

Name: _____

Inverse of Vertex Form

To create the inverse equation, follow the inverse order of operations (SADMEP), then invert the

Inverse Order of Operations	Vertex Form	Example
S ubtraction/ A ddition (Add or subtract the end number)	$y = a(x - h)^2 + k$ $-k \qquad \qquad -k$ $\boxed{y - k = a(x - h)^2}$	$y = 7(x + 5)^2 - 28$ $+28 \qquad \qquad +28$ $\boxed{y + 28 = 7(x + 5)^2}$
D ivision / M ultiplication (Divide by the first number)	$\frac{y - k}{a} = \frac{a(x - h)^2}{a}$ $\boxed{\frac{y - k}{a} = (x - h)^2}$	$\frac{y}{7} + \frac{28}{7} = \frac{7(x + 5)^2}{7}$ $\boxed{\frac{1}{7}y + 4 = (x + 5)^2}$
E xponents (Square root both sides using \pm !)	$\pm \sqrt{\frac{y - k}{a}} = \pm \sqrt{(x - h)^2}$ $\boxed{\pm \sqrt{\frac{y - k}{a}} = (x - h)}$	$\pm \sqrt{\frac{1}{7}y + 4} = \pm \sqrt{(x + 5)^2}$ $\boxed{\pm \sqrt{\frac{1}{7}y + 4} = (x + 5)}$
P arenthesis (Add or subtract the number inside)	$\pm \sqrt{\frac{y - k}{a}} = (x - h)$ $+h \text{ (in front)} \qquad +h$ $+h \pm \sqrt{\frac{y - k}{a}} = x$ $\boxed{x = +h \pm \sqrt{\frac{y - k}{a}}}$	$\pm \sqrt{\frac{1}{7}y + 4} = (x + 5)$ $-5 \text{ (in front)} \qquad -5$ $-5 \pm \sqrt{\frac{1}{7}y + 4} = x$ $\boxed{x = -5 \pm \sqrt{\frac{1}{7}y + 4}}$
Switch the Letters!	$\boxed{y = +h \pm \sqrt{\frac{x - k}{a}}}$	$\boxed{y = -5 \pm \sqrt{\frac{1}{7}x + 4}}$
Notice that there are two answers for each problem!		

1. $y = -8(x + 12)^2 + 72$	2. $y = -10(x + 9)^2 + 40$	3. $y = 7(x + 3)^2 - 175$
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$$4. y = 3(x - 1)^2 - 27$$

$$5. y = -(x - 7)^2 + 100$$

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

$$7. y = (x - 8)^2 - 121$$

$$8. y = 5(x - 2)^2 - 405$$

$$9. y = 2(x + 7)^2 - 128$$

$$10. y = 10(x - 11)^2 - 360$$

$$11. y = 9(x + 8)^2 - 36$$

$$12. y = 8(x - 4)^2$$