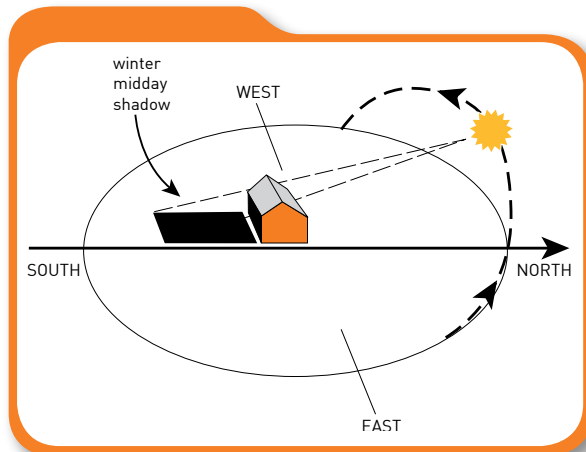


# Energy Efficient House Checklist

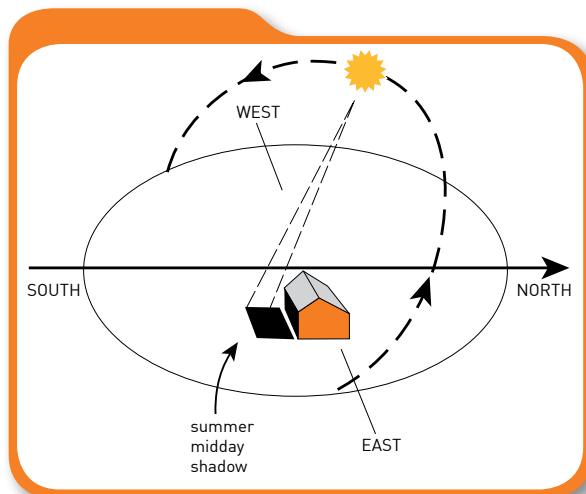
- Using the sun's energy to warm buildings is described as using **passive solar energy**.
- When architects are designing a building, to make maximum use of passive solar energy and create a building that is naturally warm in winter and cool in summer, they need to consider:
  - the building's orientation
  - particulars of the site, like the prevailing wind
  - the placement, size, construction and treatment of windows
  - the use of insulation.
- In **winter** passive solar design and construction means that we:
  - use a window design that lets as much solar heat into the building as is practical
  - use building materials that absorb the winter heat and release the heat after the sun goes down
  - use insulating material that helps retain the heat of the sun (and the heat from other heat energy sources such as a heater).
- In **summer**, passive solar design and construction may mean that we:
  - use trees, shade structures, the positioning of windows or window treatments to reduce the amount of summer solar energy that enters buildings or parts of buildings.

## Student Fact Sheet Levels 3-4

- The sun has a different trajectory or path across the sky in the summer than in the winter.



Winter path  
of the sun



Summer path  
of the sun

- Buildings should be designed and constructed to make sure they receive **maximum winter sun**. A building that is **built on an east-west axis** and has windows facing the north will collect maximum summer and winter solar energy. This means that:
  - main living rooms should face north
  - rooms that require early morning sun or later afternoon coolness should be on the east

## Student Fact Sheet Levels 3-4

- heat loss will be greatest from south-facing windows, so most homes are built with few windows on the south side
- rooms that do not need to be warm like bathrooms, laundries and garages should face the cooler south.
- **Windows facing north** will absorb maximum heat energy. Some windows that face north may need to be shaded by deciduous trees or shade structures to help stop some rooms from overheating in summer.
  - Special glass or window tints can be used that to reduce absorption of UV radiation and heat in these rooms.
- **West-facing windows** can cause overheating in the late afternoon and may need to be shaded.
  - east-facing windows help to warm a room up in the morning.
- **Curtains** can be used to retain heat in a room in winter and to prevent overheating in summer.