Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Date\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_P.\_\_\_\_

TUBE EXPLORATION

**BACKGROUND**: The process of science involves testing ideas about the natural world with data from the natural world. The process of science involves observation (asking a question), exploration (observation and inference), discovery and testing (making a hypothesis and experimenting), application (analyzing and making conclusions) and communicating with others

(scientists share their ideas.)



**Question**: What does the interior construction of the tube look like?

Before making a hypothesis, scientists discuss and share their ideas with

other scientists.

* **Observations:**

Write down **one** observation that your group discussed without touching the tube.

1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

NOW-Pass the tube to each person in your group and discuss what you and your group observe.

* Write down **two** observations that your group discusses. These observations should have something to do with what happens when you pull on a certain string, such as: *When I pull the bottom string, all the strings move.*

2.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

3.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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Now, pass the tube to each person in your group again and discuss how you think the tube is put together inside *what does it look like on the inside?* The things you discuss are known as inferences.

Materials that you will use to make your models are: beads, buttons, plastic ring, string, paper tubes, masking tape, paper clips, single hole puncher

* Write down **two** inferences that your group discusses.
* Your inferences will describe two different ideas of what you think the inside of the tube looks like. (How do you think it is made?)
* **Inferences**:

1.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

2.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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* **Hypothesis**:

Part of your hypothesis for this exploration will be one of your design drawings.

1. Make two different design drawings of a tube that represent your ideas as to what the inside of the tube looks like.

2. **LABEL** each part of your design drawing.

 MODEL 1 MODEL 2

3. Pick one of your design drawings above and write out your hypothesis:

If I build a model with strings connected as shown in MODEL \_\_\_\_ above, then it will \_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

**Testing**:

1. You and your table partner will build a model based on one of your design drawings.

2. You and your table partner will build a second model based on one of your other design drawings OR on a modification of your first model.

**Analyze and Draw Conclusions**: Compare your models to the original tube to determine if they work the same.

1. Claim: Describe in words the inside of one of your models that works the most like the yellow model. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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2. Describe the evidence you have to support your claim by circling an answer: ***exactly like, almost like, not like***: My model works *\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_* the original yellow model.

**Communicate**: You will share one of your models with the class.