

TI Technology Guide for Clearing The Bar

TI-83 Plus and TI-84 Plus Families

Unit conversion using the Science Tools Application.

Activity 1

The 2000 Olympic women's pole vault Gold medalist was Stacy Dragila from the United States. Stacy is 5'8" tall and her sprint speed is 8.33 m/sec. Calculate the height in meters that Stacy should be able to vault. Don't forget to convert Stacy's height to meters.

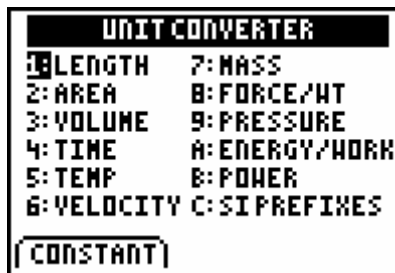
1. Starting the Application. Press **[APPS]** to display the list of applications on your calculator. From the APPLICATIONS list, arrow to SciTools (or press **[ALPHA]S** to quickly move down the list to the "S" APPs) and press **[ENTER][ENTER]**.



2. Select 2:UNIT CONVERTER and press **[ENTER]**.



3. Press **[1]** or **[ENTER]** to convert Stacy's height to meters.



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4. Enter Stacy's height in feet ($5'8'' = 5.66667$ ft). Use the arrow keys to highlight **ft** and press **ENTER**.



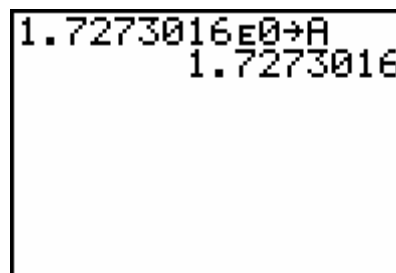
5. Use the arrow keys to highlight **m** for meters and press **ENTER**.



Notice that the number is written in scientific notation.



6. To export this number to the home screen press the soft key (**ZOOM**) for EXPT then press **2nd** [QUIT]**2nd**[QUIT] and the soft key (**Y=**) to EXIT.



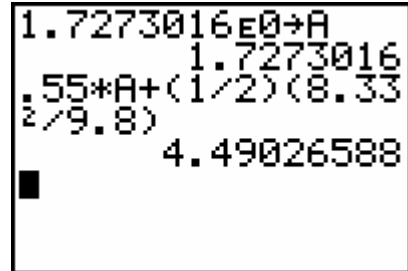
7. Press **STO** **ALPHA** A to store this number to the variable A.

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8. Now enter the formula on the home screen to calculate the suggested height for Stacy's vault.

In this case the suggested height for her vault is 4.49 meters.

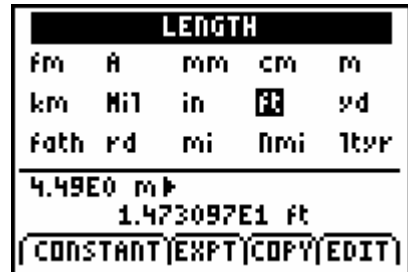


Activity 2:

Using the SciTools APP on your graphing calculator, estimate how high Stacy's vault would be in feet and inches?

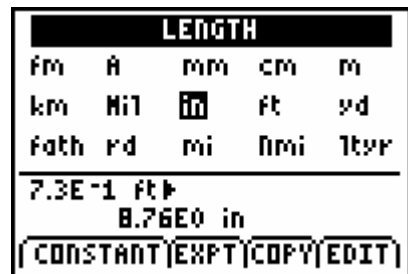
1. Enter the SciTools Application as shown in Activity 1.
2. Choose UNIT CONVERTER and LENGTH.
3. Enter 4.49 and choose **m** for meters press **[ENTER]**.

Highlight **ft** and press **[ENTER]**.



This means that Stacy's suggested height is 14.73 feet.

4. Now convert 0.73 feet to inches using the SciTools App.



This means that Stacy's suggested height would be 14'9".

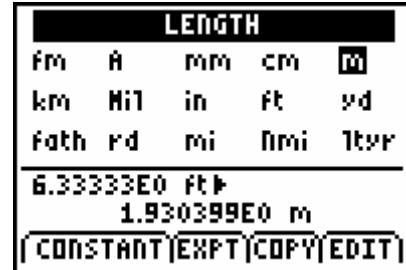
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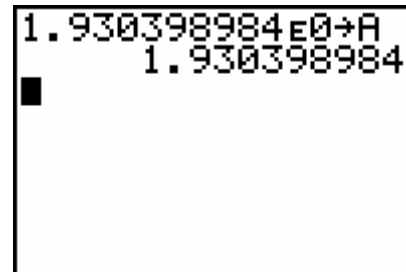
Activity 3:

If a man is 6'4" and can run at a velocity of 9.65 m/sec, how high should he be able to vault in meters? If you are a male, use this formula: $h = 0.60 * [\text{your height}] + \frac{1}{2}(v^2/g)$

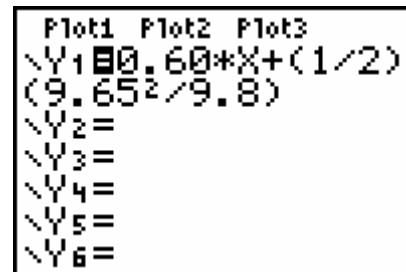
1. Use the same procedure as in Activity 1 to start the Science Tools Application and convert the height to meters.



2. Export this value to the home screen and store this number as a variable.



3. Another method, different from Activity 1, to evaluate the formula to predict vault height is as follows. Press $\boxed{Y=}$ and enter the formula shown at the right in Y1. If there are any equations in the Y= Editor move the cursor to the equation and press $\boxed{\text{CLEAR}}\boxed{\text{ENTER}}$. Continue clearing all equations before entering the new equation. In the equation at the right the X value represents height in meters and Y represents the predicted vault height.

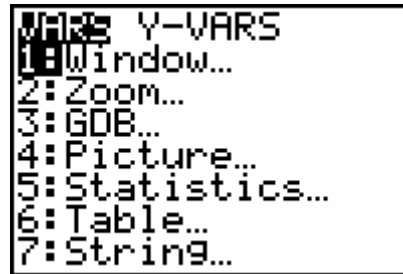


4. Press $\boxed{2nd}\boxed{[QUIT]}$ to return to the home screen and press $\boxed{\text{CLEAR}}$ if there is anything on the screen.


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5. Press **[VAR]** **[▶]** **[ENTER]** **[ENTER]**



```
VARS Y-VARS
1: Window...
2: Zoom...
3: GDB...
4: Picture...
5: Statistics...
6: Table...
7: String...
```



```
VARS Y-VARS
1: Function...
2: Parametric...
3: Polar...
4: On/Off...
```

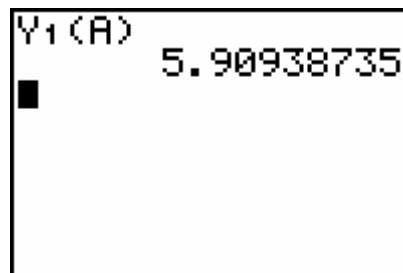


```
FUNCTION
1: Y1
2: Y2
3: Y3
4: Y4
5: Y5
6: Y6
7: ↓Y7
```



```
Y1 █
```

6. Press **[◀]** **[ALPHA]** **[A]** **[▶]** **[ENTER]**. The suggested vault height is 5.91.



```
Y1(A) 5.90938735
█
```

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Activity 4:

How high would this be in feet and inches? Use the answer from Activity 3 of 5.91 meters to convert to feet and inches.

1. Enter the SciTools App and select UNIT CONVERTER and LENGTH.
2. Enter 5.91 and arrow to **m**, press **ENTER**. Arrow to **ft** and press **ENTER**.

This number is in scientific notation and means that the height is 19 ft.

LENGTH				
fm	ft	mm	cm	m
km	mi	in	ft	yd
fath	rd	mi	nmi	kyr
5.91E0 m				
1.938976E1 ft				
CONSTANT EXPT COPY EDIT				

3. Press **CLEAR**, enter 0.39, highlight **ft**, and press **ENTER**. Highlight **in** and press **ENTER**.

Using the last two calculations means that the suggested height is 19'5"

LENGTH				
fm	ft	mm	cm	m
km	mi	in	ft	yd
fath	rd	mi	nmi	kyr
3.9E-1 ft				
4.68E0 in				
CONSTANT EXPT COPY EDIT				