

Investigate how different angles affect solar radiation.

Materials

Materials required	Per experiment
Thermometers	2
Matches / small lengths of timber dowel	2
Wire gauze section (A4 size)	2
Sheets of black paper (A4 size)	2
Retort stand (or similar stand)	2
Aluminium foil (A4 size)	4
Tape	

Method

- Layer each of the following and secure with tape:
 - Two sheets of foil (bottom),
 - One sheet of black paper (middle), and
 - One section of wire gauze (top).
- Repeat Step 1.
- Lay each section on a flat surface — wire gauze side face down.
- Secure one thermometer to each section with tape.
 - Place the thermometer scale side down in the middle of a long edge
 - Secure a piece of tape over the base of the scale, just above the bulb (if using a mercury thermometer)
- Flip each section over.
- On the opposite long side to the thermometer, insert one match/piece of dowel so that it stands vertical.
- Attach each section to a single retort stand, by a short edge.
- Place each stand in full sun.
- Angle one retort stand so that the match/piece of dowel casts no shadow.
- Angle the other retort stand so that the match/piece of dowel casts a shadow about twice its length.

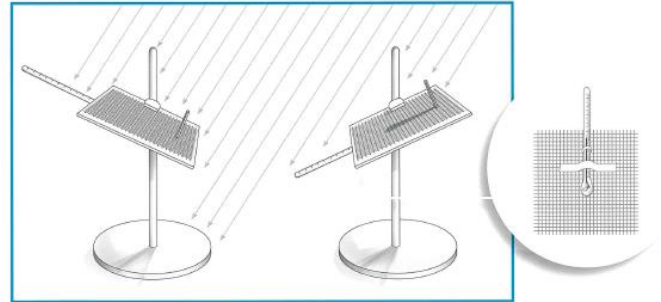


Figure 1: Material set up

Explore

- Record the temperatures at two minute intervals for 10 minutes.
- Graph your results.
 - Which stand recorded the highest temperature readings?
 - Please explain how the position of each stand is impacted the temperature readings.

Extension

- The air temperature at the tropics is warmer than the air temperature at the north and south poles.
 - Explore what this has to do with the angle of the sun.