demo

https://www.desmos.com/calculator/yhbu6l5h8b

be sure to go over the question 24
on HW to establish the same "a"
value in both forms

Volunteer

to sketch
without a
GDC.

$$y = - \ (x-6)^2 - 2$$

→ 6
↓ -2

$y = x^2$

$(0,0)$

$(6, -2)$
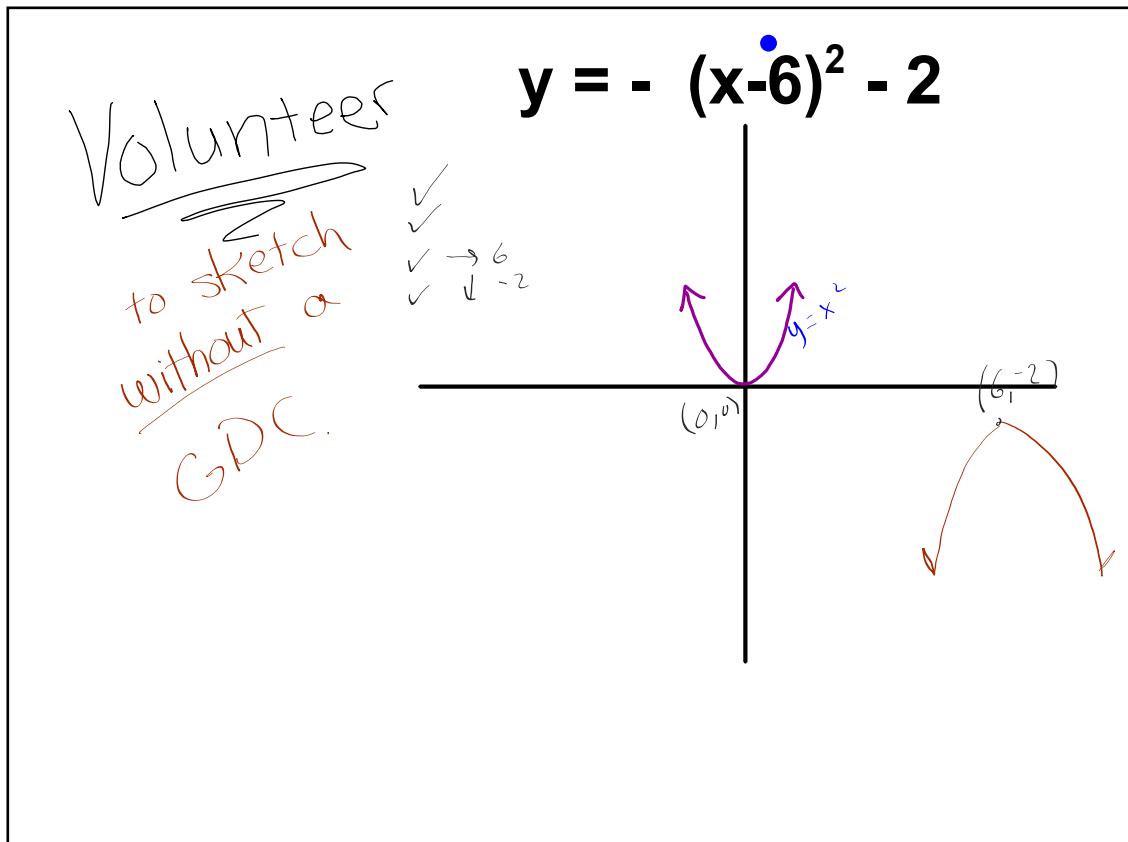
We had a Quiz yesterday

(if absent you should talk to me today before you leave.)

Also... if you don't make up LCQ's within a reasonable amount of time, they get scored as a zero and will mostly likely count as one of the dropped LCQ's for you.
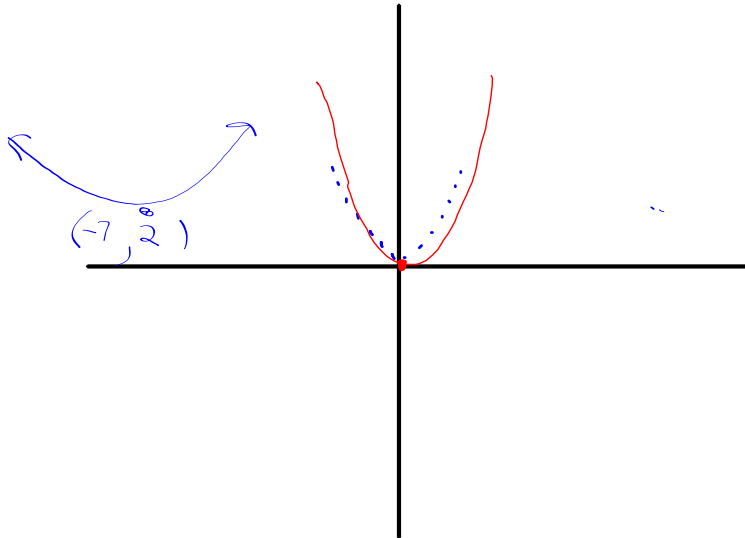

Let me know if you have questions from ② — 23 to 29

Do question #1 on the Warm Up

only!
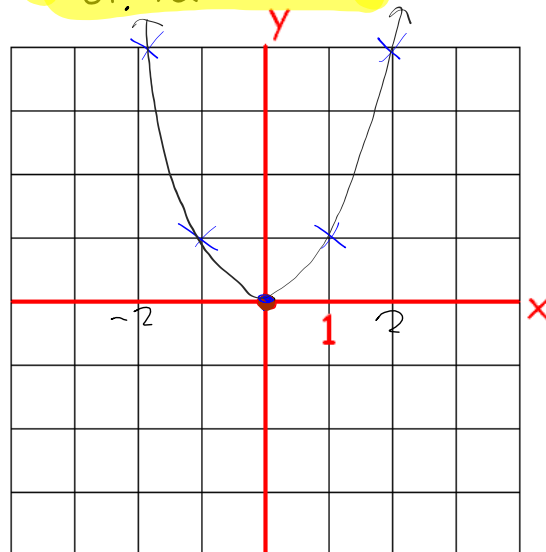
① Sketch $y = \frac{1}{3}(x+7)^2 + 2$
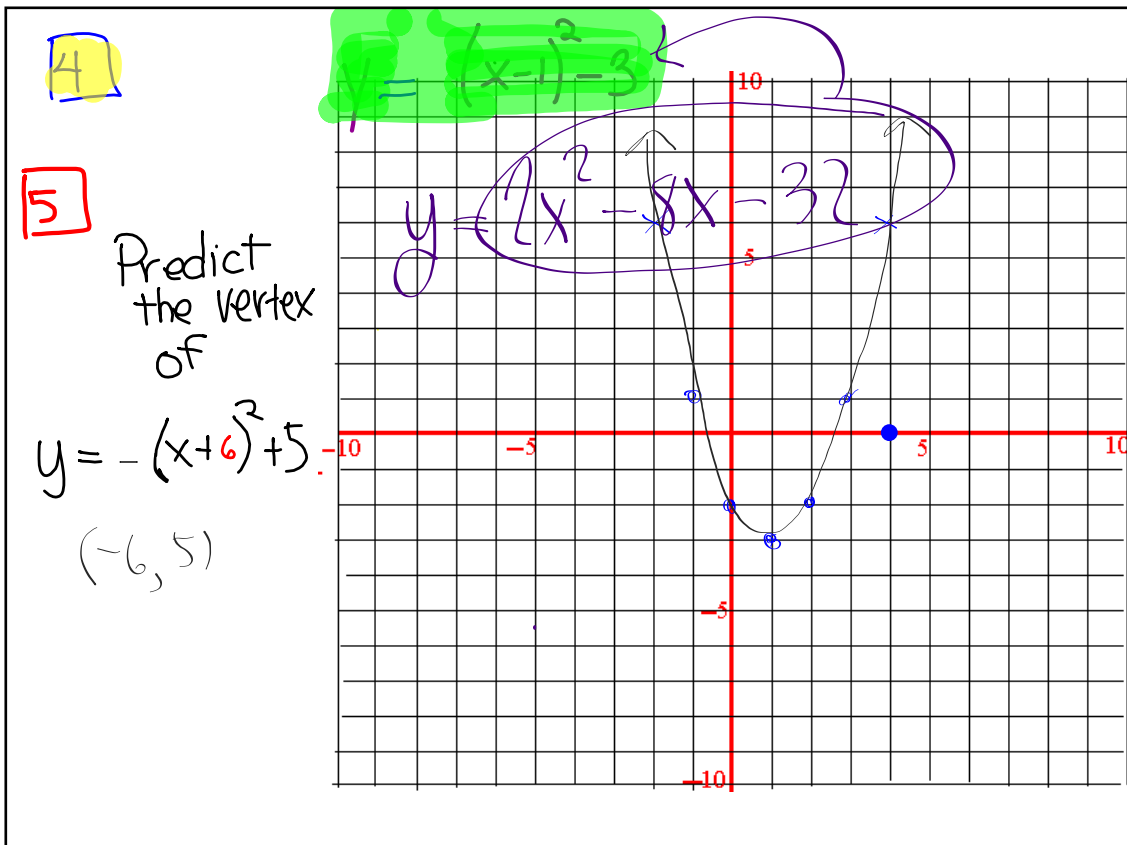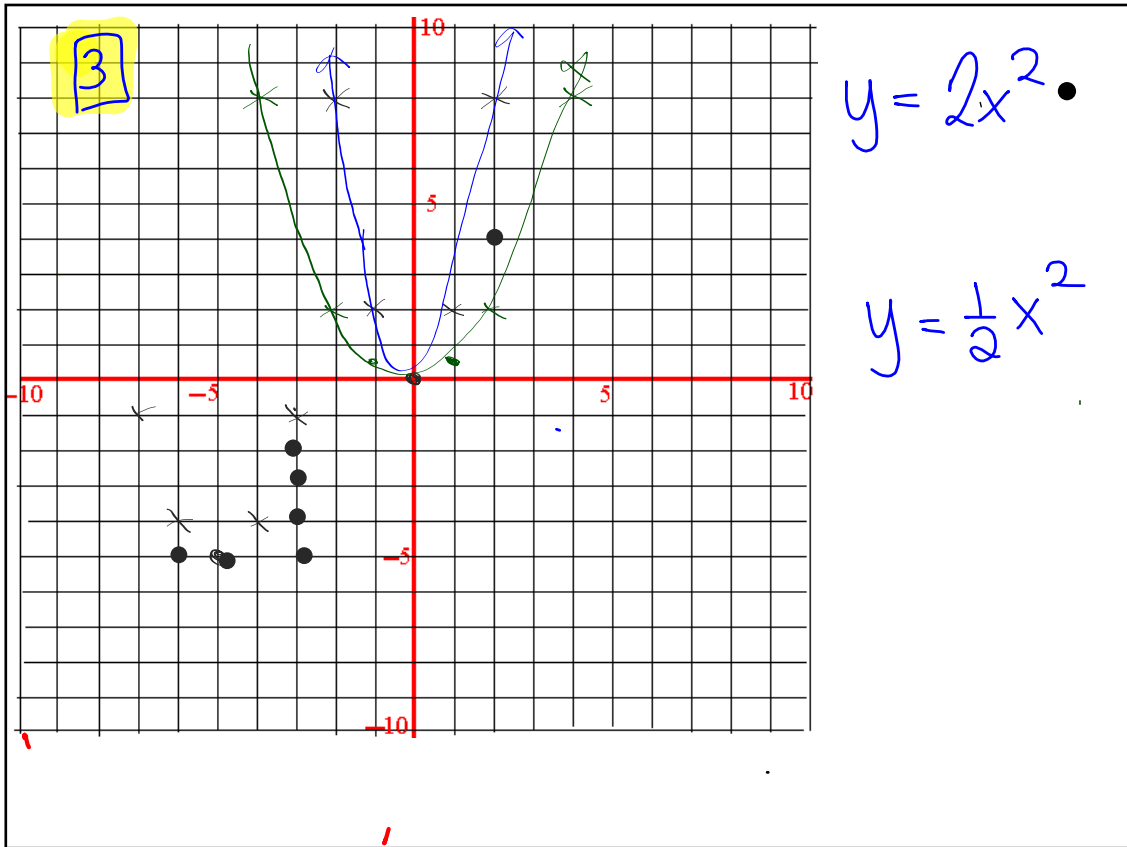
without GDC

$y = (x)^2$

(-7, 2)

②

Quick Graphs
of Parabolas

Graphing "Tricks"
to speed up
detailed graphing

$y = x^2$

3

$y = 2x^2$

$y = \frac{1}{2}x^2$

4

$y = (x-1)^2 - 3$

$y = 2x^2 - 8x - 3$

5

Predict the vertex of

$y = -(x+6)^2 + 5$

$(-6, 5)$

limited

Questions
on HW

25c   downward opening

Vertex $(-7, -2)$

Vert. compression of 0.6

$$y = -0.6(x+7)^2 - 2$$

24

$y = 3(x-1)^2 - 5$

$3(x-1)(x-1) - 5$

$(3x-3)(x-1) - 5$

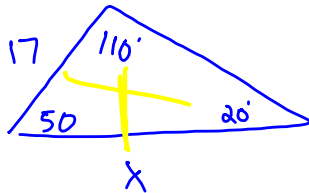$3x^2 - 3x - 3x + 3 - 5$

$3x^2 - 6x + 3 - 5$

$y = 3x^2 - 6x - 2$

$(-1)^2 = \cancel{X}$

$(x-1)(x-1) = \cancel{x^2 + 1}$

(c) Why should "a" be the same in both forms?

Same graph so must have the same stretch factor

28 a

17   110°   50   20°   X

$\dfrac{\sin A}{a} = \dfrac{\sin B}{b}$

$\dfrac{\sin 20°}{17} = \dfrac{\sin 110°}{X}$

29   Parents spend $300/mo$ food

$100\% + 4\% = 104\%$

(a) 5 years <u>inflation</u> $y = 300(1.04)^5$

(b) <u>x - years from</u>

$y = 300(1.04)^x$

27

$\sqrt{72}$

$\sqrt{4}\sqrt{18}$ $\sqrt{9}\sqrt{8}$ $\sqrt{36 \cdot \sqrt{2}}$
$2\sqrt{9}\sqrt{2}$ $\boxed{6\sqrt{2}}$
$2 \cdot 3 \cdot \sqrt{2}$

$\sqrt{30}$

$6\sqrt{2}$

4
9
16
25
36

24c

$$y = 3(x-1)^2 - 5 \qquad y = 3x^2 - 6x - 2$$

$$y = 3(x-1)(x-1) - 5$$
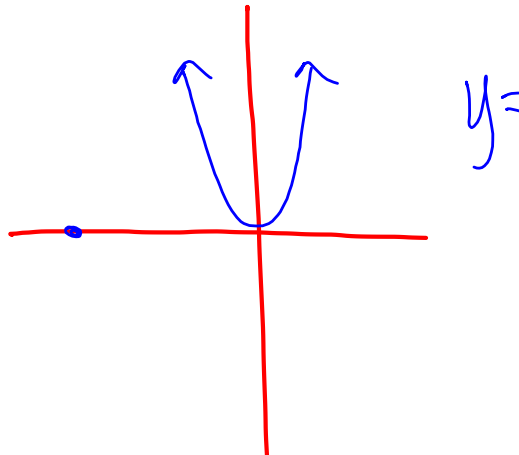
$$3x^2$$

25b   Parabola   stretch factor of 10

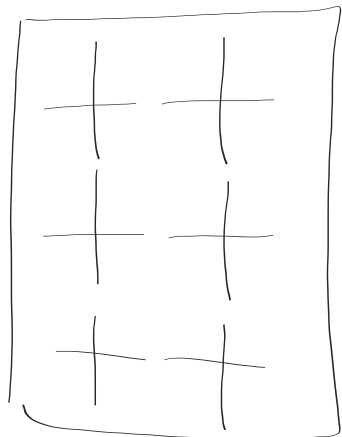   Vertex on x-axis at $x = -6$

a)

b)

c)

$$y =$$

26

$(3, -7)$ slope $\dfrac{2}{3}$

$(3 ; -7)$

Today's objective(s)

Continue graphing parabolas given
graphing form

Graph from standard form
(by converting to graphing form)

Graphing Form of a Parabola

Parent: $y = x^2$

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

Desmos

Demo of Graphing Form of a Parabola.

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

Vertical
Stretch
factor

if negative
Parabola opens
down

horizontal
translation
constant

$$(x+3)^2$$

slide to
the left

Vertical
translation
constant

Partner
Sketching Activity

Pairs, one person is an A, the other
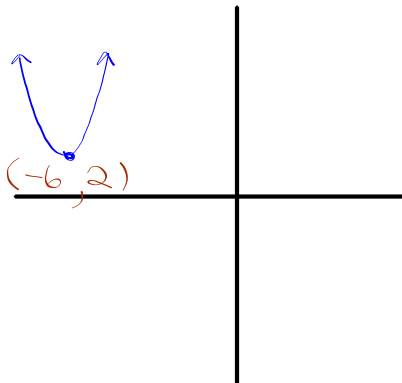a B.

Pairs should sit side by side

(A) sketches the graph on the left while B checks their answer (or coaches/helps) as needed
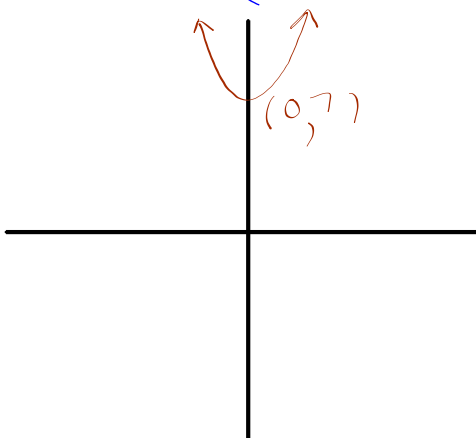
Switch Roles

Turn your GDC over or take it off your desk.

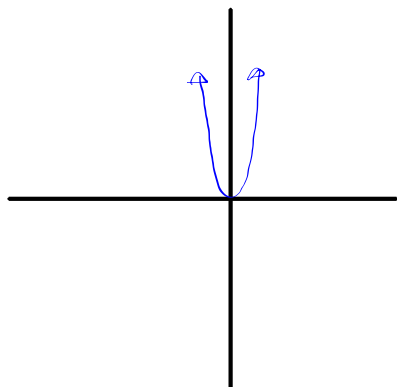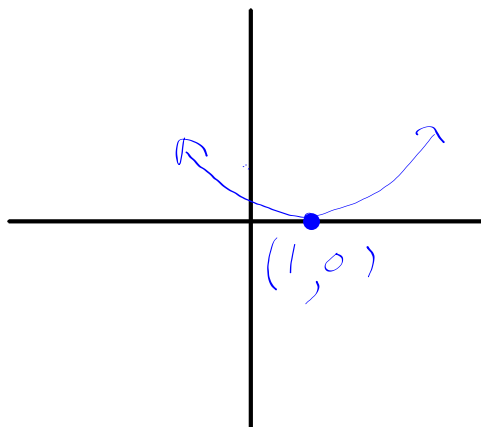Each pair will work on one sheet and will take turns.

ⓐ $y = (x + 6)^2 + 2$

$(-6, 2)$

ⓑ $y = (x)^2 + 7$

$= (x - 0)^2 + 7$

$(0, 7)$

ⓒ $y = 3x^2$

ⓓ $y = \frac{1}{2}(x - 1)^2$

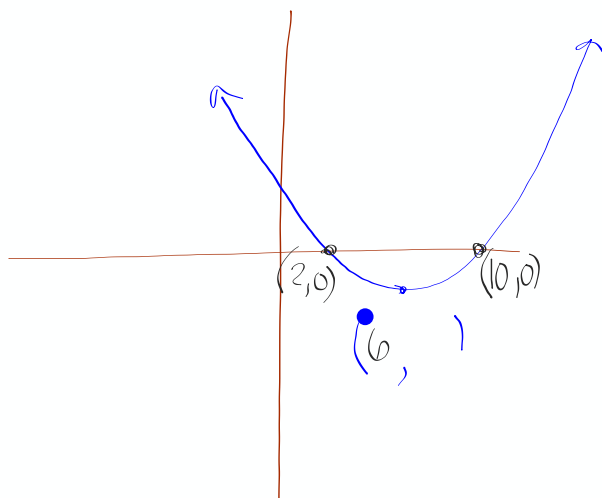$(1, 0)$

e $y = -(x-7)^2 + 6$

f $y = 2(x+3)^2 - 8$

$(7, 6)$

$(-3, -8)$
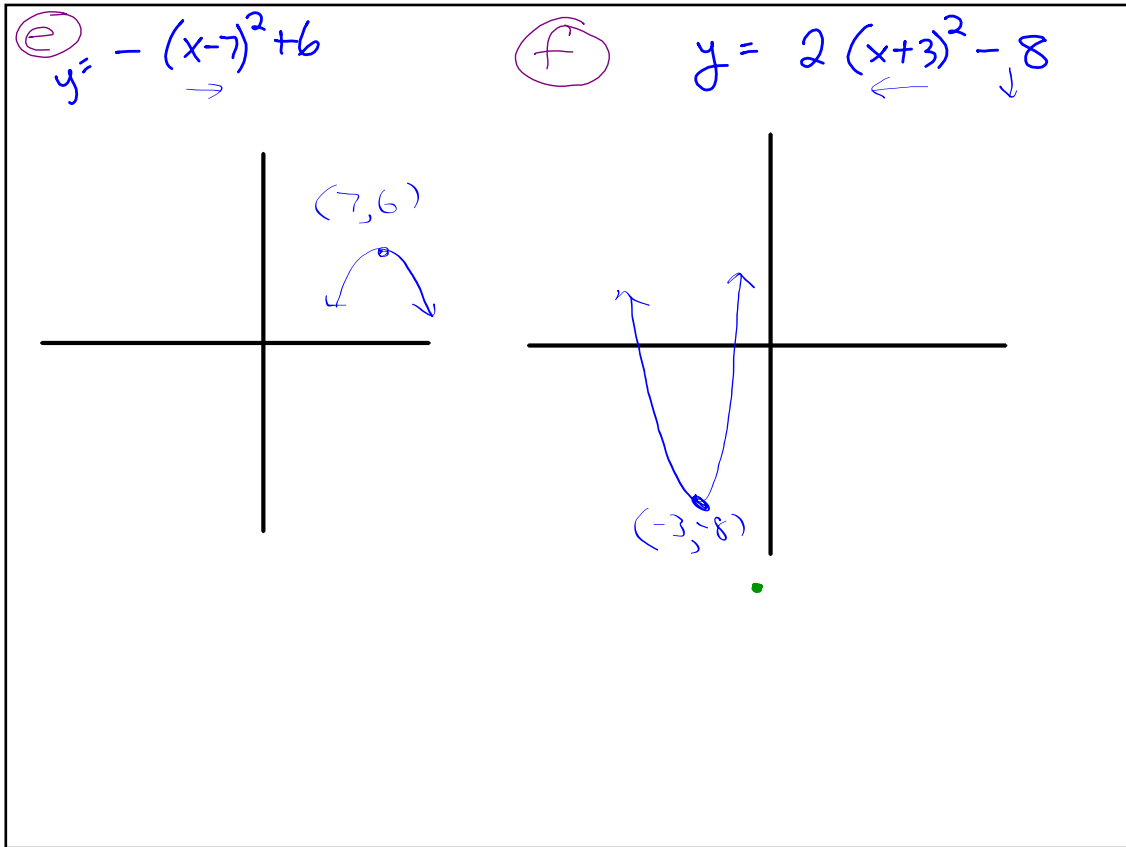
Convert standard form
to graphing form
(using x-intercepts)

$$y = x^2 - 4x + 11$$
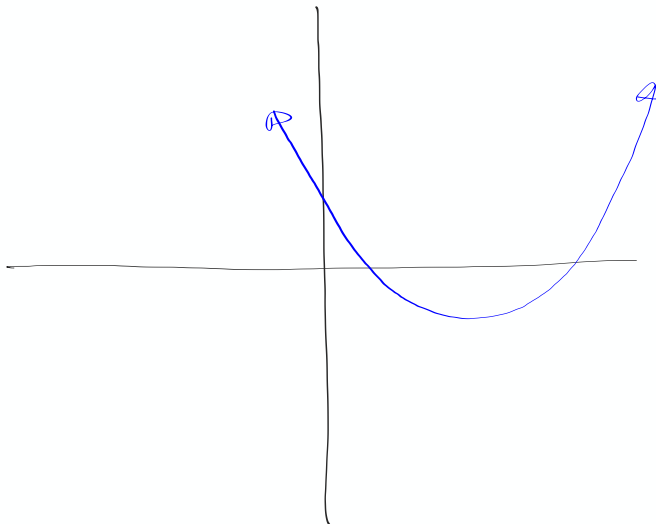std. form

$$y = (x-2)^2 + 7$$
graphing form

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

$(6, \quad)$

2   10

$$y = x^2 - 11x + 20$$

Convert $y = 2x^2 + 4x - 30$
to graphing
form

A) What is the stretch
factor ?

and orientation

$a = 2$

$y = 2x^2 + 4x - 30$

B) Find the x-intercepts
(and average them) $(3,0)$ $(-5,0)$
by •• setting $y=0$

$2x^2 + 4x - 30 = 0$ Average $\dfrac{3+{}^{-5}}{2} = \dfrac{-2}{2} = -1$

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

$2(x-3)(x+5) = 0$ Vertex $(-1, -32)$

$x-3=0$ $x+5=0$ $y = 2(-1)^2 + 4(-1) - 30$

$x=3$ $x=-5$ Graph Form $y = 2(x+1)^2 - 32$

X-intercepts

$2x^2 + 4x - 30 = 0$

$a = 2$ $X = \dfrac{-(4) \pm \sqrt{(4)^2 - 4(2)(-30)}}{2(2)}$

$b = 4$

$c = -30$

$X = \dfrac{-4 \pm \sqrt{256}}{4} =$ $\dfrac{-4+16}{4} = \dfrac{12}{4} = 3$

$= \dfrac{-4 \pm 16}{4}$ $\dfrac{-4-16}{4} = \dfrac{-20}{4} = -5$

Assignment:

2 - ... **35 - 38, 39abc, 40**

...... 41 is an _optional_ challenge

Ⓒ

$$y = 2x^2 + 4x - 30$$