Homework 1-3

1. Is it possible to find a value of $x$ so that the value of the surface area (in square inches) is equal to the value of the volume (in cubic inches)?

   $x$ in.

   $11$ in. $3$ in.

   ○ yes
   ○ no

If possible, what is the value of $x$?

$x = \underline{\hspace{2cm}}$

Write an equation to justify your answer.

An equation is $\underline{\hspace{2cm}}$.

2. Solve the equation.

   \[m - 4 = 2m\]

   $m = \underline{\hspace{2cm}}$

3. Solve the equation.

   \[6x = 5x + 22\]

   $x = \underline{\hspace{2cm}}$
4. Solve the equation.
\[ 12 (2w - 3) = 6w \]
\[ w = \square \]

5. Solve the equation.
\[ 2 (4z - 1) = 3 (z + 2) \]
\[ z = \square \]

6. Solve the equation.
\[ \frac{1}{6}d + \frac{2}{3} = \frac{1}{4}(d - 2) \]
\[ d = \square \]
7. YOU BE THE TEACHER  Your friend solves the equation shown. Is your friend correct?

\[
\begin{align*}
3x - 4 &= 2x + 1 \\
3x - 4 - 2x &= 2x + 1 - 2x \\
x - 4 &= 1 \\
x - 4 + 4 &= 1 - 4 \\
x &= -3
\end{align*}
\]

- yes
- no

Explain your reasoning.

8. MODELING REAL LIFE  Write and solve an equation to find the number of miles you must drive to have the same cost for each of the car rentals. Let \( m \) represent the number of miles.

\[
\begin{align*}
\text{\$20 plus \$0.50 per mile} & \quad \text{\$30 plus \$0.25 per mile}
\end{align*}
\]

Equation: 

\( m = \) 

9. Solve the equation.

\[3x - 1 = 1 - 3x\]

Solution: 

10. Solve the equation.

\[4x - 9 = 3.5x - 9\]

Solution: 

11. Solve the equation.

\[5x - 7 = 4x - 1\]

Solution: 

12. Solve the equation.

\[\frac{1}{2}x + \frac{1}{2}x = x + 1\]

Solution: 

13. Solve the equation.

\[-3(2x - 3) = -6x + 9\]

Solution: 

14. Solve the equation.

\[ 6(7x + 7) = 7(6x + 6) \]

Solution: 

15. **YOU BE THE TEACHER** Your friend solves the equation shown. Is your friend correct?

\[
\begin{align*}
-4(2n - 3) &= 12 - 8n \\
-8n + 12 &= 12 - 8n \\
-8n &= -8n \\
0 &= 0 \\
\text{The solution is } n &= 0.
\end{align*}
\]

○ yes
○ no
16. **NUMBER SENSE** The weight of an object is equal to $\frac{3}{4}$ of its own weight plus $\frac{3}{4}$ of a pound. How much does the object weigh?

The object weighs $\square$ pounds.