Meet the Quadratic: teacher script

QE01-V1 · QE01 Meet the quadratic · teachers only. Without a screen, read each Say line and draw each Draw step on the board. About 102 seconds as a video.

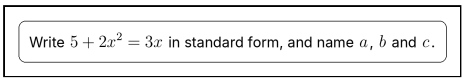
01



Say. Quadratic equations. A quadratic equation has an x squared term, and it can always be written in standard form: a x squared, plus b x, plus c, equals 0. The sign belongs to the coefficient. And a root is a number that makes the equation true.

Draw. Write the title “Meet the Quadratic” and the steps: 1. Standard form: 0 on one side; 2. The sign belongs to the coefficient; 3. A root makes it true.

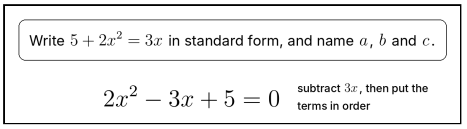
02



Say. Write 5 plus 2 x squared equals 3 x in standard form, and name a, b and c.

Draw. Clear the board. Write “Write 5 + 2x² = 3x in standard form, and name a, b and c.” in a box at the top.

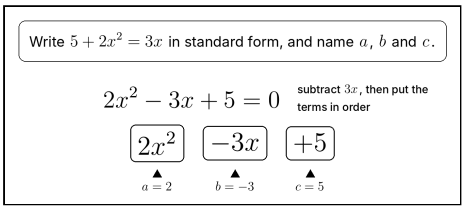
03



Say. Subtract 3 x from both sides, so the right side is 0. Then put the terms in order: x squared, then x, then the number. 2 x squared, minus 3 x, plus 5, equals 0.

Draw. Write 2x² − 3x + 5 = 0 on the next line. Beside it, write “subtract 3x, then put the terms in order”.

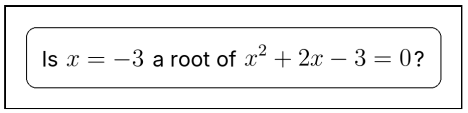
04



Say. Now read the coefficients. a is 2. b is negative 3: the minus sign belongs to b. And c is 5.

Draw. Write 2x² −3x +5, with a box round each term. Under 2x², draw an arrow and write “a = 2”. Under −3x, draw an arrow and write “b = −3”. Under 5, draw an arrow and write “c = 5”.

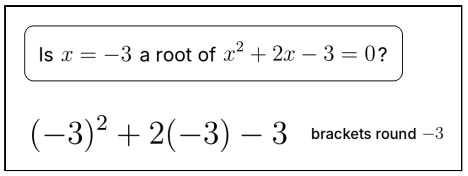
05



Say. Is x equals negative 3 a root of x squared, plus 2 x, minus 3, equals 0?

Draw. Clear the board. Write “Is x = −3 a root of x² + 2x − 3 = 0?” in a box at the top.

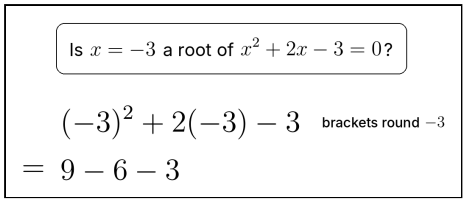
06



Say. Put negative 3 in for x, in brackets.

Draw. Write (−3)² + 2(−3) − 3 on the next line. Beside it, write “brackets round −3”.

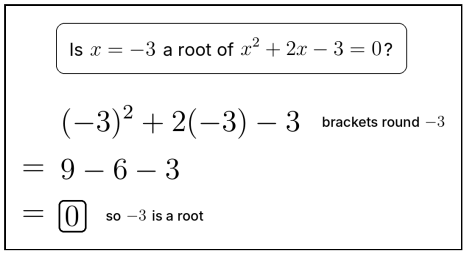
07



Say. Negative 3 squared is 9, and 2 times negative 3 is negative 6.

Draw. Write = 9 − 6 − 3 on the next line.

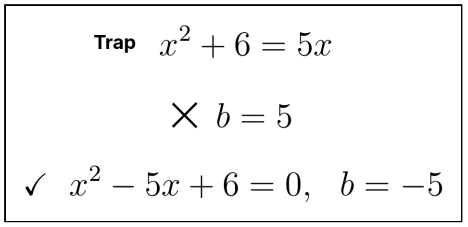
08



Say. It comes to 0, so negative 3 is a root.

Draw. Write = 0 and box it on the next line. Beside it, write “so −3 is a root”.

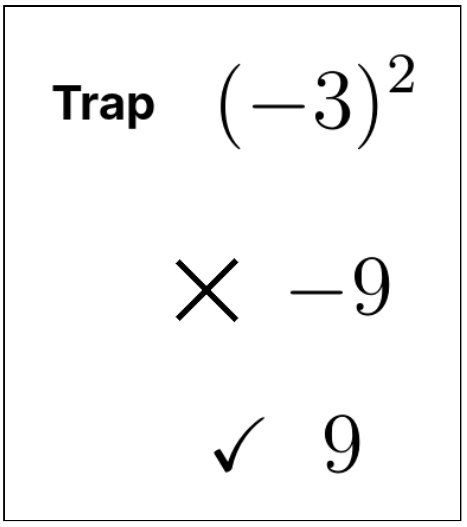
09



Say. Watch for the trap: in x squared plus 6 equals 5 x, b is not 5. Standard form first: the 5 x moves over and becomes minus 5 x, so b is negative 5.

Draw. Clear the board. Write “Trap” and x² + 6 = 5x. Below, write b = 5 and cross it out ×. Then write x² − 5x + 6 = 0,\ \ b = −5 with a tick ✓.

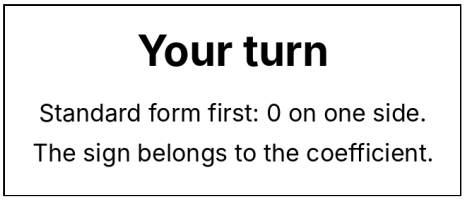
10



Say. Another trap: negative 3 squared is not negative 9. It is negative 3 times negative 3, which is positive 9. Always put a negative number in brackets.

Draw. Clear the board. Write “Trap” and $(-3)^2$. Below, write -9 and cross it out ×. Then write 9 with a tick ✓.

11



Say. Now it is your turn. Standard form first, with 0 on one side. The sign belongs to the coefficient. And to check a root, substitute it, in brackets.

Draw. Point to today’s activity: Standard form first: 0 on one side. The sign belongs to the coefficient.