Name _____ Date _____

The Function $f(x) = x^2$

1 ON YOUR OWN Complete the table for $f(x) = x^2$. Careful: $(-2.5)^2 = (-2.5) \times (-2.5)$.

x	-3	-2.5	-2	-1.5	-1	-0.5	0	0.5	1	1.5	2	2.5	3
$f(x)$	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

2 ON YOUR OWN Plot the points and join them with a **smooth curve**, not straight segments. Extend the curve beyond the last points.



Names (pair) _____ Date _____

Remember

The graph of $f(x) = x^2$ is a **parabola**. Its lowest point is the **vertex** $V(0, 0)$. The y-axis is the **axis of symmetry**: $f(-x) = f(x)$. For $x < 0$ the function **decreases**, for $x > 0$ it **increases**. All values are greater than or equal to zero. A parabola has no ends.

3 IN PAIRS **Symmetry.** One student reads from the graph, the other checks by calculating. Swap roles in every row.

$f(3) =$ ☐ $f(-3) =$ ☐ $f(1.5) =$ ☐ $f(-1.5) =$ ☐

$f(x) = 4 \Rightarrow x =$ ☐ or ☐ $f(x) = 2.25 \Rightarrow x =$ ☐ or ☐

$f(x) = 0 \Rightarrow x =$ ☐ $f(x) = -1 \Rightarrow x =$ ☐

4 ON YOUR OWN **Is the point on the graph?** Circle and explain.

$(2, 4)$	**yes**	**no**
$(-3, -9)$	**yes**	**no**
$(0.5, 0.25)$	**yes**	**no**
$(-1.5, 2.25)$	**yes**	**no**
$(4, 8)$	**yes**	**no**
$(-10, 100)$	**yes**	**no**

5 IN A GROUP **Discuss.** Ivan says: "Between $x = 0$ and $x = 1$ the graph is a straight segment." Check with the point $x = 0.5$. Is Ivan right? Where does the graph end?

_____

_____

The Parabola app · otooly.com/parabola-explorer

Mode **Three forms**: set $a = 1, b = 0, c = 0$ and compare with your graph. Move the view to see the parabola keep going.

★ ON YOUR OWN **Exit card.** $f(x) = x^2$: $f(-4) =$ ☐ $f(x) = 9 \Rightarrow x =$ ☐