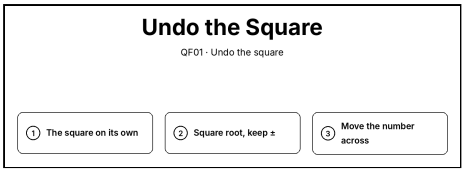
Undo the Square: teacher script

QF01-V1 · QF01 Undo the square · teachers only. Without a screen, read each Say line and draw each Draw step on the board. About 83 seconds as a video.

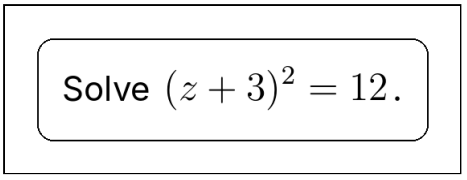
01



Say. Undo the square. When a bracket is squared, treat the whole bracket like x. First, get the square on its own. Then take the square root of both sides, and keep plus or minus. Last, move the number across.

Draw. Write the title “Undo the Square” and the steps: 1. The square on its own; 2. Square root, keep ±; 3. Move the number across.

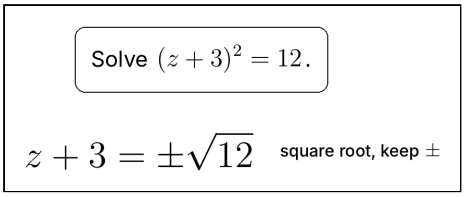
02



Say. Solve z plus 3, all squared, equals 12.

Draw. Clear the board. Write “Solve (z + 3)² = 12.” in a box at the top.

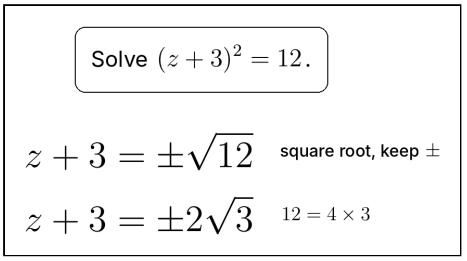
03



Say. The square is already on its own. Take the square root of both sides, and keep plus or minus.

Draw. Write z + 3 = ±√12 on the next line. Beside it, write “square root, keep ±”.

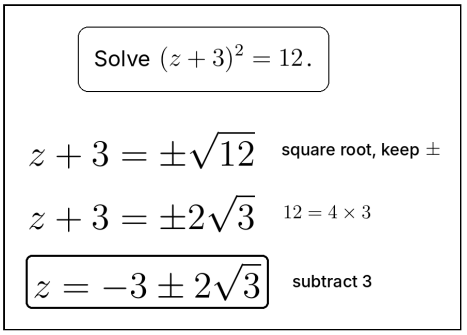
04



Say. Root 12 is 2 root 3, because 12 is 4 times 3.

Draw. Write z + 3 = ± 2√3 on the next line. Beside it, write “12 = 4 × 3”.

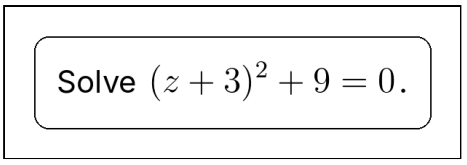
05



Say. Subtract 3 from both sides. z equals negative 3, plus or minus 2 root 3. That is two roots.

Draw. Write z = −3 ± 2√3 and box it on the next line. Beside it, write “subtract 3”.

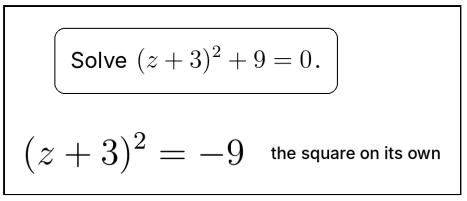
06



Say. Now solve z plus 3, all squared, plus 9, equals 0.

Draw. Clear the board. Write “Solve (z + 3)² + 9 = 0.” in a box at the top.

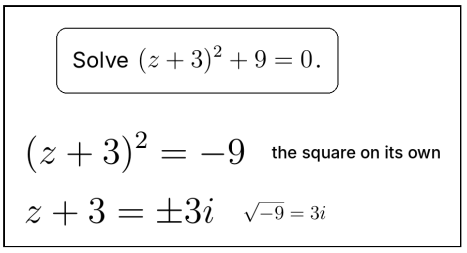
07



Say. Subtract 9 from both sides. z plus 3, all squared, equals negative 9.

Draw. Write (z + 3)² = −9 on the next line. Beside it, write “the square on its own”.

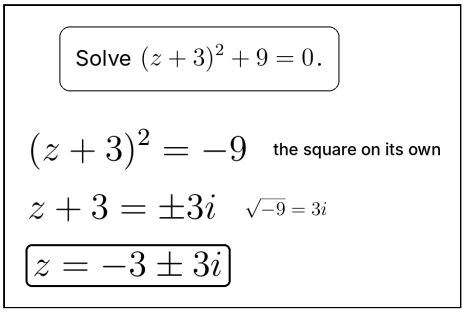
08



Say. The square root of negative 9 is 3 i. Keep plus or minus.

Draw. Write z + 3 = ± 3i on the next line. Beside it, write “√(−9) = 3i”.

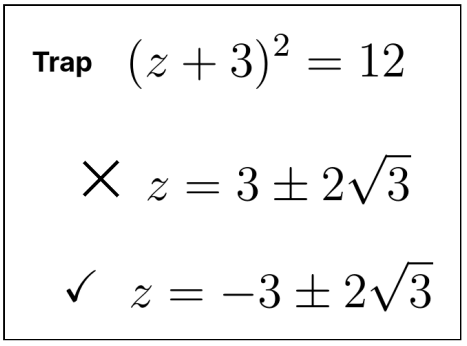
09



Say. So z equals negative 3, plus or minus 3 i: two imaginary roots.

Draw. Write z = −3 ± 3i and box it on the next line.

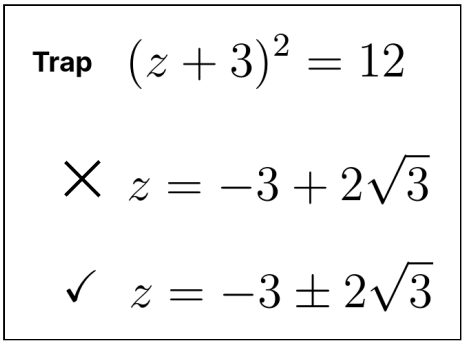
10



Say. Watch for the trap: z is not 3, plus or minus 2 root 3. The 3 changes sign as it crosses to the other side, so it is negative 3.

Draw. Clear the board. Write “Trap” and (z + 3)² = 12. Below, write z = 3 ± 2√3 and cross it out ×. Then write z = −3 ± 2√3 with a tick ✓.

11



Say. And don't stop at just one root. Plus or minus gives two roots.

Draw. Clear the board. Write “Trap” and (z + 3)² = 12. Below, write z = −3 + 2√3 and cross it out ×. Then write z = −3 ± 2√3 with a tick ✓.

12

Your turn

The square on its own.

Square root, keep ±.

Move the number across.

Say. Now it is your turn. Get the square on its own, take the square root keeping plus or minus, then move the number across.

Draw. Point to today’s activity: The square on its own. Square root, keep ±. Move the number across.