Simplify. Show all your Work

1. \(3x^2 - 3x + 5 - 5x - 9\)  
2. \(5x + 3 + y - x - 7\)  
3. \(-4(3x - 7)\)

4. \(6 + 2(3x - 8) - 5x\)  
5. \(4y - 3(x + 2y) + 7x\)  
6. \((2x - 5) - (7 + 6x)\)

Solve. (Show all work and justify each step using a Property of Equality)

7. \(-84 = x - 37\)  
8. \(\frac{x}{6} = -15\)  
9. \(-78 = -3x\)

10. \(-6x + 32 = 86\)  
11. \(24 = -6 - 9x\)  
12. \(-\frac{4}{7}x + 18 = 6\)

Determine what values for \(a\) and \(b\) make each equation true.

13. \(5x + b - 7x - 3 = ax - 8\)  
14. \(-6(ax + b) = -12x - 42\)  
15. \(a(3x + b) = 12x - 20\)

\(a = \quad b = \quad a = \quad b = \quad a = \quad b = \)
16. Sarah is a sales representative for a school supply company and earns a month salary of $1,750 plus a 4.5% commission on her sales. Last month she sold $35,000 worth of school supplies. 18% of her monthly paycheck goes into her retirement account. How much money did Sarah put into her retirement account last month?

17. Rachel invested $9,500 in a savings account that earns 2.75% simple interest. How much money will she have in total (principle + interest) after 3 years?

18. Izak bought a new 3D 70-inch HDTV on sale for 35%-off the original price of $3,289. The sales tax was 10.5%. What was the total cost of the 3D 60-inch HDTV on?

19. Tom’s catering service makes their favorite punch for important events. The table below shows how many liters of grape juice and apple juice Tom uses for each of his serving options.

<table>
<thead>
<tr>
<th>Serving Options</th>
<th>Sm.</th>
<th>Med.</th>
<th>Lg.</th>
<th>XL</th>
<th>XXL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grape Juice</td>
<td>2</td>
<td>6</td>
<td>8</td>
<td>10</td>
<td>20</td>
</tr>
<tr>
<td>Apple Juice</td>
<td>3</td>
<td>9</td>
<td>12</td>
<td>15</td>
<td>30</td>
</tr>
</tbody>
</table>

**Part A:** Graph these values to the right.

**Part B:** Is the amount of grape juice proportional to the amount of apple juice? Explain your answer.

20. Tom used 48 ounces of flour and 12 ounces of yeast to make 60 ounces of dough for baking bread. What part of every ounce of dough is flour?