Change this Vertex Form equation of a quadratic:

$$y = -2(x + 5)^2 - 9$$

Into Standard Form

$$y = -2(x + 5)^{2} - 9$$

$$-2(x^{2} + 10x + 25) - 9$$

$$-2x^{2} - 20x - 50 - 9$$

$$= -2x^{2} - 20x - 59$$

Does this quadratic have a maximum or a minimum?

$$y = -3x^{2} + 12x - 7$$
 $y = -3x^{2} + 12x - 7$
 $z_{1} \le x_{2}$
 $z_{2} \le x_{3}$

What is the max/min value of this function? the y-value at the maximum

A y-coordinate is WHAT the function equals

 Find the VERTEX! 1st →LOS 2nd→y-coord of the vertex Find the maximum value of this function and when it occurs:

$$y = -5x^{2} - 30x + 18$$

$$LOS: \times -\frac{3D}{2(-5)} = -3$$

$$Vertex \left(-3\right) (45)$$
Max Value:

When max occurs: <= - 3

A company makes syringes. The following equation models their Profit as a function of the number of syringes made per hour.

$$P(s) = -0.45s^2 + 360s - 1250$$

$$5 = \frac{-360}{2(-.45)} = 60$$

- 1. Find the number of syringes that should be made per hour in order to maximize the company's Profit.
- 2. What is the maximum Profit?

The company will have a maximum profit of \$70,750 if they make 400 syringes per hour.

You can now do Hwk #17

USE GRAPH PAPER

Problems 4, 11, 19, 28, 30, 37-39, 45, 49

A company needs to minimize their costs. The equation below gives their weekly costs (C) as a function of the number of hours each employee works (h).

$$C(h) = 0.65h^2 - 45.5h + 876$$

Find the minimum costs the company can incur and how many hours each employee should work to reach this minimum.

LOS:
$$h = \frac{45.5}{2(.65)} - 35 \text{ hrs}$$

$$(35) = 79.75$$

The company will have a minimum cost of 79.75 if employees work 35 hours.

A ball is shot into the air with an initial velocity of 80 ft/sec from the top of a 50 ft tall building. The following equation models the height (ft) of the object as a function of time (sec).

$$h(t) = -16t^2 + 80t + 50$$

$$LOS = \frac{1}{2} = \frac{-80}{32} = 2.5$$

1. Find the time it takes the object to reach its maximum height.

2. Find the maximim height of the object.

Forms for the Equation of a Quadratic

Standard Form

$$y = ax^2 + bx + c$$

LOS: $x = \frac{-b}{2a}$

Vertex: $\left(\frac{-b}{2a}\right)$,

y - int: Replace x with zero C Vertex Form

$$y = a(x - h)^2 + k$$

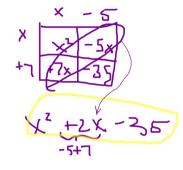
Vertex: (h,k)

LOS:
$$x = h$$

y - int: Replace x with zero it is NOT k Intercept Form (Factored Form)

Expand each

1.
$$(x-5)(x+7)$$



2.
$$(4w + 3)(2w - 9)$$

