Name _____ Date _____

# SOLVING EQUATIONS WITH SQUARE ROOTS

Taking the square root of a number is the opposite, or inverse, of squaring it. So, you can solve some equations using square roots.

***Let's try it!*** Solve $x^2 = 9$.

| | |
|---|---|
| $x^2 = 9$ | |
| $\sqrt{x^2} = \sqrt{9}$ | Take the square root of both sides of the equation. |
| $x = \pm 3$ | Since $3^2 = 3 \cdot 3 = 9$ and $(-3)^2 = (-3) \cdot (-3) = 9$, both 3 and –3 are square roots of 9. You can write this as ±3. |

In the example above, you can simplify the square root of 9 to get ±3 since 9 is a perfect square.

Consider solving an equation like $x^2 = 11$. Because 11 is not a perfect square, you would need to write your answer using the square root symbol. So, the exact solution of $x^2 = 11$ is $x = \pm\sqrt{11}$.

***Try it yourself!*** Solve each equation for the variable. Don't forget to check if you're taking the square root of a perfect square or not!

| | | |
|---|---|---|
| $a^2 = 36$ | $m^2 = 4$ | $g^2 = 68$ |
| $j^2 = 16$ | $q^2 = 20$ | $b^2 = 144$ |
| $r^2 = 55$ | $d^2 = 81$ | $s^2 = 225$ |
| $f^2 = 141$ | $w^2 = 100$ | $h^2 = 200$ |
| $c^2 = 289$ | $y^2 = 400$ | $z^2 = 180$ |
| $v^2 = 900$ | $k^2 = 625$ | $p^2 = 250$ |