

## Evidence of Change – Student Activity

*Science is just trained and organised common sense.* (J.H. Huxley)

Scientists observe and measure changes and then try to give the best possible reasons why that change happens.

Name the five senses we use to observe changes. \_\_\_\_\_

\_\_\_\_\_

Which sense do we **NOT** use in Science unless told to by the teacher? Please explain the reason for your answer.

\_\_\_\_\_

What does a scientist do if they want to smell something? \_\_\_\_\_

\_\_\_\_\_

When a scientist describes anything they have to be careful that everyone will understand exactly what they mean.

Three people saw the same thing and described it.

“It was huge and frightening and I did not like it”.

“It was quite small and had poor dress sense”.

“I found it amusing.”

What do you think they were describing? \_\_\_\_\_

Why are the descriptions so different? \_\_\_\_\_

\_\_\_\_\_



Which of these footprints is big and which is small?

\_\_\_\_\_

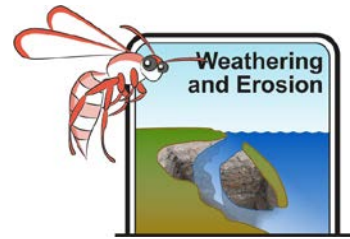


Which of these footprints is big and which is small?

\_\_\_\_\_

How can the same footprint (A) be both big and small? \_\_\_\_\_

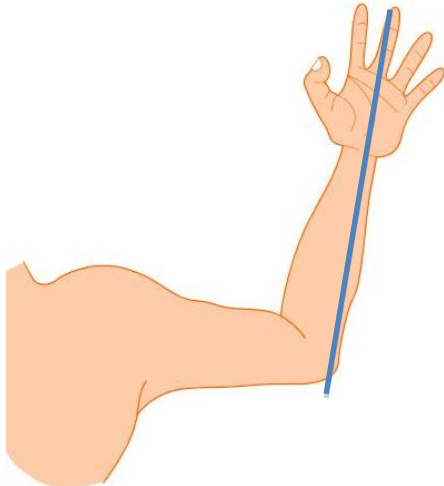
Do scientist use relative descriptions such as “ bigger” or “hotter” or “nice”? \_\_\_\_\_



## Evidence of Change – Student Activity

### Measurement and Standards

In olden times people did not use standard measurements so that measurements could differ in different places. In many parts of the ancient world the basic measurement of length was one cubit. This is the distance from your middle finger tip to the bottom of your elbow.



One cubit



One digit

To make things more confusing in Egypt the “Royal” cubit was 27 digits whereas earlier in Mesopotamia the Royal cubit was 30 digits!

If you had to pay one dollar per cubit to buy cloth in the market, in which country would you get the most cloth for your dollar?

\_\_\_\_\_

Using the few standard cubit rods uncovered during archaeological digs, the Egyptian cubit was 525mm whereas the Mesopotamian one was 497mm.

### Compare Standard Measurements and Personal Measurements – Experimental Design

Let's test the assumption that standard measurements are necessary for science data

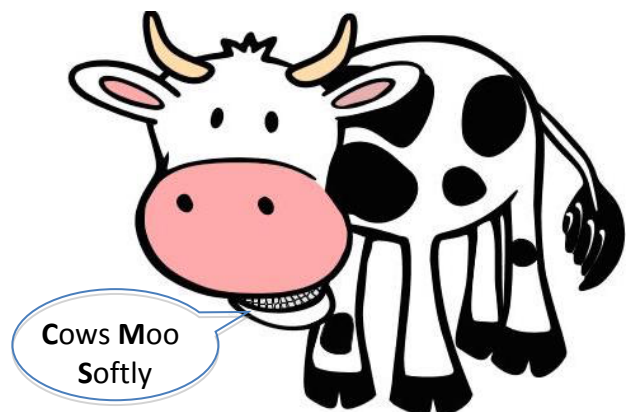
To make a good science experiment, we must:

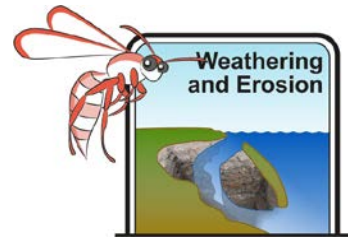
C \_\_\_\_\_

M \_\_\_\_\_

S \_\_\_\_\_

\_\_\_\_\_





## Evidence of Change – Student Activity

**Materials** (What would you need?)

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**Method** (What will you do?)

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**Observations** (What data did we collect)

| Student name  | Length in cubits & digits | Length in cm or mm |
|---|---------------------------|--------------------|
|   |                           |                    |
|   |                           |                    |
|   |                           |                    |
|   |                           |                    |
| <b>Total length</b>                                       |                           |                    |
| <b>Average length = Total length / Number of students</b> |                           |                    |

**Conclusion** (What did the data above suggest about using relative or non standard measurements compared to standard measurements?)

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In science experiments we use:

Rulers \_\_\_\_\_ to measure distance

\_\_\_\_\_ to measure heat and cold

\_\_\_\_\_ to measure weight or mass

Can you think of any other things we use to measure things in Science?