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Setting the Table
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Teacher Notes
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How do you begin when you have a table of values and you need to find the function to fit?   Do I just use the calculator to check all the answer choices or is there something that is less work?

Checking all the answer choices is very tedious and tiring. For any students, fatigue is the greatest enemy when battling a long standardized test. Less mental energy is expended if students use what they know to eliminate some of the answer choices.

Look at the question below and decide how you can use what you know to find the solution.

48 The table shows values for the independent and dependent quantities in a functional relationship.

Independent Quantity	Dependent Quantity
0	8
1	7
2	6
3	5
4	4

Which function best represents this relationship?

F $f(x) = x + 8$
G $f(x) = x - 8$
H $f(x) = 8 - x$
J $f(x) = -8 - x$

Notice that the independent quantities are increasing as the dependent quantities are decreasing. That means that the linear function has a negative number multiplied by the x in the equation. That eliminates answer choices F and G.

You can check the other two choices using the table with the table set on ASK for the independent value.

```
Plot1 Plot2 Plot3    TABLE SETUP
\Y1￭8-X               TblStart=0
\Y2=                  ΔTbl=1
\Y3=                 Indpnt: Auto ASK
\Y4=                 Depend: Auto Ask
\Y5=
\Y6=
\Y7=

   X     Y1
   0     8
   1     7
   2     6
   3     5
         4

X=
```

Entering the choice H in the equation editor and entering the independent quantities in for x, you can see that the correct dependent values are calculated.

Look at the question below? Is there an efficient way to find the answer using the home screen?

31 Which equation best describes the relationship between x and y shown in the table below?

x	y
1	3
2	12
4	48
6	108
9	243

A $\quad y = 3x$

B $\quad x = 3y$

C $\quad x = 3y^2$

D $\quad y = 3x^2$

One thing about the input and output values should be noticed. The input and output values are increasing but not at the same amount. The second thing students should notice is that the answer choices are in two formats, *x=* and *y=*. Hopefully students will draw on previous experiences to understand that the most likely answer choice is not linear since the changes in values in the table are not constant. This would make choice D the one to check first.

```
3{1,2,4,6,9}²          3{1,2,4,6,9}²
                       {3 12 48 108 24…
                       ■
```

The first four correct values are visible on the home screen. To show the last value to confirm that it matched the table, right arrow until it is visible.

```
3{1,2,4,6,9}²
… 12 48 108 243}
```

This confirms that choice D is the correct answer.

Use the way that is easiest for you to work the question below.

40. Casey conducted an experiment and recorded the data in the table shown below.

x	y
1	1
2	2
3	5
4	10

Which equataion best describes these data?

F $y = x$

G $y = 2x - 1$

H $y = x^2 + x - 1$

J $y = (x - 1)^2 + 1$

Students should recognize that F is not a correct answer. They also should recognize that the change in *y* is not constant while the change in *x* is one, meaning that the equation is not linear.

Using the table with the Tableset on ASK for the independent value, students should have similar screen shots to those below.

These values do not match the given table.

Student could clear the equation and check with the same input values.

```
Plot1  Plot2  Plot3        X      Y₁
\Y₁⊟(X−1)²+1               1      1
\Y₂=                       2      2
\Y₃=                       3      5
\Y₄=                       4      10
\Y₅=
\Y₆=
\Y₇=                    X=1
```

These are the same values in the given table.

Using the home screen, students can evaluate each of the functions using the given independent values.

```
{1,2,3,4}²+{1,2,    {1,2,3,4}²+{1,2,
3,4}+1              3,4}+1
                           {3 7 13 21}
■
```

This first answer choice does not give the correct set of output values.

```
({1,2,3,4}−1)²+1   ({1,2,3,4}−1)²+1
■
                           {1 2 5 10}
```

This does show that the last answer choice does generate the correct values but for most students, this method is not as transparent with equations of this format as it is using the tables.