Wisconsin Grade 3 Engineering Design Summer Review

Engineering Design: Review and Readiness

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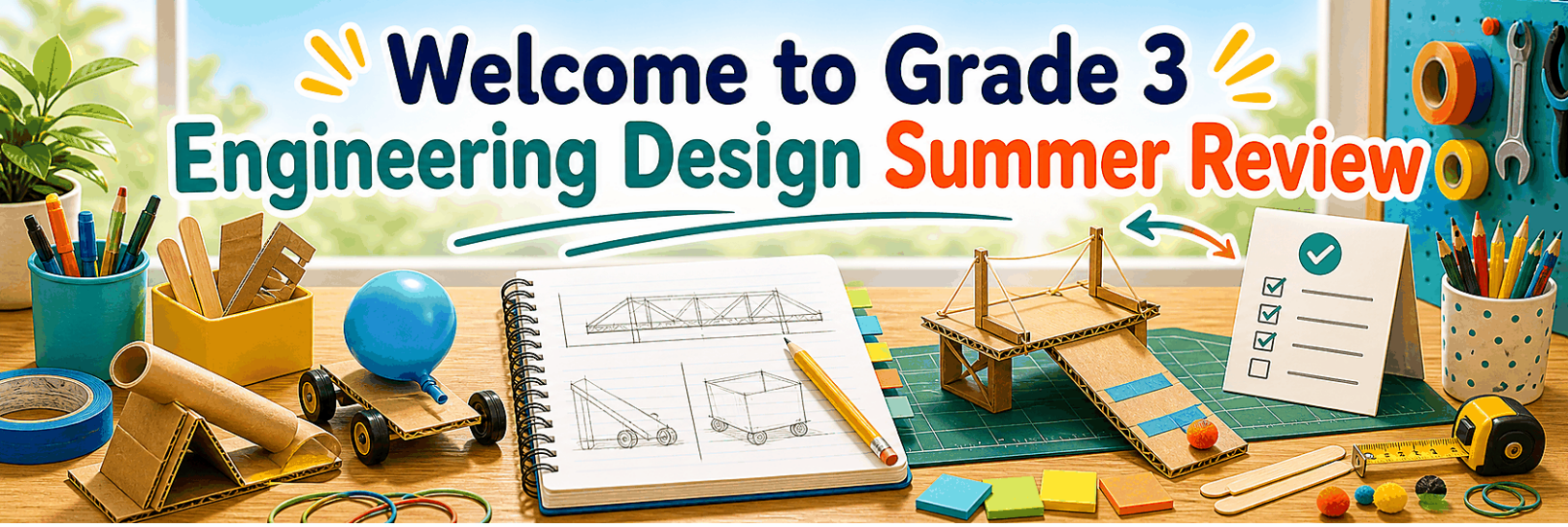


Welcome to Grade 3 Engineering Design Summer Review

A steady 8-week review of Grade 3 engineering design ideas students already know.

This book helps students revisit how engineers define problems, compare solutions, test models, and improve designs. Each day reviews one small idea and gives short practice so students can use evidence, not guesses, when they think like designers.

What students review

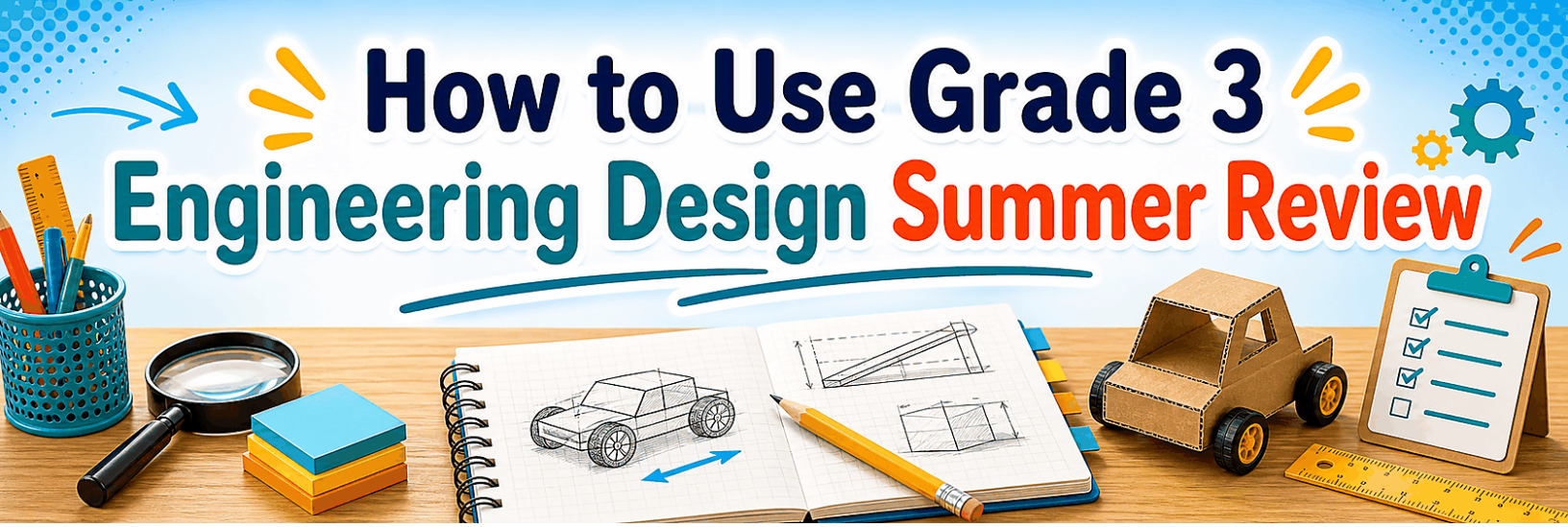
- needs, wants, and design problems
- criteria for success and constraints
- more than one possible solution
- fair tests for models and prototypes
- failure points, fixes, and better designs

What students practice

- telling a problem from a solution
- choosing evidence from pictures and tables
- comparing designs with the same rules
- explaining why a test is fair
- using results to suggest one improvement

A simple weekly rhythm

Use Days 1–4 for focused review pages. Use Day 5 as a weekly quiz. If a question is missed, read the explanation and ask, "What was the design rule here?" That one question turns checking into a quick reteach.



How to Use Grade 3 Engineering Design Summer Review

Use one page a day to keep design thinking fresh.

This review returns to Grade 3 engineering design: defining a problem, naming criteria and constraints, comparing solutions, planning fair tests, and using failure points to improve a model. The work is short on purpose, so students can think carefully.

Days 1–4	Read the review first. Notice the design words, the picture or model, and the example. Then answer the practice questions before using the answer key.
Day 5	Complete the weekly quiz. It mixes the week's ideas so students can see what they remember and what needs another look.
Best pace	Plan for about 15–20 minutes. Careful thinking works better than rushing through several pages at once.
After checking	Fix missed answers in pencil and reread the explanation. The correction is part of the design process.

Read

Ask, "What design idea is this page reviewing?" Look for the words that explain the problem or test.

Practice

Use the picture, table, model, or story. For short answers, one clear design reason is usually enough.

Check

Read the explanation after checking. It should show why the answer matches the problem, criteria, or test.

For students

Try every question first. Circle a clue that helped, such as a criterion, a constraint, or a test result. If you miss one, write the design word nearby.

For parents and teachers

Ask the student to explain the problem before answering. Help with reading, but let the student choose. Use missed items to reteach one design idea.

Science Summer Progress Tracker

Check off each short review day and the Friday quiz as you finish.

8 weeks | 32 review days | 8 Friday quizzes

This grade 3 science summer review belongs to: _____

Week	Focus	Mon	Tue	Wed	Thu	Fri Quiz
1	Defining Design Problems and Comparing Solutions	☐	☐	☐	☐	☐
2	Comparing Solutions and Testing and Improving Mix	☐	☐	☐	☐	☐
3	Defining Design Problems and Comparing Solutions	☐	☐	☐	☐	☐
4	Testing and Improving and Defining Design Problems	☐	☐	☐	☐	☐
5	Defining Design Problems and Comparing Solutions Mix	☐	☐	☐	☐	☐
6	Testing and Improving and Defining Design Problems	☐	☐	☐	☐	☐
7	Comparing Solutions and Testing and Improving	☐	☐	☐	☐	☐
8	Defining Design Problems and Comparing Solutions	☐	☐	☐	☐	☐

Reflection Notes

A design idea that feels strong: _____

A design idea to practice again: _____

Table of Contents

Here's what we'll explore together!

Let's learn and have fun!

WEEK

1

Defining Design Problems and Comparing Solutions

Practice this week's science ideas.

This Week's Days

Day 1	Problems, Needs, and Wants
Day 2	Criteria and Constraints
Day 3	Define Your Own Problem
Day 4	More Than One Way
Day 5	Week 1 Quiz

Answer Key & Explanations

Check the answer first, then read the explanation to see the evidence or reasoning.

Week 1 Day 1: Problems, Needs, and Wants

Answers

1. B
2. B
3. True
4. solution
5. want
6. user

Explanations

1. The correct choice names the need before choosing materials, colors, or a final design.
2. A need is important for safety or daily work, while a want may only be helpful.
3. Starting with the problem helps the solution match the real need instead of a guess.
4. A solution is the design made to solve a problem or meet a need.
5. A color choice may be nice, but it is usually not required for safety or daily work.
6. The user is the person or group the solution is designed to help.

Week 1 Day 2: Criteria and Constraints

Answers

1. A
2. C
3. True
4. criterion
5. constraint
6. meet criteria

Explanations

1. A criterion tells what success looks like, such as working safely.
2. A constraint is a limit, and using only cardboard limits the materials.
3. The rules and limits give each design the same target to meet.
4. A criterion is one rule for judging whether the solution works.

5 A constraint limits materials, time, cost, size, or another part of the design.

6 Criteria describe the jobs the solution must do, so engineers try to meet them.

Week 1 Day 3: Define Your Own Problem

Answers

1 B | 2 B | 3 True | 4 problem | 5 materials | 6 criterion

Explanations

1 The clear statement names the user need and includes a useful limit.

2 A strong statement names the need and gives rules and limits for the solution.

3 If the statement does not pick one design too early, teams can compare ideas.

4 Defining the problem gives the design work a clear target.

5 Materials are a common constraint because teams may only use certain supplies.

6 A criterion tells how engineers will judge whether the solution works.

Week 1 Day 4: More Than One Way

Answers

1 A | 2 B | 3 False | 4 sketch | 5 more than one | 6 parts

Explanations

1 More than one sketch gives the team options to compare against the criteria.

2 Brainstorming means thinking of several possible solutions before choosing.

3 The first idea can be useful, but comparing designs may reveal a better match.

4 A sketch is a drawing that shows how a design idea might work.

5 Comparing more than one idea helps engineers choose based on evidence.

6 Labels name the parts so others can understand how the design works.

Week 1 Day 5: Quiz

Answers

1 B | 2 True | 3 A | 4 True | 5 B | 6 True | 7 A | 8 False | 9 solution

Explanations

1 The correct choice names the need before choosing materials, colors, or a final design.

2 Starting with the problem helps the solution match the real need instead of a guess.

3 A criterion tells what success looks like, such as working safely.

4 The rules and limits give each design the same target to meet.

5 The clear statement names the user need and includes a useful limit.

6 If the statement does not pick one design too early, teams can compare ideas.

7 More than one sketch gives the team options to compare against the criteria.

8 The first idea can be useful, but comparing designs may reveal a better match.

9 A solution is the design made to solve a problem or meet a need.

Week 2 Day 1: Comparing Against the Criteria

Answers