Reteaching 7-1  

Solving Two-Step Equations

Solve \( \frac{k}{5} - 9 = -7 \).

\[
\begin{align*}
\frac{k}{5} - 9 &= -7 \\
\frac{k}{5} - 9 + 9 &= -7 + 9 \\
\frac{k}{5} &= 2 \\
\frac{k}{5} \cdot 5 &= 2 \cdot 5 \\
k &= 10
\end{align*}
\]

Add 9 to each side.
Simplify.
Multiply each side by 5.
Simplify.

Complete the example.

1. \(4n + 13 = 1\)

\[
\begin{align*}
4n + 13 &= 1 \\
4n &= 1 - 13 \\
4n &= -12 \\
\frac{4n}{4} &= \frac{-12}{4} \\
\frac{4n}{4} &= -3 \\
n &= -3
\end{align*}
\]

Subtract 13 from each side.
Simplify.
Divide each side by 4.
Simplify.

Solve each equation.

2. \(3x - 5 = 10\) \(x = \) ________

3. \(\frac{n}{2} + 10 = 7\) \(n = \) ________

4. \(\frac{m}{7} - 9 = -5\) \(m = \) ________

5. \(5w - 2 = -12\) \(w = \) ________

6. \(4a + 12 = -8\) \(a = \) ________

7. \(\frac{b}{3} + 8 = -7\) \(b = \) ________
Reteaching 7-2

Solve Multi-Step Equations

Solve $6 - 2(x + 5) = 8$

$6 - 2(x + 5) = 8$

Distribute.

Simplify. Think of $6 - 2x$ as $6 + (-2x)$. Then subtract $6 - 10$.

Add 4 to each side.

Simplify.

Divide each side by $-2$.

Simplify.

Solve each equation.

1. $3(a - 4) = 9$

Distribute.

Add 12 to each side.

Simplify.

Divide each side by 3.

Simplify.

Solve each equation.

2. $n + 5n = 30 \quad n = \phantom{0}$

3. $y - 4y = 33 \quad y = \phantom{0}$

4. $12 = 4(b - 2) \quad b = \phantom{0}$

5. $-3(k - 4) = -6 \quad k = \phantom{0}$

6. $m - 3m + 3 = 11 \quad m = \phantom{0}$

7. $2(x - 9) + 5 = 1 \quad x = \phantom{0}$
Reteaching 7-3  Multi-Step Equations With Fractions and Decimals

Solve $0.25x - 0.4 = 1.6$
You can clear the decimals first. Since 0.25 is the decimal with the greatest number of decimal places and $0.25 = \frac{25}{100}$, multiply each side by 100.

\[0.25x - 0.4 = 1.6\]
\[100(0.25x - 0.4) = 100(1.6)\]
\[25x - 40 = 160\]
\[25x - 40 + 40 = 160 + 40\]
\[25x = 200\]
\[\frac{25x}{25} = \frac{200}{25}\]
\[x = 8\]

Solve each equation.

1. $0.8x + 2.1 = 5.3$
2. $0.5k - 3.4 = 0.1$

\[x = \underline{\hspace{1cm}}\]

3. $2.7n + 4.1 = 36.5$
4. $0.96m - 1.8m = -12.6$

\[n = \underline{\hspace{1cm}}\]

5. $0.7b + 6 - 0.3b = 6.8$
6. $1.4a + 3.5a - 4.3 = 44.7$

\[b = \underline{\hspace{1cm}}\]

\[m = \underline{\hspace{1cm}}\]

\[a = \underline{\hspace{1cm}}\]
Reteaching 7-4

Write an equation. Then solve.

Orlando worked for $6/h one week and $7/h the next week. He worked 5 more hours the second week than the first and earned $347 for the 2 weeks of work. How many hours did he work each week.

Let \( h \) be the number of hours Orlando worked the first week. Then he worked \( h + 5 \) hours the second week. He earned \( 6h \) dollars the first week.

**Words**

\[
\text{Earnings week 1} + \text{Earnings week 2} = \text{Total earnings}
\]

**Equation**

\[
6h + 7(h + 5) = 347
\]

Now solve.

\[
6h + 7(h + 5) = 347
\]

\[
6h + 7h + 35 = 347
\]

\[
13h + 35 = 347
\]

\[
13h = 312
\]

\[
\frac{13h}{13} = \frac{312}{13}
\]

\[
h = 24
\]

Orlando worked 24 hours the first week. He worked \( h + 5 = 24 + 5 = 29 \) hours the second week.

Check: \( 24 \cdot 6 + 29 \cdot 7 = 144 + 203 = 347 \).

**Write an equation. Then solve.**

1. The sum of half of a number and 8 less than the number is 25.

2. A triangle has two sides equal in length and a third side 5 in. longer than half the length of each of the other two sides. If the perimeter of the triangle is 50 in., how long is each side?
Reteaching 7-5  Solving Equations With Variables on Both Sides

Solve $4(n - 5) + 2 = 3n - 4$.

$4(n - 5) + 2 = 3n - 4$

Distribute.

$4n - 20 + 2 = 3n - 4$

Simplify.

$4n - 18 = 3n - 4$

Subtract $3n$ from each side.

$n - 18 = -4$

Simplify.

$n - 18 + 18 = -4 + 18$

Add 18 to each side.

$n = 14$

Simplify.

Solve each equation.

1. $7x + 9 = 4x$

2. $8m - 5 = 5m + 7$

3. $k + k + k = k + 18$

4. $3(n - 5) = -2n$

5. $4(y - 9) = 3(2y - 8)$

6. $6(z - 2) + 3 = 3z - 15$

7. $x + 7x + 15x = 29x + 18$

8. $8(7 - p) - 8 = -16(p - 2)$
Solve and graph $2x + 9 > 5$.

$2x + 9 > 5$
$2x + 9 - 9 > 5 - 9$ \hspace{1cm} \text{Subtract 9 from each side.}$
$2x > -4$ \hspace{1cm} \text{Simplify.}$
$\frac{2x}{2} > \frac{-4}{2}$ \hspace{1cm} \text{Divide each side by 2.}$
$x > -2$ \hspace{1cm} \text{Simplify.}$

Since $x > -2$, $-2$ is not a solution. Use an open circle at $-2$. Then shade everything to the right of $-2$.

---

Solve each inequality. Graph the solutions on a number line.

1. $8 + 3x \leq 2$ \hspace{3cm} 2. $\frac{x}{5} - 3 > -4$

3. $15 - 5k \geq 0$ \hspace{3cm} 4. $9 + 2y < 7$

5. $\frac{x}{2} + 12 > 10$ \hspace{3cm} 6. $6t - 5 \geq -23$
Reteaching 7-7

Transforming Formulas

Solve the surface area formula \( s = 2\pi r^2 + 2\pi rh \) for \( h \).

\[
s = 2\pi r^2 + 2\pi rh
\]

\[
s - 2\pi r^2 = 2\pi r^2 - 2\pi r^2 + 2\pi rh
\]

Subtract \( 2\pi r^2 \) from each side.

\[
s - 2\pi r^2 = 2\pi rh
\]

Simplify.

\[
\frac{s - 2\pi r^2}{2\pi r} = \frac{2\pi rh}{2\pi r}
\]

Divide each side by \( 2\pi r \).

\[
\frac{s - 2\pi r^2}{2\pi r} = h
\]

Simplify.

Solve for the indicated variable.

1. \( y = mx + b \), for \( x \)

2. \( y = mx + b \), for \( m \)

3. \( p = 6s \), for \( s \)

4. \( A = \frac{1}{2}h(B + b) \), for \( h \)

5. \( I = Prt \), for \( P \)

6. \( y = \frac{2}{3}x - 5 \), for \( x \)

7. \( t = 0.05p \), for \( p \)

8. \( V = lwh \), for \( w \)

9. \( k = \frac{1}{2}mv^2 \), for \( m \)

10. \( W = p(V - L) \), for \( V \)

11. \( F = \frac{Gm_1m_2}{r^2} \), for \( G \)

12. \( W = p(V - L) \), for \( L \)

13. \( V = \frac{h}{c}v - \frac{E}{c} \), for \( e \)

14. \( mv = (m + M)u \), for \( m \)
Reteaching 7-8

Find the balance in an account when $500 is deposited at 4% interest compounded semi-annually for 2 years.

The table shows the interest and balance for each half year.

<table>
<thead>
<tr>
<th>Principal at Beginning of Period</th>
<th>Interest</th>
<th>Balance</th>
</tr>
</thead>
<tbody>
<tr>
<td>½ year: $500</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 year:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1½ year:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 year:</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The balance after 2 years is $541.21.

You can also find the balance with the formula $B = p(1 + r)^n$, where $B$ is the ending balance. The principal $p$ is 500. The rate is for a half year; 4% annual interest equals 2% per half year. Thus $r$ is 0.02. The number of compounding periods $n$ is 4, because there are 4 half years in 2 years.

\[
B = p(1 + r)^n
\]

\[
B = 500(1 + 0.02)^4 \quad \text{Substitute.}
\]

\[
B = 541.22 \quad \text{Use a calculator. Round to the nearest cent.}
\]

With the formula, the ending balance is $541.22. The difference is due to rounding error.

Find the ending balance when $1,500 is deposited at 6% interest compounded semi-annually for 2 years.

1. Use a table.

<table>
<thead>
<tr>
<th>Principal at Beginning of Period</th>
<th>Interest</th>
<th>Balance</th>
</tr>
</thead>
<tbody>
<tr>
<td>½ year: $1,500</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 year:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1½ year:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 year:</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2. Use the formula:

\[
B = p(1 + r)^n = \quad = \quad
\]