Warm-Up December 13, 2018

1. Find the root(s) of $y = -3x^2 - 6x + 2$

$a=-3 \quad b=-6 \quad c=2$

$\sqrt{60}$

$\sqrt{4\cdot 15}$

$2\sqrt{15}$

$$x=\frac{6\pm\sqrt{(-6)^2-4(-3)(2)}}{2(-3)}$$

$$x=\frac{6\pm\boxed{\sqrt{60}}}{-6}=\frac{6\pm2\sqrt{15}}{-6}=\{-2.29,.29\}$$

2. Find the vertex of $y = 2x^2 + 5x - 6$

$$x=\frac{-b}{2a}=\frac{-5}{2(2)}=\frac{-5}{4}=-1.25 \quad (-1.25,-9.125)$$

$$y=2(-1.25)^2+5(-1.25)-6=-9.125$$

3. Write the equation of the line in slope intercept form that passes through (4, -7), and $\boxed{(-2, 5)}$.

x y

$$m=\frac{5-(-7)}{-2-4}=\frac{12}{-6}=-2$$

$y=mx+b$

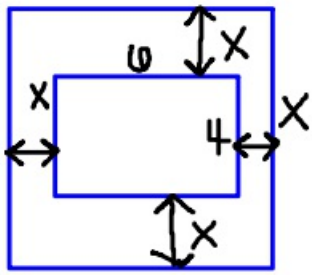
$5=(-2)(-2)+b$

$5=4+b$

$-4 \quad -4$

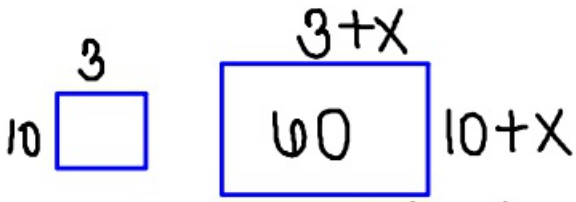
$1=b$

$y=-2x+1$



$$(2x+6)(2x+4)=48$$

$$4x^2+20x+24=48$$



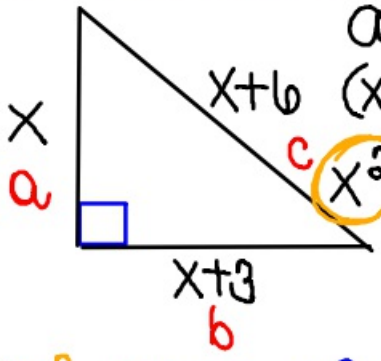
$$(x+10)(x+3)=60$$

$$x^2+13x+30=60$$

$$x^2+13x-30=0$$

$$(x+15)(x-2)=0$$

6.) The larger leg of a right triangle is 3 centimeters longer than its smaller leg. The hypotenuse is 6 centimeters longer than the smaller leg.
How many centimeters long is the smaller leg?



$$a^2+b^2=c^2$$

$$(x)^2+\boxed{(x+3)^2}=\boxed{(x+6)^2}$$

$$x^2+x^2+6x+9=x^2+12x+36$$

$$2x^2+6x+9=x^2+12x+36$$

$$-x^2-12x-36 \quad -x^2-12x-36$$

$$x^2-6x-27=0$$

$$(x+3)(x-9)=0$$

$$x+3=0 \qquad x-9=0$$

$$-3 \; -3 \qquad +9 \; +9$$

$$x=-3 \qquad x=9$$

$$ac=-27$$

-1	27
-3	9

9 cm

Products of Consecutive Numbers

Consecutive: 1, 2, 3--> n, n+1, n+2
Consecutive Even: 2, 4, 6--> n, n+ 2, n+4
Consecutive Odd: 7, 9, 11, --> n, n+2, n+4

answers should be!

1. The product of two negative consecutive integers is 56. Find the integers. $n, n+1$

$$n(n+1)=56$$
$$n^2+n=56$$
$$-56 \quad -56$$
$$n^2+n-56=0$$
$$(n-7)(n+8)=0$$
$$\cancel{n-7=0} \qquad n+8=0$$
$$\cancel{n=7} \qquad n=-8$$
$$n+1=-7$$

$ac=-56$

-1	56
-2	28
-4	14
-7	8

2. The product of two negative consecutive $\boxed{\text{odd}}$ integers is 99. Find the integers. $\rightarrow n, n+2$

$$n(n+2)=99$$

$$n^2+2n=99$$

$$-99 \quad -99$$

$$n^2+2n-99=0$$

$$(n+11)(n-9)=0$$

$$n+11=0$$

$$n=-11$$

$$n+2=-9$$

3. Find two consecutive odd integers such that the square of the smaller is 10 more than the larger.

$n, n+2$

$n+2$

$n^2 = 10 + (n+2)$

$n^2 = n + 12$

$-n-12 \quad -n-12$

$n^2 - n - 12 = 0$

$(n-4)(n+3) = 0$

$\cancel{n-4=0} \quad n+3=0$

$\cancel{n=4} \quad n=-3$

even!

$n+2=-1$

You Try:

1. The product of two negative consecutive integers is 42. Find the integers.

2. The product of two positive consecutive odd integers is 195. Find the integers.

3. The product of two positive consecutive even integers is 6 more than three times their sum. Find the integers.

answer should be!

$n, n+2$ $\quad + \quad$ $n+n+2$

$$n(n+2) = 6 + 3(2n+2)$$
$$n^2 + 2n = 6 + 6n + 6$$
$$n^2 + 2n = 6n + 12$$
$$- \quad 6n - 12 \quad - 6n - 12$$
$$n^2 - 4n - 12 = 0$$
$$(n+2)(n-6) = 0$$
$$\cancel{n+2=0} \qquad n-6=0$$
$$\cancel{n=-2} \qquad n=6$$
$$n+2=8$$