## Math $11 \quad$ Getting Information from Standard Form

1. $y=(x+4)^{2} \cdot 3$
2. $y=3(x-1)^{2}+1$
3. $\mathbf{y}=\mathrm{x}^{2}+1$
4. $y=\frac{1}{2} x^{2}+1$
5. $y=\underline{I}(x+1)^{2}$
6. $y=\frac{1}{4} x^{2}+1$
7. $y=3(x+3)^{2} \cdot 2$
8. $y=-2(x-7)^{2}+1$
9. $y=-3 x^{2} \cdot 6$
10. $y=\underline{I x^{2}} \cdot 3$
11. $y=1 x^{2}$
12. $y=x^{2} \cdot 4$

| Vertex | Stretch <br> Factor | Equation of <br> Axis of <br> Symmetry | Direction <br> of Opening | Domain | Range | Maximum/ <br> Minimum <br> Value |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $(-4,-3)$ | $\mathbf{I}$ | $\mathbf{x}=-4$ | Upward | $\{\mathbf{x} \mid \mathbf{x} \in \mathbf{R}\}$ | $\{\mathbf{y} \geq-3, \mathbf{y} \in R$ | Minimum <br> $(-4,-3)$ |


| $(1,1)$ | 3 | $\mathbf{x}=\mathbf{1}$ | Upward | $(\mathbf{x} \mid \mathbf{X €} \mathbf{R})$ | $\mathbf{y} \mid \mathbf{y} \geq \mathbf{1}, \mathbf{y} \in \mathbf{R}$ | $\underset{(\mathbf{I}, \mathbf{1})}{\text { Minimum }}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $(0,1)$ | 1 | $\mathbf{x}=0$ | Upward | $(\mathbf{x} \mid \mathbf{X € ~} \mathbf{R})$ | $\mathbf{y} \mid \mathbf{y} \geq \mathbf{1}, \mathbf{y} \in \mathbf{R}$ | $\begin{gathered} \text { Minimum } \\ (0, \mathbf{1}) \end{gathered}$ |
| $(0,1)$ | $\begin{aligned} & 1 \\ & \hline 2 \\ & \hline \end{aligned}$ | $\mathbf{x}=0$ | Upward | $(\mathbf{x} \mid \mathbf{X € ~} \mathbf{R})$ | $\mathbf{y} \mid \mathbf{y} \geq \mathbf{1}, \mathbf{y} \in \mathbf{R}$ | $\begin{gathered} \text { Minimum } \\ (0, \mathbf{1}) \end{gathered}$ |
| (-1, 0) | $\frac{1}{3}$ | $\mathbf{x}=\mathbf{- 1}$ | Upward | $(\mathbf{x} \mid \mathbf{X € ~} \mathbf{R})$ | $\mathbf{y} \mid \mathbf{y} \geq \mathbf{0}, \mathbf{y} \in \mathbf{R}$ | $\begin{aligned} & \text { Minimum } \\ & (-1,0) \\ & \hline \end{aligned}$ |
| $(0,1)$ | $\frac{1}{4}$ | $\mathbf{x}=0$ | Upward | $(\mathbf{x} \mid \mathbf{X € ~} \mathbf{R})$ | $\mathbf{y} \mid \mathbf{y} \geq \mathbf{1}, \mathbf{y} \in \mathbf{R}$ | $\begin{gathered} \text { Minimum } \\ (\mathbf{0}, \mathbf{1}) \end{gathered}$ |
| $(-3,-2)$ | 3 | $\mathbf{x}=\mathbf{- 3}$ | Upward | $(\mathbf{x} \mid \mathbf{X € ~} \mathbf{R})$ | $\mathbf{y} \mid \mathbf{y}$ こ-2,y $\mathbf{y}$ ¢ | $\underset{(-3,-2)}{\text { Minimum }}$ |
| $(7,1)$ | 2 | $\mathbf{x}=7$ | Downward | (X\|X€ ${ }^{\text {c }}$ | $\mathbf{y} \mid \mathbf{y} \leq 1, \mathbf{y} \in \mathrm{R}$ | $\begin{aligned} & \text { Maximum } \\ & (7,1) \end{aligned}$ |
| $(0,-6)$ | $\begin{aligned} & 3 \\ & 2 \end{aligned}$ | $\mathbf{x}=0$ | Downward | $(\mathbf{x} \mid \mathbf{X €} \mathbf{R})$ | $\mathbf{y} \mid \mathbf{y} \leq \cdot \mathbf{6 , y} \in \mathbf{R}$ | $\begin{gathered} \text { Maximum } \\ (0,-6) \\ \hline \end{gathered}$ |
| $(0,-3)$ | $\underline{1}$ | $\mathbf{x}=\mathbf{0}$ | Upward | $(\mathbf{x} \mid \mathbf{X € ~} \mathbf{R})$ | $\mathbf{y} \mid \mathbf{y} \mathbf{\geq} \cdot \mathbf{3 , y} \in \mathbf{R}$ | $\begin{aligned} & \text { Minimum } \\ & (0,-3) \end{aligned}$ |
| $(0,0)$ | $\frac{1}{3}$ | $\mathbf{x}=0$ | Upward | $(\mathbf{x} \mid \mathbf{X} \in \mathbf{R})$ | $\mathbf{y} \mid \mathbf{y} \geq \mathbf{0}, \mathbf{y} \in \mathbf{R}$ | $\begin{aligned} & \text { Minimum } \\ & (0,0) \end{aligned}$ |
| $(0,-4)$ | 1 | $\mathbf{x}=0$ | Upward | $(\mathbf{x} \mid \mathbf{X} € \mathbf{R})$ | $\mathbf{y} \mid \mathbf{y}$ - $\mathbf{4 , \mathbf { y }}$ ¢ R | $\begin{gathered} \text { Minimum } \\ (0,-4) \end{gathered}$ |

