4.10 *X* Marks the Spot
A Practice Understanding Task

Table Puzzles

1. Use the tables to find the missing values of x:

a.

x	$y = 0.7x - 3$
-2	-4.4
-10	10
	-8.6
4	-0.2
	1.2

b.

x	$y = -\dfrac{2}{3}x + 4$
10	$-10\dfrac{2}{3}$
-3	6
5	$\dfrac{2}{3}$
	0
	10

c. What equations could be written, in terms of *x* only, for each of the rows that are missing the *x* in the two tables above?

d.

x	$y = 3^x$
5	243
	81
-3	$\dfrac{1}{27}$
	$\dfrac{1}{3}$
2	9

e.

x	$y = \left(\dfrac{1}{2}\right)^x$
-5	32
	8
	1
2	$\dfrac{1}{4}$
	$\dfrac{1}{16}$

f. What equations could be written, in terms of *x* only, for each of the rows that are missing the *x* in the two tables above?

2. What strategy did you use to find the solutions to equations generated by the tables that contained linear functions?

3. What strategy did you use to find the solutions to equations generated by the tables that contained exponential functions?

Graph Puzzles

4. The graph of $y= -\frac{1}{2}x+3$ is given below. Use the graph to solve the equations for x and label the solutions.

a. $5 = -\frac{1}{2}x + 3$

$x =$ _____

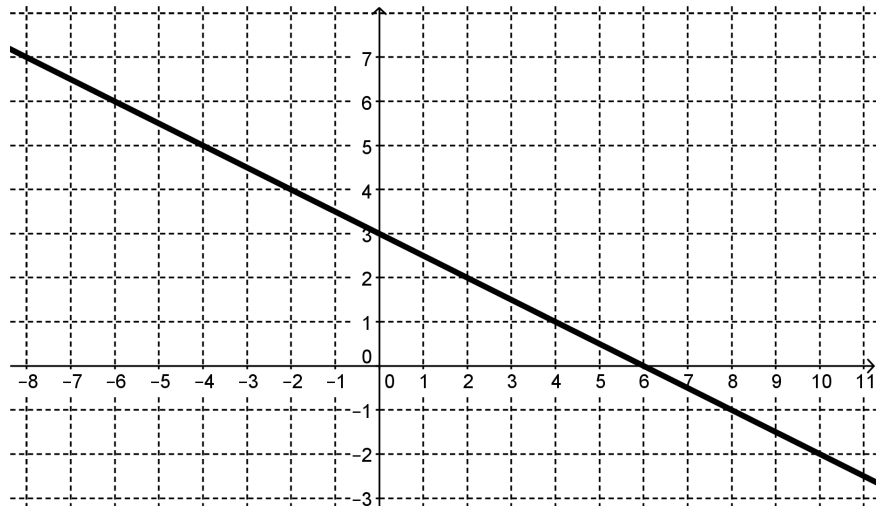Label the solution with an A on the graph.

b. $-\frac{1}{2}x + 3 = 1$

$x =$ _____

Label the solution with a B on the graph.

c. $-0.5x + 3 = -1$

$x =$ _____

Label the solution with a C on the graph.

5. The graph of $y = 3^x$ is given below. Use the graph to solve the equations for x and label the solutions.

a. $3^x = \dfrac{1}{9}$

   $x = $ _____
   Label the solution with an A on the graph.

b. $3^x = 9$

   $x = $ _____
   Label the solution with a B on the graph.

c. $3\sqrt{3} = 3^x$

$x = $ _____
Label the solution with a C on the graph.

d. $1 = 3^x$

$x = $ _____
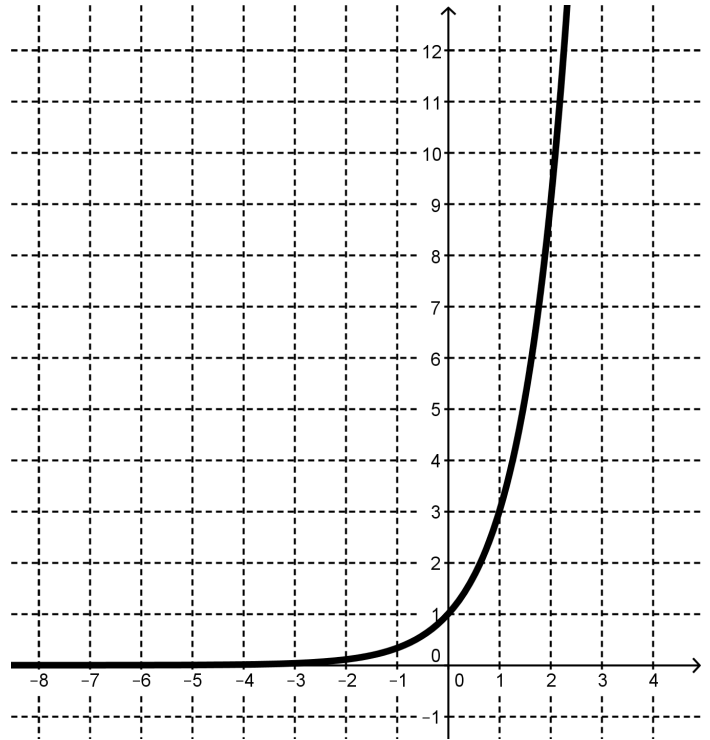Label the solution with a D on the graph.

e. $6 = 3^x$

$x = $ _____
Label the solution with an E on the graph.

6. How does the graph help to find solutions for x?

Equation Puzzles:

Solve each equation for x:

7. $5^x = 125$

8. $7 = -6x + 9$

9. $10^x = 10,000$

10. $2.5 - 0.9x = 1.3$

11. $6^x = \dfrac{1}{36}$

12. $\left(\dfrac{1.}{4}\right)^x = 16$