Algebra I Chapter 2 Review

Simplify.
1. \(12 - (-3) = 15\)
2. \(-6(-3) - (-2) = 18 - (-2) = 20\)
3. \((-6)^2 / (-9) = -4\)
4. \(-3 + 10 + 2 + (-6)\times3 = -3 + 5 + (-6)\times3 = -3 + 5 - 18 = -21\)
5. \(\frac{70 + 4}{70 + 4} = 74\)
6. \(-3 \div 5 = -12\)
7. \(\frac{196}{49} = 4\)
8. \(-6(4p - 2q)\) for \(p = -1.4\) and \(q = 1.3\)
   \(-6(-1.4 - 2(1.3)) = -6(-1.4 - 2.6) = -6(-4) = 24\)
9. \(\frac{b}{c}\) for \(b = \frac{1}{3}\) and \(c = \frac{2}{3}\)
   \(-\frac{1}{3} \div \left(\frac{2}{3}\right) = -\frac{1}{3} \times \left(\frac{3}{2}\right) = -\frac{1}{2}\)
10. \(\frac{3d + 1}{25}\) for \(d = -20\)
    \(\frac{3(-20) + 1}{25} = -\frac{59}{25}\)

Evaluate each expression.
5. \(7xy + 4\) for \(x = -5\) and \(y = -2\)
6. \(m^2 + n\) for \(m = -14\) and \(n = -4\)
7. \(|4 - 2y|\) for \(y = 9\)
8. \(-6(4p - 2q)\) for \(p = -1.4\) and \(q = 1.3\)

Simplify each expression.
11. \(-\frac{1}{4}(4 - 6a)\)
12. \(-2(-3 + 2a)\)

Write an expression for each phrase.
13. 7 times the quantity \(f\) plus 12
    \(7(f + 12)\)
14. 3 times the difference \(-4\) times \(q\) minus 10
    \(3(-4q - 10)\)
Simplify each expression.

15. \( \frac{1}{4}(4x - 8) + 3x \)
\[ x - 2 + 3x \]
\[ 4x - 2 \]

16. \((4^2 - 2^3)(1^3 - 3^2)\)
\[(16 - 8)(1 - 9)\]
\[-64\]

Simplify each expression.

17. \(-\frac{4}{5} - 2\frac{1}{2}\)
\[ -\frac{23}{5} - \frac{5}{2} = -\frac{46}{10} - \frac{25}{10} \]
\[ = -\frac{71}{10} = -7\frac{1}{10} \]

18. \[6.2 - 9.7 + (-3.1)\]
\[ 6.2 - 12.8 \]
\[ -6.6 \]

19. On a diving exercise, a submarine rose 20 ft, dove 40 ft, rose 7 ft, and rose 13 ft. What was the change in depth after the exercise?
\[ + 20 - 40 + 7 + 13 = 0 \]

20. At 9:00 A.M., the temperature was -7°F. By noon, the temperature was 19°F. What was the change in temperature?
\[ 19 - (-7) = 26 \text{° change} \]
Algebra I Chapter 3 Review

Solve each equation. Check your answer.

1. \[5n - 7 = 28\]
   \[
   \begin{align*}
   5n &= 35 \\
   n &= 7 
   \end{align*}
   \]

2. \[7y + 5 - 3y = -31\]
   \[
   \begin{align*}
   4y + 5 &= -31 \\
   4y &= -36 \\
   y &= -9 
   \end{align*}
   \]

3. \[8(t + 7) = 32 + 2t\]
   \[
   \begin{align*}
   8t + 56 &= 32 + 2t \\
   6t &= -24 \\
   t &= -4 
   \end{align*}
   \]

4. \[-11.4x + 5.4x = 48\]
   \[
   \begin{align*}
   -6x &= 48 \\
   x &= -8 
   \end{align*}
   \]

5. \[6(w - 5) - 3w = w + 10\]
   \[
   \begin{align*}
   6w - 30 - 3w &= w + 10 \\
   3w - 30 &= w + 10 \\
   2w &= 40 \\
   w &= 20 
   \end{align*}
   \]

Write an equation to model each situation. Solve your equation.

7. An online music club sells compact discs for $13.95 each plus $1.95 shipping and handling per order. If Maria's total bill was $85.65, how many compact discs did Maria purchase?
   \[
   \begin{align*}
   13.95x + 1.95 &= 85.65 \\
   13.95x &= 83.70 \\
   x &= 6 
   \end{align*}
   \]

8. Tickets to the county fair for four adults and five children cost $33.00. An adult's ticket costs $1.50 more than a child's ticket. Find the cost of an adult's ticket.

   \[
   \begin{align*}
   x &= \text{cost of child's ticket} \\
   x + 1.50 &= \text{cost of adult's ticket} \\
   4x + 5(x + 1.50) &= 33 \\
   9x + 6 &= 33 \\
   9x &= 27 \\
   x &= 3 \\
   \text{child's ticket} &= 3.50 \\
   \text{adult ticket} &= 4.50 
   \end{align*}
   \]

9. Convert 55 days to minutes
   \[
   55 \times 24 \times 60 = 79,200 \text{ minutes} 
   \]

10. Convert 12 pounds into ounces
    \[
    12 \times 16 = 192 \text{ ounces} 
    \]

11. Mrs. Harrison is 5 feet 7 inches tall. How many cm is that? (1 in = 2.54 cm)
    \[
    5 \text{ ft} \times 7 \text{ in} = 67 \text{ inches} \\
    67 \times 2.54 = 170.18 \text{ cm} 
    \]

Solve each proportion.

12. \[\frac{2}{1.2} = \frac{5}{k}\]
    \[
    \frac{5 \times 1.2}{2} = \frac{k}{k} \\
    k = 3 
    \]

13. \[\frac{20 \times 12}{48} = \frac{8}{20}\]
    \[
    \frac{240}{48} = g \\
    g = 5 
    \]

14. \[\frac{2h - 6}{6} = \frac{2}{3}\]
    \[
    2h - 6 = \frac{12}{3} \\
    2h - 6 = 4 \\
    h = 5 
    \]
15. The pair of figures are similar. Find the length $x$.

\[ \frac{10}{10} \cdot \frac{x}{8} = \frac{6}{8} \]

\[ x = \frac{60}{8} \]

\[ x = 7.5 \text{ m} \]

Find each percent of change. Describe the percent of change as an increase or decrease.

16. 25 ft to 15 ft

\[ \frac{25 - 15}{25} \Rightarrow \frac{10}{25} = 40\% \text{ decrease} \]

17. 75 cm to 60 cm

\[ \frac{75 - 60}{75} \Rightarrow \frac{15}{75} = 20\% \text{ decrease} \]

18. A long-distance phone company charges $4.95 month plus an additional $0.10 per minute.

a. Define a variable and write a formula to find the total cost per month for long-distance service.

\[ x = \# \text{ minutes} \]

\[ 4.95 + 0.10x \]

b. Use this formula to find the long-distance charges for 120 minutes of calls in one month.

\[ 4.95 + 0.10(120) \]

\[ 4.95 + 12 \]

\[ \boxed{16.95} \]
Algebra I Chapter 4 Review

Is each number a solution of the given inequality?
1. $4y + 3 \leq 7$
   a. $-3$ ?
   $4(-3) + 3 \leq 7$
   $-12 + 3 \leq 7$
   $-9 \leq 7$ **YES**
   b. $-1$ ?
   $4(-1) + 3 \leq 7$
   $-4 + 3 \leq 7$
   $-1 \leq 7$ **NO**
   c. $3$ ?
   $4(3) + 3 \leq 7$
   $12 + 3 \leq 7$
   $15 \leq 7$ **NO**

Write an inequality for each graph.

2. $x < -1$

3. $x \geq 2$

4. $x < 1.5$

5. $x \geq -3.5$

Solve each inequality. Graph the solution.

6. $-20 \leq 5y$
   $\frac{-20}{5} \leq y$

7. $-3 < 5c + 16$
   $-19 < 5c$
   $\frac{-19}{5} < c$
   $-3.8 < c$

8. $4b + 6 > 2$
   $4b > -4$
   $b > -1$

9. $15g < 90$
   $g < 6$

The graphs for each solution are shown at the bottom of the page.
10. $m + 9 > 6$
   $m > -3$

11. $3x - 8 < -2x + 22$
   $5x < 30$
   $x < 6$

Solve each inequality. Check your solution.

12. $3(x - 4) < -15$
   $3x - 12 < -15$
   $3x < -3$
   $x < -1$

13. $6(x - 11) - 4x < -72$
   $6x - 66 - 4x < -72$
   $2x < -6$
   $x < -3$

14. Suppose you and a friend are working for a nursery planting trees. Together you can plant 8 trees per hour. What is the greatest number of hours that you and your friend would need to plant at most 40 trees?
   $8x \leq 40$
   $x \leq 5$

15. Suppose the physics club is going on a field trip. Members will be riding in vans that will hold 7 people each including the driver. At least 28 people will be going on the field trip. What is the least number of vans needed to make the trip?
   $7x \geq 28$
   $x \geq 4$

16. You need to buy stamps to mail some letters. The stamps cost $.34 each. What is the maximum number of stamps that you can buy with $3.84?
   $0.34x \leq 3.84$
   $x \leq 11.29$
   11 stamps

17. The Garcias are putting a brick border along one edge of their flower garden. The flower garden is no more than 31 ft long. If each brick is 6 in. long, what is the greatest number of bricks needed?
   $x = 62$ bricks