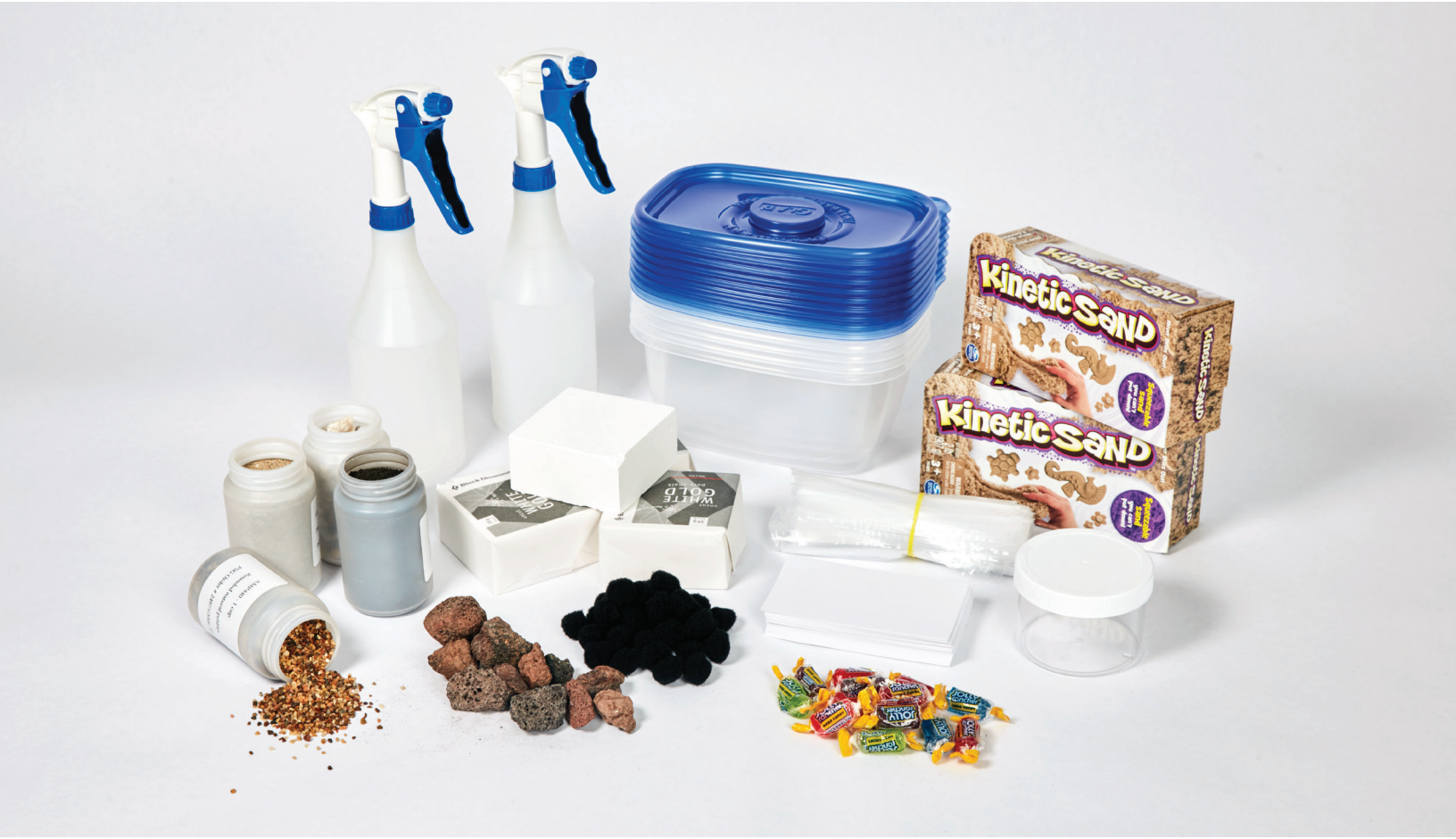
AmplifyScience

Grade 2 Hands-on activities



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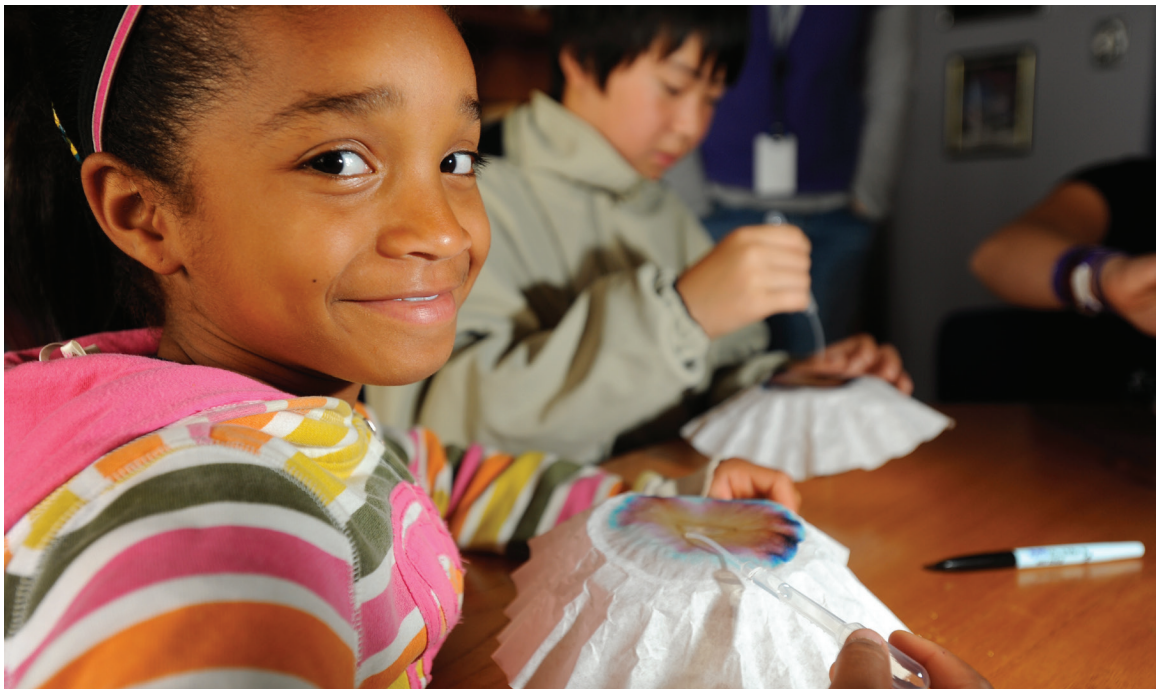
Hands-on investigation

Hands-on learning is at the heart of Amplify Science, and is integrated into every unit. Each hands-on activity provides clear instructions for the teacher, while providing easily accessible materials in unit-specific kits.

With Amplify Science, students actively participate in science, acting like scientists and engineers as they gather evidence, think critically, solve problems, and communicate their claims.

This document will walk you through an overview of the materials provided for an entire unit, and then focus on one particular activity in that unit to give you a sense of the role hands-on investigation plays in the instruction.



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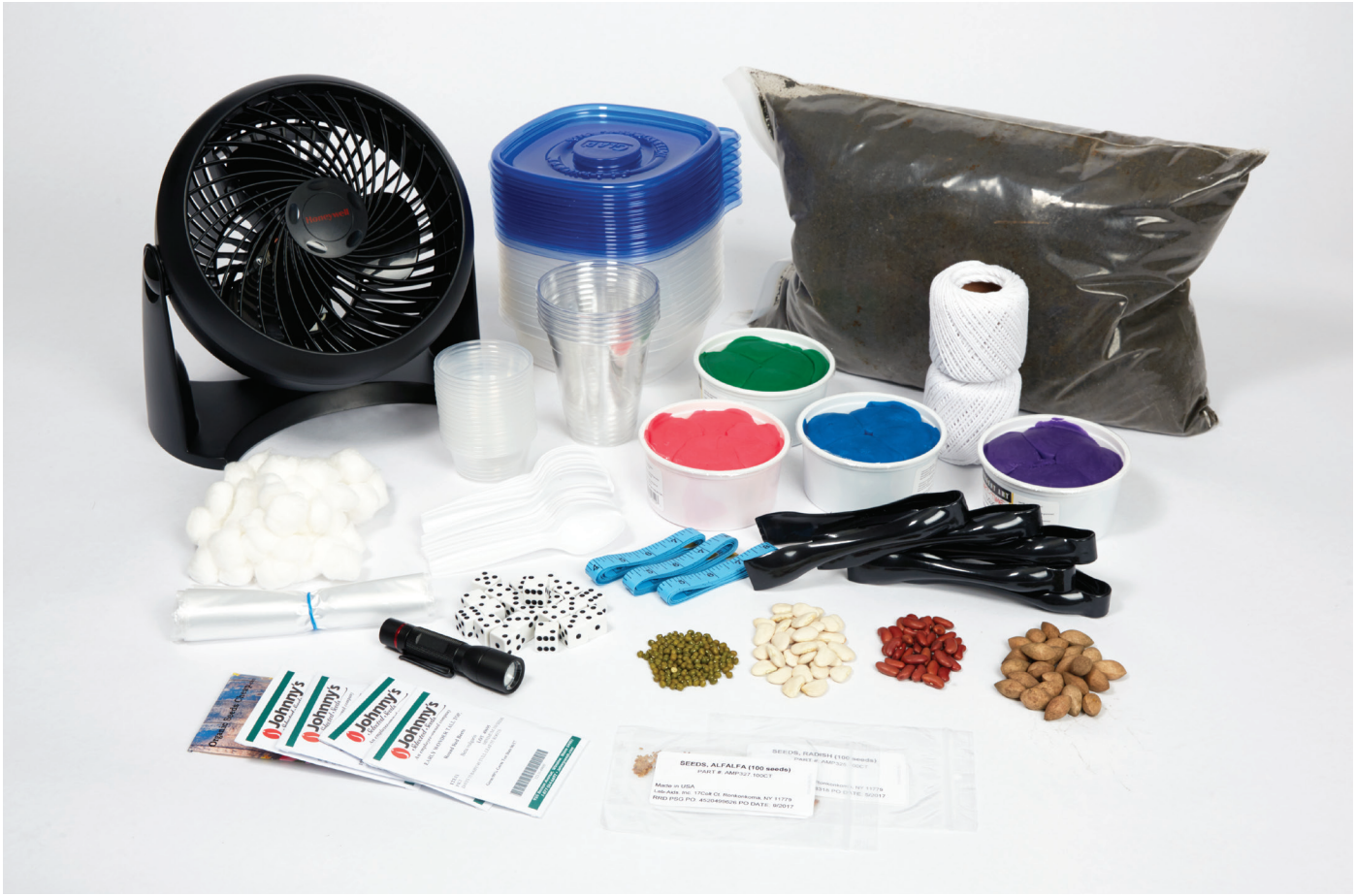
Grade 2

Plant and Animal Relationships

In their role as plant scientists working at the Bengal Tiger Reserve, students work to figure out why there are no new Chalta trees growing in this part of the forest. Students investigate what the Chalta tree needs to survive, and collect and analyze qualitative and quantitative data to solve the mystery.

Materials in this unit



Quantity	Description
2 bags	beans, kidney*
1 bag	beans, lima
1 bag	beans, mung*
2 bags	cotton balls*
1	fan, small
1	flashlight
24 oz.	modeling clay, blue*
24 oz.	modeling clay, green*
24 oz.	modeling clay, pink*
24 oz.	modeling clay, purple*
18	plastic bags*
9	plastic containers
18	plastic cups, 3-oz.
6	plastic cups, 12-oz.
18	probability cubes (dice)
1 bag	seeds, alfalfa
1 bag	seeds, beet
1 bag	seeds, ginko tree
1 bag	seeds, marigold
2 bags	seeds, radish*
1 bag	seeds, sunflower
1 bag	seeds, sweet corn
1 bag	soil*
6	spoons
1 ball	string
9	tape measures
5	tongs
18	crayons, blue Δ
36	glue sticks Δ
1	marker, wide-tip, black Δ
18	markers, blue Δ
2 boxes	paper clips Δ
2 rolls	paper towels* Δ
144 sheets	paper (11" x 17")* Δ
180 sheets	paper (8.5" x 11")* Δ
2 pads	paper, chart* Δ
9	pencils Δ
1	pitcher Δ
36	rulers Δ
1	scissors Δ
1	stapler Δ
1 roll	tape, clear* Δ
2 rolls	tape, masking* □ Δ
9	trays, plastic □ Δ

* **consumable item**
□ **included in starter kit**
Δ **items provided by the teacher**

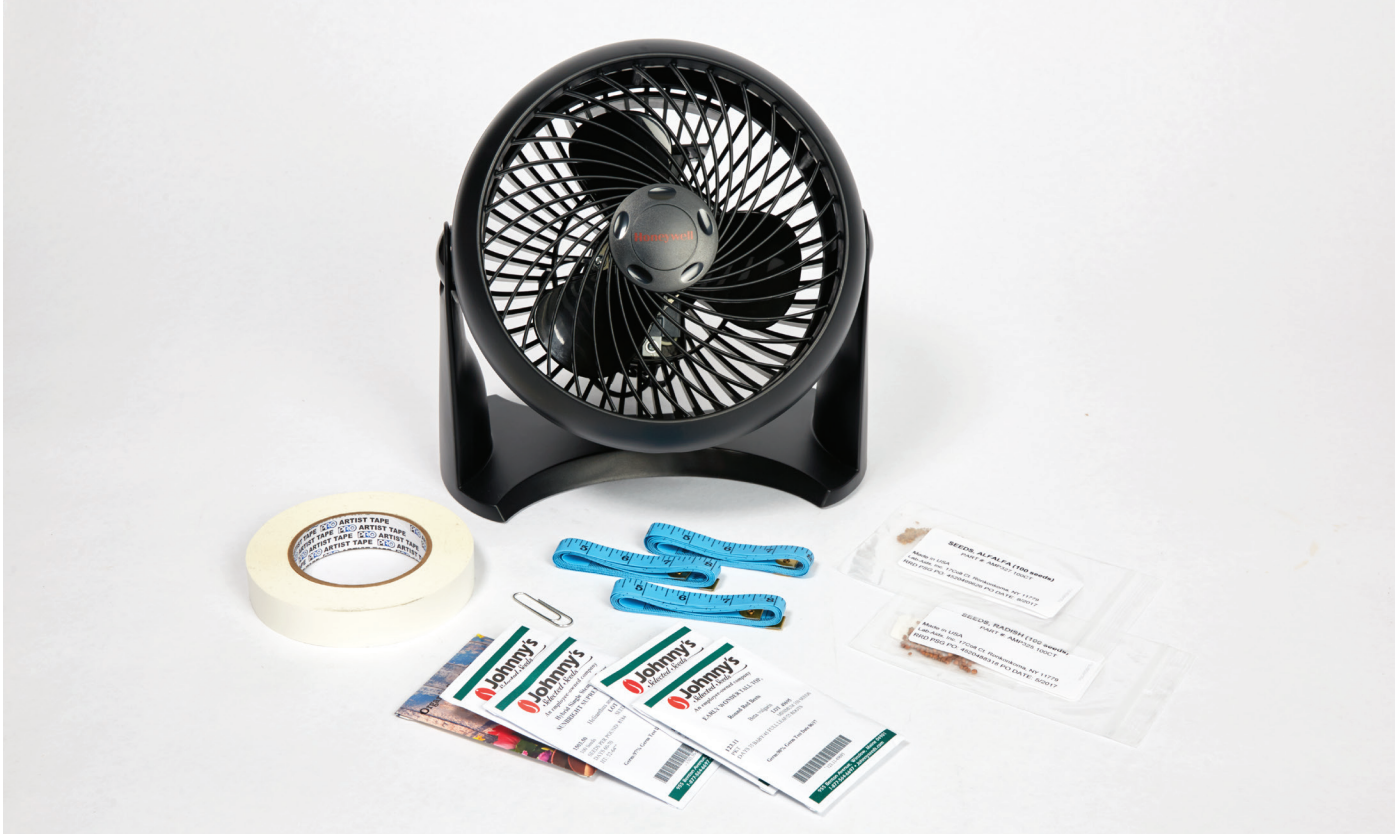
Elementary School Starter Kit

Amplify Science also offers a starter kit for purchase, which includes general science materials needed to conduct most hands-on activities for all units in the curriculum. Starter kit items can fulfill some teacher-provided materials needed for each unit.

Example activity

Propeller Seed Investigation; Fluffy Seed Investigation

In Lesson 4.3 of *Plant and Animal Relationships*, students use models to investigate how seeds that are not used by animals for food are dispersed in their habitat. The class uses a model to investigate how many seeds with and without propellers move in the wind. Groups then use a model to investigate whether seeds with fluffy parts move farther in the wind than seeds without fluffy parts. Students record and compare the data collected in the two investigations to learn that both propellers and fluffy parts help seeds get dispersed to new places away from the plant that made the seeds. Students write a final scientific explanation about what they have learned about how the seeds from sal trees and red silk trees get dispersed.



Example activity materials

For the classroom wall

- Propeller Seed Investigation chart

For the class

- propeller seed models
- fluffy seed models
- 1 small fan
- tape measures, 150 cm
- masking tape Δ

For each group of four students

- 1 fluffy seed model
- 1 paper clip
- 1 tape measure, 150 cm

For each student

- *Plant and Animal Relationships* Investigation Notebook (pages 64–69)

Δ items provided by the teacher

Unit print materials

Each unit's kit includes print materials for the classroom:

- Chapter Questions
- Key Concepts
- Vocabulary
- Unit Questions
- 18 copies of each student book:

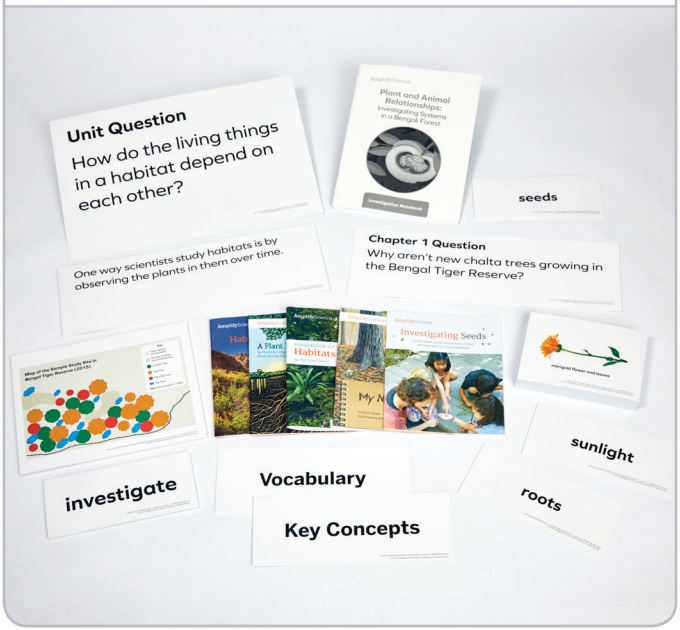
  A Plant Is a System

  Habitat Scientist

  Investigating Seeds

  My Nature Notebook

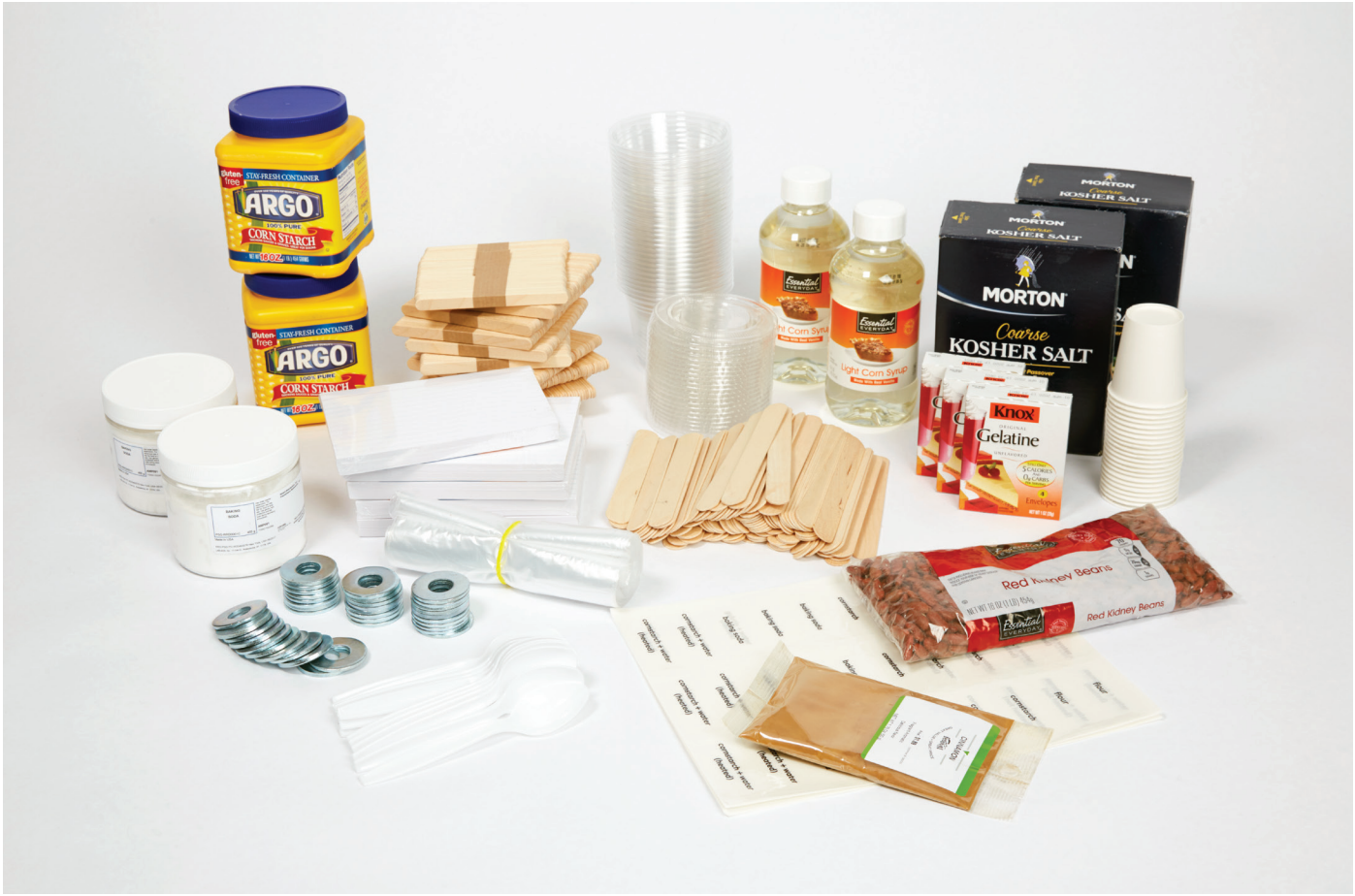
  Handbook of Habitats



Properties of Materials

As glue engineers, students use engineering design practices to design a glue for use at their school. They conduct tests that yield quantifiable results, graph their data, analyze and interpret results, and then use that evidence to iteratively design a series of glue mixtures, each one better than the one before.

Materials in this unit



Quantity	Description
54	bags, plastic, self-sealing
8	baking soda, containers*
1	beans, kidney, bag*
1	cinnamon powder, container
8	cornstarch, containers*
8	corn syrup, bottles*
344	cups, paper, 3 oz.*
300	cups, plastic, 9 oz., with lids*
6	gelatin powder, boxes*
350	index cards, 4" x 6", unlined*
99	labels, pre-printed
2	salt, kosher, boxes*
48	spoons, plastic
400	sticks, craft, wooden, large*
550	sticks, craft, wooden, small*
150	washers, metal
73	cardstock, white, 8.5" x 11"* Δ
2	flour, bags, 1 lb.* Δ
4	glue, school, white, non-toxic, containers, 4 fl. oz.* Δ
4	glue, craft, tacky, non-toxic, containers, 4 fl. oz.* Δ
3–4	glues, non-toxic, assorted (e.g., glitter glue, glue stick, wood glue), containers* Δ
36	goggles, safety □ Δ
1	marker, black Δ
1	measuring cup, 2 cup capacity with handle Δ
1	microwave Δ
several	newspaper (or old chart paper)* Δ
1	paper, chart, pad* Δ
14	paper, white, unlined sheets, 8.5" x 11"* Δ
218	paper clips, jumbo* Δ
72	plates, paper, small* Δ
1	refrigerator Δ
1	scissors Δ
1	spoon, metal, large Δ
1	tape, masking, roll* □ Δ
2	toothpicks* Δ
10	trays, plastic □ Δ
1	tub, plastic* Δ

*** consumable item**
□ included in starter kit
Δ items provided by the teacher

Example activity

Making Observations and Gathering Test Results

By completing strength tests and conducting research using a reference book, students gather evidence about which ingredients might make a strong glue. In Lesson 3.3 of *Properties of Materials*, students complete strength tests on the new glue ingredients and come away with more evidence about which ingredients will make a glue that meets their design goals. Using the Properties of Materials Graphing Tool, students graph and evaluate their results and they make claims about which ingredients had the properties of being both sticky and strong. Then they search in the *Handbook of Interesting Ingredients* for evidence about which ingredients might give the property of strength to their glue mixtures.

Example activity materials

For the classroom wall

- Design Goals poster

For the class

- 135 metal washers
- corn syrup
- cornstarch
- gelatin
- flour Δ
- water Δ
- paperclips Δ

For each pair of students

- 1 copy of Handbook of Interesting Ingredients book

For each student

- *Properties of Materials* Investigation Notebook (pages 52–54)

Δ items provided by the teacher

Unit print materials

Each unit's kit includes print materials for the classroom:

- **Chapter Questions**
- **Key Concepts**
- **Vocabulary**
- **Unit Questions**
- **18 copies of each student book:**

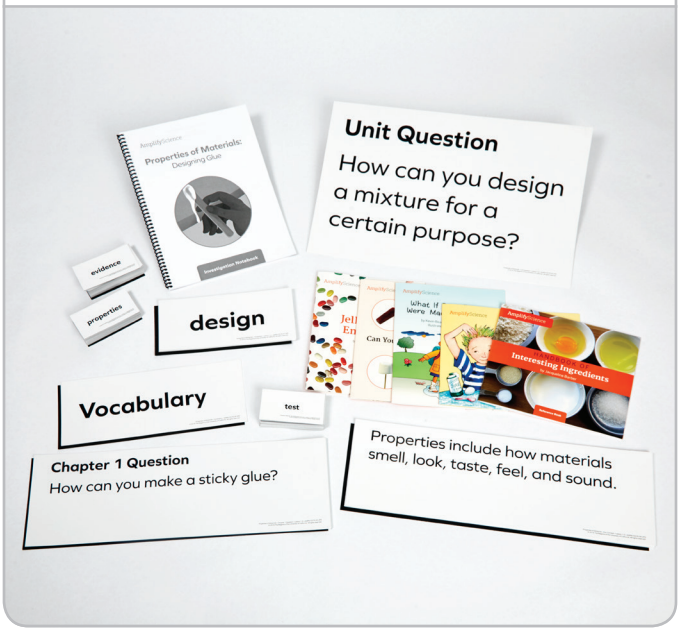
  Jelly Bean Engineer

  Jess Makes Hair Gel

  Can You Change it Back?

  Handbook of Interesting Ingredients

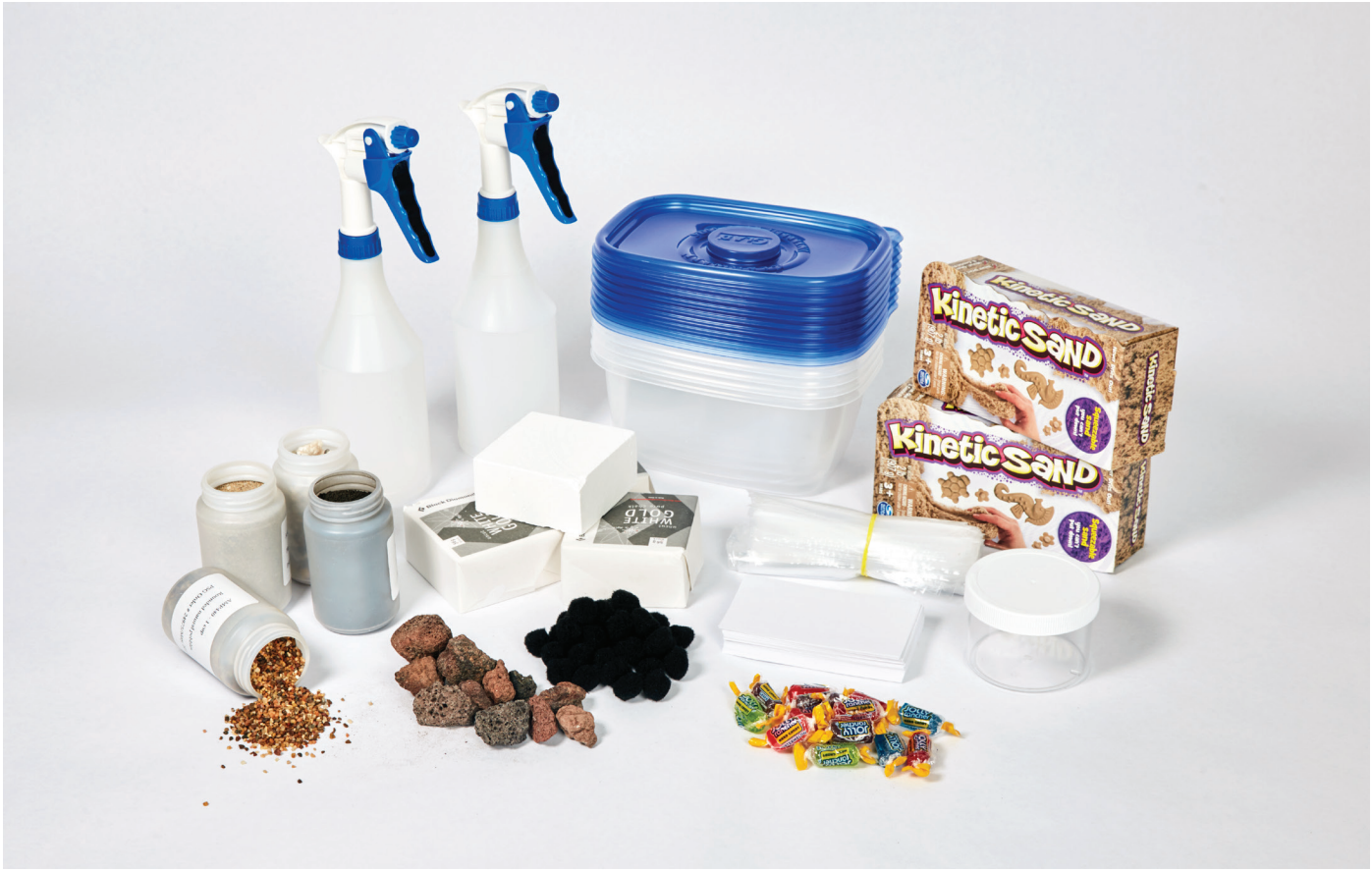
  What If Rain Boots Were Made of Paper?



Changing Landforms

As geologists, students attempt to figure out why the edge of the cliff closest to the fictional Oceanside Recreation Center appears to be closer to the flagpole. They decide if a nearby cliff's recent collapse means that the recreation center should be closed immediately. They use models to investigate how wind and water can cause changes to landforms.

Materials in this unit



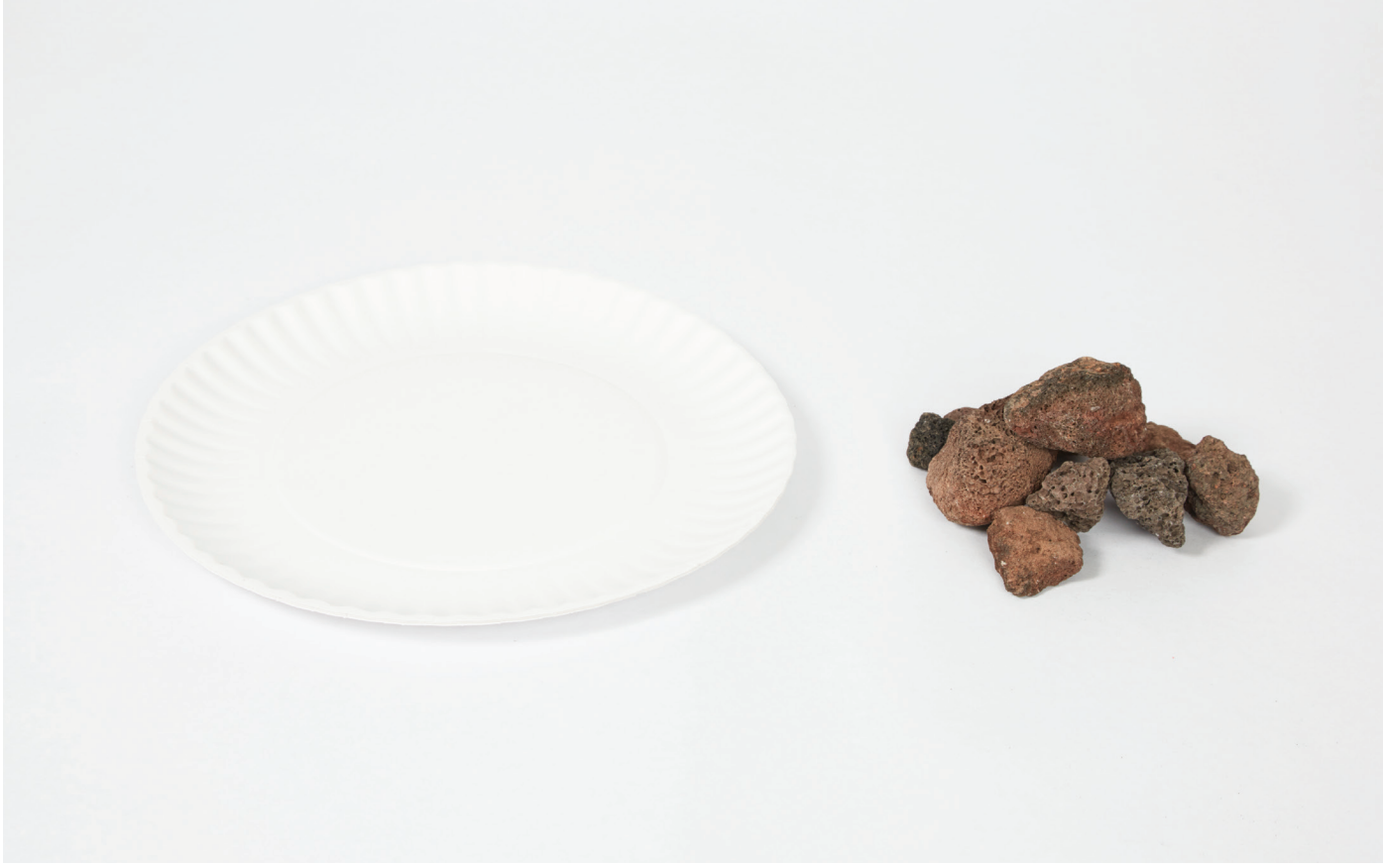
Quantity	Description
72	bags, plastic*
9	bottle, plastic spray
4	chalk, white, blocks*
18	containers, clear, plastic
16	hard candy, 1 bag*
74	index cards, 3" x 5", pack of 100*
1	jar, with lid, clear plastic
500	pom-poms, black
18	rocks, pumice
2	sand, jagged black, cups*
2	sand, jagged white, cups*
2	sand, rounded multi-colored, cups*
3	sand, rounded sandbox, cups*
2	sand, kinetic, boxes
36	colored pencils, brown, yellow, green, sets Δ
1	cup, measuring Δ
9	glue, white, bottle Δ
36	goggles, safety, child-size □ Δ
18	lens, hand, plastic □ Δ
1	marker, permanent, black Δ
1	marker, wide-tip Δ
7	paper, chart* Δ
15	paper clips Δ
9	paper plates, white Δ
1	stapler Δ
1	straw, plastic, non-flexible* Δ
1	tablespoon Δ
1	tape, masking, roll* □ Δ
10	trays, cafeteria □ Δ
4	water, gallons* Δ

* consumable item
□ included in starter kit
Δ items provided by the teacher

Example activity

Scale of Erosion in the Chalk Model

In Lesson 2.5 of *Changing Landforms*, students return to the Chalk Model they previously used to investigate water's role in landform change, this time adding complexity to their understanding. As they did in an earlier lesson, they spray chalk with water, paying close attention to the size of the pieces that break off the chalk. This leads students to discover that water causes tiny pieces to break off landforms. Then, students rub two pumice rocks together and observe how the pumice breaks down into very fine powder or very tiny pieces. This experience gives students a sense of the scale of the pieces that break off real landforms during erosion.



Example activity materials

For the classroom wall

- **key concept: Water hitting a landform causes tiny pieces of the landform to break off.**

For each group of four students

- **2 pumice rocks**
- **1 paper plate, white** Δ

Δ items provided by the teacher

Unit print materials

Each unit's kit includes print materials for the classroom:

- **Chapter Questions**
- **Key Concepts**
- **Vocabulary**
- **Unit Questions**
- **18 copies of each student book:**

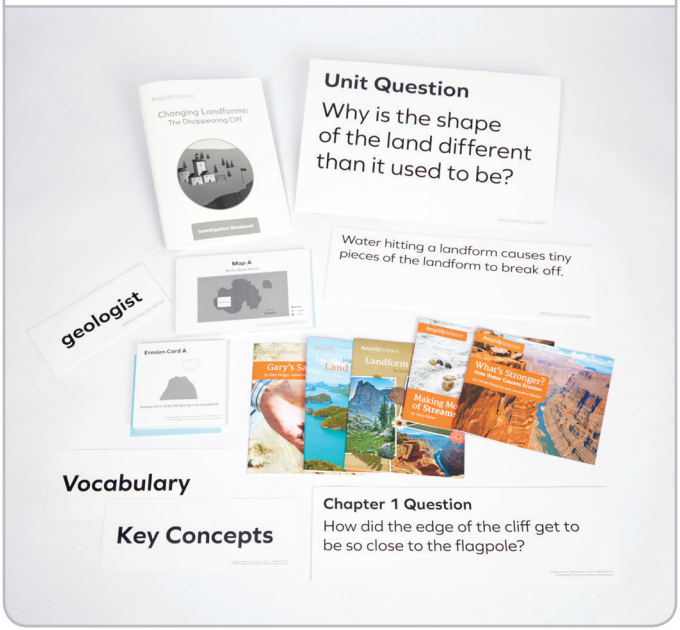
  Landform Postcards

  Gary's Sand Journal

  Making Models of Streams

  Handbook of Land and Water

  What's Stronger? How Water Causes Erosion



Go to **amplify.com/sciencek5**
for a list of all materials in each kit.

Amplify.

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