

Name: \_\_\_\_\_

Date: \_\_\_\_\_

## EOC-What Comes Out? Teacher Notes

**The student makes connections among various representations of a numerical relationship and to generate a different representation of data given another representation of data (such as a table, graph, equation, or verbal description).**

Students sometimes have a difficult time transitioning from recursive thinking, finding the “next one”, to the input-output patterning the leads to an understanding of functions. This activity focuses on the use of the table function of the calculator to efficiently answer standardized test questions.

What happens when you put numbers into a pattern or equation? If you put different numbers in, what happens to the numbers that come out?

Look at the question given below. The equation gives you the cost of tickets on a bus.

How many tickets are you to buy to find the correct table of values?

1,2,3,4

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How can you use a graphing calculator to find the answer to the question?

Use the given equation to graph and trace for values or the table to substitute values into the equation.

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**1** The equation  $c = 0.75t$  represents  $c$ , the total cost of  $t$  tickets on a bus. Which table contains values that fit this equation?

Name: \_\_\_\_\_

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Cost of Bus Tickets

A

<i>t</i>	1	2	3	4
<i>c</i>	\$0.75	\$1.50	\$2.25	\$3.00

Cost of Bus Tickets

B

<i>t</i>	1	2	3	4
<i>c</i>	\$0.75	\$1.00	\$1.25	\$1.50

Cost of Bus Tickets

C

<i>t</i>	1	2	3	4
<i>c</i>	\$1.75	\$2.50	\$3.25	\$4.00

Cost of Bus Tickets

D

<i>t</i>	1	2	3	4
<i>c</i>	\$1.75	\$2.75	\$3.75	\$4.75

A student can enter the equation  $y=0.75x$  in the equation editor and, using the table, find the correct values of *c*.

Plot1 Plot2 Plot3 $Y_1 = 0.75X$ $Y_2 =$ $Y_3 =$ $Y_4 =$ $Y_5 =$ $Y_6 =$ $Y_7 =$	TABLE SETUP TblStart=0 $\Delta Tbl=1$ Indent: Auto Ask Depend: Ask	<table border="1"> <thead> <tr> <th>X</th> <th>Y<sub>1</sub></th> </tr> </thead> <tbody> <tr><td>0</td><td>0</td></tr> <tr><td>1</td><td>.75</td></tr> <tr><td>2</td><td>1.5</td></tr> <tr><td>3</td><td>2.25</td></tr> <tr><td>4</td><td>3</td></tr> <tr><td>5</td><td>3.75</td></tr> <tr><td>6</td><td>4.5</td></tr> </tbody> </table>	X	Y <sub>1</sub>	0	0	1	.75	2	1.5	3	2.25	4	3	5	3.75	6	4.5
X	Y <sub>1</sub>																	
0	0																	
1	.75																	
2	1.5																	
3	2.25																	
4	3																	
5	3.75																	
6	4.5																	
		X=0																

A student can also use the table in “ASK” setting and see just the input and output values that are used in this problem.

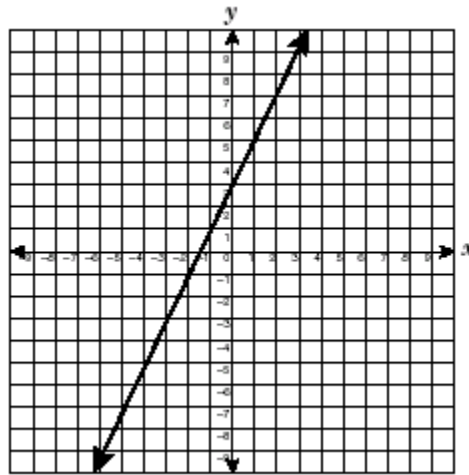
TABLE SETUP TblStart=0 $\Delta Tbl=1$ Indent: Auto Ask Depend: Ask	<table border="1"> <thead> <tr> <th>X</th> <th>Y<sub>1</sub></th> </tr> </thead> <tbody> <tr><td>1</td><td>.75</td></tr> <tr><td>2</td><td>1.5</td></tr> <tr><td>3</td><td>2.25</td></tr> <tr><td>4</td><td>3</td></tr> </tbody> </table>	X	Y <sub>1</sub>	1	.75	2	1.5	3	2.25	4	3
X	Y <sub>1</sub>										
1	.75										
2	1.5										
3	2.25										
4	3										
		X=									

This shows that the correct table of values is answer choice A.

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47 The graph of the line  $y = 2x + 3$  is drawn on the coordinate grid below.



Which table of ordered pairs contains only points on this line?

**A**

x	y
-2	1
0	3
1	5
3	9

**C**

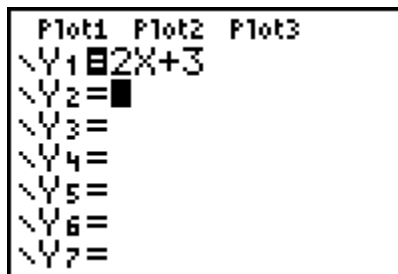
x	y
-1	-2
3	0
5	1
7	2

**B**

x	y
-2	-1
0	3
1	5
2	7

**D**

x	y
2	1
0	3
1	5
2	7



X	Y1
-2	-1
-1	1
0	3
1	5
2	7

X = -2

Using the equation editor and the table of values, a student can see that B is the correct answer.

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Can you use the same strategy to solve the problem below.

24 Which equation could be used to generate this table of values?

$x$	$y$
-1	2
0	1
1	2
2	5

- A  $y = -2x$
- B  $y = 2x + 1$
- C  $y = x + 1$
- D  $y = x^2 + 1$

When finding the pattern to match a table of values, it can save students work if they check values starting at the bottom of the table instead of the top since many standardized test questions will have more than one pattern that works at the top of a table but will not work for all the values.

For example, see what happens if you check the first pattern.

Plot1 Plot2 Plot3 $\sqrt{Y_1} = -2X$ $\sqrt{Y_2} =$ $\sqrt{Y_3} =$ $\sqrt{Y_4} =$ $\sqrt{Y_5} =$ $\sqrt{Y_6} =$ $\sqrt{Y_7} =$	TABLE SETUP TblStart=0 $\Delta Tbl=1$ Indent: Auto <input checked="" type="checkbox"/> Hsk Depend: <input checked="" type="checkbox"/> Hsk	TABLE SETUP TblStart=0 $\Delta Tbl=1$ Indent: Auto <input checked="" type="checkbox"/> Hsk Depend: <input checked="" type="checkbox"/> Hsk	<table border="1"> <thead> <tr> <th>X</th> <th>Y1</th> </tr> </thead> <tbody> <tr> <td>2</td> <td>-4</td> </tr> <tr> <td></td> <td></td> </tr> </tbody> </table>	X	Y1	2	-4		
X	Y1								
2	-4								
			X=						

The pattern works for the first number in the table but does not continue. If the student had checked the last table value first, it would be apparent that the pattern was not correct.

Some students will notice that the output value 2 is given for two input values and they would check the last pattern.

<table border="1"> <thead> <tr> <th>X</th> <th>Y1</th> </tr> </thead> <tbody> <tr> <td>2</td> <td>5</td> </tr> <tr> <td>1</td> <td>2</td> </tr> <tr> <td></td> <td></td> </tr> </tbody> </table>	X	Y1	2	5	1	2			
X	Y1								
2	5								
1	2								
X=									

You can tell that you have the wrong pattern with one input but you need to check at least two inputs to justify that you have the correct pattern.