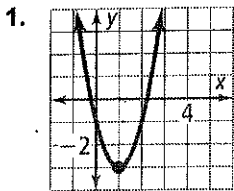


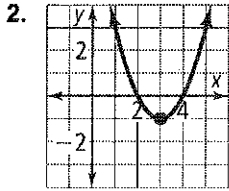
#4

9-1 Practice Form G
Quadratic Graphs and Their Properties

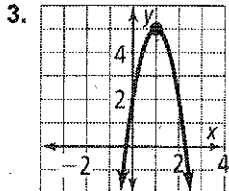
Identify the vertex of each graph. Tell whether it is a minimum or a maximum.



min. (1, -3)
 Graph each function.



min (3, -1)



max, (1, 5)

4. $f(x) = 3x^2$

5. $f(x) = -2.5x^2$

6. $f(x) = -\frac{1}{5}x^2$

GRAPH PAPER

Order each group of quadratic functions from widest to narrowest graph.

7. $y = -3x^2, y = -5x^2, y = -1x^2$
 $y = -1x^2, y = -3x^2, y = -5x^2$

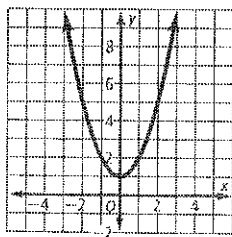
8. $y = 4x^2, y = -2x^2, y = -6x^2$
 $y = -2x^2, y = 4x^2, y = -6x^2$

9. $y = x^2, y = \frac{1}{3}x^2, y = 2x^2$
 $y = \frac{1}{3}x^2, y = x^2, y = 2x^2$

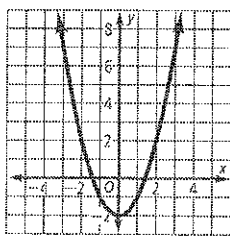
10. $y = \frac{1}{8}x^2, y = \frac{1}{4}x^2, y = \frac{1}{2}x^2$
 $y = \frac{1}{8}x^2, y = \frac{1}{4}x^2, y = \frac{1}{2}x^2$

Graph each function.

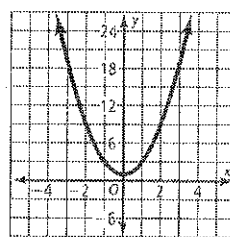
11. $f(x) = x^2 + 1$



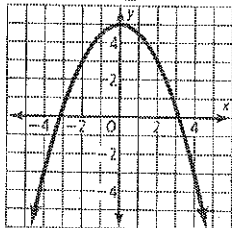
12. $f(x) = x^2 - 2$



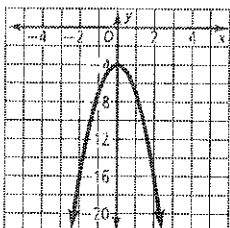
13. $f(x) = 2x^2 + 1$



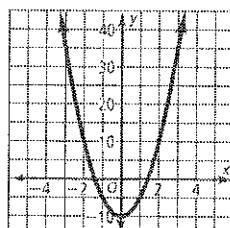
14. $f(x) = -\frac{1}{2}x^2 + 5$



15. $f(x) = -3x^2 - 4$



16. $f(x) = 5x^2 - 10$



9-1 Practice (continued)

Quadratic Graphs and Their Properties

Form G

17. For a physics experiment, the class drops a golf ball of a bridge toward the pavement below. The bridge is 75 feet high. The function $h = -16t^2 + 75$ gives the golf ball's height h above the pavement (in feet) after t seconds. Graph the function. How many seconds does it take for the golf ball to hit the pavement?

on Graph Paper

x	0	1	2	3
y	75	59	41	21

18. A relief organization flew over a village and dropped a package of food and medicine. The plane is flying at 1000 feet. The function $h = -16t^2 + 1000$ gives the package's height h above the ground (in feet) after t seconds. Graph the function. How many seconds does it take for the package to hit the ground?

on Graph Paper

x	0	1	2	3	4	5	6	7	8
y	1000	984	920	800	624	400	128	0	24

Identify the domain and range of each function.

19. $y = 5x^2 - 5$ $D = \mathbb{R}$
 $R = y \geq -5$

20. $y = -\frac{1}{2}x^2 + 3$ $D = \mathbb{R}$
 $R = y \leq 3$

21. $y = \frac{3}{5}x^2 - 2$ $D = \mathbb{R}$
 $R = y \geq -2$

22. $f(x) = -9x^2 + 1$ $D = \mathbb{R}$
 $R = y \leq 1$

Use a graphing calculator to graph each function. Identify the vertex and axis of symmetry.

23. $y = 2.75x^2 + 3$ 24. $y = -\frac{1}{3}x^2 - 8$ 25. $y = -2x^2 + 7$

Vertex = (0, 3) AOS $\rightarrow x=0$ Vertex = (0, -8) AOS $\rightarrow x=0$ Vertex = (0, 7) AOS $\rightarrow x=0$

26. **Writing** Discuss how the function $y = x^2 + 4$ differs from the graph $y = x^2$.

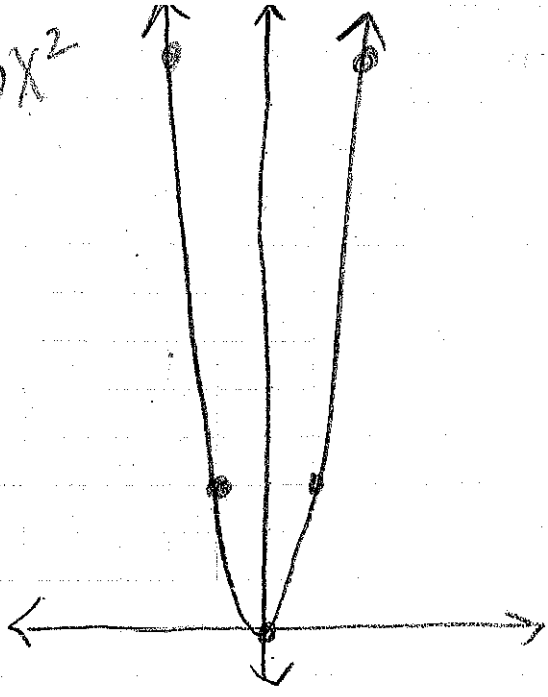
Same width; $y = x^2$ has its min at (0, 0) where $y = x^2 + 4$ is shifted up 4 units. Both AOS

27. **Writing** Explain how you can determine if the parabola opens up or down by simply examining the equation.

If "a" is positive, opens up \uparrow
 If "a" is negative, opens down \downarrow

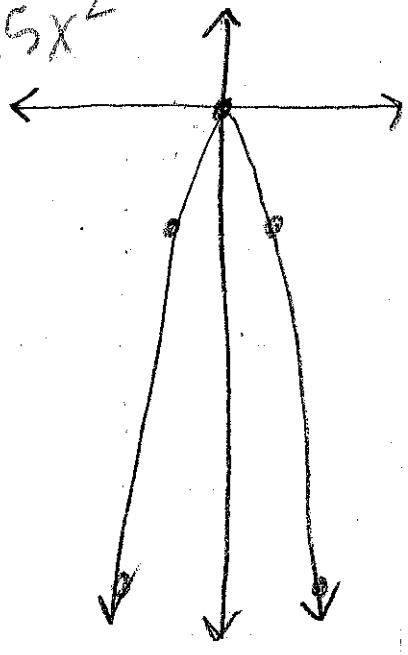
$$y = 3x^2$$

X	y
-2	12
-1	3
0	0
1	3
2	12



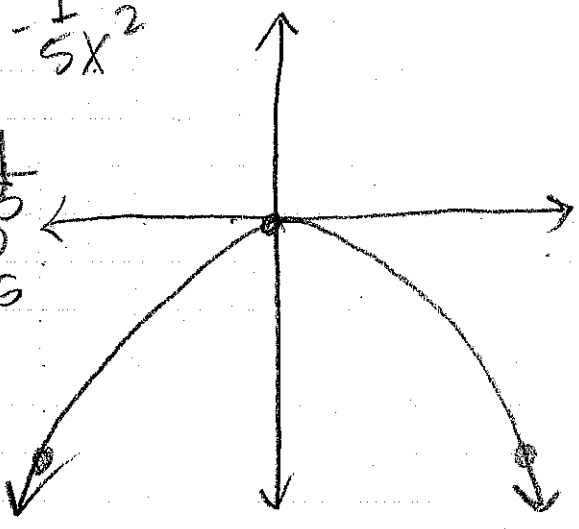
$$y = -2.5x^2$$

X	y
-2	-10
-1	-2.5
0	0
1	-2.5
2	-10

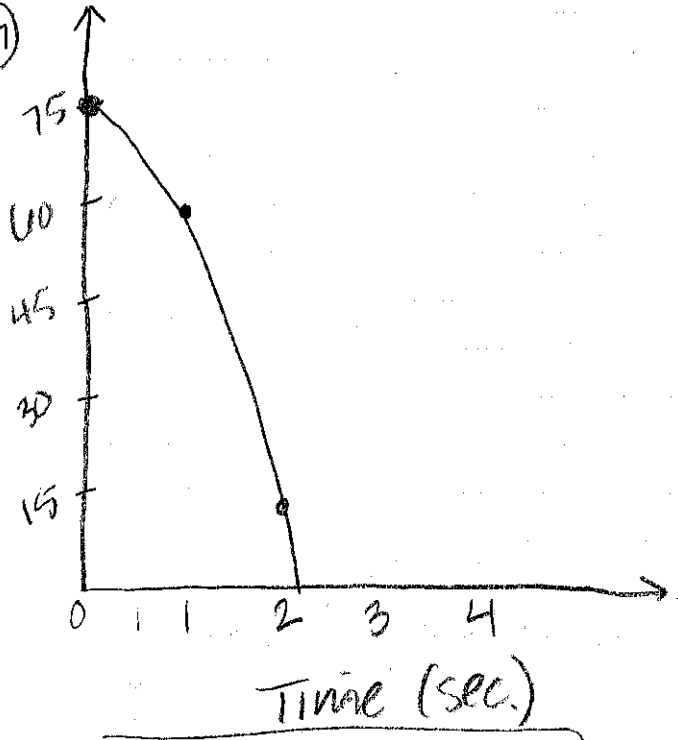


$$y = -\frac{1}{5}x^2$$

X	y
-5	-5
0	0
5	-5

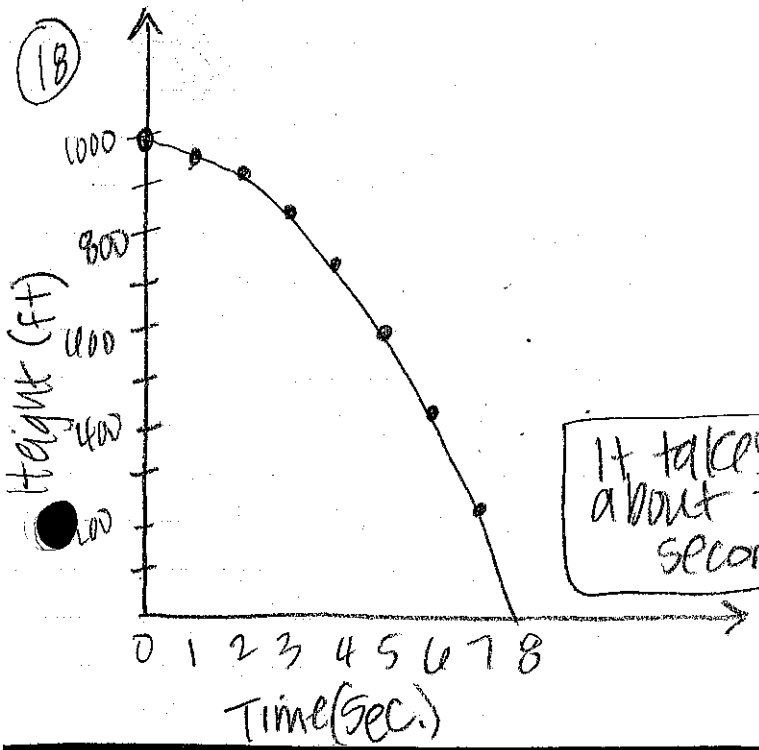


(17)



It takes about 2.2 seconds.

(18)



It takes about 7.9 seconds

Key - ~~5~~

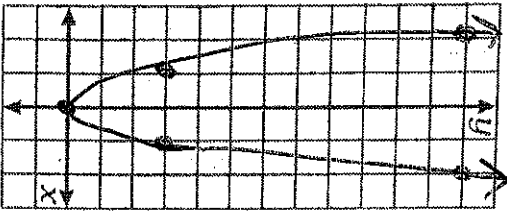
Who Is An Expert at Catching Small Green Vegetables?

Complete each table and graph. For table cells with letters, write the letter in the corresponding box at the right.

2	5	-3	-1	0	12	9	1	-7	-8	8	-5	6	3	7	-12	4	-2
A	T	R	A	P	P	E	A	S	S	A	R	T	T	I	S	T	

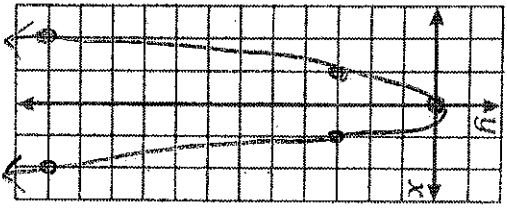
1 $y = 3x^2$

x	y
2	12
1	3
0	0
-1	3
-2	12



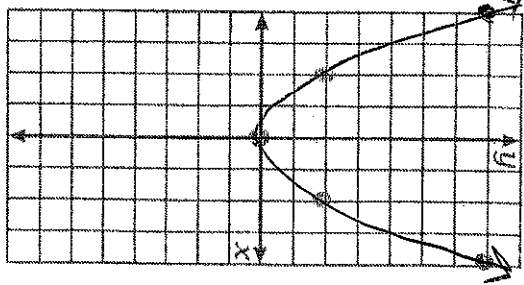
2 $y = -3x^2$

x	y
2	-12
1	-3
0	0
-1	-3
-2	-12



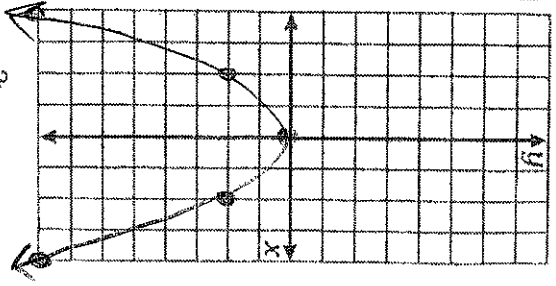
3 $y = \frac{1}{2}x^2$

x	y
4	8
2	2
0	0
-2	2
-4	8



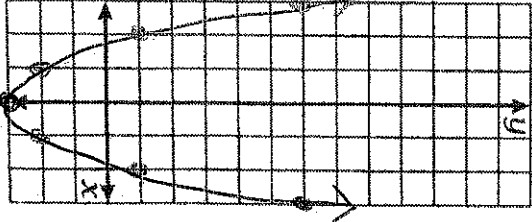
4 $y = -\frac{1}{2}x^2$

x	y
4	-8
2	-2
0	0
-2	-2
-4	-8



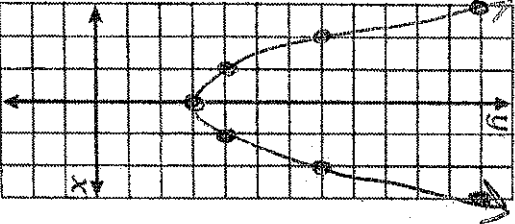
5 $y = x^2 - 3$

x	y
3	6
2	1
1	-2
0	-3
-1	-2
-2	1
-3	6



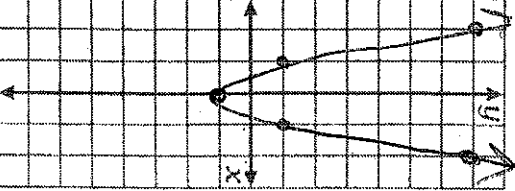
6 $y = x^2 + 3$

x	y
3	12
2	7
1	4
0	3
-1	4
-2	7
-3	12



7 $y = 2x^2 - 1$

x	y
2	7
1	1
0	-1
-1	1
-2	7



8 $y = -2x^2 + 1$

x	y
2	-7
1	-1
0	1
-1	-1
-2	-7

