Grade 2
Classroom Slides sampler

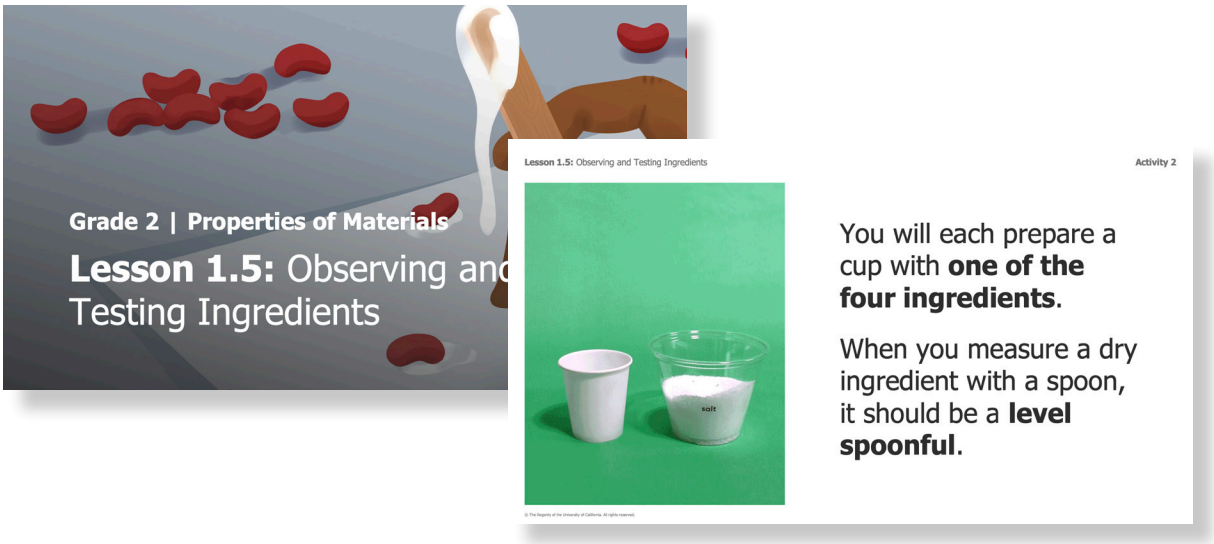
Meet your new hands-free TG!

Science time just got a whole lot easier. With our new Classroom Slides, you can put down the Teacher's Guide and focus on what matters most—your students. Plus, with Classroom Slides, lesson prep is as quick as a click!

Classroom Slides are:

- **Available offline**, which means no more sweating unreliable internet connections.
- **Streamlined for easy lesson delivery**, including lesson visuals, activity instructions and transitions, animations, investigation setup videos, technology support, and more.
- **Fully editable**, allowing you to incorporate your own flavor, flair, and favorite resources, such as Mystery Science.

This sampler includes slides from one lesson from the Properties of Materials unit.



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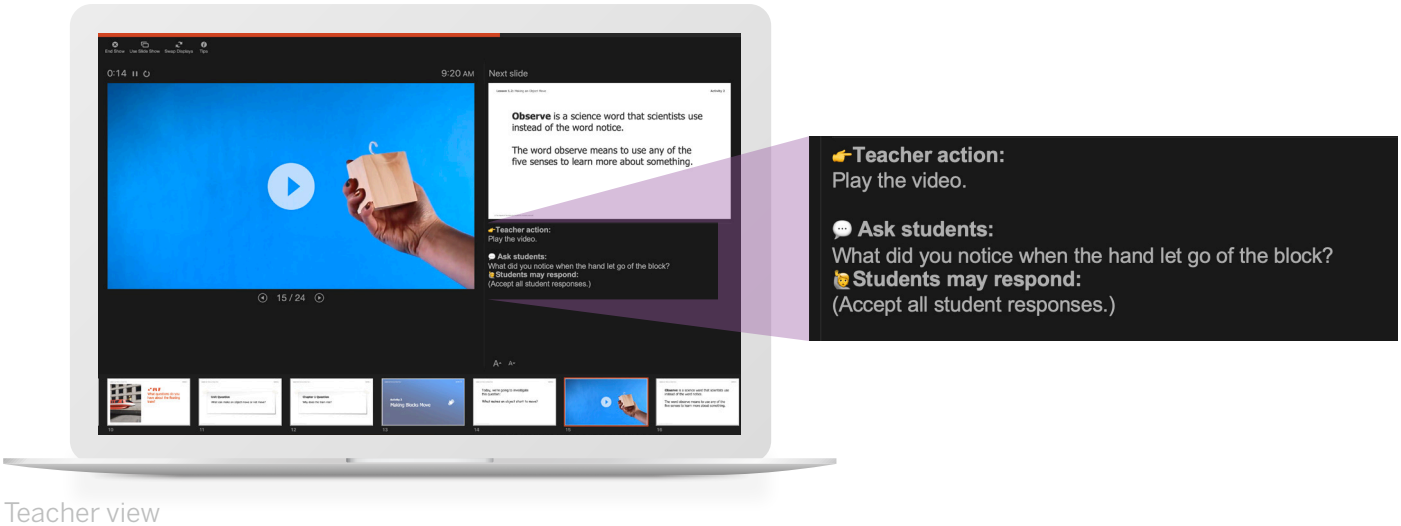
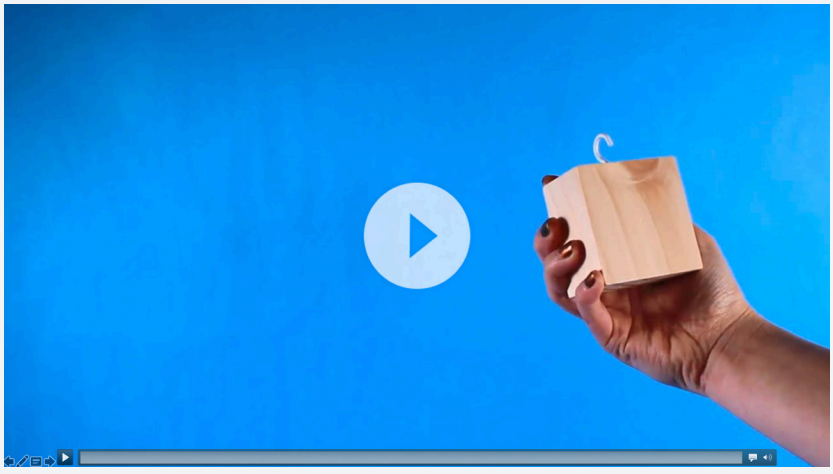
Presenter view

When using presenter view you can:

- **Project the student-facing content** and
- **View your teacher notes**, including teacher talk, teacher actions, and potential student responses and
- **Preview the next slide**.



Teacher view



Student view

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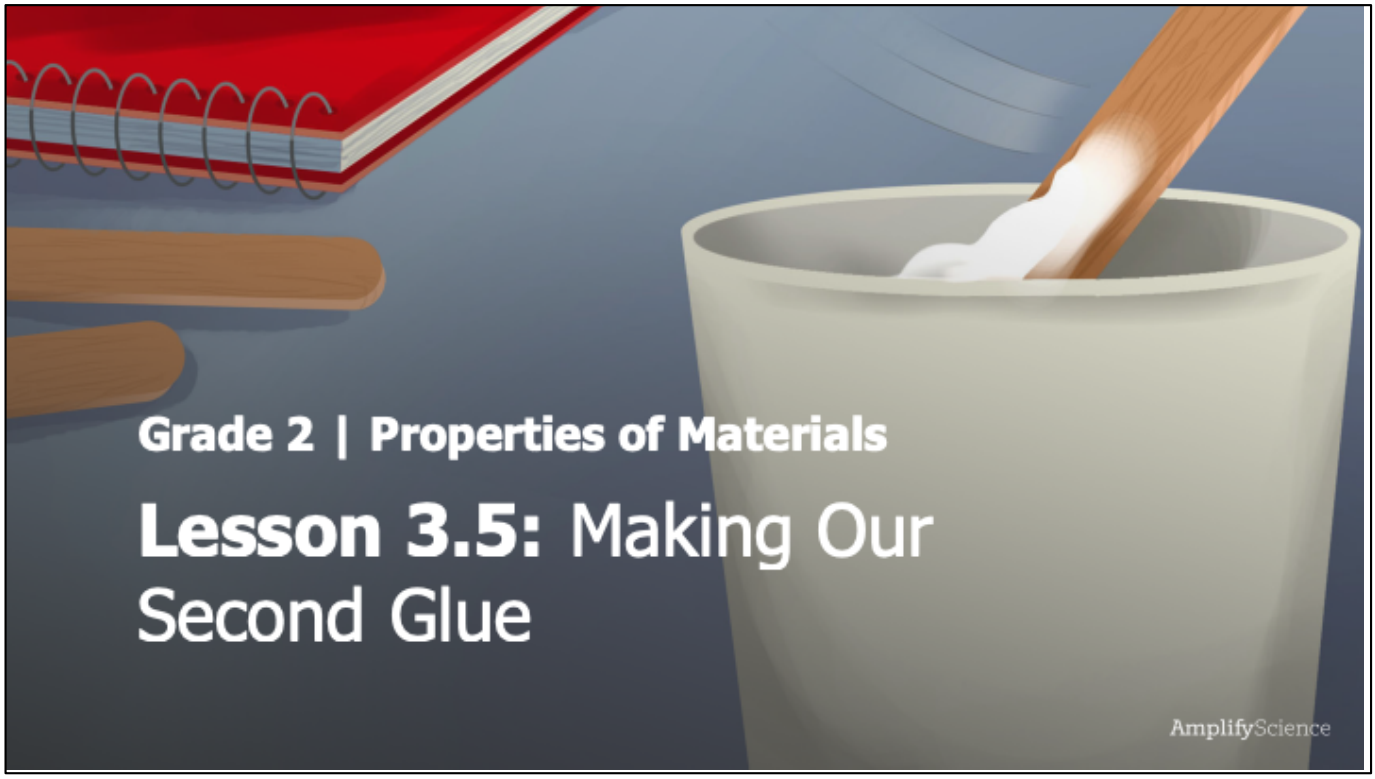
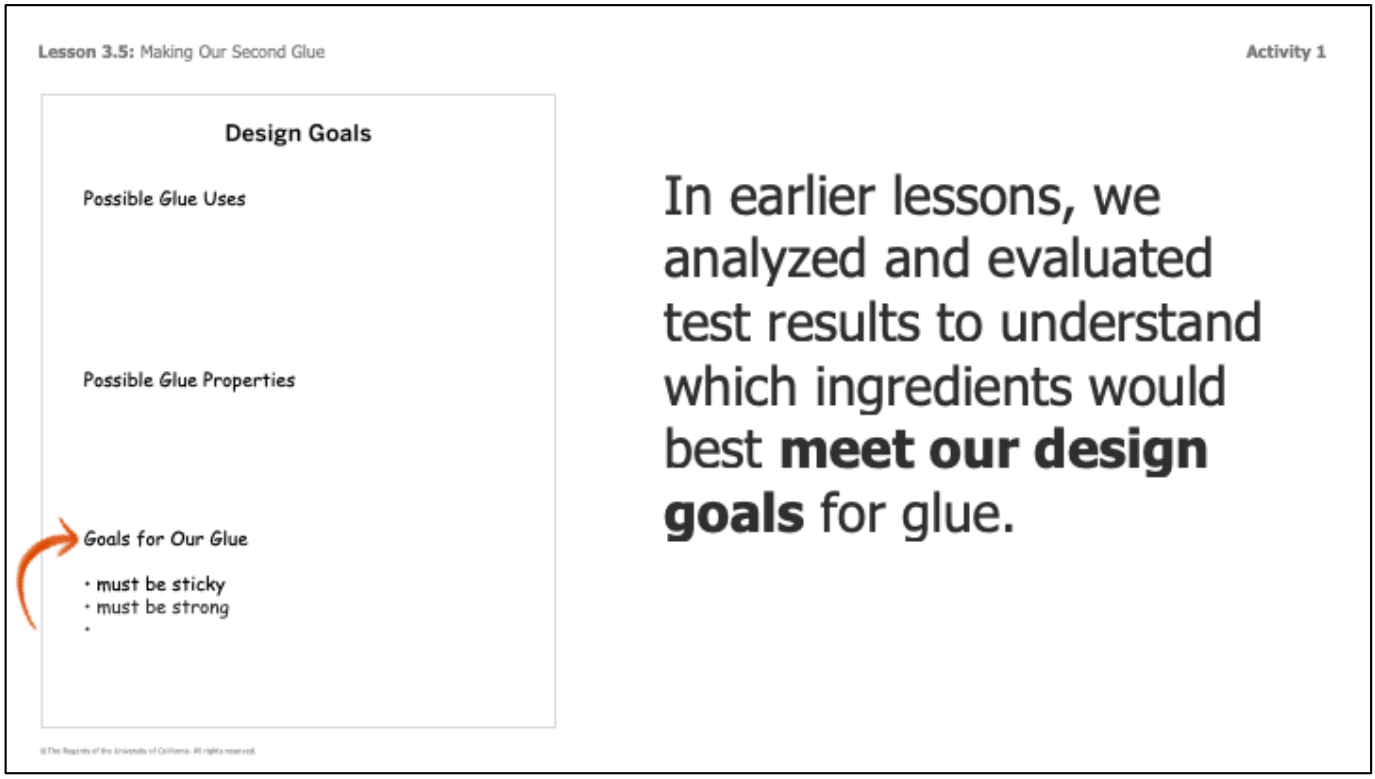


Lesson purpose: To provide students with an opportunity to practice conducting fair tests in order to compare solutions

Please refer to this lesson's Materials & Preparation section in the digital Teacher's Guide or the Print Teacher's Guide for information about preparing to teach this lesson, including any applicable safety notes.

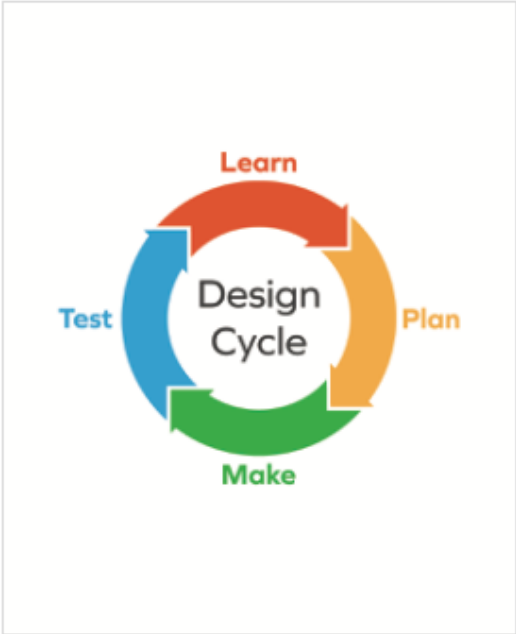
Activity 1

Writing a Glue Recipe



💬 **Suggested teacher talk:**

Today, we will be doing something else engineers do: working closely with another engineer on a design project.



Today, we will work in pairs to **plan**, **make**, and prepare to **test** glues that meet our design goals.

Name: _____ Date: _____

Writing a Design Argument: My Glue Plan

Directions:
1. Complete the sentence to tell what your design goals are.
2. Read the question.
3. Write a claim to answer the question.
4. Support your claim with evidence from different sources.
   You may use the Scientific Language on page 59 to help you write.

Design goals: My design goals are to make a glue that is sticky, strong, and _____.

Question: Which ingredients will best meet your design goals?

Claim: _____

_____.

How do you know? What is your evidence?

_____

_____

_____

_____

_____

_____

_____

58 Properties of Materials—Lesson 3.4

Turn to page 58 in your notebooks, where you wrote your glue plans.

Share your arguments about why you chose the glue ingredients you did.

💬 **Suggested teacher talk:**

Don't be concerned if you each think different ingredients would be better. Engineers test different ideas and get evidence about how different combinations of ingredients work out.

Name: _____ Date: _____

Writing a Design Argument: My Glue Plan

Directions:
1. Complete the sentence to tell what your design goals are.
2. Read the question.
3. Write a claim to answer the question.
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   You may use the Scientific Language on page 59 to help you write.

Design goals: My design goals are to make a glue that is sticky, strong, and _____.

Question: Which ingredients will best meet your design goals?

Claim: _____

_____.

How do you know? What is your evidence?

_____

_____

_____

_____

_____

_____

_____

58 Properties of Materials—Lesson 3.4

You know what **ingredients** you will use in your glue, but you haven't decided yet **how much** of each ingredient to use.

💬 **Suggested teacher talk:**

Soon, you will work with your partner to talk through how much of each ingredient you will use. Then, each partner will follow their own recipe to make their own glue mixtures. You will be working with this same partner for three lessons.

Name: _____ Date: _____

Notes for Our Glue Recipe

Directions:
1. Complete the sentence to tell what your design goals are.
2. With your partner, decide whether your glue is Glue 1 or Glue 2.
3. In the table, record the ingredients you plan to mix together to make your glue. Circle how many spoonfuls you will add of each ingredient.
4. Then, predict how many washers your glue will hold in the strength test.

Our glue must be sticky, strong, and _____

_____.

What is your glue called? Circle it.

Glue 1 Glue 2

Ingredient	Spoonfuls added

Strength test prediction: _____ washers

Properties of Materials—Lesson 3.5 **61**

Now turn to page 61 in your notebooks.

You and your partner will each **write your own glue recipes**, using the ingredients you already chose in your arguments.

Name: _____ Date: _____

Notes for Our Glue Recipe

Directions:
1. Complete the sentence to tell what your design goals are.
2. With your partner, decide whether your glue is Glue 1 or Glue 2.
3. In the table, record the ingredients you plan to mix together to make your glue. Circle how many spoonfuls you will add of each ingredient.
4. Then, predict how many washers your glue will hold in the strength test.

Our glue must be sticky, strong, and _____

_____

What is your glue called? Circle it.

Glue 1 Glue 2

Ingredient	Spoonfuls added

Strength test prediction: _____ washers

Properties of Materials—Lesson 3.5 61

One partner will plan **Glue 1** and the other partner will plan **Glue 2**.

It doesn't matter which glue is which. The numbers are just so you can tell them apart.

💬 **Suggested teacher talk:**

You will each make a glue mixture, and will then test the glue to see if it has the desired properties.

💬 **Suggested teacher talk:**

Even though you and your partner are both designing glue to have the same properties, the two of you will each write your *own* glue recipes, not the same one. Remember, you will be using the ingredients that you already decided on.

Name: _____ Date: _____

Notes for Our Glue Recipe

Directions:
1. Complete the sentence to tell what your design goals are.
2. With your partner, decide whether your glue is Glue 1 or Glue 2.
3. In the table, record the ingredients you plan to mix together to make your glue. Circle how many spoonfuls you will add of each ingredient.
4. Then, predict how many washers your glue will hold in the strength test.

Our glue must be sticky, strong, and _____

_____

What is your glue called? Circle it.

Glue 1 Glue 2

Ingredient	Spoonfuls added

Strength test prediction: _____ washers

Properties of Materials—Lesson 3.5 61

You will list your ingredients in the table, and then **circle how many spoonfuls** you plan to add of each ingredient.

You could circle a half spoonful, like this.

💬 **Suggested teacher talk:**

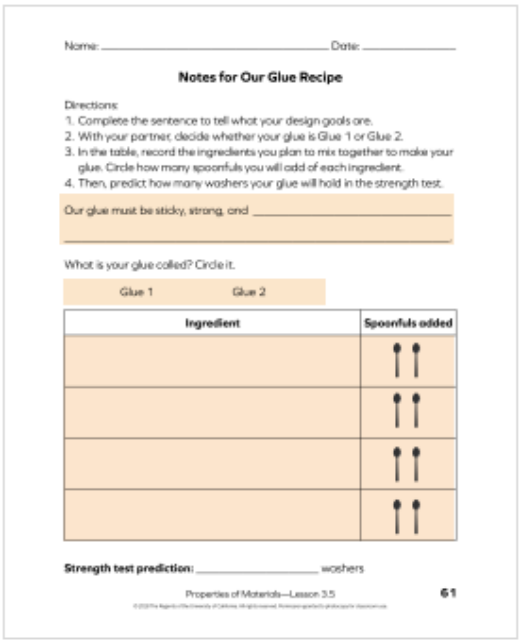
Now is the time for you to decide exactly how much of each ingredient to use. You may use anywhere between less than one spoonful of an ingredient to up to two spoonfuls of each ingredient.

💬 **Suggested teacher talk:**

Remember to think about the first time you made glue. Keep in mind how much water you added and how that changed your glue's stickiness. Think about whether you had too much or too little of one ingredient.

💬 **Suggested teacher talk:**

As you plan how much of each ingredient to use, you should talk with your partner, because that will be very helpful. However, you should make sure to write your glue recipe by yourself.



Name: _____ Date: _____

Notes for Our Glue Recipe

Directions:
1. Complete the sentence to tell what your design goals are.
2. With your partner, decide whether your glue is Glue 1 or Glue 2.
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Our glue must be sticky, strong, and _____

_____

What is your glue called? Circle it.

Glue 1 Glue 2

Ingredient	Spoonfuls added

Strength test prediction: _____ washers

Properties of Materials—Lesson 3.5 61

Talk to your partner about how much of each ingredient to use.

Then **write your own** glue recipe.

Activity 2

Making Glue and Setting Up Tests

These are the **materials** you will use to follow your glue recipes.

You will mix your glues in the small paper cups.

Making Your Own Glue

Step 1

Look at your recipe to remember how you planned to make your glue.

Step 2

Measure each ingredient you chose and **add it carefully** to your cup, a little at a time.

Step 3

Observe what happens as you mix in each ingredient. What does the mixture look, feel, and smell like?

SAFETY NOTE:

Be aware of any students with wheat allergies. Make sure students do not eat any of the ingredients. Have students wash their hands after working with the ingredients in this lesson.

Now we will set up strength tests, just like we did before.

What does it mean to set up a **fair test**? Why is that important?

🙋‍♀️**Students may respond:**

Scientists and engineers want to keep everything the same when they are testing so they can see how the one thing they are trying to test works.

If I used a **tiny bit of glue** to hold the paper clip in place, but my partner used **lots of glue**, would our test results be **fair**?

Students may respond:

No.

Setting Up Strength Tests

Step 1

Write your name and Glue 1 or Glue 2 at the top of your card.

Step 2

Use a stir stick to **spread a small dab of your glue** on the card.

Step 3

Press a bent paper clip into your dab of glue and leave the card to dry.

5 MIN

Activity 3

Making and Discussing Predictions

Next, we will make predictions about the strength of our glues.

Why do scientists and engineers make **predictions**?

Name: _____ Date: _____

Notes for Our Glue Recipe

Directions:
1. Complete the sentence to tell what your design goals are.
2. With your partner, decide whether your glue is Glue 1 or Glue 2.
3. In the table, record the ingredients you plan to mix together to make your glue. Circle how many spoonfuls you will add of each ingredient.
4. Then, predict how many washers your glue will hold in the strength test.

Our glue must be sticky, strong, and _____

_____

What is your glue called? Circle it.

Glue 1 Glue 2

Ingredient	Spoonfuls added

Strength test prediction: _____ washers

Properties of Materials—Lesson 3.5 61

Based on what you observed, **how many washers** do you predict your glue will hold?

Discuss and **record** your predictions.

💬 **Suggested teacher talk:**

It's all right if you only have a rough prediction, such as more than 10 washers or fewer than 10 washers.

Name: _____ Date: _____

Notes for Our Glue Recipe

Directions:
1. Complete the sentence to tell what your design goals are.
2. With your partner, decide whether your glue is Glue 1 or Glue 2.
3. In the table, record the ingredients you plan to mix together to make your glue. Circle how many spoonfuls you will add of each ingredient.
4. Then, predict how many washers your glue will hold in the strength test.

Our glue must be sticky, strong, and _____

_____

What is your glue called? Circle it.

Glue 1 Glue 2

Ingredient	Spoonfuls added

Strength test prediction: _____ washers

Properties of Materials—Lesson 3.5 61

What is your **prediction?**

Activity 4

Critical Juncture: Reflecting on Designing Mixtures

Name: _____ Date: _____

Designing a Toothpaste Mixture

Oh no! You've run out of toothpaste! Luckily you have some ingredients that may help you design a toothpaste.

Here are your ingredients and their properties:

Ingredient	Properties
Mint	green, tastes minty, smells minty
Cornstarch	white, makes mixtures thick and sticky after heating
Flour	powder, can be tan colored, makes a mixture hard when dry
Baking soda	white powder, made of tiny crystals, makes a mixture good for cleaning
Oil	thick, makes a mixture slippery
Cinnamon	adds a spicy smell and flavor to a mixture, covers up bad smells
Water	clear, thin, runny, pourable

Which properties would you like your toothpaste to have?

_____

_____

_____

_____

42 Properties of Materials—Lesson 3.5

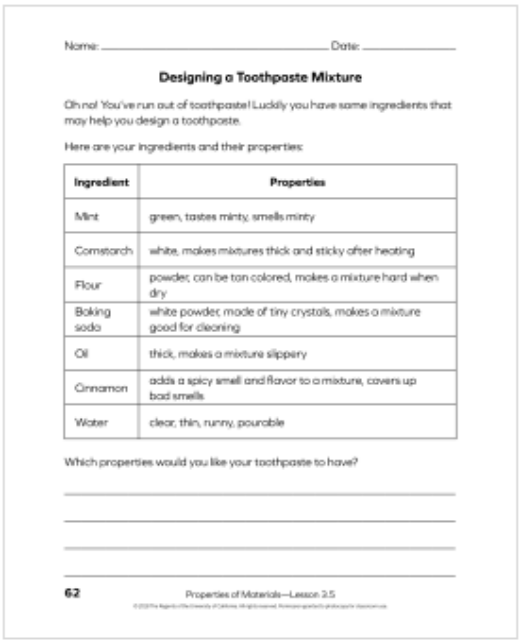
63 Properties of Materials—Lesson 3.5

Turn to pages 62–63 in your notebooks.

Imagine you have just run out of toothpaste, and you decide to **design a toothpaste mixture** of your own.

💬 **Suggested teacher talk:**

You have heard of people making their own toothpaste and you want to give it a try.



Name: _____ Date: _____

Designing a Toothpaste Mixture

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Oil	thick, makes a mixture slippery
Cinnamon	adds a spicy smell and flavor to a mixture, covers up bad smells
Water	clear, thin, runny, pourable

Which properties would you like your toothpaste to have?

_____

_____

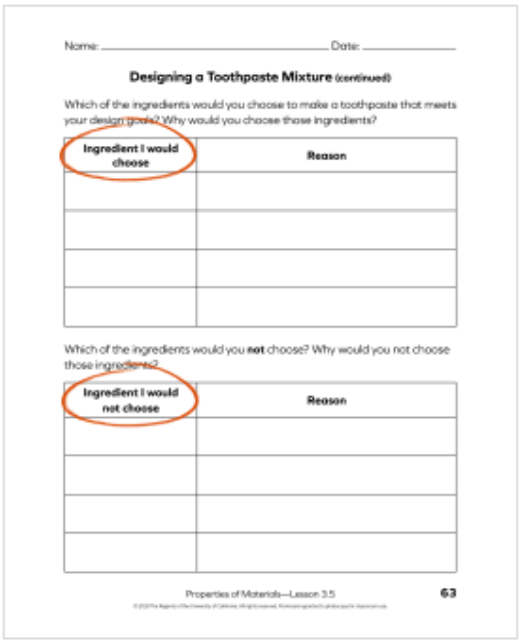
_____

_____

62 Properties of Materials—Lesson 3.5

First, you will review the **list of ingredients** you can use and their **properties** on page 62.

Then you'll decide which properties you want your toothpaste to have.



Name: _____ Date: _____

Designing a Toothpaste Mixture (continued)

Which of the ingredients would you choose to make a toothpaste that meets your design goals? Why would you choose those ingredients?

Ingredient I would choose	Reason

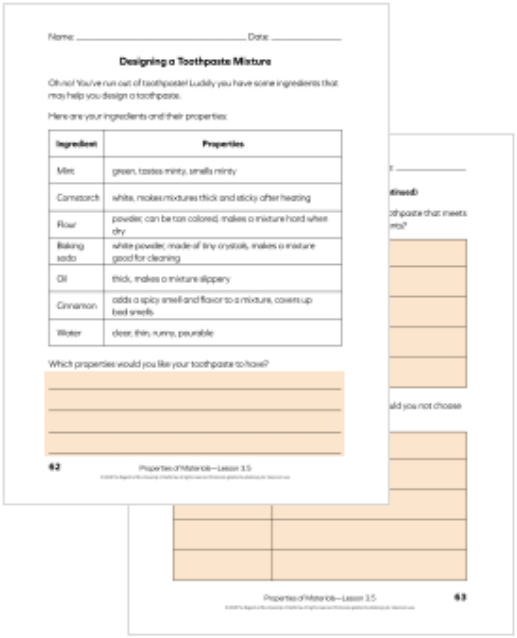
Which of the ingredients would you **not** choose? Why would you not choose those ingredients?

Ingredient I would not choose	Reason

Properties of Materials—Lesson 3.5 **63**

On page 63, you will list the toothpaste **ingredients you would choose** and explain why.

Also list the ingredients you **would NOT choose** and explain why.



Name: _____ Date: _____

Designing a Toothpaste Mixture

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Water	clear, thin, runny, pourable

Which properties would you like your toothpaste to have?

42 Properties of Materials—Lesson 3.5

63 Properties of Materials—Lesson 3.5

Answer the questions on pages 62–63 to design your toothpaste mixture.

CRITICAL JUNCTURE

Let's think about the key concepts we learned in Chapter 3.

What have we learned about the **properties** of mixtures?

🙋**Students may respond:**
(Accept all responses.)

Key Concept

Mixtures may have a combination of properties of their ingredients.

How can we make **mixtures** that have the **properties** we want—for example, something that is minty tasting or gel-like?

Students may respond:

Mix together ingredients that have the properties we want.

Key Concept

Mixtures can be designed to have certain properties by using ingredients with certain properties.

We have all designed glue mixtures to have certain **properties**.

In the next lesson, we will get to find out if the **ingredients** we chose gave our glue **mixtures** the properties we wanted.

End of Lesson

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