

GRADE 4 LEARNING PACK

3D Structure: Balance, Join & Strength

Explore how shape, base, joins and material properties affect a small three-dimensional structure.

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

Explore how shape, base, joins and material properties affect a small three-dimensional structure.

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 A stable structure manages balance and load.

2 Different joining methods suit different materials.

3 Prototypes help reveal problems before a final build.

Talk about it

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

Build paper columns in three cross-section shapes and compare stability.

Test a wide and narrow base.

Compare fold, slot, tab and tape joins using safe materials.

Identify where a model bends under a small safe load.

Sketch a reinforcement change before rebuilding.

Try it beyond the page

Real-world / hands-on connection

Build only with lightweight craft materials and adult-approved tools; no sharp cutting without supervision.

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

Create a small free-standing sculpture or model structure with a labelled design sketch and revision note.

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

CHALLENGE

Think deeper

1. Why does base width matter?

2. What is a prototype?

3. Why test joins?

Quick review

1. In one sentence, explain the big idea of “3D Structure: Balance, Join & Strength”.

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 can affect stability.

2. Suggested response

An early model used to test ideas.

3. Suggested response

Different joins have different strength and suitability.

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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