

Integer Operations Review

Name: _____

Adding Integers

1) $85 + (-96) =$ _____

2) $80 + 57 =$ _____

3) $86 + (-38) =$ _____

4) $22 + (-41) =$ _____

5) $-18 + (-45) =$ _____

6) $-32 + 48 =$ _____

7) $6 + (-33) =$ _____

8) $6 + (-47) =$ _____

9) $(-78) + 69 =$ _____

10) $-72 + (-30) + 10 =$ _____

11) $-83 + (-36) + 20 =$ _____

Subtracting Integers

1) $1 - 3 =$ _____

2) $2 - (-5) =$ _____

3) $6 - (-9) =$ _____

4) $-7 - (-1) =$ _____

5) $-7 - 4 =$ _____

6) $3 - (-2) =$ _____

7) $-1 - 9 =$ _____

8) $2 - 9 =$ _____

9) $-8 - (-1) =$ _____

Multiplying Integers

1) $(-4)(-12) =$ _____

2) $-8 \times (-8) =$ _____

3) $(-8)(-10) =$ _____

4) $5 \times 1 =$ _____

5) $(-10)(11) =$ _____

6) $(-3)(-8) =$ _____

7) $-2 \times 6 =$ _____

8) $7(-12) =$ _____

9) $4 \times (-10) =$ _____

10) $(-9)(-6)(2) =$ _____

11) $(-10)(-7)(-4) =$ _____

Dividing Integers

1) $-48 \div 6 =$ _____

2) $-81 \div (-9) =$ _____

3) $-18 \div (-6) =$ _____

4) $25 \div (-5) =$ _____

5) $-10 \div 2 =$ _____

6) $-35 \div (-5) =$ _____

7) $-42 \div 6 =$ _____

8) $-70 \div (-7) =$ _____

9) $-16 \div (-8) =$ _____

Perimeter and Area of Figures

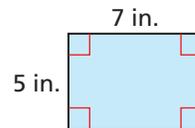
Perimeter and Area of Polygons

The **perimeter** P of a figure is the distance around the figure. The **area** A of a figure is the number of square units enclosed by the figure.

Perimeter and Area				
Square	Rectangle	Triangle	Parallelogram	Trapezoid
$P = 4s$	$P = 2\ell + 2w$	$P = a + b + c$	$A = bh$	$A = \frac{1}{2}h(b_1 + b_2)$
$A = s^2$	$A = \ell w$	$A = \frac{1}{2}bh$		

Example 1 Find the perimeter and area of the figure.

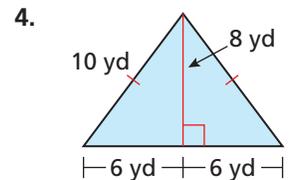
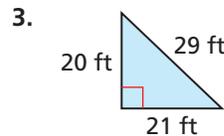
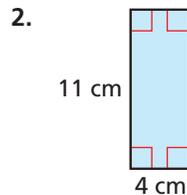
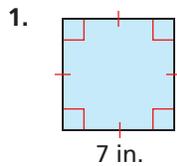
$$\begin{aligned}
 P &= 2\ell + 2w & A &= \ell w \\
 &= 2(7) + 2(5) & &= 7(5) \\
 &= 24 \text{ in.} & &= 35 \text{ in.}^2
 \end{aligned}$$



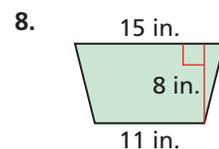
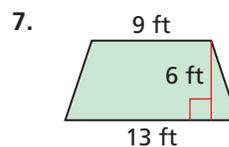
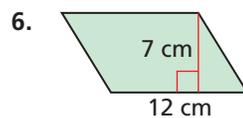
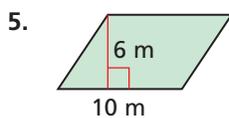
Practice

Check your answers at BigIdeasMath.com.

Find the perimeter and area of the figure.



Find the area of the figure.

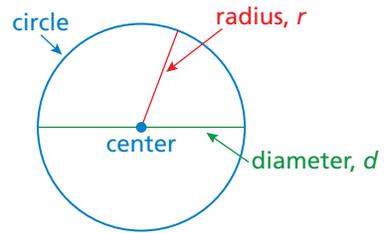


Use a geometric formula to solve the problem.

- A triangle has a base of 7 feet and an area of 63 square feet. Find the height.
- A rectangle has a length of 6 inches and a perimeter of 28 inches. Find the width.

Circumference and Area of a Circle

A **circle** is the set of all points in a plane that are the same distance from a point called the **center**. The distance from the center to any point on the circle is the **radius**. The distance across the circle through the center is the **diameter**. The diameter is twice the radius.



The **circumference** of a circle is the distance around the circle. The ratio $\frac{\text{circumference}}{\text{diameter}}$ is the same for every circle and is represented by the Greek letter π , called **pi**. Pi is an irrational number whose value is approximately 3.14 or $\frac{22}{7}$.

Circumference of a Circle	Area of a Circle
The circumference C of a circle is equal to π times the diameter d or π times twice the radius r . $C = \pi d$ or $C = 2\pi r$	The area A of a circle is the product of π and the square of the radius. $A = \pi r^2$

Example 1 The diameter of a circle is 8.5 meters. Find the radius.

$$\begin{aligned} r &= \frac{d}{2} && \text{Radius of a circle} \\ &= \frac{8.5}{2} && \text{Substitute 8.5 for } d. \\ &= 4.25 && \text{Divide.} \end{aligned}$$

▶ The radius is 4.25 meters.

Example 2 The radius of a circle is $5\frac{3}{4}$ feet. Find the diameter.

$$\begin{aligned} d &= 2r && \text{Diameter of a circle} \\ &= 2\left(5\frac{3}{4}\right) && \text{Substitute } 5\frac{3}{4} \text{ for } r. \\ &= 11\frac{1}{2} \end{aligned}$$

▶ The diameter is $11\frac{1}{2}$ feet.

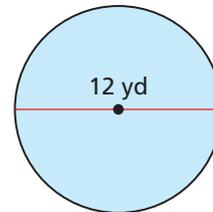
Example 3 Find (a) the circumference C and (b) the area A of the circle.

a. $C = \pi d$
 $= \pi(12)$
 ≈ 37.7

▶ The circumference is about 37.7 yards.

b. $A = \pi r^2$
 $= \pi \cdot (6)^2$
 $= 36\pi$
 ≈ 113.1

▶ The area is about 113.1 square yards.



Practice

Check your answers at BigIdeasMath.com.

- The radius of a circle is 4.6 millimeters. Find the diameter.
- The diameter of a circle is $2\frac{1}{4}$ miles. Find the radius.

Find the circumference and area of the circle with the given radius or diameter.

13. $r = 16$ inches 14. $d = 10$ centimeters 15. $r = 7$ meters 16. $d = 2.4$ yards

17. The area of a circle is 81π square feet. Find the radius.

Solving Linear Equations

To determine whether a value is a solution of an equation, substitute the value into the equation and simplify.

Example 1 Determine whether (a) $x = 1$ or (b) $x = -2$ is a solution of $5x - 1 = 4$.

a. $5x - 1 = -2x + 6$

$$5(1) - 1 \stackrel{?}{=} -2(1) + 6 \quad \text{Substitute.}$$

$$4 = 4 \quad \checkmark \quad \text{Simplify.}$$

► So, $x = 1$ is a solution.

b. $5x - 1 = -2x + 6$

$$5(-2) - 1 \stackrel{?}{=} -2(-2) + 6 \quad \text{Substitute.}$$

$$-11 \neq 10 \quad \times \quad \text{Simplify.}$$

► So, $x = -2$ is *not* a solution.

To solve a linear equation, isolate the variable.

Example 2 Solve each equation. Check your solution.

a. $4x - 3 = 13$

$$4x - 3 + 3 = 13 + 3 \quad \text{Add 3.}$$

$$4x = 16 \quad \text{Simplify.}$$

$$\frac{4x}{4} = \frac{16}{4} \quad \text{Divide by 4.}$$

$$x = 4 \quad \text{Simplify.}$$

Check

$$4x - 3 = 13$$

$$4(4) - 3 \stackrel{?}{=} 13$$

$$13 = 13 \quad \checkmark$$

b. $2(y - 8) = y + 6$

$$2y - 16 = y + 6 \quad \text{Distributive Property}$$

$$2y - y - 16 = y - y + 6 \quad \text{Subtract } y.$$

$$y - 16 = 6 \quad \text{Simplify.}$$

$$y - 16 + 16 = 6 + 16 \quad \text{Add 16.}$$

$$y = 22 \quad \text{Simplify.}$$

Check

$$2(y - 8) = y + 6$$

$$2(22 - 8) \stackrel{?}{=} 22 + 6$$

$$28 = 28 \quad \checkmark$$

Practice

Check your answers at BigIdeasMath.com.

Determine whether (a) $x = -1$ or (b) $x = 3$ is a solution of the equation.

1. $5x + 7 = 2$

2. $-4x + 8 = -4$

3. $2x - 1 = 3x - 4$

Solve the equation. Check your solution.

4. $x - 9 = 24$

5. $n + 14 = 0$

6. $-16 = 4y$

7. $-\frac{5}{6}t = -15$

8. $81 = 46 - x$

9. $4x + 5 = 1$

10. $x + 5 = 11x$

11. $9(y - 3) = 45$

12. $6 = 7k + 8 - k$

13. $6n + 3 = -4n + 7$

14. $2c + 5 = 3(c - 8)$

15. $18m + 3(2m + 8) = 0$

16. $\frac{w - 6}{5} = 8$

17. $\frac{15 + h}{3} = 10$

18. $\frac{8 - 3x}{5} = x$

19. $(8r + 6) + (4r - 1) = 14$

20. $\frac{2}{3}y - 3 = 9$

21. $\frac{1}{2}x - \frac{3}{10} = \frac{5}{2}x + \frac{7}{10}$

22. **MONEY** You have a total of \$3.25 in change made up of 25 pennies, 6 nickels, 2 dimes, and x quarters. How many quarters do you have?

Solving Linear Inequalities

Addition Property of Inequality

When you add the same number to each side of an inequality, the inequality remains true.

Multiplication and Division Properties of Inequality (Case 1)

When you multiply or divide each side of an inequality by the same *positive* number, the inequality remains true.

To solve an inequality, isolate the variable.

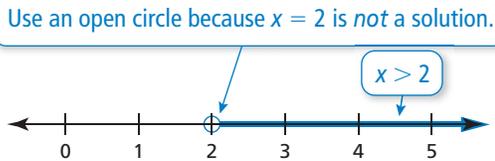
Example 1 Solve each inequality. Graph the solution.

a. $x + 1 > 3$

$$\begin{array}{r} -1 \quad -1 \\ x + 1 > 3 \\ \hline x > 2 \end{array}$$

Subtract 1 from each side.
Simplify.

▶ The solution is $x > 2$.



Subtraction Property of Inequality

When you subtract the same number from each side of an inequality, the inequality remains true.

Multiplication and Division Properties of Inequality (Case 2)

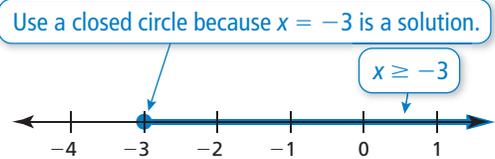
When you multiply or divide each side of an inequality by the same *negative* number, the direction of the inequality symbol must be reversed for the inequality to remain true.

b. $-3x \leq 9$

$$\begin{array}{r} -3x \leq 9 \\ \hline -3x \geq -9 \\ \hline x \geq -3 \end{array}$$

Divide each side by -3 .
Reverse the inequality symbol.
Simplify.

▶ The solution is $x \geq -3$.

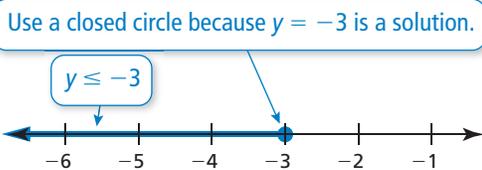


c. $-25 \geq 9y + 2$

$$\begin{array}{r} -2 \quad -2 \\ -25 \geq 9y + 2 \\ \hline -27 \geq 9y \\ \hline -27 \geq 9y \\ \hline -3 \geq y \end{array}$$

Subtract 2 from each side.
Simplify.
Divide each side by 9.
Simplify.

▶ The solution is $y \leq -3$.

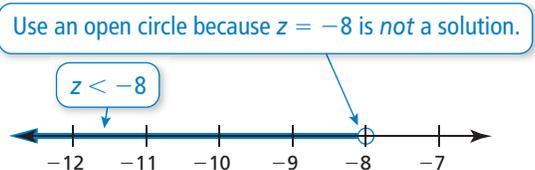


d. $-\frac{z}{2} + 6 > 10$

$$\begin{array}{r} -\frac{z}{2} + 6 > 10 \\ \hline -\frac{z}{2} > 4 \\ \hline -\frac{z}{2} \cdot (-2) > 4 \cdot (-2) \\ \hline z < -8 \end{array}$$

Subtract 6 from each side.
Simplify.
Multiply each side by -2 .
Reverse the inequality symbol.
Simplify.

▶ The solution is $z < -8$.



Practice

Solve the inequality. Graph the solution.

1. $x + 2 > 7$

2. $y - 5 \leq -8$

3. $\frac{t}{-3} > -1$

4. $\frac{2s}{5} \leq 6$

5. $-2q + 1 \geq 15$

6. $3z - 4 < -1$

Check your answers at BigIdeasMath.com.

Pre-Algebra Review

Name: _____

Class: _____

<p>Date: _____</p>	<p>1. Add or subtract: $(-6) + 13$</p>	<p>2. Simplify the expression: $4m + 7 - 2m - 20$</p>	<p>3. Simplify the expression: $8(a - 4)$</p>	<p>4. At noon, the temperature is -4°F. By 6:00 pm, the temperature rose 26 degrees. What is the new temp?</p>	<p>5. Use the distributive property and then simplify the expression: $3(x - 8) + 6(x + 4)$</p>
<p>Date: _____</p>	<p>2. Solve the equation: $c + 5 = -18$</p>	<p>2. Solve the equation: $-6 + x = 6$</p>	<p>3. Create a math equation to match the situation: Twelve less than a number is 5. Now, solve it:</p>	<p>4. Solve the equation: $\frac{x}{8} = 24$</p>	<p>5. Solve the equation: $\frac{1}{3}x = 12$</p>
<p>Date: _____</p>	<p>1. A square has a perimeter of 48 units. What is the length of each side?</p>	<p>2. A square has a side length of 14 meters. What is the perimeter of the square? What is the area of the square?</p>	<p>3. What value of x makes the equation $x + 15 - 6 = 23$ true?</p>	<p>4. Solve the equation: $2x = 32$</p>	<p>5. What is 8 less than negative 12?</p>
<p>Date: _____</p>	<p>1. Solve the equation: $6 = -\frac{x}{7}$</p>	<p>2. A dog pen is 8 feet wide. The length of the pen is 3 times the width. What is the length of the dog pen?</p>	<p>3. Use order of operations to simplify: $4 + 8 - (3 \cdot 7) - 12$</p>	<p>4. The temperature at 6:00 AM was 21°F. By noon, the temperature dropped 32°F. What was the temperature at noon?</p>	<p>5. Simplify the expression: $2(4 - x) + 12(2 - x)$</p>
<p>Date: _____</p>	<p>1. Simplify the expression: $4x + 8 + 2x + 6x - 10$</p>	<p>2. What is the absolute value of -8?</p>	<p>3. Simplify the expression: $6(x - 12) + 2(3x - 36)$</p>	<p>4. Let $a = -3$. Complete the statement using $<$, $>$, or $=$. $12a$ _____ 36</p>	<p>5. Let $b = -6$. Complete the statement using $<$, $>$, or $=$. $12 - b$ _____ -18</p>