

GRADE 5 LEARNING PACK

Energy Transfer, Heat & Efficiency

Trace energy transfers in simple systems and investigate heat transfer/insulation while recognising that useful energy can spread to surroundings.

LEARN • PRACTISE • CREATE • REFLECT

Original BrightPencil Kids resource - adult-led where appropriate

A4 edition • 12 purposeful pages • review copy

Print. Learn. Grow.

Grown-up guide

Learning objective

Trace energy transfers in simple systems and investigate heat transfer/insulation while recognising that useful energy can spread to surroundings.

Use this pack well

- Model the first example aloud, then let the learner try.
- Ask “How do you know?” more often than “Are you finished?”.
- Use real objects, talk, movement or observation when the activity suggests it.
- Stop or shorten the session if attention or enjoyment drops.
- Open-ended pages can have many successful answers.

Quality note

This resource was written originally for BrightPencil Kids. Curriculum sources informed scope and progression only; no third-party worksheet or story text is reproduced.

Learn the idea

1 Energy can be transferred and transformed between stores/forms in simplified models.

2 Heat transfer occurs because of temperature differences.

3 Real systems are not perfectly efficient; some energy spreads to surroundings.

Talk about it

Explain one idea in your own words. Give an example from real life, a drawing or an object if that helps.

Trace energy changes in a battery-powered lamp at a simple level.

Compare conduction/insulation examples without unsafe heat.

Interpret cooling data from two insulated cups of warm water.

Explain why “energy disappeared” is weaker than describing transfer to surroundings.

Identify one design trade-off between insulation, weight and cost using fictional materials.

Try it beyond the page

Real-world / hands-on connection

With an adult, compare cooling of comfortably warm water in safe containers; never use boiling water.

Before you finish

What did you notice?

What evidence, object or example helped you?

What would you change if you tried again?

Create something

Your project

Design an insulated container prototype on paper with materials, predicted energy-transfer pathways and a fair-test plan.

Use this space for planning, drawing, mapping, designing or notes.

CHALLENGE

Think deeper

1. What does insulation mainly do?

2. Does a real device convert all input energy into the intended useful output?

3. Why keep starting temperature the same in a fair comparison?

Quick review

1. In one sentence, explain the big idea of “Energy Transfer, Heat & Efficiency”.

2. Draw or write one example that shows you understand.

3. Choose one activity from this pack and explain the strategy you used.

4. Write one question you still have.

Answer & discussion notes

Use these as guidance, not scripts. Open questions can have different successful responses when the reasoning is sensible and evidence-based.

1. Suggested response

It slows heat transfer.

2. Suggested response

Usually no.

3. Suggested response

To make comparison clearer.

Review before publication

Check age fit, factual accuracy, clarity, accessibility, rights provenance and whether the activity works in practice. This file remains a review copy until those checks are signed off.

My learning reflection

I finished this BrightPencil learning pack.

One thing I understand better now:

A strategy that helped me:

Something I created or noticed:

My next small question or goal:
