Skill Builder 2.1
The Addition Property of Equality

Solve each algebra equation. Complete the puzzle at the bottom to see if your work is correct.

1. \(7x - 6 = 6x - 1\)  
   O 10
   A 5

2. \(4.5 + x = 4.5\)  
   B -4
   I 2

3. \(x + \frac{7}{2} = \frac{13}{2}\)  
   E 1.5
   S -10

4. \(3.5 = x + 2\)  
   N 0.6
   L 0

5. \(7(x + 4) = 6x + 24\)  
   R \(\frac{1}{2}\)

6. \(x - 1 = -\frac{1}{2}\)  
   U 11
   F 6

7. \(2x = x + 5\)  
   G 3

8. \(2(x-1) = x\)  
   K 9

9. \(x + 20 = 10\)

10. \(18 = x + 12\)

11. \(4(x - 2) = 3(x + 1)\)

12. \(x + 11.4 = 12\)
Circle the equations in each row that have the same solutions.

1. a. $2x = 8$ b. $x = -2x$ c. $-6x = -24$ d. $3x + 8 = 2x + 12$

2. a. $x = -3$ b. $-4x = 12$ c. $\frac{1}{6}x = -\frac{1}{2}$ d. $3x = 6x + 3$

3. a. $\frac{2}{3}x = 12$ b. $4(x + 2) = 16$ c. $x = 18$ d. $x = 8$

4. a. $6(x - 3) = 5x - 8$ b. $4(x + 2) = 16$ c. $15 - x = 25$ d. $3x + 7 = 5x - 13$

5. a. $3x + 10 = 4x + 5$ b. $-12x = -60$ c. $x = 5$ d. $-x = -5$

Solve each equation. Show your steps.

6. $\frac{x}{6} = -2$

7. $25 + x = 5x + 1$

8. $6x + 3 = 7x$

9. $2y - 8 = 2(y + 3)$

10. $(a - 3) = 3(a + 5)$

11. $-18 - 3(x - 4) = -3x - 6$

12. $5y = 6y - 4$

13. $a + 10 = 2a - 4$

14. $\frac{3}{4}x = 6$

15. $9(2 - y) + 5 = 4y - 16$
Skill Builder 2.3
Solving Linear Equations

Solve each equation. Place the correct answer in the blank beside each equation.

_____ 1. $2(x - 2) = 5(x + 1)$
   a. $\frac{9}{7}$
   b. 3
   c. $-\frac{7}{3}$
   d. $-3$

_____ 2. $6x + 2x - x = 10 + 4$
   a. $-2$
   b. $\frac{14}{9}$
   c. $\frac{7}{4}$
   d. 2

_____ 3. $\frac{x}{3} - 2 = 8$
   a. 30
   b. 10
   c. $-10$
   d. 18

_____ 4. $2(x + 4) = 2x - 8$
   a. no solution
   b. 4
   c. all real numbers
   d. $-4$

_____ 5. $\frac{x}{2} - \frac{5}{3} = \frac{3x}{4} - \frac{1}{6}$
   a. $-6$
   b. 3
   c. $-3$
   d. 6

_____ 6. $2(6x - 4) = -2$
   a. $\frac{1}{2}$
   b. $-\frac{1}{2}$
   c. 2
   d. no solution

_____ 7. $2x + 4 = x + 4$
   a. 8
   b. $\frac{8}{3}$
   c. 0
   d. all real numbers

_____ 8. $2x + 4x - 6x = 8$
   a. 0
   b. 8
   c. no solution
   d. all real numbers

_____ 9. $3(4x + 5) = -33$
   a. 4
   b. $\frac{1}{4}$
   c. $\frac{7}{3}$
   d. $-4$

_____ 10. $4x - (2x + 5) = 11$
   a. 8
   b. 3
   c. $-8$
   d. $-3$

S-11
Skill Builder 2.4
Formulas and Percents

Solve each formula for \( m \).
1. \( y = mx + b \)
2. \( am + p = t \)
3. \( p + m - h = v \)

Solve each formula for \( A \).
4. \( \frac{2A}{b} = h \)
5. \( \frac{A}{w} = l \)
6. \( 3b - AW = P \)

7. Fill in the table.

<table>
<thead>
<tr>
<th></th>
<th>Decimal</th>
<th>Fraction</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.45</td>
<td>45/100</td>
<td>45%</td>
<td></td>
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<tr>
<td>a.</td>
<td></td>
<td></td>
<td>23%</td>
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<tr>
<td>b.</td>
<td>2 3/100</td>
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<tr>
<td>c.</td>
<td>0.08</td>
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<td></td>
</tr>
<tr>
<td>d.</td>
<td>27/10</td>
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8. Fill in the table.

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<tr>
<th>Original Amount</th>
<th>New Amount</th>
<th>Decrease</th>
<th>% Decrease</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. $1200</td>
<td>$885</td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. $2500</td>
<td>$2100</td>
<td></td>
<td></td>
</tr>
<tr>
<td>c. $45</td>
<td>$36</td>
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<td></td>
</tr>
</tbody>
</table>
Skill Builder 2.5
An Introduction to Problem Solving

Match the following mathematical expressions/equations to the English phrase/statement. Read carefully.

1. A number decreased by five.
2. The quotient of five and a number is four.
3. Three more than twice a number is five.
4. Eight less than a number.
5. A number increased by two is three times the number.
6. Twice the difference of a number and four is six.
7. Eleven is the same as a number less four.
8. Three times a number increased by 4 is seven.
9. Two less than six times a number is five.
10. The difference of a number and four is ten.
11. Nine more than the product of eight and a number.

a. \(2x + 3 = 5\)   b. \(2x - 4 = 6\)
c. \(x - 8\)   d. \(3x + 4 = 7\)
e. \(11 = x - 4\)   f. \(x - 5\)
g. \(8x + 9\)   h. \(2 - 6x = 5\)
i. \(x + 3 = 5\)   j. \(5 = 4\)
k. \(3x = 7 + 4\)   l. \(x + 2 = 3x\)
m. \(5 - x\)   n. \(11 = 4 - x\)
o. \(x ÷ 5 = 4\)   p. \(x - 4 = 10\)
q. \(\frac{8}{x} + 9\)   r. \(8 - x\)
s. \(6x - 2 = 5\)   t. \(2(x - 4) = 6\)
u. \(x = 10 - 4\)
### Fill in the table.

<table>
<thead>
<tr>
<th>Equation</th>
<th>Graph</th>
<th>Set Builder Notation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. ( x \geq -4 )</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. ( { x \mid x &lt; 2 } )</td>
<td></td>
<td></td>
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<tr>
<td>3. ( x \geq 3 )</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. ( { x \mid x &gt; \frac{1}{2} } )</td>
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<td></td>
</tr>
<tr>
<td>5. ( x &lt; 4 )</td>
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<td></td>
</tr>
<tr>
<td>6. ( { x \mid x \leq \frac{5}{3} } )</td>
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<tr>
<td>7. ( 6x &lt; 4 + 6x )</td>
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<tr>
<td>8. ( { x \mid x &lt; 0 } )</td>
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<tr>
<td>9. ( 2x \geq 2x + 6 )</td>
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<tr>
<td>10. ( { x \mid x &gt; -3.5 } )</td>
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</tbody>
</table>

### Fill in the blank:

When multiplying or dividing both sides of an inequality by a negative number, ______________ the inequality symbol.