

LESSON
9.4**Investigating Algebra Activity:
Solving $x^2 = d$ by Taking Square Roots***For use before the lesson "Use Square Roots to Solve Quadratic Equations"***Materials:** paper and pencil**QUESTION** How can you solve a quadratic equation of the form $x^2 = d$ by finding square roots?**EXPLORE** Determine number of solutions**STEP 1** Complete table

Copy and complete the table for each function in the first column.

Function	x-value						
	-3	-2	-1	0	1	2	3
$y = x^2$	$y = (-3)^2 = 9$						
$y = x^2 - 4$							
$y = x^2 + 4$							

STEP 2 Graph functions

Plot the points generated by the table to graph each function.

STEP 3 Analyze graphsHow many x -intercepts does each function have, if any? What are the x -intercepts?**DRAW
CONCLUSIONS****The related equations for each function in the Explore are $x^2 = 0$, $x^2 = 4$, and $x^2 = -4$. Complete the statement using your observations from the Explore.**

- In the equation $x^2 = d$, if $d > 0$, then $x^2 = d$ has ? solution(s). The solution(s) are ?.
- In the equation $x^2 = d$, if $d = 0$, then $x^2 = d$ has ? solution(s). The solution(s) are ?.
- In the equation $x^2 = d$, if $d < 0$, then $x^2 = d$ has ? solution(s). The solution(s) are ?.

Determine how many solutions the quadratic equation has. Then solve the equation.

4. $n^2 = -9$

5. $m^2 = 16$

6. $y^2 - 4 = -4$

7. $k^2 + 10 = 46$

8. $2c^2 = -32$

9. $6x^2 = 0$