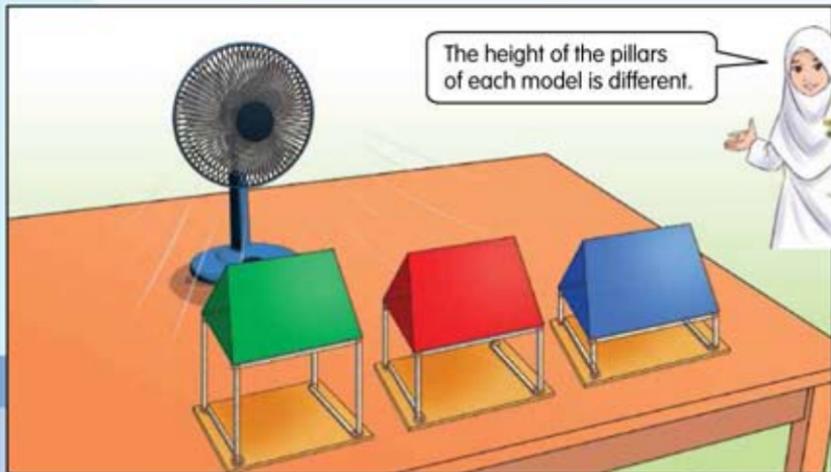
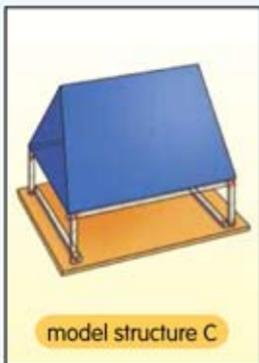


UNIT 1

SCIENTIFIC SKILLS

Alia wants to make a hurricane-proof building model. She applies scientific skills to make the most stable model.



Observe the models above. Predict which model will not fall easily when it is blown by wind. What is your reason?

Science Process Skills

Did you know that science process skills can help us to solve problems systematically? Do you still remember the science process skills that you have learned? Let us find out how Raju and his friends applied the science process skills that they have learned.



The apparatus and materials needed are scissors, adhesive tape, a ruler, a plastic bottle, four plastic bottle caps, a flexible drinking straw, two non-flexible drinking straws, two skewer sticks, and a balloon.

The steps to build a balloon car are as follows:

 Be careful when using scissors.



Measure and cut two non-flexible drinking straws at the length of 11 cm.



Paste the drinking straws to the plastic bottle using adhesive tape.



Measure and cut two skewer sticks at the length of 15 cm.

1.1.1, 1.1.2, 1.1.3,
1.1.4, 1.1.5, 1.1.6,
1.1.7, 1.1.8, 1.1.9,
1.1.10, 1.1.11, 1.1.12



Make a hole at the centre of each cap. Insert the skewer stick as shown.



Insert the skewer sticks into both of the non-flexible drinking straws. They act as axles.



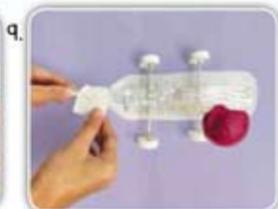
Insert the flexible drinking straw into the balloon. Join them together using adhesive tape.



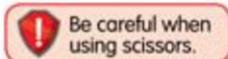
Make a hole on the upper part of the plastic bottle.



Insert the flexible drinking straw into the hole. Ensure that one end of the drinking straw is placed out of the bottle.



Stick the end of the drinking straw that is placed out of the plastic bottle using the adhesive tape.



Be careful when using scissors.

Our balloon car is ready. Let's test it. Does the size of the balloon affect the distance travelled by the balloon car?



Before testing the balloon car, Raju and his friends discuss the factors that affect the distance travelled by the balloon car.

Friends, let's use balloons of different sizes for this experiment.

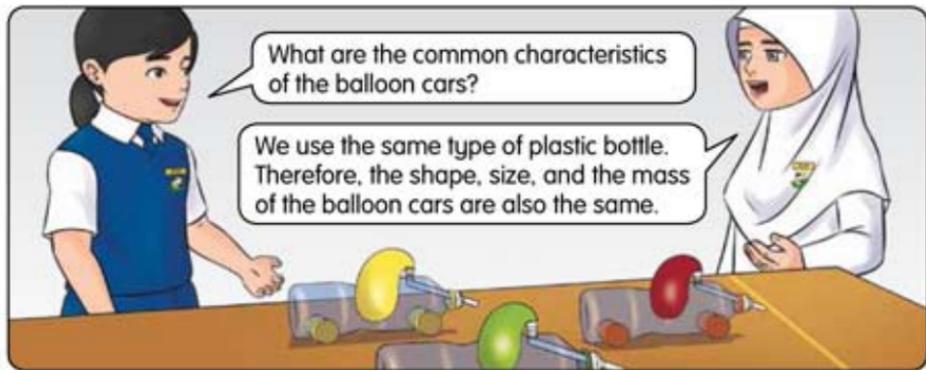
Sure. Let's fix the shape, size, and mass of the balloon cars.



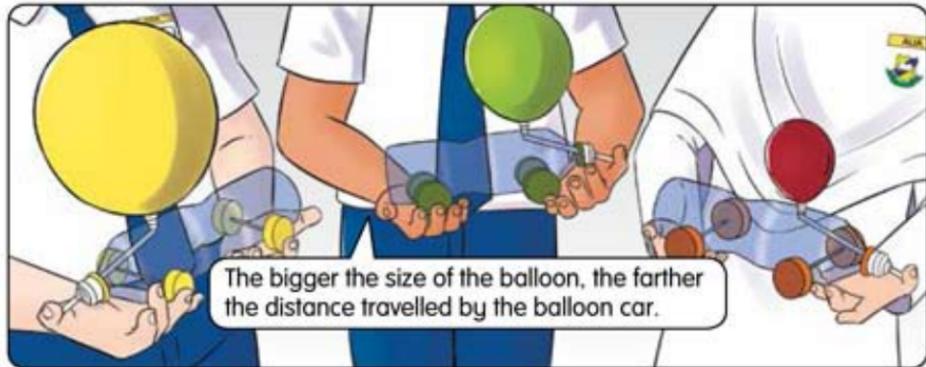
After that, we can observe the distance travelled by the balloon cars.

What are the common characteristics of the balloon cars?

We use the same type of plastic bottle. Therefore, the shape, size, and the mass of the balloon cars are also the same.



The bigger the size of the balloon, the farther the distance travelled by the balloon car.

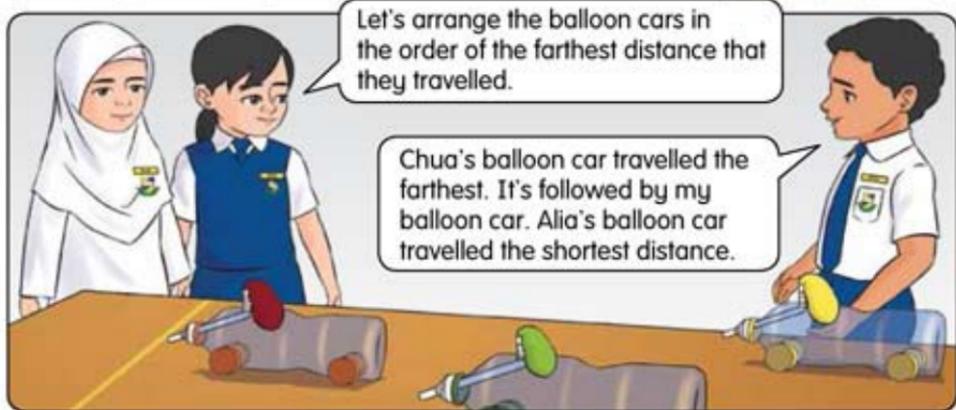
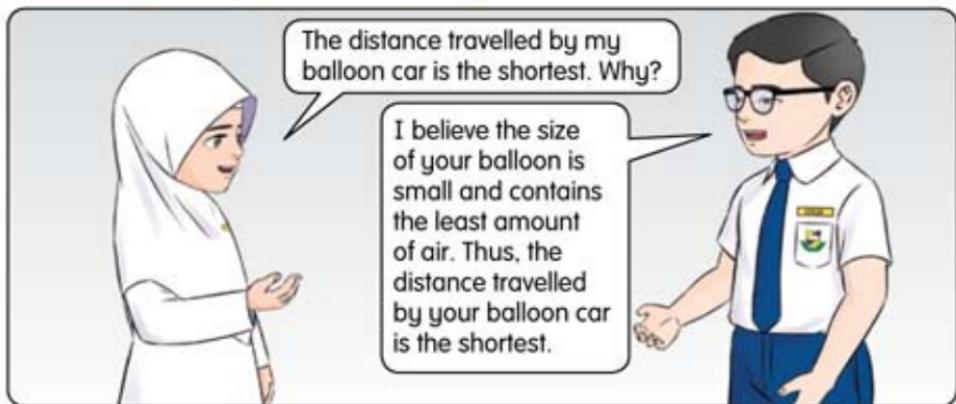
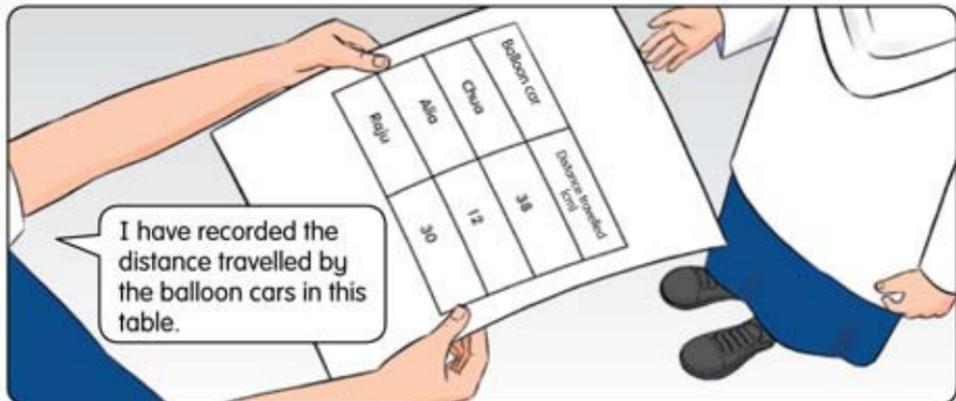


State the science process skills that are discussed by the pupils in each situation.



Assist the pupils to identify the variables in all of the steps of the experiment.



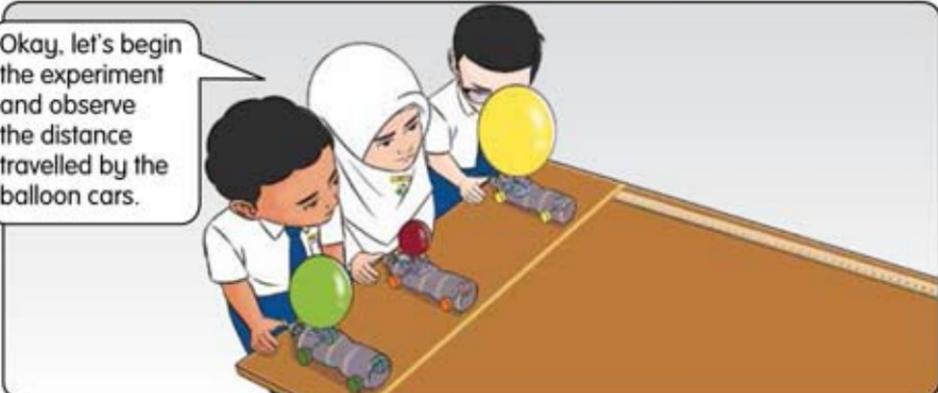


Based on the activities above, what science process skills are carried out?

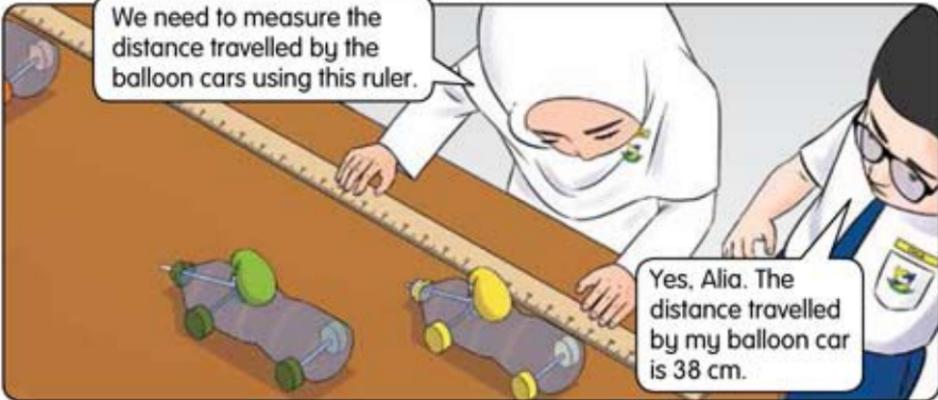




I predict that Chua's balloon car will travel the farthest.



Okay, let's begin the experiment and observe the distance travelled by the balloon cars.



We need to measure the distance travelled by the balloon cars using this ruler.

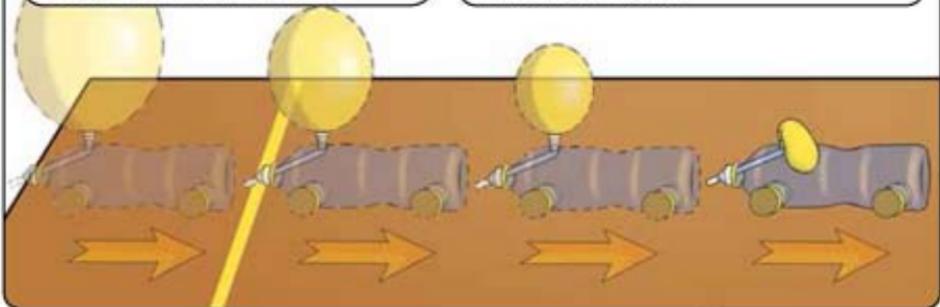
Yes, Alia. The distance travelled by my balloon car is 38 cm.



What are the science process skills that can be identified in the activity above?

Look, Chua. The size of the balloon changes as the car moves.

Yes, Raju. I noticed that the size of the balloon becomes smaller in time as the balloon car moves.



In my opinion, the fastest balloon car is also the one that travelled the farthest. Hence, the balloon car that wins is the fastest.

How do we determine the fastest balloon car?

Balloon car	Distance travelled (cm)
Chua	38
Ali	12



Let's repeat this experiment using the same balloon car but with different mass.

Sure, Jesy. I predict that the lighter the balloon car, the farther the distance it will travel.



What are the science process skills discussed by the pupils?



**EXPERIMENT****Mass Affects the Distance Travelled by the Balloon Car**

Does the mass of the balloon car affect the distance travelled by the balloon car?



Be careful when using scissors.

Plan and conduct an experiment to test your hypothesis. Write a report of the experiment based on the format shown below.

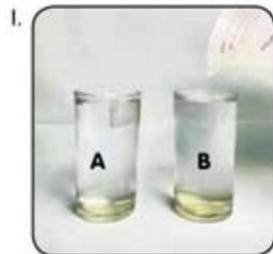
1. **Aim:** _____ 
2. **Problem statement:** _____ 
3. **Hypothesis:** _____ 
4. **Variables:**
 - (a) manipulated: _____ 
 - (b) responding: _____ 
 - (c) constant: _____ 
5. **Apparatus and materials:**
scissors, adhesive tape, ruler, one plastic bottle, four plastic bottle caps, one flexible drinking straw, two non-flexible drinking straws, two skewer sticks, one balloon, 12 pieces of 10 sen coin
6. **Steps:** _____ 
7. **Data:** _____ 
8. **Interpreting Data:** _____ 
9. **Conclusion:**
 - (a) The hypothesis is (accepted/not accepted). 
 - (b) State the conclusion: _____

111, 112, 113,
114, 115, 116,
117, 118, 119,
1110, 1111, 1112

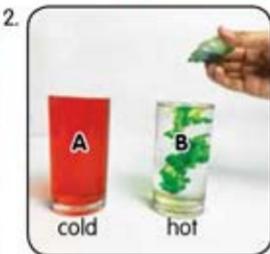


Apparatus and materials: two clear glasses of the same size, a piece of hard plastic sheet, an oven glove, cold water, hot water, two different food colourings

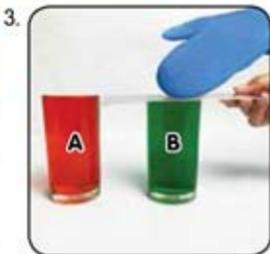
 Be careful when handling hot water.

Steps:

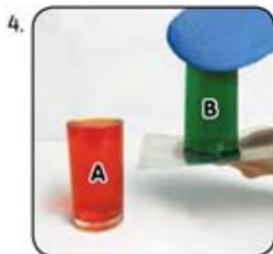
Label the glasses as A and B. Pour cold water into glass A and hot water into glass B.



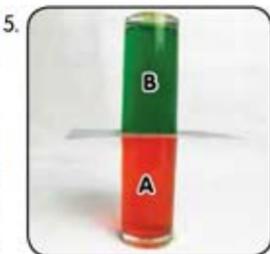
Add a few drops of red colouring into glass A and green colouring into glass B. Then, stir each solution well.



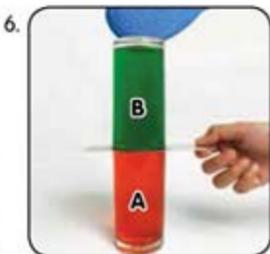
Place a piece of hard plastic sheet on top of glass B and press it using an oven glove.



Invert glass B and place it on top of glass A.



Ensure that the positions of glasses A and B are as shown in the picture.



Pull the hard plastic sheet slowly and observe.

Questions:

1. What is your observation for the activity carried out? Explain.
2. What science process skills are involved in this activity?



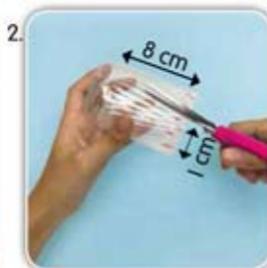
Make a bottle mill using a pair of scissors, coloured adhesive tape, and plastic bottle.

Steps:

Be careful when using scissors.



Measure 10 cm from the bottom of the bottle and cut it out.



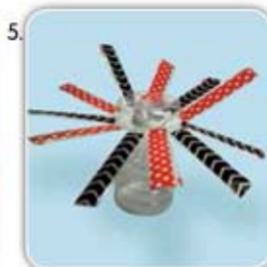
Measure 8 cm and cut vertically along the whole bottle into strips.



Fold each strip that has been cut outwards to form the fan blade.



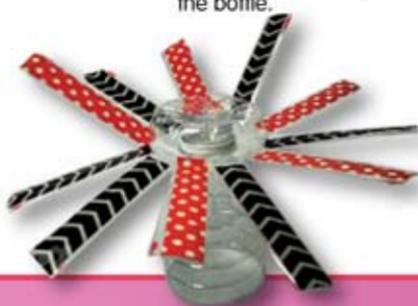
Decorate the fan blades using coloured adhesive tape.



Place the fan blades upside-down on top of the bottle.



Hold the bottle mill below a rotating ceiling fan.



bottle mill



MIND REFLECTION

The science process skills are as follows:

- observing
- classifying
- measuring and using numbers
- making inferences
- predicting
- communicating
- using space-time relationship
- interpreting data
- defining operationally
- controlling variables
- making hypothesis
- experimenting



MIND TEST

Answer all questions in the Science exercise book.

1. The pictures below show the methods to harvest paddy.



using a sickle



using a machine

Method to harvest paddy	Land area (hectare)
using a sickle	1.5
using a machine	5

What are the variables identified?

2. The pictures show two mangoes of the same type. They were plucked from different orchards. The table below is the data recorded by a Year 6 pupil.



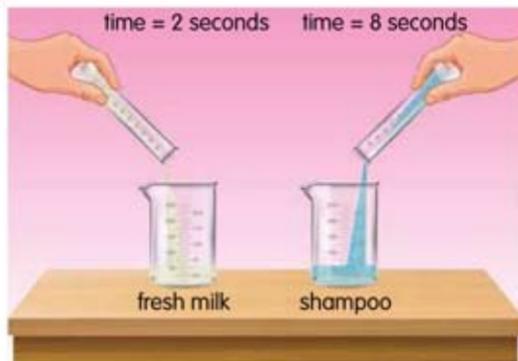
mango A

mango B

Characteristic \ Fruit	Mango A	Mango B
mass (g)	400	600
taste	sour	sweet

- (a) Give an observation and state an inference about the differences between mangoes A and B.
- (b) State one more observation to support the inference in 2(a).

3. Laili poured 100 ml of fresh milk and 100 ml of shampoo into two different beakers. She recorded the time taken for each liquid to flow out completely from the measuring cylinder. State one hypothesis that can be made from this activity.



4. The picture below shows several types of animals that are reared by Pak Teh.



- What is the common characteristic that can be used to classify these animals?
- Suggest other common characteristics that can be used to classify these animals.
- Make a classification chart for the common characteristics that you have suggested.