

# mission briefing for students

In partnership with



## Extremes of Temperature

1. Find hottest and coldest places on Earth. (Look here: <http://bit.ly/1FwJTSv>)
2. Find the average maximum and minimum temperature in 4 major world cities. You could choose the capital cities of countries students in your class have family from. (Look here: <http://bit.ly/1IIYpkK>)



teacher's top tip

Make sure that ALL of your readings are in °C (Centigrade). If you can only find °F (Fahrenheit) look for temperature conversion on the help sheet.

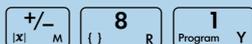


teacher's top tip

Work out the temperature range on your calculator.

Use the  $\boxed{\pm}$  key to enter the negative temperatures.

For example -81°C enter



3. Now find out the maximum and minimum temperatures inside and outside the International Space Station. (Look here: <http://bit.ly/1G5jmXn>)



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4. Make a table.

Numb	Place	Maximum	Minimum	Temperature Range (Maximum – minimum)
1	ISS Outside			
2	ISS Inside			
3	Hottest and coldest places on earth			
4	City 1			
5	City 2			
6	City 3			
7	City 4			

#### Look at your data

1. Draw a bar chart of the maximum temperatures.
2. Draw a bar chart of the minimum temperatures.
3. Draw a bar chart of the temperatures ranges.
4. Work out the average temperature range



See the Help sheet to draw bar charts





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#### Questions

Answer these questions:

1. Where do you find the biggest range of temperature?
2. What does that tell you about being out and about in that place?
3. What is it like living in cities with a big temperature range?
4. What is it like inside the International Space Station?
5. How do the cities compare to the average temperature range?
6. How does the International Space Station compare to the average?
7. How would you keep yourself comfortable inside and outside the ISS compared to living in one of the cities?





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### Extremes of Temperature

#### Help Sheet: Convert °F (Fahrenheit) to °C (Centigrade)

This is the rule to use:

$$(^{\circ}F - 32) \div 1.8 = ^{\circ}C$$

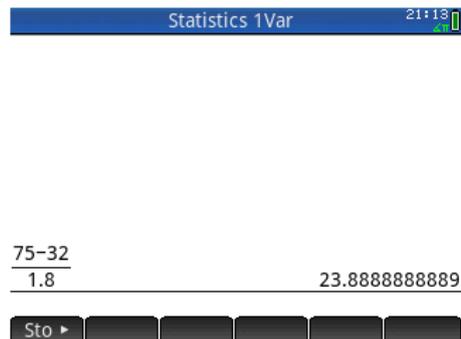
##### Example 1

“Inside the ISS the temperature is normally kept around  $75^{\circ}F$ ”

You will work out:

$$(75^{\circ}F - 32) \div 1.8$$

Into HP Prime type:



The temperature inside the ISS is normally kept around  $28.9^{\circ}C$

##### Example 2

“Without thermal controls, the temperature of the orbiting Space Station's Sun-facing side would soar to  $250^{\circ}F$  while thermometers on the dark side would plunge to minus  $250^{\circ}F$ ”

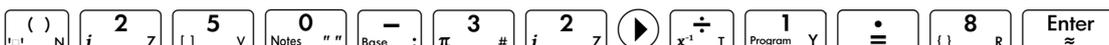
You will work out:

$$(250^{\circ}F - 32) \div 1.8$$

... and

$$(-250^{\circ}F - 32) \div 1.8$$

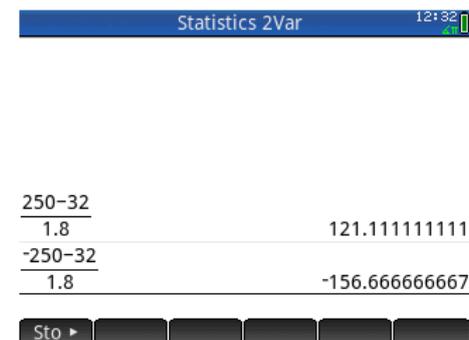
Into HP Prime type:



... and



“Without thermal controls, the temperature of the orbiting Space Station's Sun-facing side would soar to  $121.1^{\circ}C$  while thermometers on the dark side would plunge to minus  $-156.7^{\circ}C$ ”



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### Extremes of Temperature

#### Drawing Multiple Bar Charts

1. Press and choose Statistics 1 Var

2. On the screen click **Reset** then **OK** then **Start**



3. Enter your data from the three columns. Type the number then Press . Press right cursor

to go to the next column.

4. Press and Choose Bar for Plot 1, then Bar for Plot and for Plot 3. Click in the tick boxes for all three plots.

5. Press to see the bar chart for your data.

Statistics 1Var Numeric View				
	D1	D2	D3	D4
1	-56	-81	25	
2	-4	23	27	
3	42	23	19	
4	37	14	23	
5	49	24	25	
6				

Enter value or expression  
 Edit More Go To Sort Make Stats

Statistics 1Var Symbolic View

H1: D1

Plot1: Bar

Option1:

H2: D2

Plot2: Bar

Option2:

H3: D3

Choose graph color

Choose

