

GRADE 5 LEARNING PACK

Forces: Gravity, Friction & Mechanical Advantage

Use force models to reason about gravity, friction, balanced/unbalanced effects and simple machines.

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

Use force models to reason about gravity, friction, balanced/unbalanced effects and simple machines.

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 Forces can change motion or shape; balanced forces can result in no change in motion.

2 Gravity attracts masses; near Earth it gives objects weight.

3 Simple machines can reduce required force by increasing distance or changing direction.

Talk about it

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

Draw force arrows for a resting book at an introductory level.

Compare friction on different surfaces using a fair test plan.

Explain why shoe tread can increase useful friction.

Use a ramp/lever example to reason about force versus distance.

Separate mass from weight at an introductory conceptual level without advanced formulas.

Try it beyond the page

Real-world / hands-on connection

Use safe toy objects, ramps or levers with adult/teacher supervision; record observations without lifting heavy loads.

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 a simple machine to move a light fictional load and justify the force trade-off.

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

CHALLENGE

Think deeper

1. What force pulls objects toward Earth?

2. Can friction be useful?

3. How can a ramp help move a load upward?

Quick review

1. In one sentence, explain the big idea of “Forces: Gravity, Friction & Mechanical Advantage”.

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

Gravity.

2. Suggested response

Yes.

3. Suggested response

It can reduce the force needed by spreading the work over a greater distance.

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.

FINISH

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:

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