Northpoint Horizons

Dedicated to the Success of All Students

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Why Teach Vocabulary?

- There is a direct link from vocabulary knowledge to comprehension of reading (Beck& McKeown)
- The amount of words acquired from context depends on the amount of text read and the ability of the child to read it. (Kuhn & Stahl, 1998)
- A good reader will learn up to five times more words than a struggling reader (Kuhn & Stahl, 1998)
- Culturally, vocabulary knowledge and usage is an indicator of intellectual ability

Vocabulary Instruction:

- Should be active
- Should be engaging
- Should help students make connections to what they already know
- Should make links between related concepts
- Should include multiple repetitions
- Should build student independence
- Should be in their hands and in their mouths

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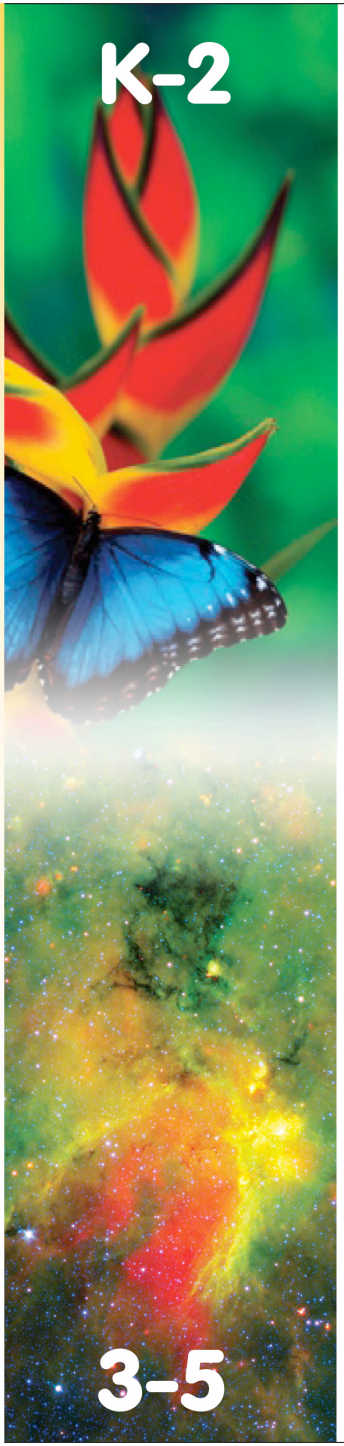

Every day, students struggle to learn the academic vocabulary that they need to understand in order to succeed in school.

science CAVS™

Content Academic Vocabulary System eases the struggle and provides the solution to the successful acquisition of Science academic vocabulary.

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Science CAVS Content Academic Vocabulary System™

- Research Based
- Systematic, Hands-on Instructional Approach
- Differentiated Instruction
- Success on the TEST
- Flexible & Easy to use

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Science CAVS Content Academic Vocabulary System™

Research Based

- Vocabulary Acquisition
  - Isabel Beck
  - Robert Marzano

- Sheltered Instructional Operational Protocol
- National Literacy Panel on Language-Minority Children and Youth
- Efficacy study utilizing CAVS

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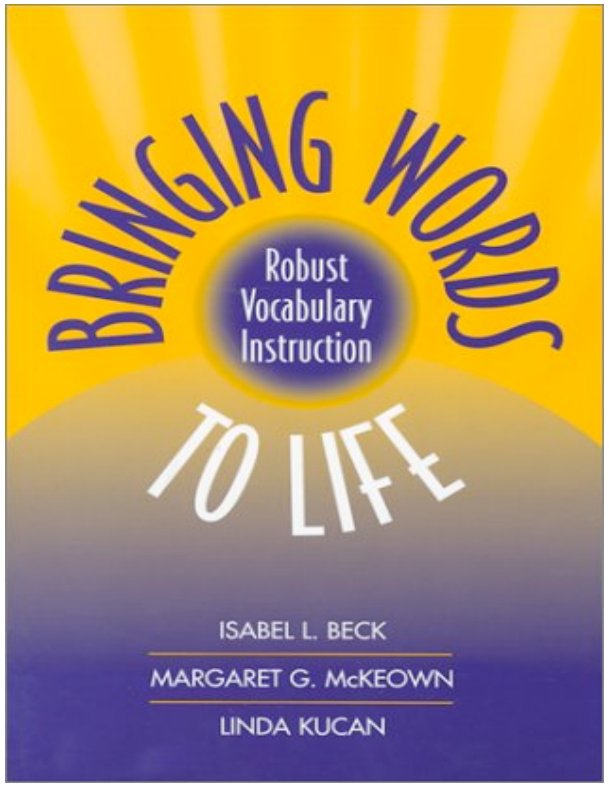
Valuable Resources

Bringing Words to Life: Robust Vocabulary Instruction

Isabel Beck, Margaret G. McKeown, & Linda Kucan

Guilford Press



from *Bringing Words to Life* by Isabel Beck, Margaret G. McKeown, and Linda Kucan
Guilford Press

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Bringing Words to Life

- The first tier consists of the most basic words – clock, baby, happy, walk, and so on.

- The second tier contains words that are high frequency for the mature language users and are found across a variety of domains.

- The third tier is made up of words whose frequency of use is quite low and often limited to specific domains.

from *Bringing Words to Life* by Isabel Beck, Margaret McKeown, and Linda Kucan
Guilford Press

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Bringing Words to Life

- Young children's listening and speaking competence is in advance of their reading and writing competence.

- As children are developing their reading and writing competence, we need to take advantage of their listening and speaking competencies to enhance their vocabulary development.

from *Bringing Words to Life* by Isabel Beck, Margaret McKeown, and Linda Kucan
Guilford Press

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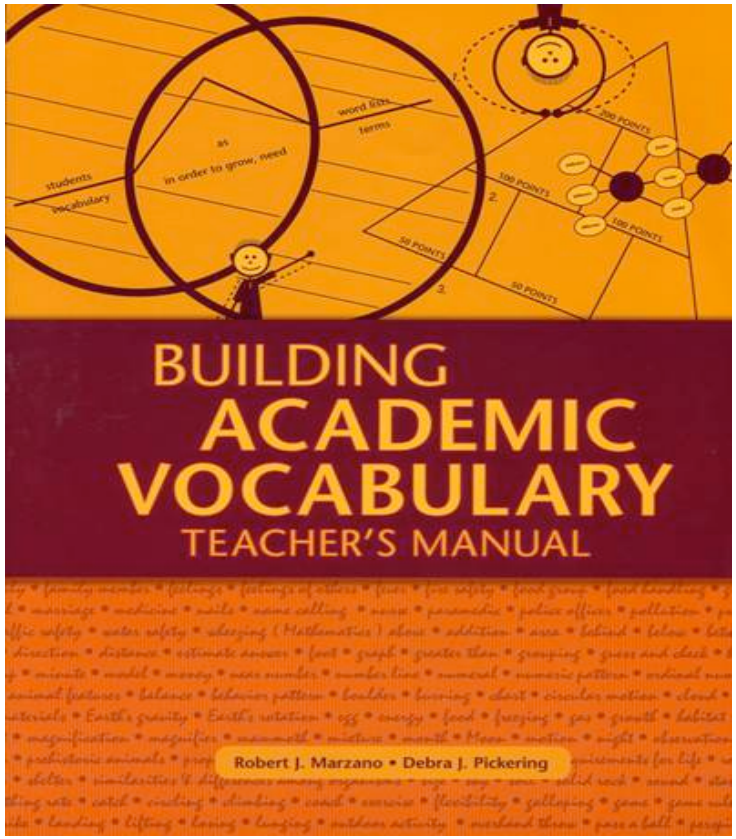
Valuable Resources

Building Academic Vocabulary: Teacher's Manual

Robert J. Marzano &
Debra J. Pickering

ASCD



from *Building Academic Vocabulary* by Robert J Marzano and Debra J Pickering

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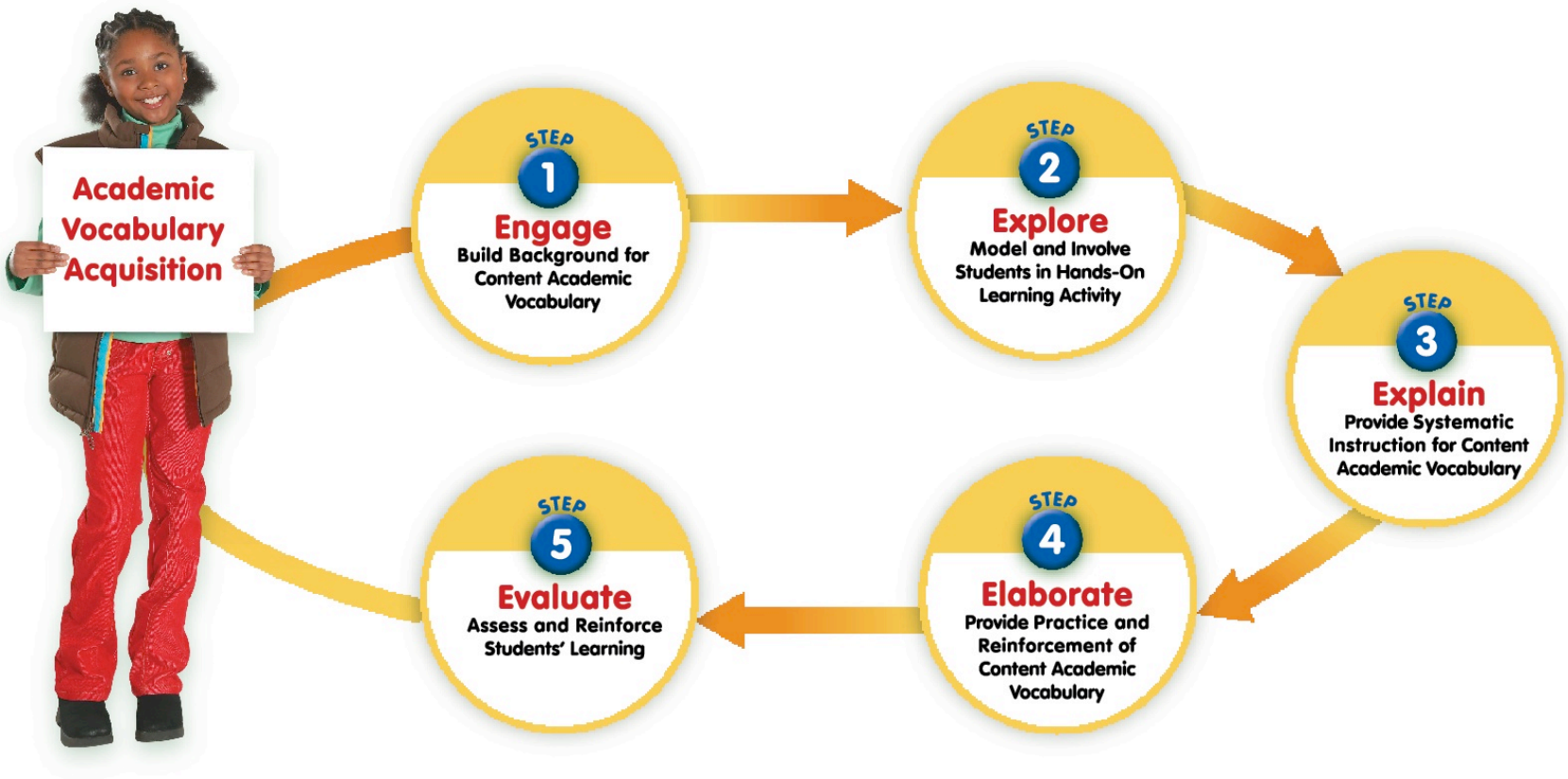
Systematic, Hands-on Instructional Approach

The "5E" Model



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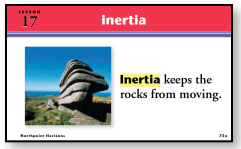
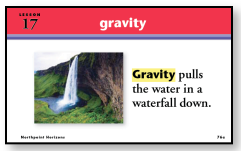
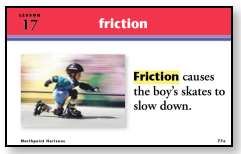
Systematic, Hands-on Instructional Approach

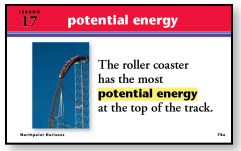
A Picture is Worth 100 Science Vocabulary Words!

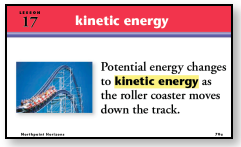
STEP 1: ENGAGE











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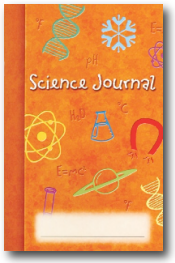
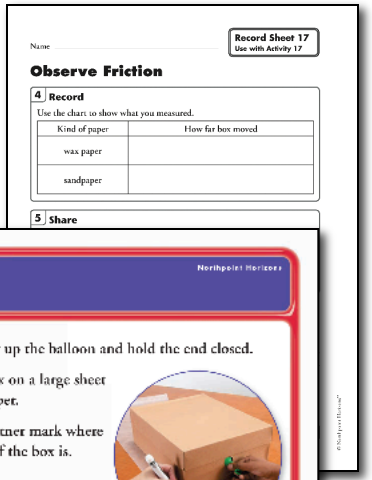
Systematic, Hands-on Instructional Approach

STEP 2: EXPLORE





Name

Record Sheet 17
Use with Activity 17

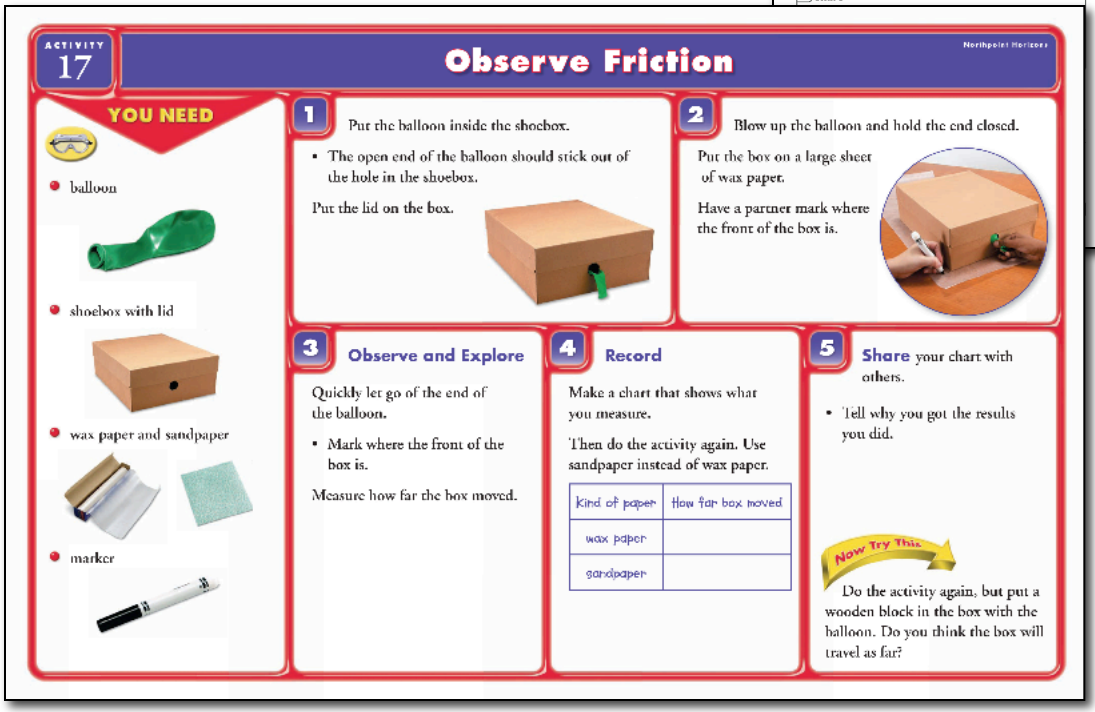
Observe Friction

4 Record

Use the chart to show what you measured.

Kind of paper	How far box moved
wax paper	
sandpaper	

5 Share



ACTIVITY 17

Observe Friction

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YOU NEED

- balloon
- shoebox with lid
- wax paper and sandpaper
- marker

1 Put the balloon inside the shoebox.

- The open end of the balloon should stick out of the hole in the shoebox.

Put the lid on the box.

2 Blow up the balloon and hold the end closed.

Put the box on a large sheet of wax paper.

Have a partner mark where the front of the box is.

3 Observe and Explore

Quickly let go of the end of the balloon.

- Mark where the front of the box is.

Measure how far the box moved.

4 Record

Make a chart that shows what you measure.

Then do the activity again. Use sandpaper instead of wax paper.

Kind of paper	How far box moved
wax paper	
sandpaper	

5 Share your chart with others.

- Tell why you got the results you did.

Now Try This

Do the activity again, but put a wooden block in the box with the balloon. Do you think the box will travel as far?

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Differentiated Instruction

STEP 3: EXPLAIN (K–2)

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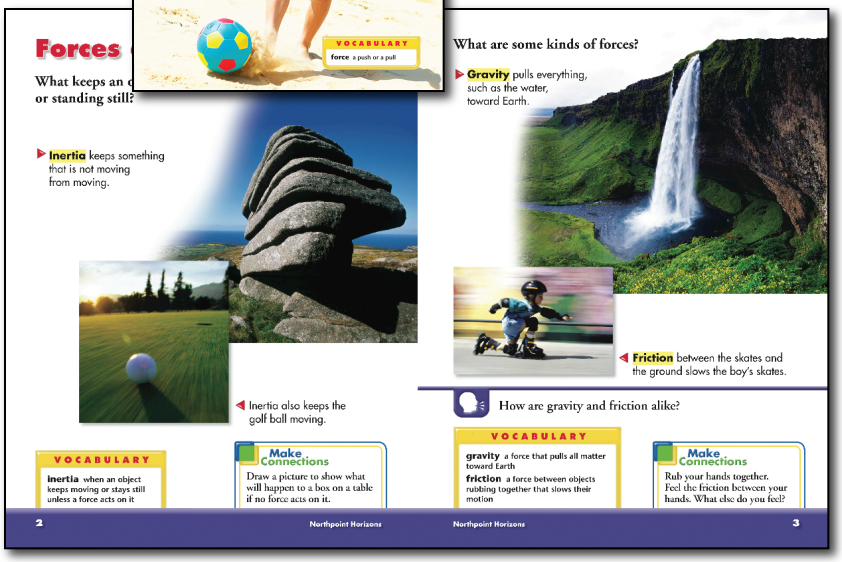
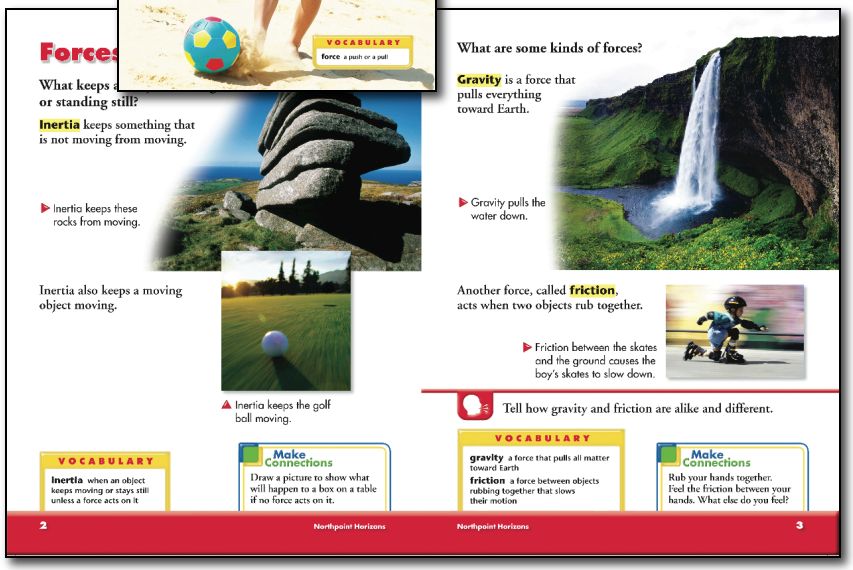
Differentiated Instruction

STEP 3: EXPLAIN (3–5)





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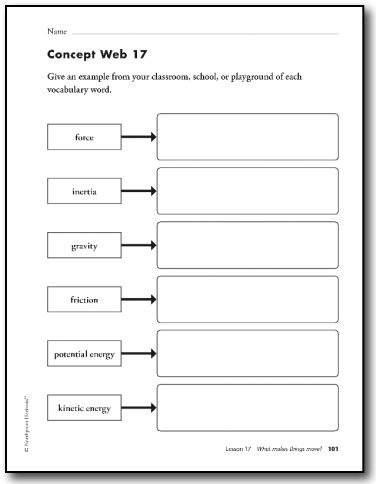
Systematic, Hands-on Instructional Approach

STEP 4: ELABORATE

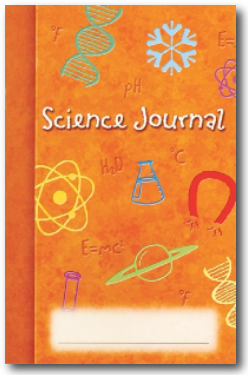

Name _____

Concept Web 17

Give an example from your classroom, school, or playground of each vocabulary word.

force	
inertia	
gravity	
friction	
potential energy	
kinetic energy	

Lesson 17 What makes things move? 101



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Science CAVS Content Academic Vocabulary System

The Teacher's GuideThe "5 E" Model

LESSON 17 What makes things

Engage

Concept Poster 6 and Science Vocabu Cards 74–79 *Whole group activity*

Build Background

Show students side A of card 74 (force) and ask them t image on the poster. (water pushing down slide, boy's merry-go-round, children's legs pushing paddle boats, pulling up flag, children's legs pushing see-saw up and 74, image side out, in the pocket closest to the image. *push or pull. How is the boy's foot acting as a force in the card?* (pushing/kicking ball) *Do you see any other exam pulling on the poster?* (see examples above) Read the sen of the card. Repeat with remaining cards.

Ask students the following questions:

- *Earth's force of gravity pulls down on all matter. Wha Earth had no gravity?* (everything would float upwa
- *The force of inertia keeps an object moving or keeps ob until a force acts on it. What objects in the picture are* (buildings, equipment, and any people who are stat
- *Friction is a force between objects rubbing together tha motion. Give an example of friction.*
- *What kind of energy does a moving object have?* (kine *object that is not moving?* (potential energy)

Explore and Learn

Inquiry Activity *Small group activity*

Model the Activity

- Place the materials for Activity Placemat 17 on each copies of Activity Record Sheet 17 (p. 100).
- Model the correct pronunciation for each of the act Have students repeat the words. Explain that they a the force of friction when an inflated balloon deflat
- Read the steps of Activity Placemat 17 (Observe Fri with students.
- Guide students as they work in small groups to com and Activity Record Sheet 17.
- Have student partners complete the **Now Try This**

Discuss the Activity

Invite students to discuss the activity and compare ob

- *What happened when you let the balloon go?*
- *How much did your shoebox move?*
- *What happened when you used sandpaper and repeat*

Vocabulary Word Wall

Place these words on the Word Wall:

force, inertia, gravity, friction, potential energy, kinetic energy

Have students copy the words in their Science Journals. Then have students draw a picture to illustrate each word and write a sentence using the word. Photocopy and post examples of students' illustrations and sentences below the appropriate words on the Word Wall.

Cognates

For Spanish-speaking students, it may be helpful to post this cognate chart to show similarities between vocabulary words in Spanish and English. Keep in mind that students have varying literacy levels in Spanish, and some may not be familiar with these words.

Cognates	
English	Spanish
force	fuerza
inertia	inercia
gravity	gravedad
friction	fricción
potential energy	energía potencial
kinetic energy	energía cinética

Science Content Picture Dictionary

For students needing additional help with vocabulary words, refer them to the Science Content Picture Dictionary.

Explain Concepts and Voca

Reader Cards A and B *Whole group, sma paired activities*

Build Background

Review the Concept Poster 6 activity from the **Engage** s

- *What forces are acting on the boy on the water slide?* (gr friction)
- *What is the force of gravity?* (force that pulls all matter
- *Suppose the merry-go-round in the picture were spinning Why would it keep spinning?* (inertia would keep it spi there would be no gravity or friction to slow it down)
- *Explain how the force of friction works between the boy water slide.* (contact between the boy's body and the s friction which slows down his motion)
- *Explain this statement: All objects have energy.* (All obj energy—potential—and the energy of motion—kine

Read the Reader Cards A and B

- Distribute copies of the Reader Cards to students. Gi A to Beginning/Emerging English learners and Card B Expanding English learners and native English speak
- Direct students' attention to the title of the card and Have students repeat the words. Then ask students answers to the title question. Encourage students to u vocabulary words in their answers.
- Have students preview the pictures on the Reader Ca what they see. Ask them: *What kind of movement do y pictures? What forces are causing the movement?* Then h the Reader Card aloud in a small group or with a par groups and partners whenever possible to provide bro practice for English learners. Note that new English s able to read only single words.
- Encourage students to check one another's comprehen responding to the questions or prompts located next t
- Circulate among students, guiding them and providin as needed.

Make Connections

- Direct students' attention to the **Make Connections** students to work with their partners to discuss the qu prompts, or to complete the activities.
- Suggest that students use their Science Journal to rec or observations.

Elaborate

Concept Web *Paired activity*

Distribute copies of Concept Web 17 (p. 101). Have each student work with a partner to discuss the words and complete the web. For students needing additional help with the web, refer them to the Concept Poster 6, Science Vocabulary Cards 74–79, and Reader Cards A and B. When students have finished, ask volunteers to share and talk about their completed webs.

Radius™ Science Vocabulary Cards *Small group activity*

Have students use the Radius™ Audio Learning System and Radius™ Science Vocabulary Cards 74–79 to practice listening to, reading, writing, and speaking each vocabulary word. Then have students do one or more of the following activities in their Science Journals:

- Ask students to write sentences about gravity, potential energy, friction, and kinetic energy. Write a model sentence for them to follow on the board: When you push a heavy desk across the floor, there is ____ when the legs of the desk rub against the floor. (friction)
- Invite students to use their own words to write definitions of the vocabulary words. Have them illustrate their definitions.

Evaluate

Transparency 17 *Whole group activity*

Assess Vocabulary Knowledge

Use side B (definition side) of the Science Vocabulary Cards 74–79 to review the lesson vocabulary words. Then distribute a copy of Transparency 17 to each student. Have students cut out the words at the bottom of the page and place them in the correct boxes. Model the task for them by using Transparency 17. Invite volunteers to use each vocabulary word in a sentence.

Lesson Review 17 *Individual activity*

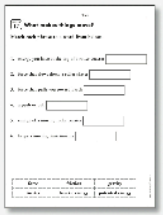
Assess Concept Knowledge

Distribute copies of Lesson Review 17 (p. 102). Read the directions aloud and verify students' understanding. For students whose literacy skills in English are emerging, consider reading the sentences aloud. When students have finished, review the correct answers.

Home Connection

Send the completed copy of Activity Record Sheet 17 (p. 100) home with each student to share with his or her family.

Send a second copy of Transparency 17 home with each student for extra review and practice. Encourage students to work with family members to cut out and place vocabulary words in the appropriate places on the transparency copy. Students can use the transparency copy to review vocabulary words throughout the school year.



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Success on the TEST

STEP 5: EVALUATE

Name _____

LESSON 17 **What makes things move?**

Match each phrase to a word from below.

1. energy you have at the top of a roller coaster _____
2. force that slows down a roller skater _____
3. force that pulls you toward Earth _____
4. a push or pull _____
5. energy of a moving roller coaster _____
6. keeps a moving train moving _____

force	friction	gravity
inertia	kinetic energy	potential energy

Name _____

Lesson Review 17

Read the words in the box. Then write the word that completes each sentence. You will use some words twice.

Friction	Gravity	Inertia

1. Inertia keeps a rock that is not moving from moving.
2. Gravity pulls water down a waterfall.
3. Friction makes skates slow down.
4. Inertia keeps a golf ball moving.

Write more or less on the line to answer each question.

6. Would a car have more or less potential energy as it moves down a hill?
   It would have less potential energy.
7. Would a car have more or less kinetic energy as it moves down a hill?
   It would have more kinetic energy.

Give two examples of forces.

8. Answers will vary but may include a push and a pull.

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Success on the TEST

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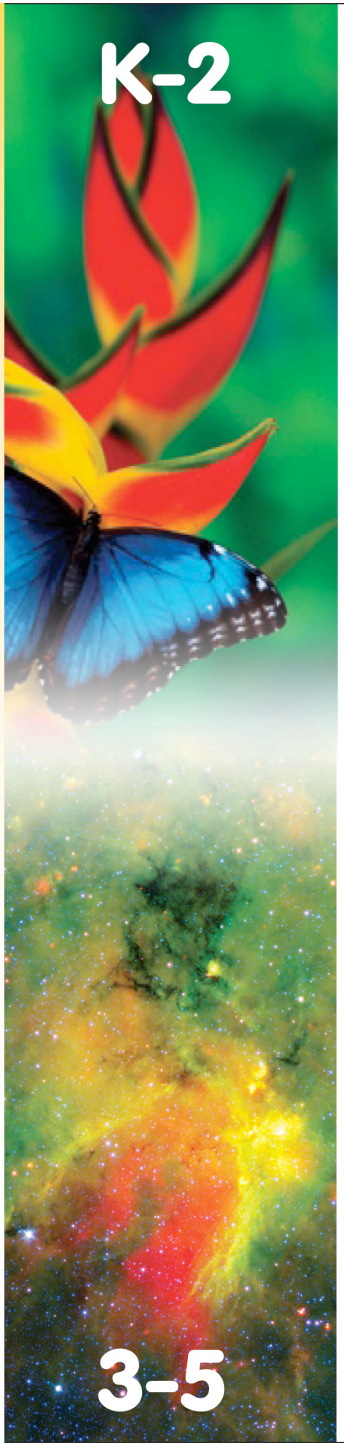

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