Name: Date:

Instruction: Factor and solve the following equations. Show your work.

1. $\boxed{7x(4x+5); x = -\frac{5}{4}, 0}$

2. $\boxed{(3p-2)(p+4); p = -4, \frac{2}{3}}$

3. $\boxed{(3x-1)(x+2); x = -2, \frac{1}{3}}$

4.

$$\begin{aligned} 12y^2 + 57y + 63 &= 0 \\ 3(4y^2 + 19y + 21) &= 0 \\ \boxed{3(4y+7)(y+3)} &= 0 \\ x &= \boxed{-3, -\frac{7}{4}} \end{aligned}$$

5. This problem may have been graded incorrectly.

$$\begin{aligned} 12x^2 + 8 &= 20x \\ 12x^2 - 20x + 8 &= 0 \\ 4(3x^2 - 5x + 2) &= 0 \\ \boxed{4(3x-2)(x-1)} &= 0 \\ x &= \boxed{\frac{2}{3}, 1} \end{aligned}$$

6.

$$\begin{aligned} 6x^2 - 12x + 6 &= 0 \\ 6(x^2 - 2x + 1) &= 0 \\ \boxed{6(x-1)^2} &= 0 \\ x &= \boxed{1} \end{aligned}$$

7. $\boxed{(5x-9)(x-1); x = 1, \frac{9}{5}}$

8.

$$\begin{aligned} 3(x-1)^2 + 5x &= 5 \\ 3(x^2 - 2x + 1) + 5x &= 5 \\ 3x^2 - 6x + 3 + 5x &= 5 \\ 3x^2 - x + 3 &= 5 \\ 3x^2 - x - 2 &= 0 \\ \boxed{(3x+2)(x-1)} &= 0 \\ x &= \boxed{-\frac{2}{3}, 1} \end{aligned}$$

9. $\boxed{(3x-10)(2x+3); x = -\frac{3}{2}, \frac{10}{3}}$

10. $\boxed{(2x-5)^2; x = \frac{5}{2}}$