**Matter**is anything that takes up space and has mass.

Matter has **three states: solid, liquid and gas.**

**Solids** hold their shape and its particles are close together.

**Liquids** take the shape of their container and its particles are farther apart.

**Gases** fill its container and its particles are very far apart.

**Activity 1**: Find three things in your house that can be considered solids, three things that can be considered liquids and think of three examples of things that can be considered gases.

**Test to see if the definitions are accurate by doing the following:** You may wish to video your experiments to share with others (optional).

1. Hold one of the solids in your hand and squeeze it to see if it holds its shape. The more it holds its shape, the closer together are its particles.

2. Now, take a glass of water and pour it into another container such as a bowl. Did the liquid take the shape of its new container? Its particles are spread further apart.

3. Finally, think about what happens when you are standing in an elevator with someone who is wearing strong perfume. You will likely want to get off the elevator quick so as not to have to breathe it in. Now, imagine what would happen if that same person were standing at the other end of a large room. Why would the smell of perfume be less strong? Does this prove that the particles in a gas are spread far apart to fill any space?

Test this (with an adult’s permission) by spritzing an air freshener or perfume first in a small room and then in a larger room. Note the start time on a clock, watch or phone. Record how many minutes it takes for the smell to be less noticeable or completely gone. Did the size of the room affect how strong or long the scent lasted?

**Activity 2**: Matter can expand or contract depending on temperature. Think of the air in your bicycle tire. Heating or freezing the air inside can cause its pressure to drop. On a warm day, you fill your tire with air and it appears fine. Then, after leaving it outside on a cold night, you notice the tire pressure has dropped. You drive your bike down the road to get it checked and notice that it is fine again. Why? How did the friction cause the temperature of the air inside the tire to change?

**Test this idea**: You may video yourself doing the experiment if you wish to share with others (optional)

1. Get a partner to record the height that a ball bounces with a measuring tape or stick(you can place a piece of tape or marker on the stick to show how high it bounces) when you drop a basketball or any ball from the same position(ie. Hold the ball out at chin height and drop it to the floor or pavement). Try this a few times to get a good estimate.
2. Now, put the ball in a freezer for a few hours. Repeat step 1 dropping the ball from the same height while your partner records how high it bounces.
3. Did the temperature of the air inside the ball affect how high it bounced? Does this prove that matter can contract or expand?