SAT RELEASED TEST ADMINISTERED ON APRIL 10, 2018

CLASSROOM SAT SESSION #6

Calculator Portion Released Test:

18.) The velocity *v*, in meters per second, of a falling object on Earth after *t* seconds, ignoring the effect of air resistance, is modeled by the equation v = 9.8t. There is a different linear relationship between time and velocity on Mars, as shown in the table below.

Time (seconds)	Velocity on Mars (meters per second)
0	0
4	14.8
8	29.6

If an object dropped toward the surface of Earth has a velocity of 58.8 meters per second after *t* seconds, what would be the velocity of the same object dropped toward the surface of Mars after *t* seconds, ignoring the effect of air resistance?

A.) 15.9 meters per second

B.) 22.2 meters per second

C.) 36.2 meters per second

D.) 88.8 meters per second

Write the responses below before you turn the page! Let's focus only on the top portion of the problem.

Ask yourself, what do we know just by reading the top portion of the problem?

_____

What do we need to find out just by reading the top portion of the problem?

_____

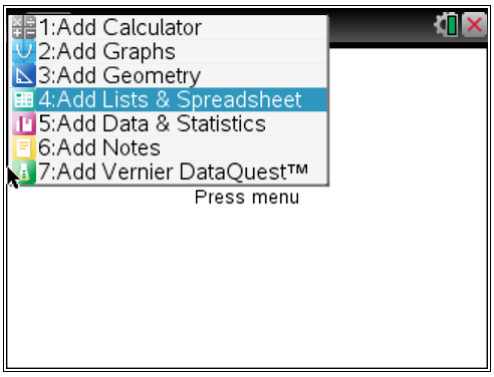
Let's use the TI Nspire to find the linear relationship between time and velocity on Mars.

Press the Home Key

Select 1: New Document

Press Enter

Select 4: Add Lists & Spreadsheet

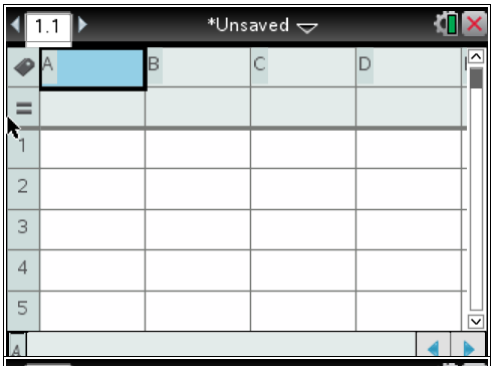


Press Enter

Put the cursor at the very top of column A.

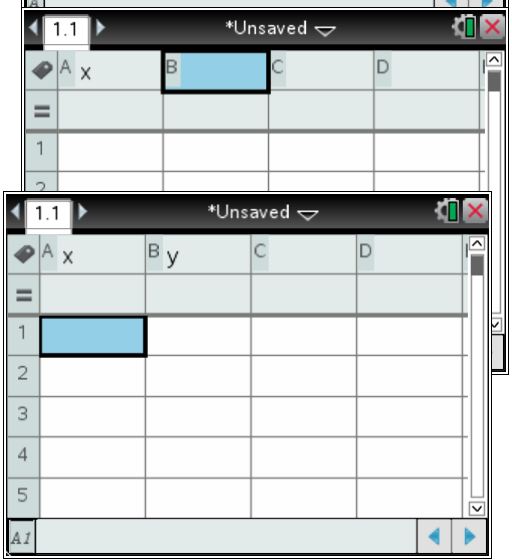
You must label the column. I realize that the x value is time in seconds, however, I do not want to waste too much time, so I am just going to label this column x.

Press x



Press Enter

Put the cursor at the very top of column B.



The y values are meters per second. Again with the limited

time we have, I just called the y values y.

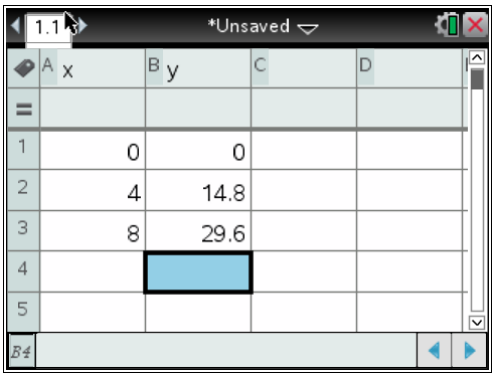
Press y

Press Enter.

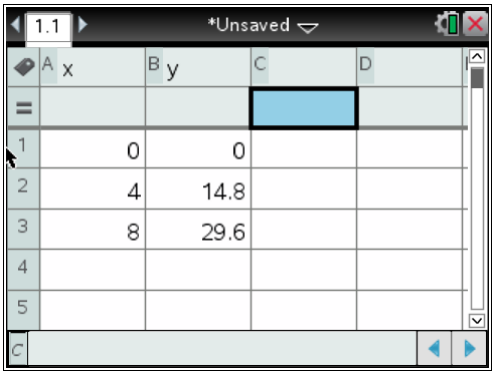
Place the cursor in row 1 of column A which are the x values.

Type in the x and the y values in the appropriate spots.

Press Enter after each data entry.



Now, place the cursor in column C in the second spot.

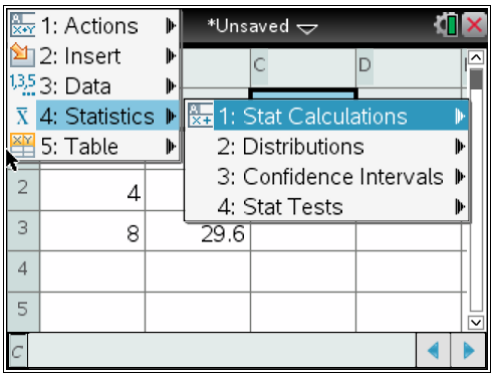


Press the Menu Key.

Select 4: Statistics

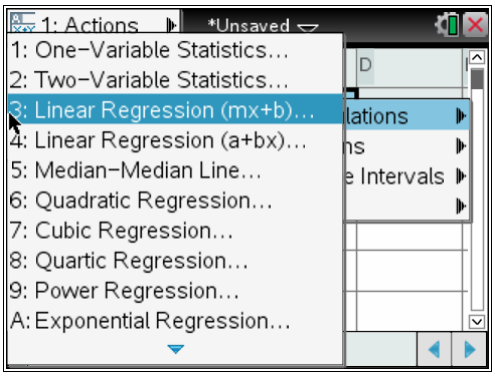
Press the right arrow key.

Select 1: Stat Calculations



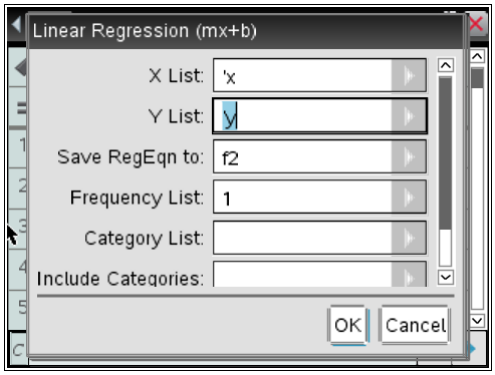
Press the right arrow key.

Select 3: Linear Regression (mx + b)



Press Enter

In the drop down menus choose the x and the y.

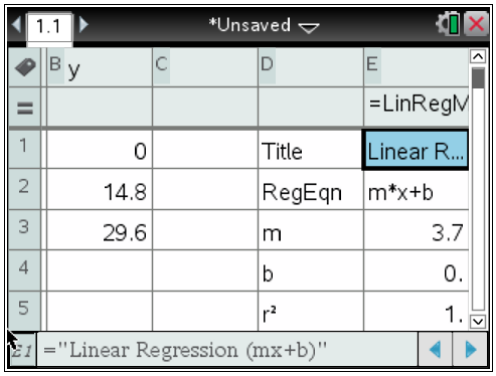


Press OK.

This gives you the slope (m) and the y-intercept (b).

y = 3.7x + 0

y = 3.7x



Just from the information we received from the top portion of the word problem, they gave us that

Earth: $v = 9.8t$

After the linear regression re performed on the TI Nspire, we know that

Mars: $v = 3.7x$

Now reread the bottom part of the word problem:

> If an object dropped toward the surface of Earth has a velocity of 58.8 meters per second after *t* seconds, what would be the velocity of the same object dropped toward the surface of Mars after *t* seconds, ignoring the effect of air resistance?

Earth	Mars
$v = 9.8t$	$v = 3.7t$

> Since an object dropped toward the surface of Earth has a velocity of 58.8 meters per second after t seconds, let's plug 58.8 into our equation. In the Earth equation, I have to solve for time. In the Mars equation, I will know the time from Earth, so I have to find the velocity.

Earth	Mars
$58.8 = 9.8t$	$v = 3.7\ (6)$
Solve for t	Solve for v
$6 = t$	$v = 22.2$

> Therefore, answer choice B is the correct solution.

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Population of Greenleaf, Idaho

Year	Population
2000	862
2010	846

The table above shows the population of Greenleaf, Idaho, for the years 2000 and 2010. If the relationship between population and year is linear, which of the following functions P models the population of Greenleaf t years after 2000?

A) $P(t) = 862 - 1.6t$

B) $P(t) = 862 - 16t$

C) $P(t) = 862 + 16(t - 2{,}000)$

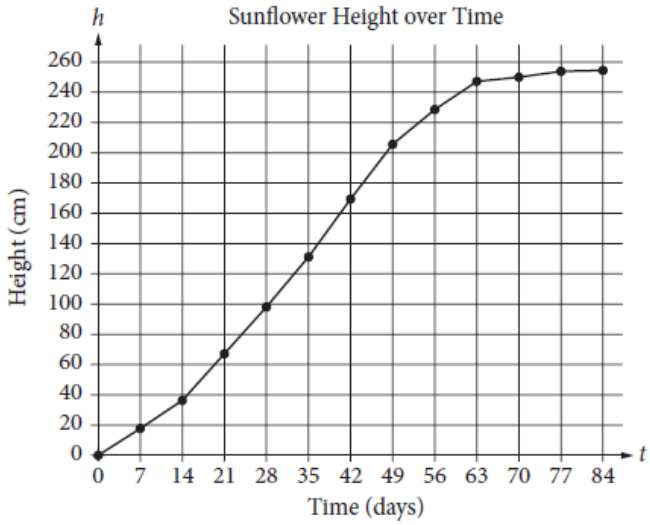
D) $P(t) = 862 - 1.6(t - 2{,}000)$

SAT Released Test #6

Questions 12-14 refer to the following information.

Sunflower Growth

Day	Height (cm)
0	0.00
7	17.93
14	36.36
21	67.76
28	98.10
35	131.00
42	169.50
49	205.50
56	228.30
63	247.10
70	250.50
77	253.80
84	254.50



In 1919, H. S. Reed and R. H. Holland published a paper on the growth of sunflowers. Included in the paper were the table and graph above, which show the height h, in centimeters, of a sunflower t days after the sunflower begins to grow.

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The growth rate of the sunflower from day 14 to day 35 is nearly constant. On this interval, which of the following equations best models the height h, in centimeters, of the sunflower t days after it begins to grow?

A) $h = 2.1t - 15$

B) $h = 4.5t - 27$

C) $h = 6.8t - 12$

D) $h = 13.2t - 18$

TI NSpire Steps

1.) Classroom Session #1 uses question 6 on the calculator portion of the SAT test given on April 10, 2018

TI NSpire Calculator Skill: "Solving Linear Systems" on the TI Nspire

2.) Classroom Session #2 uses question 5 on the calculator portion of the SAT test given on April 10, 2018

TI NSpire Calculator Skill: Boolean Checking on the TI Nspire

3.) Classroom Session #3 uses question 8 on the calculator portion of the SAT test given on April 10, 2018

TI NSpire Calculator Skill: Storing values for variables on the TI Nspire

4.) Classroom Session #4 uses question 6 on the calculator portion of the SAT test given on April 10, 2018

TI NSpire Calculator Skill: "Solving Linear Systems" on the TI Nspire

5.) Classroom Session #5 uses question 17 on the calculator portion of the SAT test given on April 10, 2018

TI NSpire Calculator Skill: Finding Population Standard Deviation on the TI Nspire

6.) Classroom Session #6 uses question 18 on the calculator portion of the SAT test given on April 10, 2018

TI NSpire Calculator Skill: Finding Linear Regression on the TI Nspire