

Lesson 7: How Do I Measure This?

Engagement Questions:

Why was it a bad idea for the king to walk around the queen to measure for her bed? _____

Why did the bed end up being too small for the queen? _____

How could this problem have been avoided? _____

Exploration Activity:

The reason to do an experiment is to answer a question. The question that you and your team will answer is:

How is the size of the crater related to the size of the item and the height from which it is dropped?

During this experiment you will learn how craters form. To start, we will need three objects that we will pretend are meteors. With your team, circle the **three** objects you will use:

marble

ping pong ball

dried peas

golf ball

gumball

cinnamon imperial

So that we can get good results, we will need to drop each object from the same height. Circle the **one** height that your team will drop your objects from:

30 centimeters

50 centimeters

70 centimeters

Then, use this information to fill in the shaded parts of the table on the next page.

Exploration Activity Cont.:

	Diameter of Crater from Drop Height _____	
Items that will be dropped ↓		
1.		
2.		
3.		

Teacher Checkpoint: Once you and your team have completed the shaded areas, ask your teacher to check it over. Teacher's Initials: _____

Now that you have correctly created your table, begin the experiment by **dropping** the first item from the height your team selected. Then, carefully remove the object from the pan using the tongs.

With your team, examine the crater. Use your ruler to measure the diameter of the crater (in cm). The diameter is the distance across the widest part of the circle.

Repeat these steps with your two other objects. Each time:

1. Drop the next object into the pan from the correct height.
2. Carefully remove the object with the tongs.
3. Measure the diameter of the crater left behind.
4. Record the diameter of the crater correctly on the chart.

When you have finished, we will need something to compare it to. Place an X over your Drop Height and work with your team to circle a different number. Then, write this number in the **third column** of your table above.

30 centimeters

50 centimeters

70 centimeters

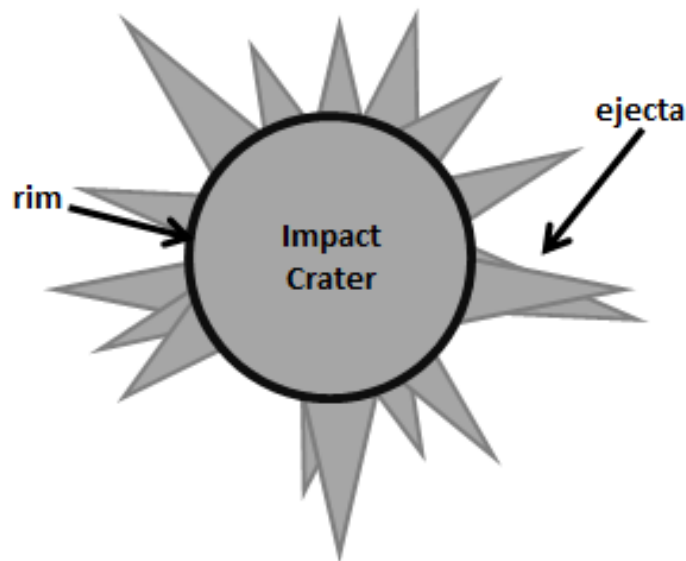
Teacher Checkpoint: After you and your team have circled your second Drop Height and written it in the third column of your table, show it to your teacher. Teacher's Initials: _____

Exploration Activity Cont.:

Now that your chart is complete, we need to draw conclusions from the information we gathered.

Which item created the biggest crater? Why? _____

Using the diagram below, choose one of your objects and describe in detail what the crater looked like after the object was removed.



How does the crater change as the height an object is dropped from changes?

Explanation:

What scientific or technological question will your team answer? (Go back through your Science Notebook and copy it from Lesson 6.)

Our Team's Question: _____

Now, think about the experiment that you conducted and how you measured the craters to help answer this question.

What things will you measure with your own rover experiment:

1. _____
2. _____
3. _____

List three ways you and your team will take these measurements in your own experiment?

1. _____
2. _____
3. _____

Evaluation:

Why are taking accurate measurements critical to your Mars rover mission? _____
