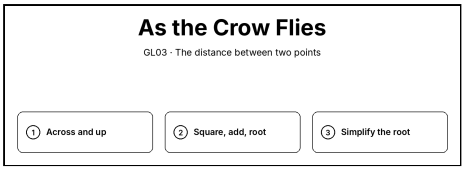
As the Crow Flies: teacher script

GL03-V1 · GL03 The distance between two points · teachers only. Without a screen, read each Say line and draw each Draw step on the board. About 62 seconds as a video.

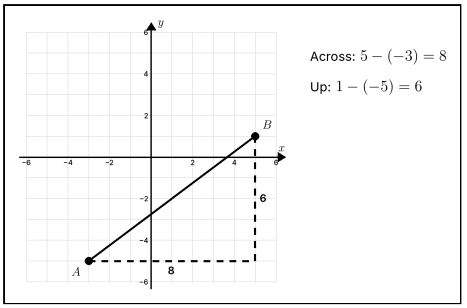
01



Say. The distance between two points. Across and up make a right triangle. Square, add, then take the root. Simplify the root if you can.

Draw. Write the title “As the Crow Flies” and the steps: 1. Across and up; 2. Square, add, root; 3. Simplify the root.

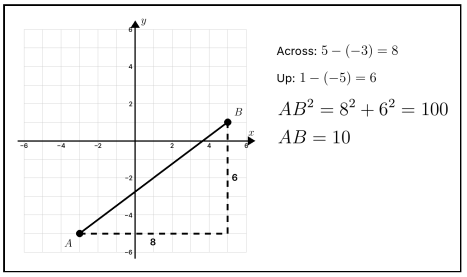
02



Say. How far is it from negative 3, negative 5, to 5, 1, in a straight line? Go across and up: 8 across, because 5 minus negative 3 is 8, and 6 up.

Draw. Clear the board and draw a grid with axes from -6 to 6. Plot (-3, -5) and label it “A”. Plot (5, 1) and label it “B”. Draw a segment from (-3, -5) to (5, 1). Draw a dashed segment from (-3, -5) to (5, -5), labelled “8”. Draw a dashed segment from (5, -5) to (5, 1), labelled “6”. Beside the grid, write “Across: 5 − (−3) = 8”. Beside the grid, write “Up: 1 − (−5) = 6”.

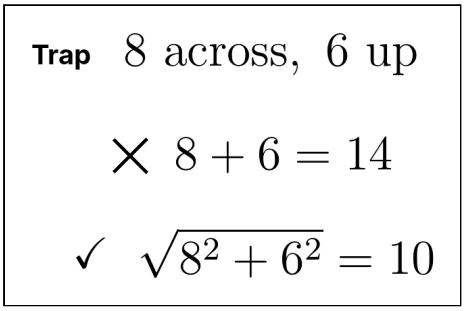
03



Say. Pythagoras: A B squared is 8 squared plus 6 squared, which is 100. So A B is 10.

Draw. Beside the grid, write “AB^2 = 8^2 + 6^2 = 100”. Beside the grid, write “AB = 10”.

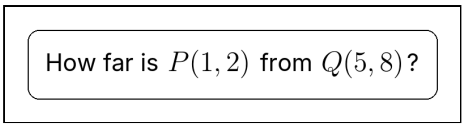
04



Say. Watch for the trap: adding the sides. 14 is the way round the corner. The straight path is shorter: square, add, then the root.

Draw. Clear the board. Write “Trap” and 8 across,\ 6 up. Below, write 8 + 6 = 14 and cross it out ×. Then write √(8² + 6²) = 10 with a tick ✓.

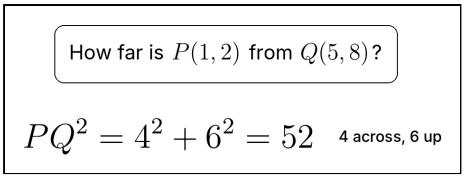
05



Say. How far is the point 1, 2 from the point 5, 8?

Draw. Clear the board. Write “How far is P(1, 2) from Q(5, 8)?” in a box at the top.

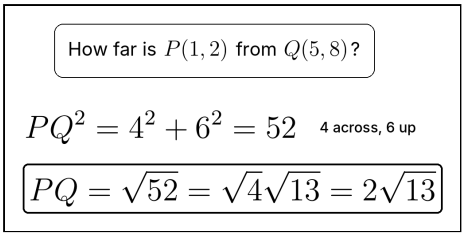
06



Say. 4 across and 6 up: P Q squared is 16 plus 36, which is 52.

Draw. Write PQ² = 4² + 6² = 52 on the next line. Beside it, write “4 across, 6 up”.

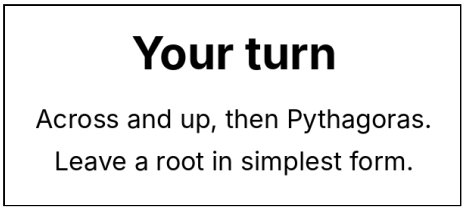
07



Say. 52 isn't a square number, so leave the root. Take out the square factor, 4: the distance is 2 root 13.

Draw. Write PQ = √(52) = √(4)√(13) = 2√(13) and box it on the next line.

08



Say. Now it is your turn. Across and up, then square, add, and take the root.

Draw. Point to today’s activity: Across and up, then Pythagoras. Leave a root in simplest form.