



The Obscurian's Riddle



Thank you, thank you, thank you—you've answered my distress signal. Help! I need your help! The Obscurian said she'll give me a pair of extremely rare Flimflammian Flip-Flops if I can solve her riddle. I simply **must** have the Flip-Flops to put in my Intergalactic Footwear Museum. The problem is, I'm **totally** mathematically challenged. I need an algebra expert like you to help me solve this riddle.



Mission Materials: You can complete this mission using any of the following tools:

- The Grapher Station on board the [Astro Algebra](#) flagship, the Algebra Centauri. (From the Bridge, click "Off Duty," then enter the Grapher Station.)
- OR
- A graphing calculator.
- OR
- Graph paper and pencil.



Can you solve my riddle?
Why was 6 afraid of 7?

7 9 2 6 8 4 9 4 9 1 9 10 6 5 9 10 3 10 9

To solve the riddle, start by plotting the 10 pairs of linear equations in the chart below and finding the point at which each pair intersects. You can do this with the Grapher Station in *Astro Algebra*, a graphing calculator, or graph paper. Then use these points to find 10 letters on the Obscurian's graph that fill in the blanks in the riddle.

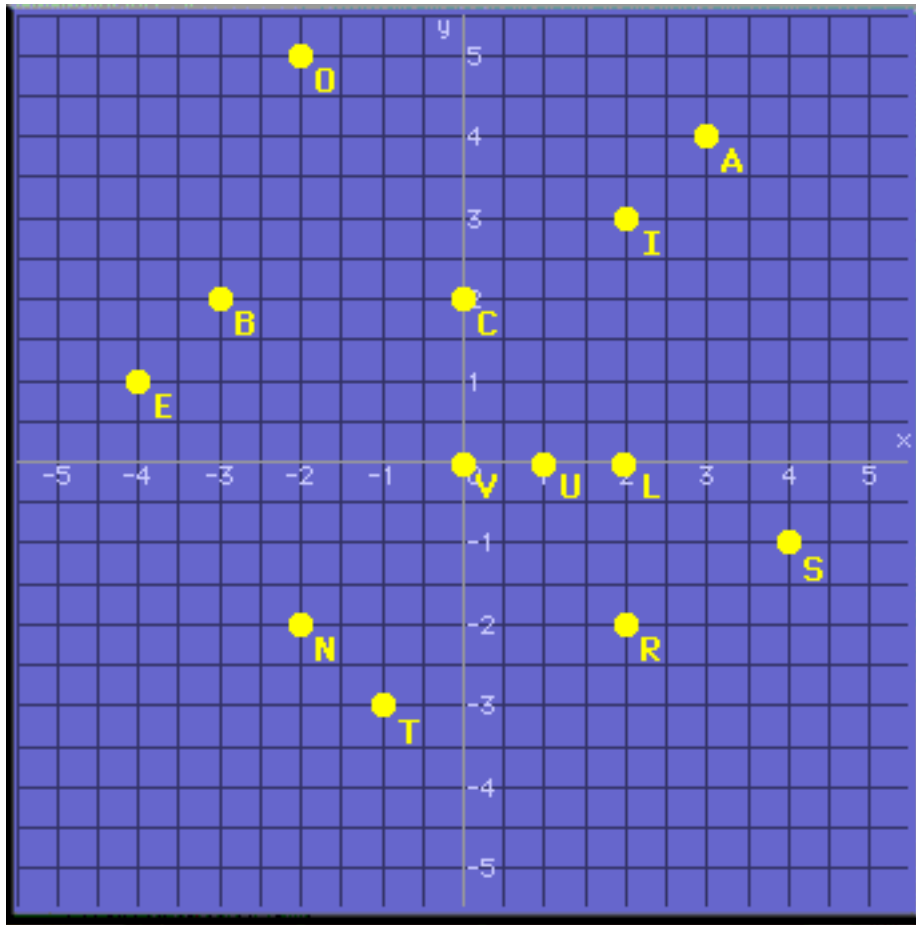
For example, follow these steps to solve Pair #1:

1. Look at the two linear equations in Pair #1, $y=x$ and $y=2x$.
2. Plot the line for each equation. The lines intersect at the point $0,0$.
3. Write the coordinates $0,0$ in the **Point of Intersection** spaces in the chart.
4. Next, find the letter on the graph that matches the point $0,0$. The letter is **V**.
5. Find the blank(s) in the Answer Space that have the number 1 below them. Write the letter **V** in each of these spaces.

CHART

Pair	Equation 1	Equation 2	Point of Intersection		Letter
			x	y	
1	$y = x$	$y = 2x$	0	0	Y
2	$y = x + 2$	$y = -x + 2$			
3	$y = 2x - 1$	$y = x + 1$			
4	$y = -x + 3$	$y = x - 5$			
5	$y = 3x$	$y = -x - 4$			
6	$y = \frac{2}{3}x + 2$	$y = 4$			
7	$y = \frac{1}{3}x + 3$	$y = -\frac{5}{3}x - 3$			
8	$y = -2x + 2$	$y = x - 1$			
9	$y = \frac{1}{4}x + 2$	$y = -\frac{1}{2}x - 1$			
10	$y = \frac{3}{2}x + 1$	$y = \frac{1}{2}x - 1$			

THE OBSCURIAN'S GRAPH



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