

Direction: Write neatly; show your work in an organized fashion. Factor Completely (#1 - #8)

1. $36mn - 9m^2n^2$	2. $9t^3 - 12t^2 + 3t - 4$
3. $z^2 + 20z + 99$	4. $5b^2 + 25b - 120$
5. $5c^2 + c - 18$	6. $12x^2 + 28x - 24$
7. $a^2 - 14a + 49$	8. $25m^2 - 4n^2$
9. Solve the equation: $2y^2 + 12y = -10$	10. The length of a rectangle is 2 more than twice the width. The area is 60 in^2 . Find the dimensions.

<p>1. $36mn - 9m^2n^2$</p> $= 9mn(4 - mn)$	<p>2. $9t^3 - 12t^2 + 3t - 4$</p> $= 3t^2(3t - 4) + 1(3t - 4)$ $= (3t^2 + 1)(3t - 4)$
<p>3. $z^2 + 20z + 99$</p> $= (z + 9)(z + 11)$	<p>4. $5b^2 + 25b - 120$</p> $= 5(b^2 + 5b - 24)$ $= 5(b - 3)(b + 8)$
<p>5. $5c^2 + c - 18$</p> $= (5c - 9)(c + 2)$	<p>6. $12x^2 + 28x - 24$</p> $= 4(3x^2 + 7x - 6)$ $= 4(3x - 2)(x + 3)$
<p>7. $a^2 - 14a + 49$</p> $= (a - 7)^2$	<p>8. $25m^2 - 4n^2$</p> $= (5m + 2n)(5m - 2n)$
<p>9. Solve the equation:</p> $\begin{array}{r} 2y^2 + 12y = -10 \\ \underline{\quad + 10 \quad + 10} \end{array}$ $2y^2 + 12y + 10 = 0$ <p>so,</p> $2(y^2 + 6y + 5) = 0$ $2(y + 5)(y + 1) = 0$ <p>so $y + 5 = 0$ or $y + 1 = 0$</p> $\begin{array}{r} \underline{-5 \quad -5 \quad -1 \quad -1} \end{array}$ <p>so $y = -5$ or -1</p>	<p>10. The length of a rectangle is 2 more than twice the width. The area is 60 in^2. Find the dimensions.</p> <p>Let $x = \text{width}$ So $2x + 2 = \text{length}$</p> <p>Area = (width)(length)</p> <p>So</p> $60 = (x)(2x + 2)$ $60 = 2x^2 + 2x$ $\begin{array}{r} \underline{-60 \quad -60} \end{array}$ $0 = 2x^2 + 2x - 60$ $0 = 2(x^2 + x - 30)$ $0 = 2(x + 6)(x - 5)$ <p>So</p> $\begin{array}{r} x + 6 = 0 \text{ or } x - 5 = 0 \\ \underline{-6 \quad -6 \quad +5 \quad +5} \\ x = -6 \quad \text{or } x = 5 \end{array}$ <p>But width can't be -6 So width is 5 inches And length is 12 in.</p>