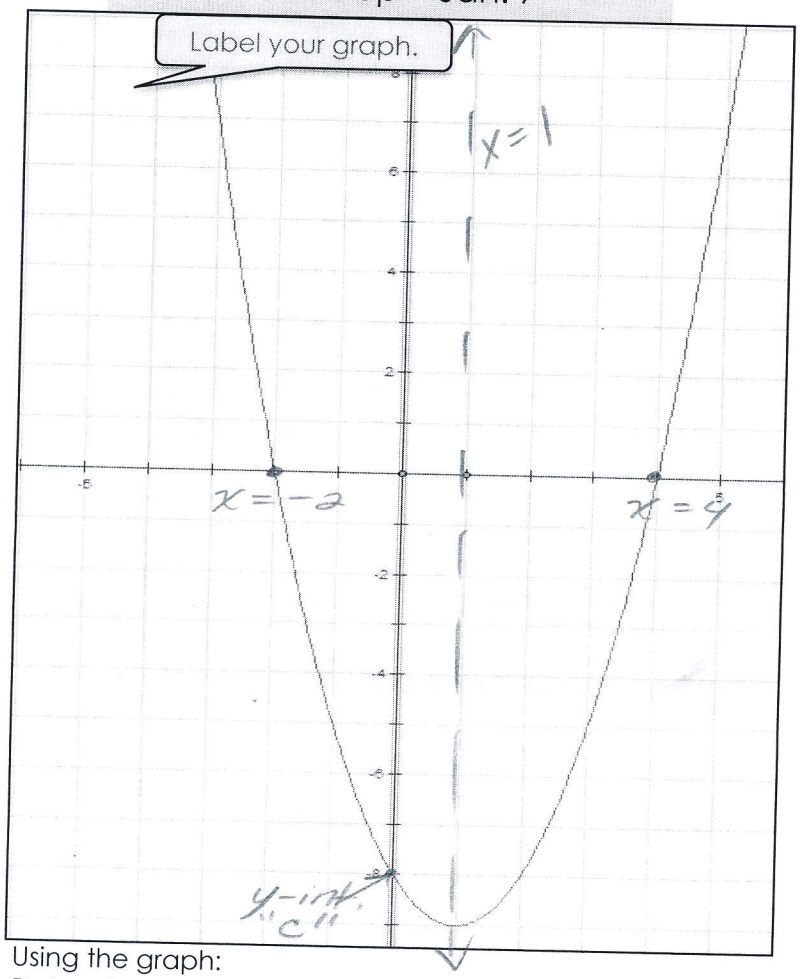
Warm-up Jan. 7



Using the graph:

Determine the zeros of the parabola? _____

State the equation of the axis of symmetry. $x = 1$

State the equation of the quadratic function.

$x = -2 \quad x = 4$

$(x+2)(x-4) = 0$

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

Quadratic Matching Activity

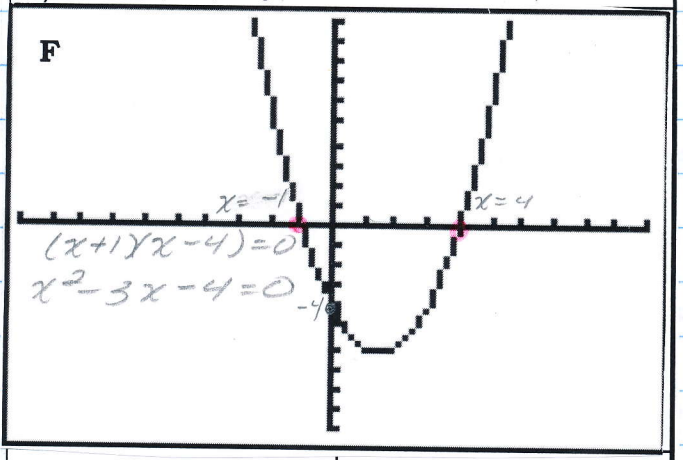
Quadratic Formula

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$a = 1, b = -3, c = -4$

1.) $x^2 - 3x - 4 = 0$

F



Factors	Roots

$$x = \frac{-(-3) \pm \sqrt{(-3)^2 - 4(1)(-4)}}{2(1)}$$

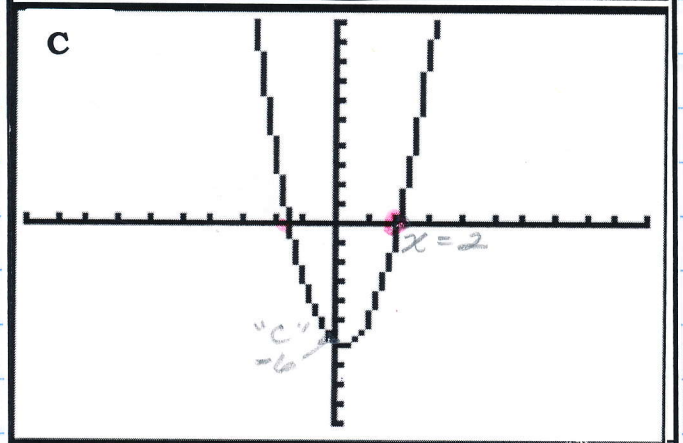
$$x = \frac{3 \pm \sqrt{25}}{2}$$

$$x = \frac{3 \pm 5}{2} = \begin{cases} \frac{3+5}{2} = 4 & \text{root} \\ \frac{3-5}{2} = -1 & \text{root} \end{cases}$$

$a = 2, b = -1, c = -6$

2.) $2x^2 - x - 6 = 0$

C



Factors	Roots

$$x = \frac{-(-1) \pm \sqrt{(-1)^2 - 4(2)(-6)}}{2(2)}$$

$$x = \frac{1 \pm \sqrt{49}}{4}$$

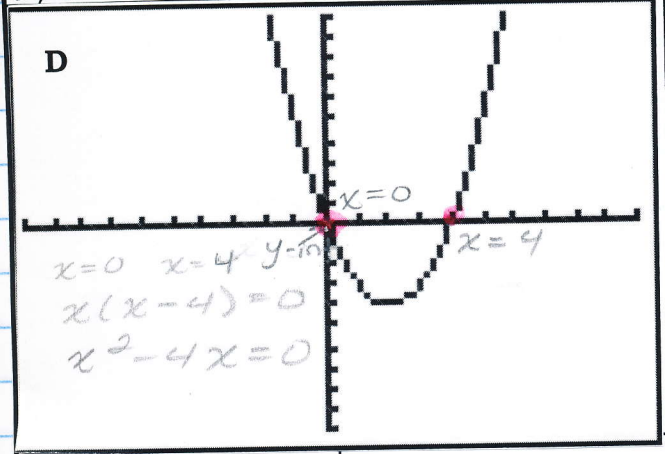
$$x = \frac{1 \pm 7}{4} = \begin{cases} \frac{1+7}{4} = 2 & \text{root} \\ \frac{1-7}{4} = \frac{-3}{2} & \text{root} \end{cases}$$

$a=1, b=-4, c=0$

$$x=\frac{-b\pm\sqrt{b^2-4ac}}{2a}$$

3.) $x^2 - 4x = 0$

D



Factors | Roots

$$x=\frac{-(-4)\pm\sqrt{(-4)^2-4(1)(0)}}{2(1)}$$

$$x=\frac{4\pm\sqrt{16}}{2}$$

$$x=\frac{4\pm4}{2}$$

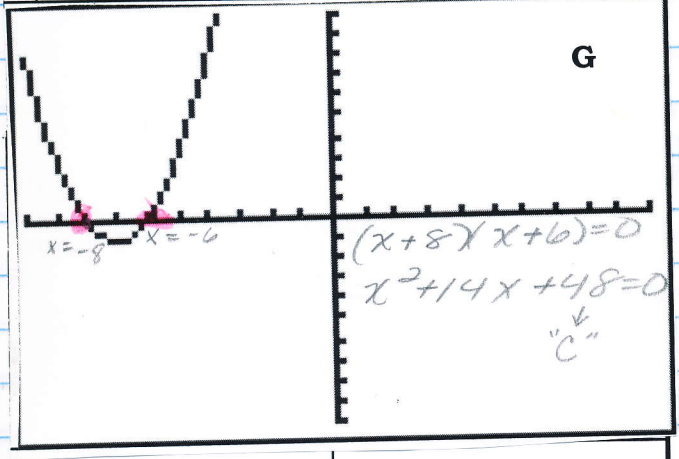
$\frac{4+4}{2}=4$ root

$\frac{4-4}{2}=0$ root

$a=1, b=14, c=48$

4.) $x^2 + 14x + 48 = 0$

G



Factors | Roots

$$x=\frac{-14\pm\sqrt{(14)^2-4(1)(48)}}{2(1)}$$

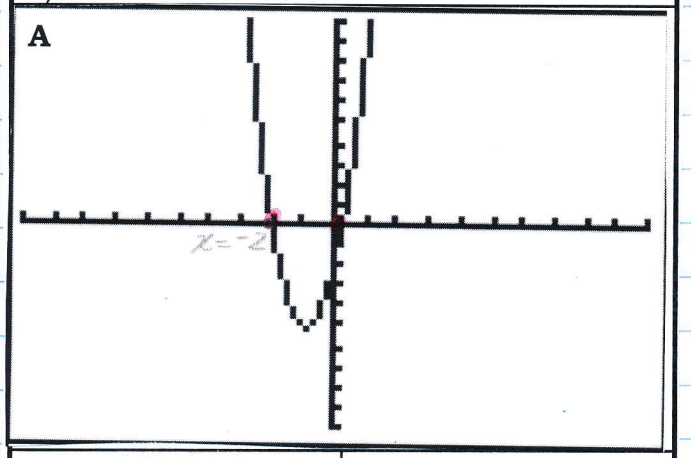
$$x=\frac{-14\pm\sqrt{4}}{2}$$

$\frac{-14+2}{2}=-6$ root

$\frac{-14-2}{2}=-8$ root

$a=4,\ b=7,\ c=-2$ $\quad x=\dfrac{-7\pm\sqrt{(-7)^2-4(4)(-2)}}{2(4)}$

5.) $4x^2 + 7x - 2 = 0$



Factors | Roots

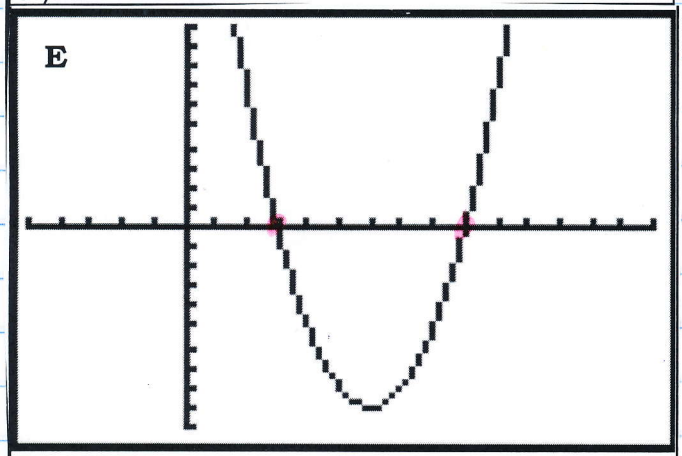
$x=\dfrac{-7\pm\sqrt{81}}{8}$

$x=\dfrac{-7\pm 9}{8}$ $\quad \dfrac{-7+9}{8}=\dfrac{1}{4}$ root

$\dfrac{-7-9}{8}=-2$ root

$a=1,\ b=-12,\ c=27$ $\quad x=\dfrac{-(-12)\pm\sqrt{(-12)^2-4(1)(27)}}{2(1)}$

6.) $x^2 - 12x + 27 = 0$



Factors | Roots

$x=\dfrac{12\pm\sqrt{36}}{2}$

$x=\dfrac{12\pm 6}{2}$ $\quad \dfrac{12+6}{2}=9$ root

$\dfrac{12-6}{2}=3$ root

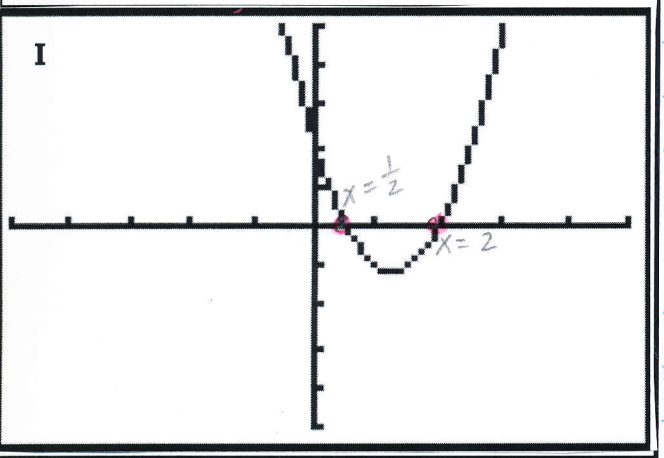
9D

$a=2,\ b=-5,\ c=2$

$$x=\frac{-(-5)\pm\sqrt{(-5)^2-4(2)(2)}}{2(2)}$$

7.) $2x^2 - 5x + 2 = 0$

I



Factors	Roots

$$x=\frac{5\pm\sqrt{9}}{4}$$

$$x=\frac{5\pm3}{4}$$

$\frac{5+3}{4}=2$ root

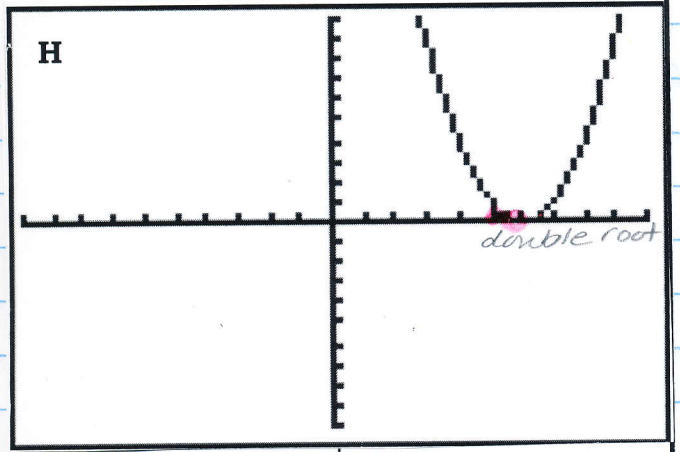
$\frac{5-3}{4}=\frac{2}{4}=\frac{1}{2}$ root

$a=1,\ b=-12,\ c=36$

$$x=\frac{-(-12)\pm\sqrt{(-12)^2-4(1)(36)}}{2(1)}$$

8.) $x^2 - 12x + 36 = 0$

H



Factors	Roots

$$x=\frac{12\pm\sqrt{0}}{2}$$

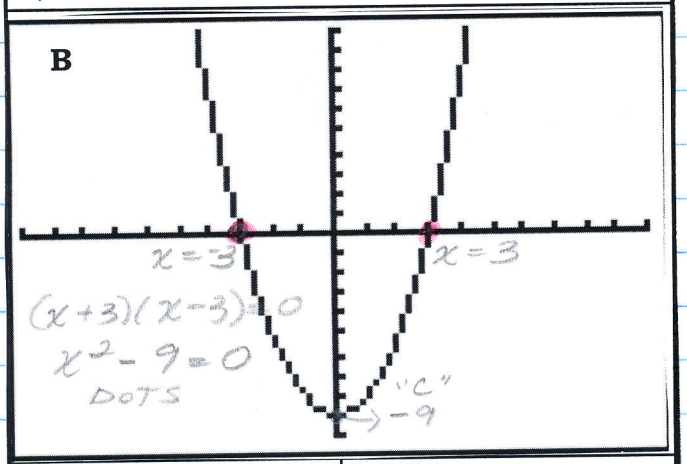
$x = 6$ double root

$a = 1,\ b = 0,\ c = -9$

$$x = \frac{0 \pm \sqrt{(0)^2 - 4(1)(-9)}}{2(1)}$$

9.) $x^2 - 9 = 0$

B



Factors	Roots

$$x = \frac{\pm\sqrt{36}}{2}$$

$$x = \frac{\pm 6}{2} = \begin{cases} \frac{6}{2} = 3 & \text{root} \\ \frac{-6}{2} = -3 & \text{root} \end{cases}$$