

Warm-Up

5/2/19

1. Find the area

$2x + 3$



$3x - 4$

$(2x+3)(3x-4)$

$2x + 3$

$3x$	$6x^2$	$9x$
-4	$-8x$	-12

$6x^2 + x - 12$

2. Factor Completely: $\frac{5z^2}{5} + \frac{50z}{5} + \frac{125}{5}$

$5(z^2 + 10z + 25)$

$(z^2 + 5z)(5z + 25)$

$z(z+5)5(z+5)$

$a=1$
 $b=10$
 $c=25$
 $ac=25$
 $\frac{5}{5}$

$5(z+5)^2$

3. Factor: $\frac{81x^2}{9} - \frac{9y^2}{9}$

$9(9x^2 - y^2)$

$9(3x+y)(3x-y)$

Abby graphed a linear equation with an **x-intercept of 4** and a **y-intercept of -12**, which function did she graph?

- ~~A. $-4x + y = -12$ $y = 4x + 12$~~ C. $4x - y = 12$ $y = 4x - 12$
~~B. $3x + y = -12$ $y = 3x + 12$~~ D. $3x - y = 12$

$(0, -12)$
 $(4, 0)$

$$\frac{y_2 - y_1}{x_2 - x_1} = \frac{0 - (-12)}{4 - 0}$$

$$\frac{12}{4} = 3$$

Jose graphed a **linear equation** with an **x-intercept of -2** and a **y-intercept of 10**, which function did he graph?

- A. $5x + y = -10$ C. $2x + y = -10$
 B. $-5x + y = 10$ D. $-2x + y = 10$

~~A. $y = -5x - 10$~~

~~C. $y = 2x - 10$~~

B. $y = 5x + 10$

D. $y = 2x + 10$

$(-2, 0)$
 $(0, 10)$

$$\frac{10}{2} = 5$$

Application

Find the length and width.

1.

$$A = 10x^3y^4 + 30xy$$

$$10xy(x^2y^3 + 3)$$

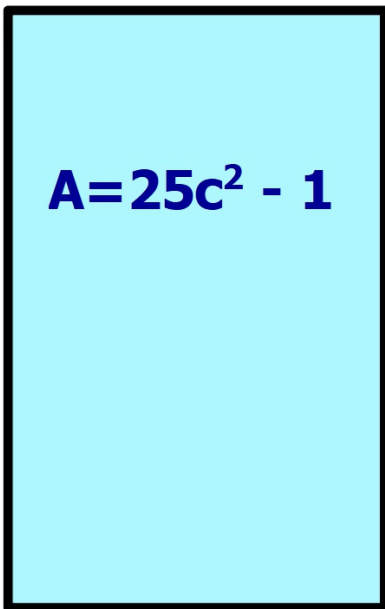
width

length

Application

Find the length and width.

2.



$$25c^2 - 1$$
$$(5c + 1)(5c - 1)$$

width

length

Application

Find the length and width.

3.

$$A = x^2 - 7x - 8$$

$$a=1 \quad b=-7 \quad c=-8$$

$$ac = -8$$
$$\begin{array}{r} 1 \overline{) -8} \\ \end{array}$$

$$(x^2 + x)(8x - 8)$$

$$\textcircled{x}(x+1) \textcircled{-8}(x+1)$$

$$(x-8)(x+1)$$

\uparrow length \uparrow width

Application

Find the length and width.

4.

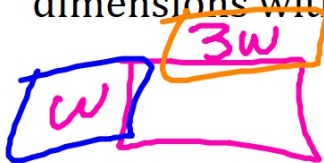
$$A = (2x^2 - 6x)(x + 7x - 21)$$

$$(2x)(x-3)(7)(x-3)$$

$$(2x+7)(x-3)$$

↑ length ↑ width

The length of Morgan's room is three times the width of her room. After some remodeling the area of Morgan's room is given by the trinomial $3w^2 + 8w + 4$ sq.ft. Find the increase in the dimensions of the room. (Hint: Factor $3w^2 + 8w + 4$ and compare the dimensions with the original.)



$$3w^2 + 8w + 4$$

$$(3w^2 + 2w)(w + 4)$$

$$(w)(3w + 2)(2)(3w + 2)$$

$$a=3$$

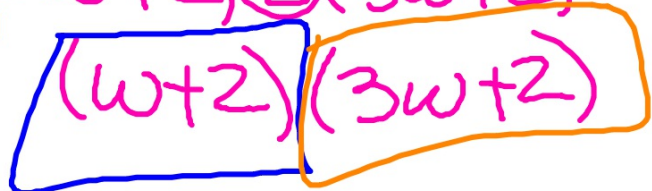
$$b=8$$

$$c=4$$

$$ac=12$$

$$\begin{array}{r} 2 \\ \hline 6 \end{array}$$

Increase of
2 ft



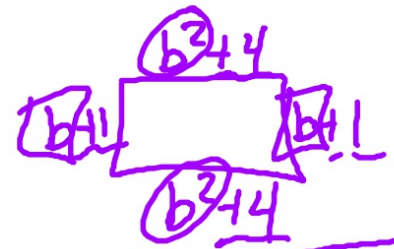
The area of a rectangular plastic sheet is given by $b^3 + b^2 + 4b + 4$ square inches. Find an expression for the perimeter of the sheet. (Hint : Factor $b^3 + b^2 + 4b + 4$ to find the length and width of the sheet. Use the perimeter formula for a rectangle, $P = 2L + 2W$).

$$(b^3 + b^2) + 4b + 4$$

$$b^2(b+1) + 4(b+1)$$

$$(b^2 + 4)(b+1)$$

↑ length ↑ width



$$P = 2b^2 + 2b + 10$$

A square parking area has an area equal to $36x^2 - 36x + 9$ meters. Find the side of the parking lot.

$$36x^2 - 36x + 9$$

$$9(4x^2 - 4x + 1)$$

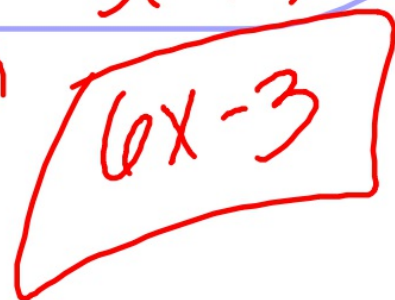
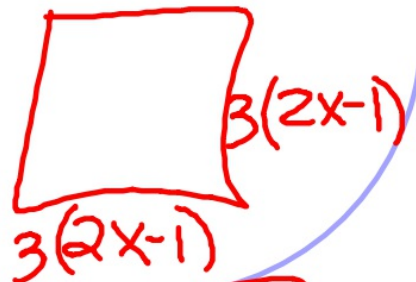
$$9(4x^2 - 2x)(2x + 1)$$
$$2x(2x - 1) - 1(2x - 1)$$

$$9(2x - 1)(2x - 1)$$

↑ width ↑ length

$$a=4 \quad b=-4$$
$$c=1$$

$$ac = \frac{4}{-2 \mid -2}$$



The length of a rectangular courtyard is given by the expression $2x - 3$. If the area is given by, $2x^2 + 5x - 12$, find the width of the room. (Hint: Factor the expression given for area.)

$$2x^2 + 5x - 12$$

$$(\cancel{2x^2 - 3x})(\cancel{+8x - 12})$$

$$\textcircled{x}(2x - 3)\textcircled{4}(2x - 3)$$

$$\boxed{(x + 4)(2x - 3)}$$

$$a=2 \quad b=5$$

$$c=-12$$

$$ac=-24$$

$$\begin{array}{r} \hline -3 \overline{) 8} \end{array}$$

The volume of a rectangular prism is $15x^3 + 70x^2 + 40x$. What are the possible dimensions of the prism? $V = lwh$

$$15x^3 + 70x^2 + 40x$$

$$5x(3x^2 + 14x + 8)$$

$$(3x^2 + 2x)(4x + 8)$$

$$x(3x+2)4(3x+2)$$

$$\rightarrow 5x(x+4)(3x+2)$$

↑
length

↑
width

↑
height

$$a=3 \quad b=14$$

$$c=8$$

$$ac=24$$
$$\begin{array}{r} 2 \overline{) 12} \end{array}$$