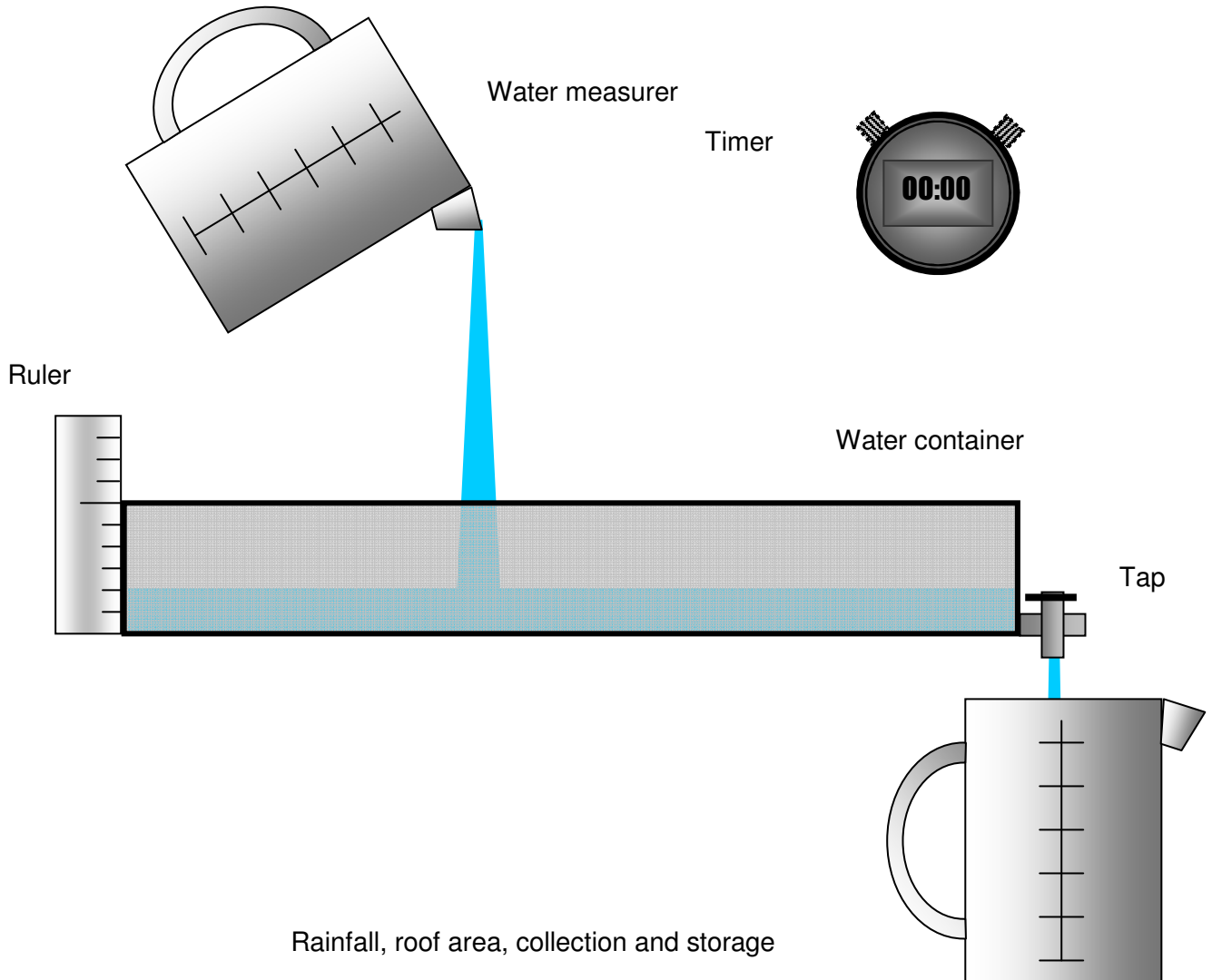


Water collection and storage

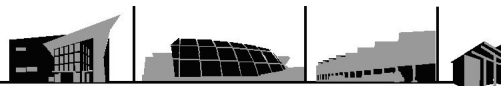


Investigations:

1. Relationship between rainfall and water collection
2. Rate of usage vs rate of collection
3. Determination of required storage capacity

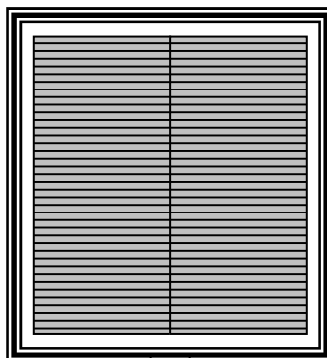
Equipment and resources:

1. 2 x Water measurers (jugs)
2. Ruler
3. Large flat tray with tap at bottom
4. Timer
5. Data logger (optional)
6. Science Investigations Teacher's notes



Solar Energy

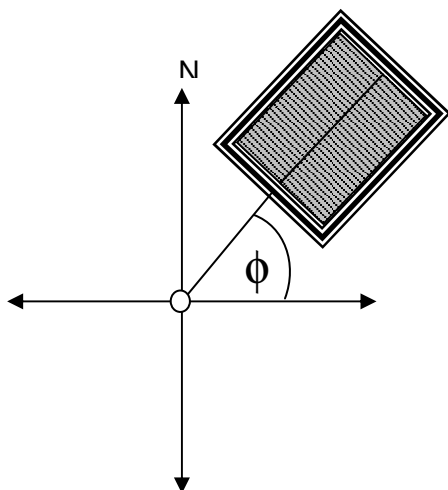
Solar panel



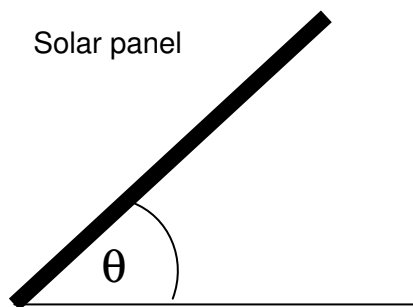
Voltmeter



Timer



Orientation angle ϕ



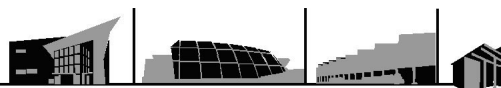
Inclination angle θ

Investigations:

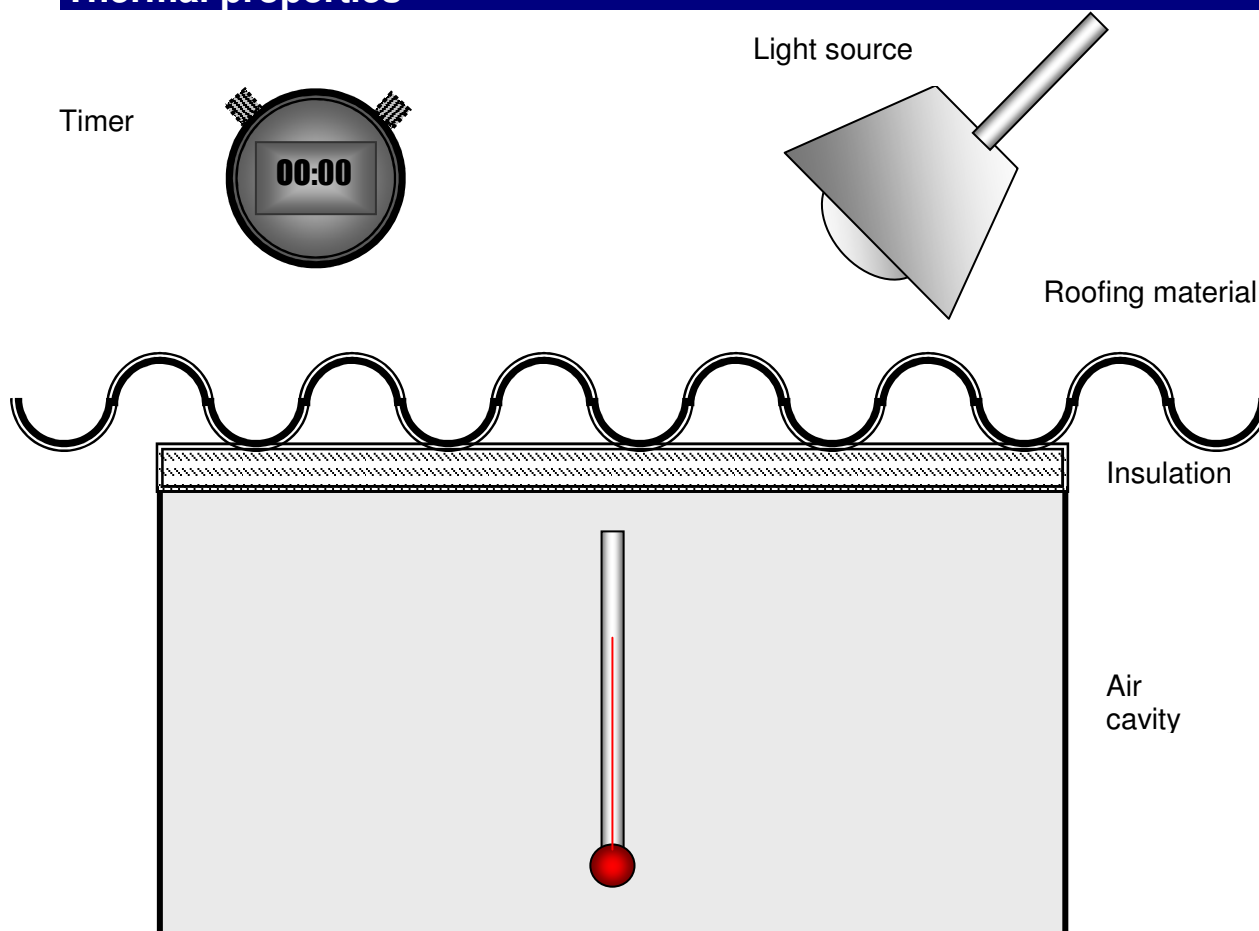
1. Solar path determination
2. Relationship between solar performance and orientation angle
3. Relationship between solar performance and inclination angle
4. Optimisation of solar performance
5. Solar energy storage

Equipment and resources:

1. Solar panel
2. Voltmeter
3. Timer
4. Data logger (optional)
5. Science Investigations Teacher's notes



Thermal properties



Investigations:

1. Heat transfer to air cavity
 - a. Control
 - b. Insulation materials
 - c. Roofing colours
 - d. Roofing with insulation
2. Effects of overhang (eaves) on air cavity temperature
3. Effects of ventilation on air cavity temperature (modifications required)
4. Thermal properties of cladding materials (design own experiment)

Equipment and materials:

1. Model house
2. Digital thermometer (internal and external temperature)
3. Insulation materials cut to size
4. Samples of roofing colours cut to size.
5. Data logger (optional extension)

Resources:

1. Science Skills: Controlling variables
2. Science Investigations Teacher's notes
3. James Hardies booklet
4. Bluescope Lysaght Colorbond website thermal properties