Solar and geothermal resources: different pathways

Teacher / technician

YEAR 10 / LESSON 31 / PHYSICS ONLY

Staff preparation and answer guidance. Keep separate from student sheets. Record actual measurements separately from labelled practice examples.

Coverage and delivery

Physics only: 4.18P, 4.19P. Solar and geothermal resources.

Allow about 60 minutes. Follow the student sequence and use the answers to check reasoning.

Requisition • class of 30, one staff demonstration and paired discussion

Item	Per pair / setup	Class total
Photovoltaic panel with matched load and leads	Staff demonstration	1 set
Opaque card and secure support	Staff demonstration	1 each
Diagram cards	1 set per pair	15 sets
Booklets	1 per learner	30

Immediate safety

Use the small panel and its matched load only. Keep it stable and dry; do not connect to mains or batteries. Do not look at the Sun, use focusing lenses or lean out of windows.

Preparation and delivery

Read alongside the student method

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1. Pilot the panel and motor or meter in available window light. If light is inadequate, use a clearly labelled recording rather than a hot lamp or invented observation.

2. Prepare 15 diagram sets. Explain the difference between solar thermal, photovoltaic and geothermal systems.

Close of lesson

- Disconnect and store the small panel and return diagram cards.

Check before teaching

Check the cards, reference data and quantities against this requisition. Keep the staff answer guide separate until the checking stage. Supplied numerical practice datasets are labelled examples; they are not class measurements.

Answers and teaching notes

Expected explanations • do not give as experimental observations

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- Thermal energy transferred to water.
- No; it converts incoming radiation into electrical output directly.
- A suitable heated working fluid or steam.
- Output should fall; record the actual observed response.
- Accessible temperatures and geological conditions vary.
- No; land, materials, construction and local environmental effects matter.

References and provenance

Pearson Physics specification

EIA: electricity generation

Prepared 22 November 2026. Original wording, tables and questions. Sources inform the concepts and technique; the lesson scope and classroom quantities are explicitly described here. No laboratory trial or final school risk approval is claimed.