

WARM-UP

1. Solve: $-6 + 2(d - 9) = 8d$

$$\begin{array}{r} -6 + 2d - 18 = 8d \\ -2d \quad -2d \\ \hline -6 - 18 = 6d \\ -24 = 6d \\ \frac{-24}{6} = \frac{6d}{6} \\ -4 = d \end{array}$$

WARM-UP

2. Find the product: $(2y + 3)(y + 5)$

$$2y^2 + 13y + 15$$

3. Factor:

a) $x^2 - 7x - 18$ b) $x^2 - 5xy + 6y^2$

$$\begin{array}{l} \begin{array}{r} x \\ -18 \\ + \\ -7 \\ + \end{array} \\ (x-9)(x+2) \end{array} \quad \begin{array}{l} \begin{array}{r} x \\ 6 \\ -5 \\ + \end{array} \\ (x-3y)(x-2y) \end{array}$$

SOLVE THE EQUATION (FACTOR 1ST):

4. $n^2 - 7n - 30 = 0$

$$\begin{array}{r} \begin{array}{r} x \\ -30 \\ + \\ -7 \\ + \end{array} \\ (n-10)(n+3) = 0 \\ n-10=0 \quad n+3=0 \\ n=10 \quad n=-3 \end{array}$$

5. $m^2 + 22 = -23m$

$$\begin{array}{r} \begin{array}{r} x \\ 22 \\ + \\ 23 \end{array} \\ m^2 + 23m + 22 = 0 \\ (m+22)(m+1) = 0 \\ m+22=0 \quad m+1=0 \\ m=-22 \quad m=-1 \end{array}$$

FIND THE ZEROS OF THE FUNCTION (FACTOR 1ST):

6. $f(x) = x^2 - 14x - 51$

$$\begin{array}{r} \begin{array}{r} x \\ -51 \\ -17 \\ + \\ 3 \end{array} \\ 0 = x^2 - 14x - 51 \\ 0 = (x-17)(x+3) \\ x-17=0 \quad x+3=0 \\ x=17 \quad x=-3 \end{array}$$

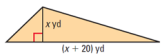
SOLVE THE EQUATION

7. $p(p + 19) = -34$

$$\begin{array}{r} \begin{array}{r} x \\ 34 \\ + \\ 19 \end{array} \\ p^2 + 19p = -34 \\ p^2 + 19p + 34 = 0 \\ (p+17)(p+2) = 0 \\ p = -17, -2 \end{array}$$

FIND THE DIMENSIONS OF THE SHAPE THAT HAS THE GIVEN AREA:

8. Area: 78 square yards



$$\begin{array}{r} \begin{array}{r} x \\ -15b \\ -6 \\ + \\ 20 \end{array} \end{array}$$

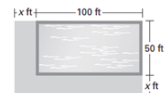
$h = 6 \text{ yd}$
 $b = 26 \text{ yd}$

Triangle Area

$$\begin{array}{l} A = \frac{1}{2}bh \\ 78 = \frac{1}{2}(x+20)(x) \\ 2(78) = \frac{1}{2}(x^2 + 20x) \\ 156 = x^2 + 20x \\ \begin{array}{r} -156 \\ -156 \end{array} \\ 0 = x^2 + 20x - 156 \\ 0 = (x+26)(x-6) \\ x = -26, 6 \end{array}$$

WORD PROBLEM PRACTICE:

9. **Patio Area** A community center is building a patio area along two sides of its pool. The pool is rectangular with a width of 50 feet and a length of 100 feet. The patio area will have the same width on each side of the pool.



- a. Write a polynomial that represents the combined area of the pool and the patio area.
- b. The combined area of the pool and patio area should be 8400 square feet. How wide should the patio area be?

$$\begin{array}{l} A = d \cdot w \\ A = (x+100)(x+50) \\ A = x^2 + 50x + 100x + 5000 \\ a) A = x^2 + 150x + 5000 \\ 8400 = x^2 + 150x + 5000 \\ \begin{array}{r} -8400 \\ -8400 \end{array} \\ 0 = x^2 + 150x - 3400 \\ 0 = (x+170)(x-20) \\ x = -170, 20 \end{array}$$