



Teacher's Guide

Jan.-Feb. 2010

Dear Educator:

Welcome to a new year and a new, expanded online-only Teacher's Guide! Each lesson provides in-depth instructional support to engage your students and help them become active, proficient readers. New features will help you use the magazine to access science content and assess students' understanding of key concepts. You'll also find ideas for English language learners and collaborative learning groups as well as suggested reteaching activities. For a link to interactive whiteboard content, please go to the Teachers tab on our website.

One thing that hasn't changed is our commitment to great storytelling. This issue of *YOUNG EXPLORER* opens with a profile of a very "Cool Cat." Readers travel to the cold, snow-covered world of lynx to learn how these wild cats have adapted to their environment. The activity on p. T13 will help you check children's grasp of the key science content.

Readers then get an exceptional look at the dazzling diversity of snowflakes. The story leads readers to compare and contrast different snowflakes, building on children's basic math skills. You can use "Snowflakes" as a springboard for discussing winter weather patterns, including how snowflakes form. The activity on p. T21 gives the class an opportunity to track and graph the weather in your town and compare it to the weather in other places in the country. You can use the activity on p. T23 to provide additional practice with counting and number sense.

"It's an Honor" explores the contributions made by some important people in our country's history, including Dr. Martin Luther King, Jr., and Harriet Tubman. Readers will learn about some of the monuments that have been built to honor important figures from America's past. Children can use the activity master on p. T32 to write about someone they think has improved their lives in some way. As a class, children can choose someone to honor and then work together to design an appropriate monument.

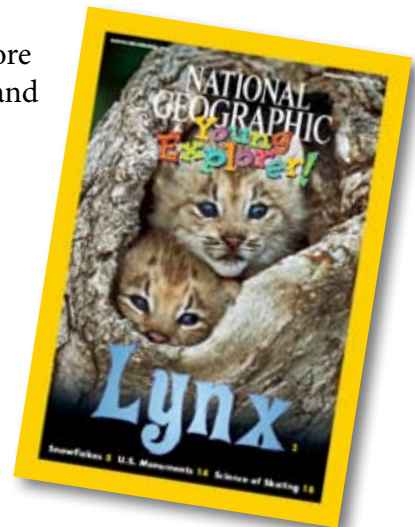
Finally, "On The Move" brings readers into the viewing stands of an ice rink to learn about force and basic laws of motion. They'll discover that when skaters are gliding, spinning, going forward, backward—or even stopping—force is at work. You can use the activity on p. T41 to build their understanding of force and cause-effect relationships. The hands-on activity on p. T43 gives children step-by-step support in making predictions about objects in motion and observing and recording what actually occurs.

As always, our goal is to help you build literacy and develop core content knowledge for all learners. We welcome your comments and suggestions to help us meet this important goal.

Wishing you a happy 2010!

A handwritten signature in black ink, reading "Jacalyn Mahler".

Jacalyn Mahler
Editor in Chief





Teacher's Guide

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Curriculum Connections

- Science • Social Studies • Reading • Writing • Math

Skills

- Understand cause-effect relationships
- Note details
- Identify sequence of events
- Write sentences
- Understand numbers and operations
- Describe shapes and spatial relationships
- Understand motion of objects

High-Frequency Words

are (pp. 6, 8, 16, 17); **cold** (pp. 2, 7); **how** (pp. 2, 7, 13, 19); **look** (pp. 10, 11, 12); **many** (pp. 13, 17); **move** (pp. 19, 20, 21, 22, 23); **other** (pp. 11, 12, 22); **some** (pp. 11, 12); **their** (pp. 7, 8, 20); **them** (pp. 7, 15); **they** (pp. 2, 10, 21, 22, 23); **with** (pp. 7, 8, 20, 23)

Decoding Skills

Long a: hares (p. 5); made (p. 8); makes (p. 6); shape (p. 8); skates (pp. 20, 23)

Long e: hear (p. 5); keeps (p. 4); meal (p. 5); near (p. 17); teaches (p. 7); tree (p. 6)

Long i: ice (p. 23); like (pp. 11, 12); sides (p. 13); size (p. 8)

Digraphs

sh: push (pp. 21, 22, 23); **sh**ape (p. 8)

th: the (pp. 6, 7, 8, 20, 21, 22, 23); **th**eir (pp. 7, 8, 20); **th**em (pp. 7, 15);

they (pp. 2, 10, 21, 22, 23)

Consonant Blends: Final cluster **nt** important (p. 15); monument (p. 15);
point (p. 13); president (p. 16)

Explore New Words

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Curriculum Connections

- Reading
- Writing

Standards Correlations: Language Arts

- Improve decoding and word recognition
- Develop academic vocabulary
- Explore multiple-meaning words
- Read aloud with fluency
- Read multi-syllabic words

Literacy Skills

- Write sentences

Activity Masters

Word Work, T4

Word Work, Answer Key, T5

Vocabulary, T6

Vocabulary, Answer Key, T7

Explore New Words

Before Reading

Before you read the stories with children, use the “Explore New Words” side of the poster to introduce key content words. First, direct their attention to the three rows of photos and ask them what they notice about each one.

If children name the key word, point to the word on the poster. If they do not, identify the word for them. Next, develop the meaning for each word. Use the following steps to teach *den*:

1. **Pronounce** Tell children that when they read the story “Cool Cat,” they are going to learn about a wild cat and the place it lives with its babies. Ask children to say the word *den* with you. Then have children say the word again as they clap one time for one syllable: *den*.
2. **Explain** Tell children that the word *den* has more than one meaning. It can mean a place in nature where wild animals sleep or find shelter. It can also mean a cozy room in a house.
3. **Engage** Next, ask students to help you complete this sentence: *Animals need a place to sleep. I know that some wild cats sleep in a _____. (den)*
4. **Involve** Say: *Listen to this sentence and tell me if I’m using the word den correctly. A bear sleeps in its den.* Ask students for a thumbs-up or a thumbs down. Explain that those who voted ‘yes’ are correct because the word *den* means a place where wild animals sleep.
5. **Elaborate** Ask: *Where do you think you might hear the word den: at a music concert or on a trip to the zoo?*

Repeat the process to teach the other key concept vocabulary. To introduce the word *force*, explain that the photo shows a skater pushing against the ice with an ice skate. Force is a push or a pull. Since the skater is pushing on the ice, the photo shows an example of force.

After you develop the meaning of each word, point to the word on the poster. Invite volunteers to read the word. Have children repeat it. Lead the class in clapping out the syllables. Read the last question. Have children show thumbs-up when they are ready to answer it. Call on several volunteers to tell which word is made up of two smaller words and to say the two words (*snowflake*: *snow*, *flake*).

Finally, guide children in reading the sentence that appears above the big picture. Volunteers can point to the two bold words and then find the same words below the smaller photos. You may want to keep the “Explore New Words” poster displayed in the classroom. As you work through the stories in YOUNG EXPLORER, ask children to raise their hands when they read or hear one of the new words.

For word work practice, children can complete the activity master on p. T4. You can use the activity on p. T6 to assess children’s understanding of the new words’ meanings.

Explore New Words

Word Bank

move	snowflake	force
den	monument	kit

Say each word in the Word Bank. Write the four words that have one syllable.

1. _____ 3. _____

2. _____ 4. _____

Write the word with two syllables.

Write the word with three syllables.

5. _____ 6. _____

Now write all the words in ABC order.

7. _____ 10. _____

8. _____ 11. _____

9. _____ 12. _____

Explore New Words

Word Bank

move snowflake force
den monument kit

Say each word in the Word Bank. Write the four words that have one syllable.

1. **move** _____ 3. **force** _____

2. **den** _____ 4. **kit** _____

Write the word with two syllables.

Write the word with three syllables.

5. **snowflake** _____ 6. **monument** _____

Now write all the words in ABC order.

7. **den** _____ 10. **monument** _____

8. **force** _____ 11. **move** _____

9. **kit** _____ 12. **snowflake** _____

Explore New Words

Complete each sentence. Use a new word you learned.

1. _____ are made of tiny ice crystals.
2. Bears sleep in a _____.
3. The Lincoln Memorial is a _____.
4. A _____ is a baby lynx.
5. Skaters use _____ to _____.

Now think of a sentence using at least one word from the Word Bank. Write it below.

6. _____
- _____

Word Bank

move	snowflake	force
den	monument	kit

Explore New Words

Complete each sentence. Use a new word you learned.

1. **Snowflakes** are made of tiny ice crystals.
2. Bears sleep in a **den**.
3. The Lincoln Memorial is a **monument**.
4. A **kit** is a baby lynx.
5. Skaters use **force** to **move**.

Now think of a sentence using at least one word from the Word Bank. Write it below.

- Answers will vary. Make sure that the response is a complete sentence. Check for correct usage of the new vocabulary.**
6. _____
- _____

Word Bank

move	snowflake	force
den	monument	kit

Cool Cat

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Curriculum Connections

- Language Arts
- Life Science

Standards Correlations: Language Arts

- Improve decoding and word recognition
- Practice reading high-frequency words
- Relate prior knowledge to text
- Develop academic vocabulary
- Produce written work
- Compare and contrast details
- Read aloud with fluency
- Read multi-syllabic words
- Construct mental images

Standards Correlations: Science

- Understand characteristics of organisms
- Understand organisms and their environments

Literacy Skills

- Note details

Activity Master

Assess, T13

Assess, Answer Key, T14

Cool Cat

Preview

Use pp. 2-3 to preview the story with children. Read aloud the title, “Cool Cat.” Ask, *What do you think the word cool means in the title?* (Possible answers: The cat lives in a cold place. The cat looks interesting or does surprising things.) Next, explain that the cat shown in the photo is a Canadian lynx. It is about three times the size of a large house cat. It is much smaller than other wild cats such as mountain lions or cougars. Emphasize that a lynx is a wild animal and cannot live in a house. Invite children to page through the rest of the story looking at the photos. Have volunteers predict what the story might be about based on their preview.

Build Background

Ask children, *Where do squirrels live?* (Possible answer: in a tree; in a forest.) Ask, *Where do fish live?* (Possible answers: in a river; in the ocean.) Encourage volunteers to name other animals and the places they live. Then display the word *habitat*. Explain that the place an animal lives is called its *habitat*. An animal’s habitat must provide shelter to keep the animal warm and safe, food, and space for the animal. It must also provide a place where animals can have their babies. Together, come up with a definition for **habitat** (“a place where animals can live, eat, and have babies”).

Explain that many animals make shelters, or homes, using things they find in their habitats. For example, gray squirrels build nests in the trees that grow in a forest. They have their babies in the nest and stay inside to keep warm in winter. Tell children they will learn about a wild cat that lives in a cold and snowy habitat.

Vocabulary

Teach Key Concept Vocabulary Display these key words from the story: *den, fur, kit, paws, survive*. Use the following steps to teach *fur*:

1. **Pronounce** Remind children that when they read “Cool Cat,” they are going to learn about a wild cat that lives in a cold and snowy habitat. Ask children to say the word *fur* aloud with you. Then have children pronounce the word *fur* aloud together, clapping once for one syllable: *fur*.
2. **Explain** Tell children that *fur* refers to the soft, thick hair that covers many animals. Say, *I like to pet my dog’s fur*.
3. **Engage** Ask students to help you complete this sentence: *Some animals have long, brown _____.* (fur)
4. **Involve** Say: *I want to use the word fur in a sentence. Listen to this sentence and tell me if I’m using the word fur correctly. The rabbit’s fur is white in winter.* Ask students for a thumbs-up or a thumbs-down. Explain that those who voted ‘yes’ are correct because the word *fur* in this sentence refers the soft hair that covers the rabbit.
5. **Elaborate** Ask: *What other animals have fur?*

Repeat the process to introduce the other key concept vocabulary.

Cool Cat

(continued)

High-Frequency Words

Create word cards for these high-frequency words from the story: *are, cold, how, their, them, they, with*. Display the cards with any previously introduced words, both regular and irregular. Have the class read the cards aloud as a group. You may want to use the following steps to teach any new words; for example, the word *are*.

- Hold up the word card *are*. Say, *This word is are*.
- Write a simple sentence on the board using *are*. (*We are friends*.) Read the sentence aloud. Underline the word *are* as you reread the sentence. Have children repeat the word after you.
- Lead children in noting the sounds and spelling patterns. (For example: Say, *What letter (or sound) does this word begin with? How many letters are in this word? What letter (or sound) does this word end with?*)
- Next, have children spell out the word as you point to each letter. (*are: a, r, e*) Ask, *What is this word?* (*are*) Then have children write the word in the air with a finger. Finally, have children write the word on a piece of paper.

Repeat the process to introduce the other high-frequency words.

English Language Learners In pairs, have children listen to “Cool Cats” multiple times <http://www.nationalgeographic.com/ngyoungexplorer/readstory.html> as they follow along with their copy of NATIONAL GEOGRAPHIC YOUNG EXPLORER. Encourage them to chime in when they recognize the high-frequency words.

Access Science Content

Read the title and introduction to the story with children. Pause at the end of p. 2. Invite volunteers to share what they think *survive* means. Make sure children understand that *survive* means “to live or exist.” Say, *I think this story is going to explain how lynx manage to live in such cold, snowy places*.

Pause after reading pp. 5-6. Ask, *What are some things that help a lynx survive?* (Thick fur keeps it warm. Round paws help it run across snow. Hairs on its ears help it hear. Lynx eat snowshoe hares.)

Read the rest of the story together. Have children turn and talk to a partner about the things a mother lynx might teach her kits to help them survive in cold and snow. Invite volunteers to share their responses. (Possible answers: The lynx will teach her kits how to run on snow with round paws. The lynx will teach her kits how to hunt snowshoe hares. The lynx will teach her kits how to make a den.)

Cool Cat

(continued)

Assess and Reteach

Materials Activity Master, p. T13; “Cool Cat” story; “Cool Cat” audio

You can use the following questions for a quick oral comprehension check. Encourage children to respond using complete sentences:

- *How does a lynx survive in cold and snow?* (A lynx has thick fur to keep warm and round paws to run across snow.)
- *What helps a lynx hear well?* (The long hairs on its ears helps a lynx hear well.)
- *Where does a lynx have her babies?* (A lynx has her babies in a den in a log or tree.)
- *What are the babies called?* (The babies are called kits.) *How long do kits stay with their mother?* (Kits stay with their mother for 10 months.)
- *What will the lynx teach her kits?* (The kits will learn how to survive in cold and snow. They will learn how to run across snow. They will learn how to make a den.)
- *What do you think the kits will hunt when they grow up?* (The kits will hunt snowshoe hares.)

Use the activity master on p. T13 as a written assessment of comprehension.

English Language Learners After listening to the story at <http://www.nationalgeographic.com/ngyoungexplorer/readstory.html>, tell children they will answer questions about the story by pointing to the photos. As children point to the correct part of the photo, model saying the correct answer and have children repeat it after you. Ask children to turn to pp. 4-5. Ask, *What keeps a lynx warm? What helps a lynx run across snow? What helps a lynx hear well? What is the lynx’s favorite meal?* Have children turn to pp. 6-7 and ask, *Where does a lynx have her babies? Show me the lynx’s kits.*

Based on the results of the comprehension assessments, you may want to reteach key science concepts. For example, children may be unclear about what it means for an animal to **survive**. Have them turn to p. 2 of the story. Invite a volunteer to read the sentences. Say, *I wonder what survive means? I just read that lynx live mostly in cold and snowy places. Survive must be how the lynx is able to live in cold and snow—how it manages to stay warm, move around in deep snow, and find enough food to eat.*

Next, tell children that together you will go through the story to find the different ways the lynx survives. Say, *Let’s reread p. 4 together.* After rereading the page, say, *We just read about the lynx’s fur. Why do you think fur is important for an animal that lives in the cold?* (Fur keeps the lynx warm.) *We also read about the lynx’s round paws. Why do you think round paws are important for an animal that lives in snow?* (Round paws help the lynx run across the snow.)

Cool Cat

(continued)

Assess and Reteach, continued

After rereading p. 5, say, *We just read that snowshoe hares are a favorite meal for the lynx. Why do you think it is important for lynx to hear snowshoe hare?* (Lynx need food to survive. Lynx eat snowshoe hares.)

After rereading p. 6, say, *We just read about the lynx's den. Why do you think it is important for the lynx to have a den?* (Lynx have their babies in the den. Lynx and their babies can sleep in a den and stay safe from other animals.)

To further reinforce the key science content, children can work in small groups to page through the story and make a list of the ways the lynx survives in cold and snowy places.

Extend the Learning

High-Frequency Words Display the high-frequency words for “Cool Cat.” Have children read the story aloud as they listen to the audio at <http://www.nationalgeographic.com/ngyoungexplorer/readstory.html>. Tell children that they are high-frequency word detectives. Their job is to find the high-frequency words in the story as they read. Once they have found where the high-frequency words appear in the story, they can find the same words in the classroom and other print materials that you provide. Each child can start a word book to write down high-frequency words as they encounter them.

Categorize Explain to children that observing what animals look like is important to scientists who study animals. Lead the class in categorizing animals into three groups based on whether they have feathers, scales, or fur. Display labeled photos of animals such as *lynx*, *mouse*, *cat*, *duck*, *snake*, *eagle*, *dog*, *fish*, *hen*, *iguana*, and *cow*. Model how to categorize, starting with the *lynx*. Say, *Remember what we read about lynx and the pictures we saw in “Cool Cat.” In which group does the lynx belong? Does it have feathers, scales, or fur?* Children can work with partners to categorize the remaining animals. Invite them to share their responses with the class.

Cool Cat

Read the story. Then complete the sentences to show what you learned.

1. Lynx live mostly in _____ and _____ places.
2. Thick _____ keeps a lynx warm.
3. Round _____ help a lynx run across snow.
4. A lynx has ears with _____ .
5. A _____
_____ is a lynx's favorite meal.
6. A lynx makes its _____ in an old log or tree.
7. In spring, babies, or _____ , are born.

Cool Cat

Read the story. Then complete the sentences to show what you learned.

1. Lynx live mostly in cold and snowy places.
2. Thick fur keeps a lynx warm.
3. Round paws help a lynx run across snow.
4. A lynx has ears with long hairs.
5. A snowshoe hare is a lynx's favorite meal.
6. A lynx makes its den in an old log or tree.
7. In spring, babies, or kits, are born.

Snowflakes

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Curriculum Connections

- Language Arts
- Earth Science

Standards Correlations: Language Arts

- Improve decoding and word recognition
- Practice reading high-frequency words
- Relate prior knowledge to text
- Develop academic vocabulary
- Produce written work
- Compare and contrast details
- Read aloud with fluency
- Read multi-syllabic words
- Construct mental images

Standards Correlations: Science

- Understand changes in earth and sky
- Analyze data

Standards Correlations: Mathematics

- Describe shapes and space
- Understand numbers and operations

Activity Masters

Assess, T19

Assess, Answer Key, T20

Graphing the Weather, T21

Graphing the Weather, Answer Key, T22

Counting Snowflakes, T23

Counting Snowflakes, Answer Key, T24

Snowflakes

Preview

Read the title and the introduction on p. 8 aloud. Say, *I wonder what we will learn from reading this story?* Invite volunteers to make predictions. Record all reasonable responses. Then page through the rest of the story with children.

Tap into Prior Knowledge Next, say, *Have you ever played in snow? What did it feel like?* Invite children to share their experiences in snow. Prompt them by asking the following: *How cold did it feel outside? Did the snow melt? What did it look like when it melted? Was there ice on the ground or hanging from houses and trees?* Encourage children who have never experienced snow to imagine what snow is like, based on what they know about snow.

Vocabulary

Teach Key Concept Vocabulary Display these key words from the story: *ice crystals, points, shape, sides, size, weather*. Use the following steps to teach *ice crystals*:

1. **Pronounce** Tell children when they read “Snowflakes,” they will learn about snowflakes, including what they’re made of. Invite children to say the words *ice crystals* with you. Then have the class say the words *ice crystals* again, clapping each syllable in each word: *ice crys-tals*.
2. **Explain** Tell children that *ice crystals* are tiny pieces of ice. Say, *One snowflake is made up of many ice crystals*.
3. **Engage** Ask students to help you complete this sentence: *An _____ is so small, your eyes can’t see it.* (ice crystal)
4. **Involve** Say: *Listen to this sentence and tell me if I’m using the words ice crystal correctly. I saw an ice crystal fall from the sky.* Ask students for a thumbs-up or a thumbs-down. Explain that those who voted ‘no’ are correct because the *ice crystals* are so small you can’t see just one fall from the sky.
5. **Elaborate** Ask children where they might use the words *ice crystals* again. Encourage them to think about a place in their home where they might see tiny pieces of ice (such as a freezer).

Repeat the process to introduce the other key concept vocabulary.

Teach High Frequency Words Create word cards for these high-frequency words from the story: *are, how, look, many, other, some, their, they, with*. Display word cards with any previously introduced words, both regular and irregular. Have the class read the cards aloud as a group. You may want to use the following steps to teach any new words; for example, the word *how*.

- Hold up the word card *how*. Say, *This word is how.*
- Write a simple sentence on the board using *how*. (*How cold is it today?*) Read the sentence aloud. Underline the word *how* as you reread the sentence. Have children repeat the word after you.
- Lead children in noting the sounds and the spelling patterns. (For example: Say, *What letter (or sound) does this word begin with? How many letters are in this word? What letter (or sound) does this word end with?*)
- Next, have children spell the word as you point to each letter. (*how: h, o, w*) Ask, *What is this word?* (*how*) Then have children write the word in the air with a finger. Finally, have children write the word on a piece of paper.

Snowflakes

(continued)

Access Science Content

Ask children, *Where do you think snow comes from?* Record all reasonable responses. Explain that snow is made up of thousands of snowflakes. Snowflakes form in clouds. They form only when the temperature in the clouds is freezing or lower. That is 32 degrees Fahrenheit and 0 degrees Celsius. Explain that while it must be at least freezing for snowflakes to form, it can be even colder. Both the temperature and the amount of water in the clouds, or moisture, make snowflakes different shapes and sizes. While the size and shape of a snowflake can change, almost all of them have six sides and six points. If you can count the number of points, then you know how many sides the snowflake has!

Tell them they will read about snowflakes that are different shapes. Read the title and p. 8 with children. Remind them of your previous explanation: *This says that the size and shape of a snowflake changes with the weather. Do you remember what two things make snowflakes change shape?* (The temperature and the amount of water in the clouds can change the size and shape of each snowflake.) Provide time for children to read the story silently. Then invite volunteers to take turns reading the rest of the story aloud.

At the end of p. 11, pause and say, *Point to the snowflake that looks like a triangle. Now point to the snowflake that looks like a drum.* At the end of p. 12, pause and say, *Point to the snowflake that looks like a star. Now point to the snowflakes that look like sticks.* At the end of the story, have children answer the last question by counting the points together out loud. *(There are six points.)* Next, ask children to turn to pp. 10-11. Say, *I know that a true triangle has three sides. How many sides does the snowflake that looks like a triangle have? Let's count them together.* (It has six sides.) *How many points does it have? Let's count them together.* (It has six points.) *Is this snowflake a true triangle or does it just look like a triangle?* (The snowflake just looks like a triangle.) Have children page through the story again, counting the points together on the rest of the snowflakes.

Assess and Reteach

Materials Activity Masters, pp. T19, T21, T23; "Snowflakes" story; "Snowflakes" audio

Assign the activity master on p. T19 to check children's comprehension of the story. Use the answer key to score the assessment. As an alternate assessment, you can ask English language learners to draw pictures that show how snowflakes are different.

Based on the results, you may want to reteach key science concepts. For example, children may not understand the connection between **temperature** and **moisture** and a snowflake's **shape**.

Remind children of these key points related to temperature and moisture.

- It must be freezing or colder for snowflakes to form. (Ask if it's cold enough today for it to snow.)
- No two snowflakes are alike. They are different shapes and sizes. (Ask them to recall some shapes from the story.)
- Both the temperature and the amount of water in the clouds make flakes have different shapes and sizes. (Ask where snow comes from. Make sure they understand it falls from clouds and is made of ice crystals.)

Snowflakes

(continued)

Assess and Reteach, continued

To reinforce the concept of different shapes, say, *Look at the photos on pp. 10-13. What does the first snowflake look like?* (a star.) *What does the middle snowflake look like?* (a triangle.) *What does the last snowflake look like?* (a drum.) Ask, *Do all snowflakes look the same?* (No.) Repeat the process using the photos on pp. 12-13 for children to consider if all snowflake have the same number of sides and points.

High-Frequency Words

Display the high-frequency words for “Snowflakes.” Have children read the story aloud along with the audio at <http://www.nationalgeographic.com/ngyoungexplorer/readstory.html>. Remind them that they are high-frequency word detectives. Their job is to find the high-frequency words in the story as they read. Children should update their high-frequency word books with any new words they find. Challenge children to use one of the high-frequency words in a sentence. Then challenge them to use a sentence with as many of the high-frequency words as they can. Children can write their sentences in their word books, underlining the high-frequency words in each sentence.

Extend the Learning

Graphing Distribute the graph template on p. T21. Explain that children will have a chance to track the week’s temperatures in your town over the course of a month. You can then use children’s “data” to create a classroom line or bar graph. Review the directions on the activity master and model completing a row. (In areas that won’t see any snow, you can “adopt” a city that is likely to get snow and track the temperature for that city, using the newspaper or Internet.) You may want children to record the temperatures from your town and your chosen city and compare the results.

Symmetry Hold up a piece of construction paper and show it to children as you fold it in half vertically. Open the paper and show that both sides of the fold match (two rectangles). Explain that the fold line is called the *line of symmetry*. An object has symmetry when it can be folded so the two halves match or are identical (exactly the same). Explain that symmetry can be found in many things in nature: a butterfly’s wings, leaves, even a human face.

Now cut a simple tree shape along the fold. Open the paper to show children that the tree shape on either side of the fold matches. They are like the reflections in a mirror. Tell children that snowflakes have symmetry, too. Since they have so many points, they can have many lines of symmetry.

To reinforce the concept, children can practice cutting out familiar shapes and folding them along the lines of symmetry. (*Example: square, triangle, circle*) Once this is mastered, children can move on to cutting snowflake shapes. Then invite volunteers to demonstrate symmetry to the class. Children should hold up their snowflake and fold it in half, showing that both sides of the fold are the same.

Counting Distribute the activity master on p. T23. Have children work independently or in pairs to develop their counting and number sense skills.

Snowflakes

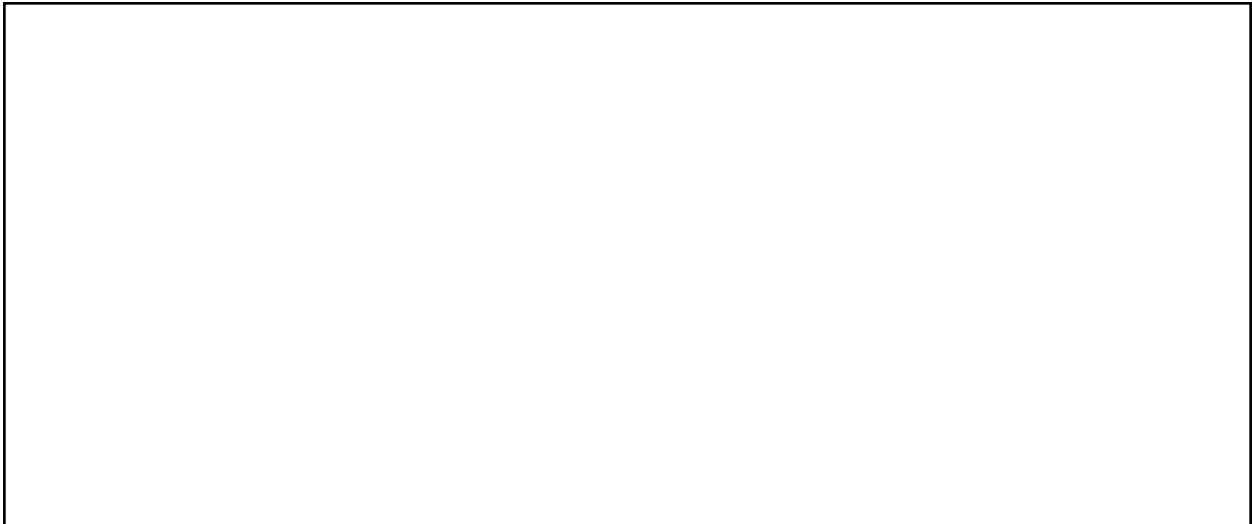
Read the story. Then complete the sentences to show what you learned.

1. Snowflakes are made of tiny _____.
2. Their size and shape changes with the _____.
3. Snowflakes can have many _____ and _____.

Write T for true or F for false.

4. All snowflakes look alike. _____
5. When the temperature is 32 degrees or less, it can snow. _____

Draw a snowflake in this box.



Snowflakes

Read the story. Then complete the sentences to show what you learned.

1. Snowflakes are made of tiny **ice** **crystals**.
2. Their size and shape changes with the **weather**.
3. Snowflakes can have many **sides** and **points**.

Write T for true or F for false.

4. All snowflakes look alike. **F**
5. When the temperature is 32 degrees or less, it can snow. **T**

Draw a snowflake in this box.

Children's drawings will vary. Check that the snowflakes have the features of those shown in the story.

Graphing the Weather

Look at the thermometer each day. Write the temperature. Draw or write what it looks like outside. Based on the temperature, is it cold enough to possibly snow?

Day of the Week	Temperature	What Does It Look Like Outside?	Can It Snow?
Monday			
Tuesday			
Wednesday			
Thursday			
Friday			

Graphing the Weather

Look at the thermometer each day. Write the temperature. Draw or write what it looks like outside. Based on the temperature, is it cold enough to possibly snow?

Day of the Week	Temperature	What Does It Look Like Outside?	Can It Snow?
Monday	60 degrees	sunny	no
Tuesday	52 degrees	cloudy	no
Wednesday	32 degrees	dark skies, rainy	yes
Thursday	40 degrees	windy	no
Friday	28 degrees	partly cloudy	yes

Snowflakes

Look at the number next to the box. Now draw that many snowflakes inside the box.

8

3

6

2

10

5

Snowflakes

Look at the number next to the box. Now draw that many snowflakes inside the box.

8**Eight snowflakes****3****Three snowflakes****6****Six snowflakes****2****Two snowflakes****10****Ten snowflakes****5****Five snowflakes**

It's an Honor

Teacher's Guide Jan.-Feb. 2010

Curriculum Connections

- Language Arts
- Social Studies

Standards Correlations: Language Arts

- Improve decoding and word recognition
- Practice reading high-frequency words
- Relate prior knowledge to text
- Develop academic vocabulary
- Produce written work
- Read aloud with fluency
- Read multi-syllabic words
- Construct mental images

Standards Correlations: Social Studies

- Understand time, continuity, and change
- Study people, places, and environments

Literacy Skills

- Writing sentences

Activity Masters

Assess, T30

Assess, Answer Key, T31

Writing, T32

Writing, Answer Key, T33

It's an Honor

Preview/Build Background

Read the title and direct children's attention to the photos on pp. 14-15. Point to the word *honor* in the title. Invite volunteers to share what they think the word means. Together, come up with a definition ("feeling of deep respect for someone.") Next, ask children if they know who the two statues are honoring. Display the names *Abraham Lincoln* and *Dr. Martin Luther King, Jr.* Discuss who the men were and why people want to honor and remember them.

Read the text on p. 15 with children. Say, *Raise your hand if you have ever visited a monument.* Invite children to share which monuments they may have visited and where the monument is. Ask the class, *Why do you think there is a monument for (name of person/event)?* Record all reasonable answers.

Next, display a map of the United States. Help volunteers locate Washington, D.C. Tell children that this is where they can visit the Lincoln Memorial. Repeat the process with Selma, AL, for Dr. King's statue and Atlanta, GA, for his childhood home.

Tell children that when they read the rest of the story, they will learn about other monuments that honor important Americans.

Vocabulary

Teach Key Concept Vocabulary Display these key words from the story: *building, honor, monument, statue.* Use the following steps to teach the word *building*:

1. **Pronounce** Ask children to say the word *building* aloud with you. Then have the class say the word again, clapping each syllable: *build-ing*
2. **Explain** Tell children that buildings are places where people gather such as schools, houses, stores, or apartments. People build them out of wood, stone, concrete, or steel. Say, *The building has fifty windows.*
3. **Engage** Ask students to help you complete this sentence: *My aunt lives in a tall apartment _____.* (building)
4. **Involve** Say: *Listen to this sentence and tell me if I'm using the word building correctly. The building has rooms, windows, and stairs.* Ask students for a thumbs-up or a thumbs-down. Explain that those who voted 'yes' are correct because the word *building* means a place where people live, work, have fun, or study.
5. **Elaborate** Ask children to work with a partner to think of a sentence that includes *building*.

Repeat the process to introduce the other key concept vocabulary.

It's an Honor

(continued)

High-Frequency Words

Create word cards for these high-frequency words from the story: *are, how, look, many, other, some, their, they, with*. Display word cards with any previously introduced words, both regular and irregular. Have the class read the cards aloud as a group. You may want to use the following steps to teach any new words; for example, the word *look*.

- Hold up the word card *look*. Say, *This word is look*.
- Write a simple sentence on the board using *look*. (*Look out the window*.) Read the sentence aloud. Underline the word *look* as you reread the sentence. Have children repeat the word after you.
- Lead children in noting the sounds and the spelling patterns. (For example: Say, *What letter (or sound) does this word begin with? What is the next sound? How many letters are in this word? What letter (or sound) does this word end with?*)
- Next, have children spell out the word as you point to each letter. (*look: l, o, o, k*) Ask, *What is this word?* (*look*) Then have children write the word in the air with a finger. Finally, have children write the word on a piece of paper.

Read and Discuss

English Language Learners Many words in the story are cognates of Spanish words. Help children whose home language is Spanish identify these words and use what they know to better understand the story. For example, point to the word *honor* in the title. Ask children which word in Spanish looks and sounds like *honor* (*honor*). Explain that the two words look and sound alike and mean the same thing in both English and Spanish. Other cognate pairs are *monuments/monumentos* (p. 15), *parks/parques* (p. 15), *important/importantes* (p. 15), *mountain/montaña* (p. 16), *different/diferentes* (p. 16), *American/Americanos* (p. 16), *presidents/presidentes* (p. 16).

In pairs, have English language learners listen to “It’s an Honor” several times at <http://www.nationalgeographic.com/ngyoungexplorer/readstory.html> as they follow along with their copy of NATIONAL GEOGRAPHIC YOUNG EXPLORER. Encourage children to chime in when they come to a cognate.

Read the story with the class. Pause on p. 16 and identify the presidents represented by Mt. Rushmore. (George Washington, Thomas Jefferson, Theodore Roosevelt, Abraham Lincoln) Provide some background about each president and why he may have been honored with a sculpture on the side of a mountain. For example, President Washington was the first president; President Lincoln abolished slavery; President Jefferson was the third president and primary author of the Declaration of Independence, a document stating that the 13 colonies were free states and no longer part of the British Empire; President Roosevelt led the country during World War II and helped develop the National Park system.

It's an Honor

(continued)

Read and Discuss, continued

English Language Learners Read aloud this sentence on p. 16, *Some monuments are as big as a mountain.* Ask children what they think this means. Invite them to share expressions from their home language used to describe things that are really big. Explain that there are some monuments that are very big. Mt. Rushmore, for example, is actually carved into the side of a mountain!

Point to South Dakota on the U.S. map that you displayed during the preview. Explain that this is where Mt. Rushmore is located. It took six and a half years and almost 400 workers to complete this monument. While carving the presidents, the workers removed nearly 450,000 tons of granite, or rock, from the side of the mountain with dynamite! Now that takes skill!

After you read p. 17, ask children how they think Harriet Tubman might have helped slaves find freedom. Give children more information about Harriet Tubman's life, including the Underground Railroad. Help volunteers locate Little Rock, AR, on the U.S. map and explain that it is where this statue is located.

Assess and Reteach

Materials Activity Master, pp. T30, T31; "It's an Honor" story; "It's an Honor" audio

Assign the activity master on p. T30 to check children's comprehension of the story. Use the answer key to score the assessment. Based on the results, you may want to reteach key concepts.

First, remind children that this story explains what monuments are and why we build them. Display the word *honor* and review its definition ("feeling of deep respect for someone.") Explain that there are many reasons we honor, or show respect for, people who have done important things for our country. Lead a discussion about the different reasons we honor each of the people in the story (*Example: We honor Martin Luther King, Jr. because he worked to make sure all people are treated equal, regardless of the color of their skin. We honor different presidents because of great things they did while they were president. We honor Harriet Tubman because she helped many slaves find freedom.*) Record all the reasons that come up in the discussion. Call on volunteers to explain the Big Idea: Why do we build monuments to honor people? Finally, point to the photo of each monument in the story and have children turn to a partner and explain why it was built.

Extend the Learning

English Language Learners After listening to the story, have children draw and label an honored person from their home country.

High-Frequency Words Display the high-frequency words for "It's an Honor." Have children read the story aloud along with the audio at <http://www.nationalgeographic.com/ngyoungexplorer/readstory.html>. Remind children that they are high-frequency word detectives. Their job is to find the high-frequency words in the story as they read. Children should update their high-frequency word books with any new words they find. Next, have children write the high-frequency words from the story on cards. Have children sort the cards into different groups. They can group them by the first letter, the last letter, or the number of letters in each word. Finally, have children arrange the cards in ABC order.

It's an Honor

(continued)

Extend the Learning, continued

Materials Activity Master, p. T32, construction paper, glue, scissors, crayons, markers, popsicle sticks, building blocks, magazines

Cooperative Learning Assign children to several small groups. Explain that each group will choose someone to honor with a monument. Each group will write about that person. In choosing the honoree, each group should ask the following questions:

- *Who is the person you want to honor with a monument?*
- *What has this person done to deserve a monument (give two reasons)?*
- *Where did or does this person live?*
- *When did they live (or are they still living)?*
- *Why do you think it is important to honor this person?*

The activity master on p. T32 will help children plan their monuments.

Tell children that once they have written about the person they want to honor, they will design a monument for the person they have chosen. Children can work together in small groups to build a monument. Remind them that the design can be for a statue, a park, or a building. When the monument is complete, groups can present their design idea to the class. They should be prepared to explain why they chose the person to honor and how the group decided what kind of monument to build.

It's an Honor

Read the story. Then complete the sentences to show what you learned.

1. We build monuments to _____ important people.

2. Monuments can be _____, _____, or _____.

Fill in the blanks.

List three people from the story who have been honored with a monument.

3. _____

4. _____

5. _____

Write your answer.

6. Explain why Harriet Tubman is honored with a monument.

It's an Honor

Read the story. Then complete the sentences to show what you learned.

1. We build monuments to **honor** important people.
2. Monuments can be **statues**, **buildings**, or **parks**.

Fill in the blanks.

List three people from the story who have been honored with a monument.

3. **Martin Luther King, Jr.** **George Washington**
4. **Abraham Lincoln** **Thomas Jefferson**
5. **Harriet Tubman** **Theodore Roosevelt**

Write your answer.

6. Explain why Harriet Tubman is honored with a monument.

Harriet Tubman helped many slaves find freedom.

It's an Honor

Write about someone you want to honor with a monument. Give two reasons why this person should be honored. Draw a picture of the monument you would make.

I want to honor _____.

One reason I would honor _____

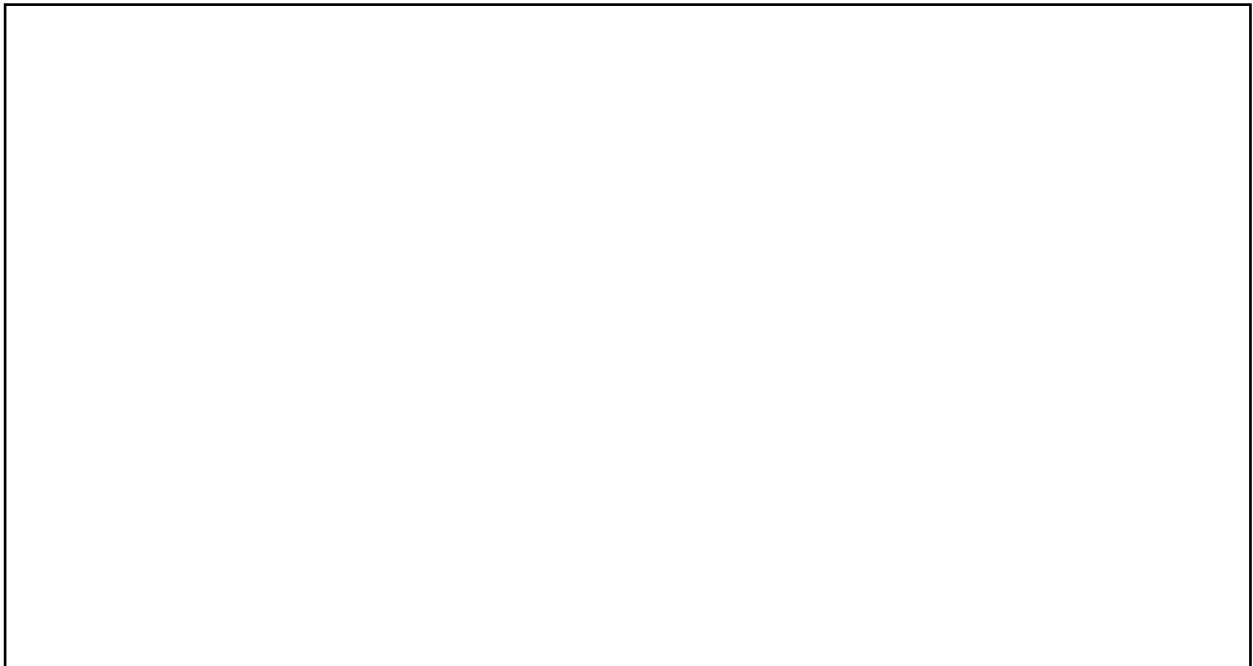
is _____.

Another reason I would honor _____

is _____.

This is a picture of the monument I would make for

_____.



It's an Honor

Write about someone you want to honor with a monument. Give two reasons why this person should be honored. Draw a picture of the monument you would make.

I want to honor my teacher.

One reason I would honor my teacher

is because she helps me learn to read.

Another reason I would honor my teacher

is because she works hard to make sure everyone learns in school!

This is a picture of the monument I would make for

my teacher.

Pictures will vary.

On The Move

Teacher's Guide Jan.-Feb. 2010

Curriculum Connections

- Language Arts
- Physical Science

Standards Correlations: Language Arts

- Improve decoding and word recognition
- Practice reading high-frequency words
- Relate prior knowledge to text
- Develop academic vocabulary
- Produce written work
- Identify cause and effect
- Read aloud with fluency
- Read multi-syllabic words
- Construct mental images
- Preview and make predictions

Standards Correlations: Science

- Understand motion of objects

Literacy Skills

- Understand cause-and-effect relationships
- Preview and make predictions

Activity Masters

Assess, T39

Assess, Answer Key, T40

Cause and Effect, T41

Cause and Effect, Answer Key, T42

Observations, T43

Observations, Answer Key, T44

On The Move

Preview/Build Background

Point to a chair and ask children, *Can this chair move by itself?* (no) Tell children you are going to make the chair move. Pull it across the room. Ask, *How did I make the chair move?* (You pulled it.) Next, ask children, *Can this book move by itself?* (No.) Tell children that you are going to make the book move. Push the book across a desk. Ask, *How did I make the book move?* (You pushed it.)

Give children several more examples of different ways things move, using push and pull. For example, say *A push with your hand can roll a ball on the ground; You can push a door to make it open (and you can pull it, too!); Bikes move with a push of the pedal.* Explain to children that these movements are caused by something called *force*.

Preview the story by asking children to look at the photos and describe the different ways the skaters move. Record all reasonable responses. Tell them that when they read the story, they will learn *how* the skaters move.

Vocabulary

Teach Key Concept Vocabulary Display these key words from the story: *force, move, pull, push, stop*. Use the following steps to teach *force*:

1. **Pronounce** Tell children when they read “On The Move,” they are going to learn about what makes ice skaters move. Invite children to say the word *force* with you. Then have the class say the word *force* aloud together, clapping each syllable: *force*.
2. **Explain** Tell children that the word *force* describes something that makes people and things move. A push or a pull are two kinds of force. Say, *I use force to roll, or move, a ball from one place to another.*
3. **Engage** Ask students to help you complete this sentence: *I use ____ to move a chair.* (force)
4. **Involve** Say: *Listen to this sentence and tell me if I’m using the word force correctly. I used force when I pushed the swing.* Ask students for a thumbs-up or a thumbs-down. Explain that those who voted ‘yes’ are correct because the word *force* refers to a push or pull.
5. **Elaborate** Ask: *What other ways can you use force?*

Repeat the process to introduce the other key concept vocabulary.

On The Move

(continued)

High Frequency Words

Create word cards for these high-frequency words from the story: *how, move, other, their, they, with*. Display word cards with any previously introduced words, both regular and irregular. Have the class read the cards aloud as a group. You may want to use the following steps to teach any new words; for example, the word *move*.

- Hold up the word card *move*. Say, *This word is move*.
- Write a simple sentence on the board using *move*. (*I move my body when I hear good music.*) Read the sentence aloud. Underline the word *move* as you reread the sentence. Have children repeat the word after you.
- Lead children in noticing the sounds and spelling patterns. (For example: Say, *What letter (or sound) does this word begin with? What is the middle sound? What is surprising about its spelling? How many letters are in this word? What letter (or sound) does this word end with? Is there a silent letter at the end?*)
- Next, have children spell the word as you point to each letter. (*move: m, o, v, e*) Ask, *What is this word?* (*move*) Then have children write the word in the air with a finger. Finally, have children write the word on a piece of paper.

Access Science Content

Read the story aloud with children. Pause after reading pp. 20-21. Say, *We just read that skaters use force, or a push or pull, to move. What kind of force are the skaters using here—a push or a pull?* (push) *In which directions can the skaters move when they push on the ice with their skates?* (Skaters can move forward and backward.) Pause again after reading p. 22. Ask, *What kind of force are the skaters using here—a push or a pull?* (pull) *How does one skater move when the other pulls?* (One skater spins.) Finally, pause after reading p. 23 and point to the photo. Introduce and explain the idea of **friction**. Tell children that the ice skater is pushing his skate down very hard on the ice. Say, *The ice and the skate blade rub together. This causes friction. This is how skaters can slow down and stop.*

English Language Learners In pairs, have children listen to “On The Move” several times at <http://www.nationalgeographic.com/ngyoungexplorer/readstory.html>. Ask children to think about how the skaters move.

On The Move

(continued)

Assess and Reteach

Materials Activity Masters, pp. T39, T40, T41, T42; “On The Move” story; newspapers, magazines; “On The Move” audio

Assign the activity master on p. T39 to check children’s comprehension of the story. Use the answer key to score the assessment. As an alternate assessment, after reading the story, English language learners can look for examples of *force* (a push or a pull) in newspaper and magazine photos. Together they can create a collage that shows *pulls* and another that shows *pushes*.

Based on the results, you may want to reteach key science concepts. For example, children may still be unclear about what **force** is. Remind children of the earlier examples of movement given before reading the story. Ask, *What caused the ball to roll?* (a push, or force). *What caused the swing to swing?* (a push and pull, or force)

Next, use the photos to review the different ways the skaters move. (*Here on p. 20 the skaters move forward. On p. 21, one skater moves backward. On p. 22, the skaters spin. On the last page, the skater stops.*)

Now ask, *What caused the skaters, the ball, the chair, or the kite to move?* (pushes or pulls ,or force) Explain that for every effect, or action, there is a cause, or reason. Remind them that force is what causes movement. Ask, *What effect did force have on the skaters, the chair, or a ball?* (The skaters move forward. The skaters move backward. The skaters spin. A skater stops. The ball rolled. The chair moved across the room.)

Children can practice relating cause and effect with the activity on p. T41.

Extend the Learning

High-Frequency Words Display the high-frequency words for “On The Move.” Have children read the story aloud while listening to the audio at <http://www.nationalgeographic.com/ngyoungexplorer/readstory.html>. Remind children that they are high-frequency word detectives. Their job is to find the high-frequency words in the story as they read. Children should update their high-frequency word books with any new words they find. Have children write all of the high-frequency words they have learned from all the stories on cards. Have children sort the cards into different groups. They can group them by the first letter, the last letter, or the number of letters in each word. Finally, have children arrange the cards in ABC order. Encourage children to make an ABC book for their high-frequency words.

Think Like a Scientist Ask children, *How can we change the direction and speed of a toy sailboat?* Tell them they will observe, or watch, how pushes and pulls can change the speed of a toy sailboat. Tell children they will write down their predictions, or guesses, about what will happen, and their observations of what does happen to the sailboat. Distribute the activity master on p. T43 and

On The Move

(continued)

Extend the Learning, continued

review the directions with children.

Display a toy sailboat or make a model. Place the sailboat in a pan of water. Ask children to predict which direction the boat will move when you push it. Next, ask children to predict which direction the boat will move when you pull it. Tell them to write down their predictions. Now demonstrate pushing and pulling the sailboat across the pan. Ask children to write down their observations. Now say, *I will push the boat harder, with more force. Then I will pull the boat harder, with greater force. Predict how the boat's speed will change when I do this. Write down your predictions.* Demonstrate pushing and pulling the boat with greater force across the pan. Then tell children to write down their observations. Children can share their predictions and observations with the rest of the class.

On The Move

Read the story. Then complete the sentences to show what you learned.

1. Skaters use _____ to move.
2. Force is a _____ or a _____.
3. The more skaters push, the more they can _____.
4. The more one skater pulls, the faster the other _____.
5. Force makes skaters _____ moving, too.

On The Move

Read the story. Then complete the sentences to show what you learned.

1. Skaters use **force** to move.
2. Force is a **push** or a **pull**.
3. The more skaters push, the more they can **move**.
4. The more one skater pulls, the faster the other **spins**.
5. Force makes skaters **stop** moving, too.

Push and Pull

Cut out and read each card. Then mix up the cards. Match the cause with its effect.



Skaters push
on the ice
with skates.



The string pulls
against your hand.

© CHARMAINE PAULSON/SHUTTERSTOCK

A soccer
player kicks
the ball.



Skaters move
across the ice.

© FICA/SHUTTERSTOCK

Wind lifts
a kite up in
the sky.



The ball rolls
on the grass.

© PALUNOVIC/SHUTTERSTOCK

Push and Pull

Cut out and read each card. Then mix up the cards. Match the cause with its effect.

Cause

Effect



Skaters push
on the ice
with skates.

Skaters move
across the ice.



© FICA/SHUTTERSTOCK

A soccer
player kicks
the ball.

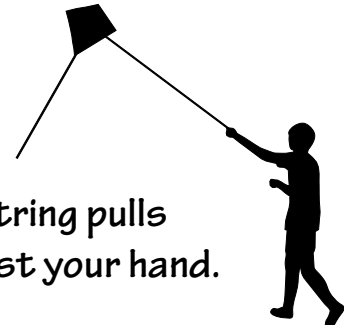
The ball rolls
on the grass.



© PAUNOVIC/SHUTTERSTOCK

Wind lifts
a kite up in
the sky.

The string pulls
against your hand.



© CHARMAINE PAULSON/SHUTTERSTOCK

Observe Force

Note your predictions and observations about the sailboat.

Predict:

1. How will the boat move when it is pushed?

2. How will the boat move when it is pulled?

Observe:

3. How did the boat move when it was pushed?

4. How did the boat move when it was pulled?

Predict:

5. What will happen to the speed of the boat when it is pushed or pulled harder?

Observe:

6. What happened to the speed of the boat when it was pushed or pulled harder?

Observe Force

Note your predictions and observations about the sailboat.

Predict:

1. How will the boat move when it is pushed?

Children should indicate direction, like forward, backward.

2. How will the boat move when it is pulled?

Children should indicate direction, like forward, backward.

Observe:

3. How did the boat move when it was pushed?

Children should indicate direction, like forward, backward.

4. How did the boat move when it was pulled?

Children should indicate direction, like forward, backward.

Predict:

5. What will happen to the speed of the boat when it is pushed or pulled harder?

Children should indicate speed, like fast or slow.

Observe:

6. What happened to the speed of the boat when it was pushed or pulled harder?

Children should indicate speed, like fast or slow.
