



## Unit 1

# Building Blocks

Name: \_\_\_\_\_

Date: \_\_\_\_\_

We are going to start with an experiment. You're going to explore this question: Based on what you see, what can you infer about particles of matter?

This is actually a double experiment. You're going to see two events that give some pretty amazing clues about the structure of matter.

For the 1<sup>st</sup> experiment, you'll need a cup of water and some paperclips.

1. Fill the cup all the way up with water. The water should be right at the brim.
2. In a moment you are going to begin to carefully add paperclips to the cup of water. Predict how many paperclips you will be able to add before the water overflows and spills: \_\_\_\_\_
3. Carefully insert paperclips, one at a time, into the cup until the water overflows.
4. Compare your prediction with the actual number you inserted.

Question: Try to come up with an explanation for what you observed: \_\_\_\_\_

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For the 2<sup>nd</sup> experiment, read through the procedure and complete step 4 before you actually do steps 1-3:

1. Place an egg in a glass of water. The egg should not be hard-boiled. It should sink to the bottom. If it doesn't sink, get a different egg. (Sometimes gas is produced as an egg ages so that an older egg might float.)
2. Take the egg out of the water and add several teaspoons of salt. Stir until most of the salt dissolves.
3. Place the egg into the salt water.
4. Make a prediction: What do you think will happen when you put the egg into the salt water? Write

your prediction first: \_\_\_\_\_

Now, actually carry out the experiment and see if your prediction was correct.

Question: What actually happened when you put the egg into the salt water? Were you correct?

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The first unit we will study is all about the "building blocks" of matter. What is everything made of at the smallest particle-level? Hopefully at least one unexpected thing happened while you were playing around with eggs, water, and paperclips. Reflect on what you saw. What does this imply about the nature of matter and tiny particles? Write your reflections below. (We will come back and discuss these mini-experiments later in the unit!)