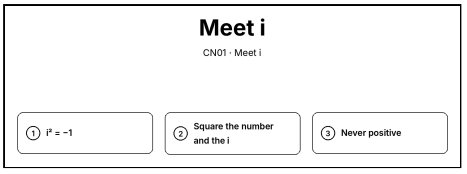
Meet i: teacher script

CN01-V1 · CN01 Meet i · teachers only. Without a screen, read each Say line and draw each Draw step on the board. About 79 seconds as a video.

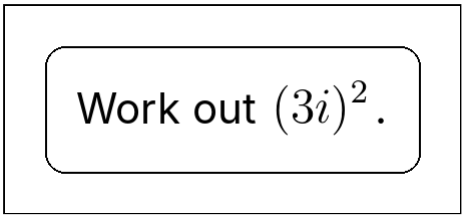
01



Say. Meet i. No real number squares to a negative number. So we invent one: a number called i, and i squared is negative 1. To square a real number times i, square the number and the i separately. The answer is never positive.

Draw. Write the title “Meet i” and the steps: 1. $i^2 = -1$; 2. Square the number and the i; 3. Never positive.

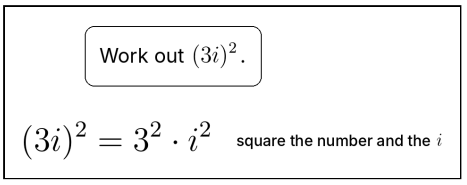
02



Say. Work out 3 i, squared.

Draw. Clear the board. Write “Work out $(3i)^2$.” in a box at the top.

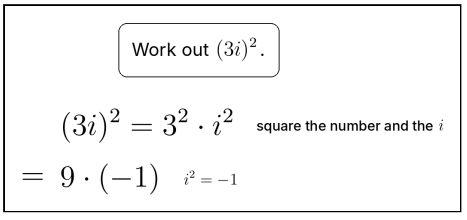
03



Say. Square the 3, and square the i.

Draw. Write $(3i)^2 = 3^2 \cdot i^2$ on the next line. Beside it, write “square the number and the i”.

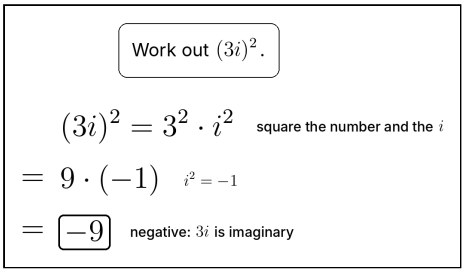
04



Say. 3 squared is 9, and i squared is negative 1.

Draw. Write $= 9 \cdot (-1)$ on the next line. Beside it, write “$i^2 = -1$”.

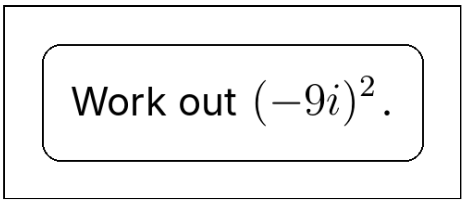
05



Say. So 3 i, squared, is negative 9. Its square is negative, so 3 i is an imaginary number.

Draw. Write $= -9$ and box it on the next line. Beside it, write “negative: 3i is imaginary”.

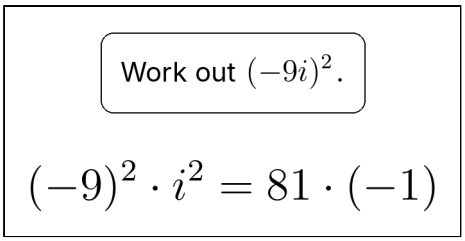
06



Say. Work out negative 9 i, squared.

Draw. Clear the board. Write “Work out (−9i)².” in a box at the top.

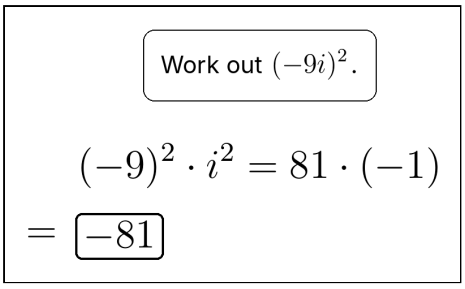
07



Say. Negative 9 squared is positive 81, and i squared is negative 1.

Draw. Write (−9)² · i² = 81 · (−1) on the next line.

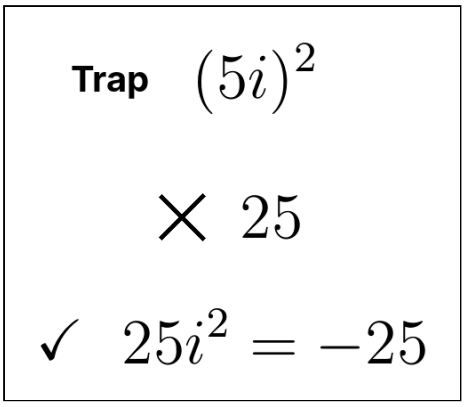
08



Say. So the answer is negative 81. A minus sign in front doesn't make the square positive.

Draw. Write = −81 and box it on the next line.

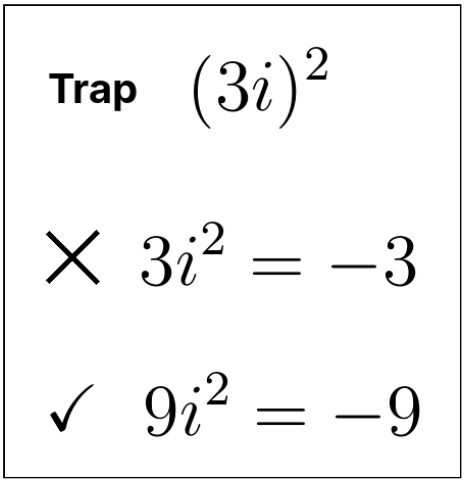
09



Say. Watch for the trap: 5 i, squared, is not 25. It is 25 times i squared, and i squared is negative 1, so it is negative 25.

Draw. Clear the board. Write “Trap” and (5i)². Below, write 25 and cross it out ×. Then write 25i² = −25 with a tick ✓.

10



Say. Another trap: 3 i, squared, is not negative 3. Square the 3 too: 9 i squared, which is negative 9.

Draw. Clear the board. Write “Trap” and (3i)². Below, write 3i² = −3 and cross it out ×. Then write 9i² = −9 with a tick ✓.

11

Your turn

$i^2 = -1$.

Square the number and the i.

Say. Now it is your turn. i squared is negative 1. Square the number and the i separately: the square of an imaginary number is never positive.

Draw. Point to today's activity: $i^2 = -1$. Square the number and the i.