

# South Dakota Grade 3 to Grade 4 Engineering Design Summer Bridge

*Engineering Design: Review and Readiness*

**Dr. A. Nazari**

Copyright © 2026 Dr. A. Nazari

Published by View Math Education

ViewMath.com

All rights reserved. No part of this publication may be reproduced, distributed, or transmitted in any form or by any means, including photocopying, recording, or other electronic or mechanical methods, without the prior written permission of the author, except in the case of brief quotations embodied in critical reviews and certain other noncommercial uses permitted by copyright law, including Section 107 or 108 of the 1976 United States Copyright Act.

The information in this book is distributed on an “as is” basis, without warranty. While every precaution has been taken in the preparation of this work, neither the author nor the publisher shall have any liability to any person or entity with respect to any loss or damage caused or alleged to be caused directly or indirectly by the information contained in this book.

*Copyright © 2026*

# *Online Science Resources*

*Scan the QR code to open the matching ViewMath science page for this state. Use it for book links, updates, and extra practice resources.*

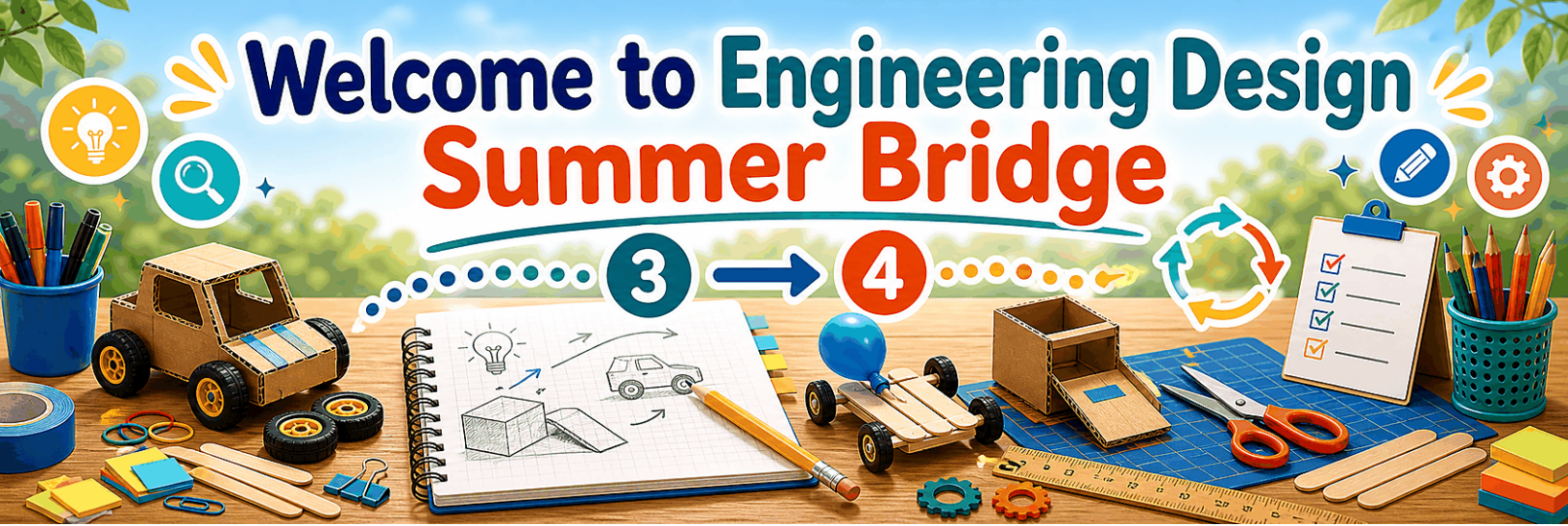


*Scan to visit ViewMath Science*

[viewmath.com/SD-G3Sci](http://viewmath.com/SD-G3Sci)

*Free to use • Works on any device • No downloads required*

# Welcome to Engineering Design Summer Bridge



## A Grade 3 to Grade 4 engineering design path: review, preview, and grow.

This bridge book reviews Grade 3 design thinking and gently previews the next step. Students revisit familiar ideas first, then move toward clearer problem statements, stronger comparisons, and more careful testing habits for Grade 4.

### Grade 3 review

- define a simple design problem
- list criteria and constraints
- compare more than one solution
- plan fair tests for designs
- use failure points to improve

### Grade 4 readiness

- make problem statements more exact
- connect research to new ideas
- use decision tables with evidence
- test like an engineer
- explain the next improvement step

#### A growth path, one step at a time

The first weeks strengthen Grade 3 skills. Later weeks add gentle Grade 4 previews. The goal is not to rush ahead; it is to help students see how the same design process becomes more careful and more evidence-based.

# How to Use Engineering Design Summer Bridge



Use the bridge pages as a guided move from review to readiness.

This book begins with Grade 3 design ideas and then previews how students will use those ideas with more independence. Students should expect review pages first and gentle Grade 4 readiness pages later.

- Review days** Read the short reminder and answer the questions. These pages rebuild the design words students need: problem, criteria, constraints, solution, test, and improvement.
- Readiness days** Slow down and look for the new step. The page may ask students to make a problem more exact, compare with a table, or explain a fix from evidence.
- Best pace** Plan for about 15–20 minutes. One careful page is enough for a summer day.
- After checking** Treat missed answers as clues. Ask, “Was I defining, comparing, testing, or improving?” Then correct the work.

## Review

Remember the Grade 3 design idea and the words that go with it.

## Step Up

Try the readiness step, such as making a clearer statement or using stronger evidence.

## Reflect

Ask what changed from Grade 3 review to Grade 4 readiness. Name the next design habit.

## For students

When a page says Grade 4 preview, do not worry if it feels new. Use the same design steps you already know and add one careful detail.

## For parents and teachers

Point out the growth step: clearer problem, better comparison, fairer test, or evidence-based fix. Keep support brief so the student still does the thinking.



# My Science Bridge Progress

Check off Grade 3 review days, Grade 4 readiness days, and Friday quizzes.

5 review weeks

3 readiness weeks

8 Friday quizzes

This grade 3 to grade 4 science summer bridge belongs to:

Week	Focus	Mon	Tue	Wed	Thu	Friday Quiz
1	Defining Design Problems and Comparing Solutions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/> / 10
2	Comparing Solutions and Testing and Improving Mix	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/> / 10
3	Defining Design Problems and Comparing Solutions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/> / 10
4	Testing and Improving and Defining Design Problems	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/> / 10
5	Defining Design Problems and Comparing Solutions Mix	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/> / 10
6	Grade 3 Review and Grade 4 Preview	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/> / 10
7	Grade 4 Preview: Generating and Comparing Solutions and Fair Tests and Failure Points	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/> / 10
8	Grade 4 Preview: Defining Design Problems and Generating and Comparing Solutions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/> / 10

 **Reflection Notes**

A design idea that feels strong: \_\_\_\_\_

A design idea to practice again: \_\_\_\_\_



Find more at  
[viewmath.com/SD-G3Sci](https://viewmath.com/SD-G3Sci)





# ★ Table of Contents ★

*Here's what we'll explore together!*

★ Week 1: Defining Design Problems and Comparing Solutions .....	2
★ Week 2: Comparing Solutions and Testing and Improving Mix .....	8
★ Week 3: Defining Design Problems and Comparing Solutions .....	14
★ Week 4: Testing and Improving and Defining Design Problems .....	20
★ Week 5: Defining Design Problems and Comparing Solutions Mix ...	26
★ Week 6: Grade 3 Review and Grade 4 Preview .....	32
★ Week 7: Grade 4 Preview: Generating and Comparing Solutions and Fair Tests and Failure Points .....	38
★ Week 8: Grade 4 Preview: Defining Design Problems and Generating and Comparing Solutions .....	44
★ Answer Key & Explanations .....	50



*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 Important ideas include engineering as solving problems by designing objects, tools, processes, or systems.
- 2 Accept two accurate review details, such as one fact about problem and one example, model, or evidence source from the lesson.
- 3 problem
- 4 Use a picture, table, graph, model, observation, or source fact from the lesson.
- 5 It helps explain Defining Design Problems.
- 6 a fact, observation, data point, or model from the lesson

### Explanations

- 1 Start with the lesson's core idea. The review explains that Important ideas include engineering as solving problems by designing objects, tools, processes, or systems.
- 2 Good details come straight from the review bullets, not from a guess. Use two facts that help explain the lesson idea.
- 3 The word problem names one of the important science ideas in this lesson. Use it when you explain your answer.
- 4 Evidence can be an observation, a table, a graph, a model, or a source fact. It must connect directly to the claim.
- 5 The topic is one part of the larger chapter idea, Defining Design Problems. Connecting the day to the chapter helps you see the pattern across lessons.
- 6 Science answers are stronger when they name the evidence. The evidence shows why the claim should be trusted.

## Week 1 Day 2: Criteria and Constraints

### Answers

- 1 The two lists every defined problem needs.
- 2 Accept two accurate review details, such as one fact about problem and one example, model, or evidence source from the lesson.
- 3 problem
- 4 Use a picture, table, graph, model, observation, or source fact from the lesson.



Get Online



Find more at  
[viewmath.com/SD-G3Sci](https://viewmath.com/SD-G3Sci)



5 It helps explain Defining Design Problems.

6 a fact, observation, data point, or model from the lesson

**Explanations**

1 Start with the lesson's core idea. The review explains that The two lists every defined problem needs.

2 Good details come straight from the review bullets, not from a guess. Use two facts that help explain the lesson idea.

3 The word problem names one of the important science ideas in this lesson. Use it when you explain your answer.

4 Evidence can be an observation, a table, a graph, a model, or a source fact. It must connect directly to the claim.

5 The topic is one part of the larger chapter idea, Defining Design Problems. Connecting the day to the chapter helps you see the pattern across lessons.

6 Science answers are stronger when they name the evidence. The evidence shows why the claim should be trusted.

**Week 1 Day 3: Define Your Own Problem**

**Answers**

1 Define a simple design problem with criteria and constraints.

2 Accept two accurate review details, such as one fact about problem and one example, model, or evidence source from the lesson.

3 problem

4 Use a picture, table, graph, model, observation, or source fact from the lesson.

5 It helps explain Defining Design Problems.

6 a fact, observation, data point, or model from the lesson

**Explanations**

1 Start with the lesson's core idea. The review explains that Define a simple design problem with criteria and constraints.

2 Good details come straight from the review bullets, not from a guess. Use two facts that help explain the lesson idea.



Find more at [viewmath.com/SD-G3Sci](http://viewmath.com/SD-G3Sci)



- 3 The word problem names one of the important science ideas in this lesson. Use it when you explain your answer.
- 4 Evidence can be an observation, a table, a graph, a model, or a source fact. It must connect directly to the claim.
- 5 The topic is one part of the larger chapter idea, Defining Design Problems. Connecting the day to the chapter helps you see the pattern across lessons.
- 6 Science answers are stronger when they name the evidence. The evidence shows why the claim should be trusted.

### Week 1 Day 4: More Than One Way

#### Answers

- 1 Good designers never stop at one idea.
- 2 Accept two accurate review details, such as one fact about problem, model, or evidence source from the lesson.
- 3 problem
- 4 Use a picture, table, graph, model, observation, or source fact from the lesson.
- 5 It helps explain Comparing Solutions.
- 6 a fact, observation, data point, or model from the lesson

#### Explanations

- 1 Start with the lesson's core idea. The review explains that Good designers never stop at one idea.
- 2 Good details come straight from the review bullets, not from a guess. Use two facts that help explain the lesson idea.
- 3 The word problem names one of the important science ideas in this lesson. Use it when you explain your answer.
- 4 Evidence can be an observation, a table, a graph, a model, or a source fact. It must connect directly to the claim.
- 5 The topic is one part of the larger chapter idea, Comparing Solutions. Connecting the day to the chapter helps you see the pattern across lessons.
- 6 Science answers are stronger when they name the evidence. The evidence shows why the claim should be trusted.



Find more at  
[viewmath.com/SD-G3Sci](https://viewmath.com/SD-G3Sci)

