

Crayon Sundials

Objective:

Students will explore shadows and how they can be used to determine time as the Earth travels around the Sun.

Key Concept:

Shadows form because opaque materials do not let light pass through. Shadows on sundials “move” due to the Earth’s rotation and passage of time.

Supplies Needed:

- Crayola® crayons
- Crayola® glue or Crayola® modeling clay
- poster board or thin cardboard
- sunny outdoor area

Procedure and Results:

1. Have a class discussion about how shadows are formed by blocking sunlight. Discuss the

Earth’s rotation around the Sun and how shadows’ positions change throughout the day, depending on the overhead position of the Sun.

2. Show the class samples of sundials. Students could create a partial sundial that marks the hours during the school day. Have them draw designs on the outside edge of the poster board (but don’t draw the shadows or numbers yet).



3. The part of a sundial that casts a shadow is called a gnomon (NO-mon). Crayons could be used to make various types of gnomons. Students could glue a crayon upright onto the sundial or set it in a lump of modeling clay. Or students could glue a stack of crayons together for a tall stack set on the dial pointing to the middle.

4. On a sunny morning, set the sundials outside. The crayon will cast a shadow. Mark that shadow each hour by drawing a crayon line and indicate what time it is in whole Arabic or Roman numerals.

5. Repeat the time observation and shadow line drawing every hour during the school day.

