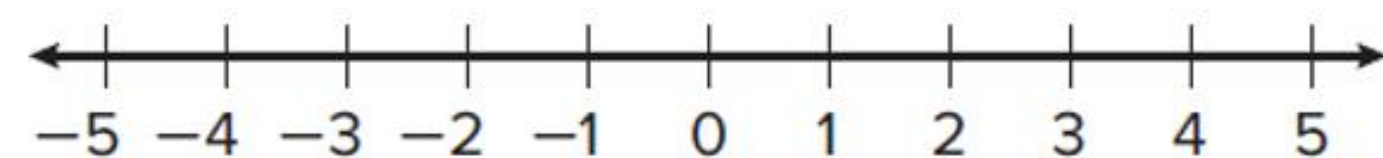


**Use inverse operations to solve one-step addition and subtraction inequalities.**

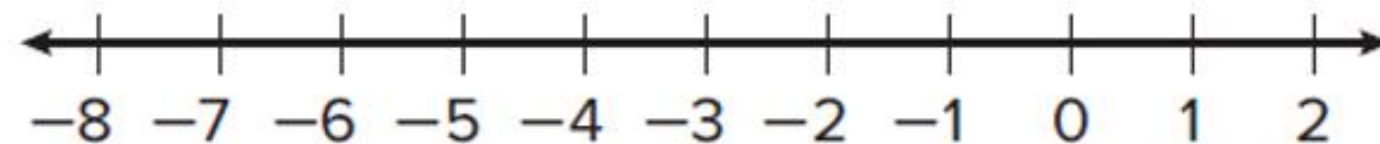
**7.**  $3 < \frac{1}{3} + x$



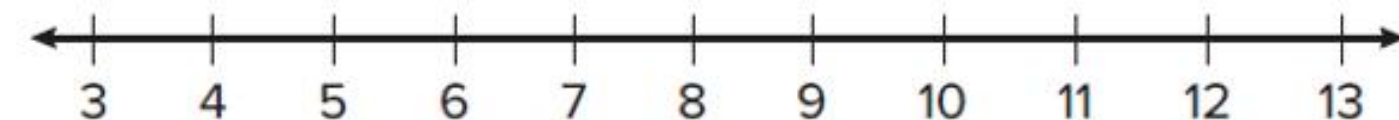
**8.**  $4 \geq x + \frac{3}{4}$



**9.**  $6.9 < x - 2.3$



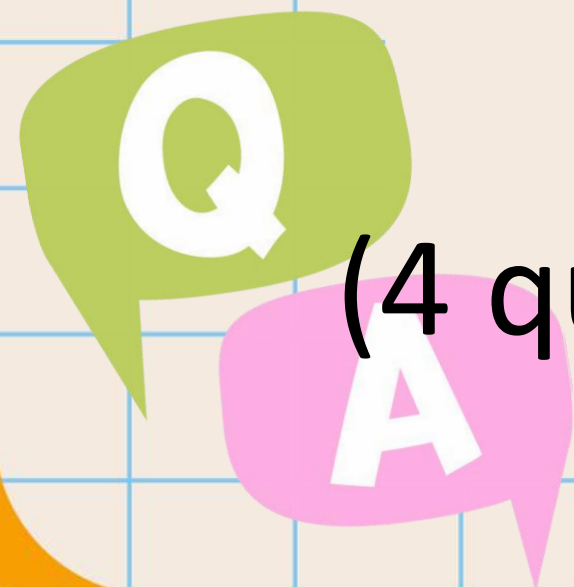
**10.**  $4 \leq x - 7$





## Part 2

# Free Response Questions



(4 questions, 5-10 marks each, Paper-Based)



THE END

Good Luck 😊

