Algebra 2 Unit 5 Worksheet 6

Solve each equation by completing the square.

1. \( x^2 + 4x - 140 = 0 \)  
2. \( x^2 - 6x = -1 \)
3. \( x^2 + 2x + 2 = 0 \)  
4. \( x^2 - 8x = -60 \)

Solve by completing the square.

5. \( 2k^2 + 16k = -12 \)  
6. \( 3x^2 + 42x = -24 \)
7. \( 4x^2 - 40x - 12 = 0 \)  
8. \( 3s^2 + 6s + 9 = 0 \)
9. \( 7t^2 + 28t + 56 = 0 \)

Find the value of x

10. Area of rectangle = 50

11. Area of parallelogram = 48

\[
\text{Area of rectangle} = \text{length} \times \text{width} = x(x + 10)
\]

\[
\text{Area of parallelogram} = \text{base} \times \text{height} = x(x + 6)
\]

Solve by completing the square.

12. \( 4x^2 - 16x - 11 = 0 \)  
13. \( 2x^2 + 24x = -25 \)
14. \( 5x^2 + 10x + 7 = 0 \)  
15. \( 8x^2 - 48x = -135 \)
16. What is the next step in completing the square to solve \( x^2 + 6x = 1 \) ?
   A. \( x^2 + 6x + 3 = 1 + 3 \)
   B. \( x^2 + 6x + 9 = 1 + 9 \)
   C. \( x(x + 6) = 1 \)
   D. \( x^2 + 6x - 1 = 0 \)
17. What is the next step in completing the square to solve \( 4x^2 + 8x = 8 \) ?
   A. \( 4x(x + 2) = 8 \)
   B. \( x^2 + 2x = 8 \)
   C. \( x^2 + 2x = 2 \)
   D. \( 4x^2 + 8x + \left( \frac{8}{2} \right)^2 = 8 \)
18. What number should be added to both sides to complete the square to solve $x^2 + 16x = 4$?
   A. 4   B. 8   C. 16   D. 64

19. What number should be added to both sides to complete the square to solve $x^2 - 10x = 2$?
   A. 5   B. -5   C. 25   D. -25

20. Which step is the first incorrect step in solving the following equation?
   \[2x^2 + 4x - 6 = 0\]
   Step 1: \[2x^2 + 4x = 6\]
   Step 2: \[x^2 + 2x = 3\]
   Step 3: \[x^2 + 2x + 1 = 3\]
   Step 4: \[(x + 1)^2 = 3\]
   Step 5: \[x + 1 = \pm\sqrt{3}\]
   Step 6: \[x = -1 \pm \sqrt{3}\]
   A. Step 2   B. Step 3   C. Step 4   D. Step 5

21. Which student solved the following equation correctly? $x^2 + 12x = 27$
   
   **Abe**
   \[x^2 + 12x = 27\]
   \[x(x + 12) = 27\]
   \[x = 27 \quad \text{or} \quad x + 12 = 27\]
   \[x = 27 \quad \text{or} \quad x = 15\]

   **Bill**
   \[x^2 + 12x = 27\]
   \[x^2 + 12x + 36 = 27\]
   \[x^2 + 2x + 1 = 3\]
   \[(x + 1)^2 = 3\]
   \[x + 1 = \pm\sqrt{3}\]
   \[x = -1 \pm \sqrt{3}\]

   **Charles**
   \[x^2 + 12x = 27\]
   \[x^2 + 12x + 36 = 63\]
   \[(x + 6)^2 = 63\]
   \[x + 6 = \pm\sqrt{63}\]
   \[x = -6 \pm 3\sqrt{7}\]

   **Dave**
   \[x^2 + 12x = 27\]
   \[x^2 + 12x - 27 = 0\]
   \[(x + 3)(x + 9) = 0\]
   \[x = -3 \quad \text{or} \quad x = -9\]