

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

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

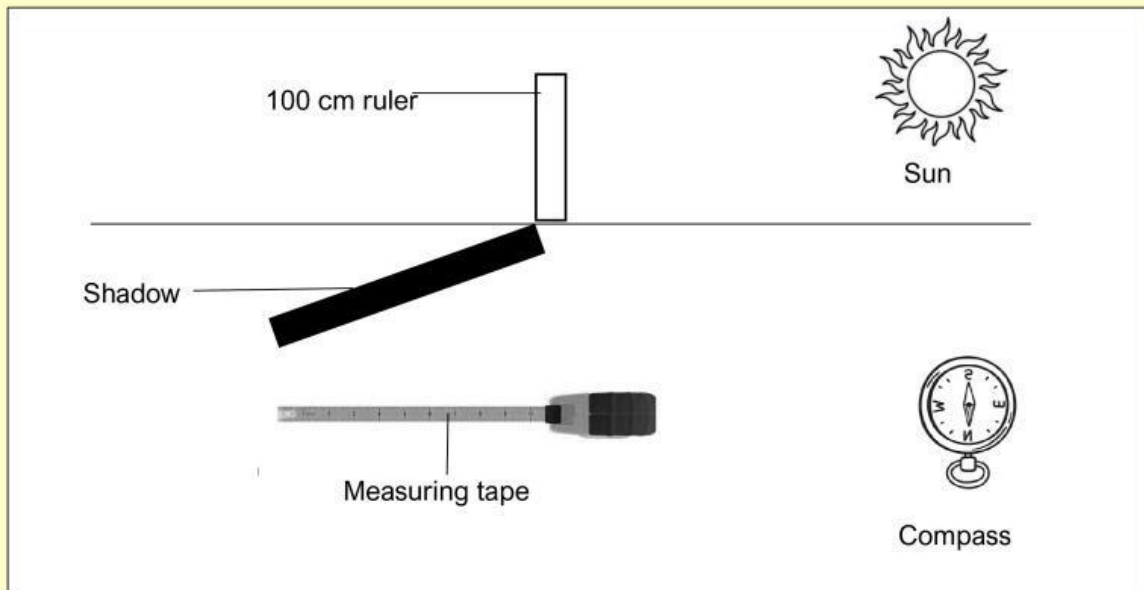
### Science Year 4 practical task

Task 2 : Shadow on the ground

Problem : Why do the length and direction of a shadow change over time?

Materials : Measuring tape, watch, 100 cm ruler, compass, masking tape

Method :



1. Stand a 100 cm ruler on the ground early in the morning.
2. Make sure the ruler is in vertical position as shown in diagram above.
3. Mark the position of West and East by masking tape.
4. Mark the shadow at 8 a.m. with masking tape.
5. Measure the length of the shadow and determine the direction of the shadow with a compass.
6. Repeat steps 4 and 5 every two hours until 4 p.m.

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

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

Record your observation in a table.

| Time    | Length of shadow (cm) | Direction of the sun  | Direction of the shadow |
|---------|-----------------------|-----------------------|-------------------------|
| 8 a.m.  | 166                   | east                  | west                    |
| 10 a.m. | 100                   | east                  | west                    |
| 12 noon | 40                    | between east and west | between east and west   |
| 2 p.m.  | 106                   | west                  | east                    |
| 4 p.m.  | 120                   | west                  | east                    |

1. The shadow of the wooden ruler moves from west to east. What is the movement of the Earth that causes this phenomenon?
  - A. From east to west
  - B. From west to east
  - C. From south to north
2. What happen to the length of shadow from morning to midday?
  - A. Increases
  - B. Decreases
  - C. Increases then decreases
3. What happen to the length of shadow from 12 noon to evening?
  - A. Increases
  - B. Decreases
  - C. Decreases then increases
4. When is the shadow of and object the longest?
  - A. 12 noon
  - B. 4 p.m.
  - C. 8 a.m.

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

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

5. When is the shadow of an object the shortest?
  - A. 10 a.m.
  - B. 12 noon
  - C. 2 p.m.
  
6. What happens to the direction of the shadow from morning to evening?
  - A. Point from east to west
  - B. Point from west to east
  
7. What conclusion can you make regarding the changes in the length and direction of shadow throughout the day?
  - A. The length and direction of shadow change because Earth rotates from the east to the west.
  - B. The length and direction of shadow change because Earth rotates from the west to the east.
  
8. In this investigation, the time is set as \_\_\_\_\_.
  - A. Manipulative variable
  - B. Responding variable
  - C. Constant variable
  
9. In this investigation, the length and direction of the shadow are set as \_\_\_\_\_.
  - A. Constant variable
  - B. Manipulative variable
  - C. Responding variables
  
10. In this investigation, there are things set as constant variable **except** \_\_\_\_\_.
  - A. Length of object
  - B. Time to observe shadow
  - C. Place of investigation