



GRADE 1 SUPPLEMENT

Set A10 Numbers to 100 with Penguins (Alternate Unit 4 Plan)

Includes

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Skills & Concepts

- ★ use addition and subtraction within 20 to solve word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions
- ★ apply properties of operations as strategies to add and subtract
- ★ understand subtraction as an unknown-addend problem
- ★ relate counting to addition and subtraction (e.g., by counting on 2 to add 2)
- ★ add and subtract within 20, demonstrating fluency for addition and subtraction within 10
- ★ use strategies such as counting on; making ten; decomposing a number leading to a ten; using the relationship between addition and subtraction; and creating equivalent but easier or known sums
- ★ count, read, and write to 100, starting at any number less than 100
- ★ understand that the two digits of a two-digit number represent amounts of tens and ones
- ★ compare two two-digit numbers based on meanings of the tens and ones digits
- ★ add and subtract 2-digit numbers
- ★ understand that the length measurement of an object is the number of same-size length units that span it with no gaps or overlaps
- ★ organize, represent, and interpret data with up to three categories
- ★ ask and answer questions about the total number of data points, how many in each category, and how many more or less are in one category than in another

Bridges in Mathematics Grade 1 Supplement

Set A10 Numbers to 100 with Penguins

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Thanks to Shelly Scheafer, Tena Paulson, and Vicky Hanna of Bend, Oregon, along with contributions by Bridges author Donna Burk for the development of this supplement.

Bridges in Mathematics is a standards-based K–5 curriculum that provides a unique blend of concept development and skills practice in the context of problem solving. It incorporates the Number Corner, a collection of daily skill-building activities for students.

The Math Learning Center is a nonprofit organization serving the education community. Our mission is to inspire and enable individuals to discover and develop their mathematical confidence and ability. We offer innovative and standards-based professional development, curriculum, materials, and resources to support learning and teaching. To find out more, visit us at www.mathlearningcenter.org.

Set A10 ★ Introduction

Grade 1 Bridges in Mathematics, Unit 4 (Penguins) Planning Guide Revision

The National Council of Teachers of Mathematics [NCTM] Standards emphasize the importance of problem solving in real-world contexts to make mathematics education meaningful and relevant for children (2000). The *Bridges in Mathematics* program does this in many ways, and two exemplary examples are offered in the first grade curriculum in the integrated units, Penguins (Unit 4), and My Little Farm (Unit 6).

The first of these units, *Penguins*, is an integrated, thematic unit designed to take the better part of 17 instructional days. Unfortunately, many teachers have scheduling conflicts and other curriculum requirements that make it difficult to devote the necessary time to implement the unit as written. For these reasons, an alternative six-week schedule that keeps the integrity of this real-world unit, but fits into a 60–90 minute time frame, has been developed.

Bridges Unit 4, Penguins, and its imaginary trip to Antarctica, is an engaging learning experience designed to integrate the content areas of mathematics, science, social studies, reading, and writing. This scenario allows the students to play a role in a real-world challenge that combines a number of math standards and other complimentary standards (Reeves, 2003).

During this unit, the children are invited to take an imaginary trip to the Antarctic, complete with passports, travel games, a packing list, and a letter home. The enduring knowledge provided in this unit helps students to understand how mathematical skills and concepts are connected to the real world.

The mathematical targets addressed in this unit include measurement, sorting, and graphing. The students use themselves as comparison points to understand the height and weight of penguins. While students will be measuring height in inches throughout the unit, the measuring strips they use are intentionally marked in tens, rather than groups of 12. For this reason, these measuring strips may be regarded as a number lines rather than instruments for measuring length in standard units per se, and will provide valuable experiences with reading and comparing 2-digit numbers, and working with tens and ones. The measuring strips also support children in developing a sense of numbers as intervals as well as the names of discreet quantities, making it easier for them to jump forward or backward to the next number. Addition and Subtraction facts and strategies are reinforced in the *Travel Games*.

References

National Council of Teachers of Mathematics [NCTM]. (2000). Principles and standards for school mathematics. Reston, VA: Author.

Reeves, D. B. (2003). Making standards work: How to implement standards-based assessments in the classroom, school, and district (3rd ed.). Englewood, CO: Advanced Learning Press

Introduction (cont.)**Notable Unit Planner Changes****Travel Games**

The collection of five Travel Games and the inclusion of *Number Line Race* as the sixth Work Place, provide continuing practice in computation and place value. These six games become the Work Places for Unit 4 rather than take-home activities, allowing this established classroom routine to continue. As students finish in each session, they may go to Work Places as time permits. A new Work Place planner has been provided on page A10.15.

Weight Activity Revision

In sessions 6, 12, 15, and 18, the weight part of *Measuring Height & Weight* found on p. 450, 484, 500 is replaced with a whole class activity. Paper bags are filled with items such as flour, rice, or beans to total the weight of the penguin. The bags are labeled with the pictures provided on pages A10.11–A10.14 in this Supplement Set. Students may pick up the bag to get a feel for the weight of each of the penguins. Comparisons are made after more than one bag is introduced.

Home Connections

Several Practice Book pages are identified in the 6-week planner for use as Home Connections. The Travel Games could also be copied and sent home if desired.

Student Measuring Strips

Most of session 3 involves the students making the measuring strips they will use throughout the unit. It is helpful to have the students put their initials on the back of each section to minimize confusion as the measuring strips are assembled and later should the measuring strips come apart. As students finish their measuring strips have them practice measuring things around the room. For example, have the students fold a sheet of paper in thirds and label the sections *longer*, *shorter*, and *the same*. Students can measure items in the room and compare them to the length of their measuring strip and record the items on this sheet of paper.

Help! A Skua! and Old Orca Card Games

In sessions 11 and 17, card games are introduced. If students have limited experiences with playing card games, the teacher may want to have the class play in small groups of 3–4 students before adding the game to Work Places (8 sets of cards are suggested for this purpose). Additionally, the students can be shown how these same cards can be used to play a memory or matching game. This alternative allows the students to either play by themselves or with a partner. Be sure to put at least 6 sets out for Work Places.

Introduction (cont.)**Overview of the 6 Work Place Games**

While measurement, sorting, and graphing are the focus of many of the unit sessions, the games in this unit provide practice using the addition, subtraction, and place-value skills taught so far this year. It is important that students have time to work at Work Places as often as possible.

Journey to Antarctica, see p. 433 (Make 3 game boards.)

In this game students move around a game board spending money on items to prepare for their trip to Antarctica. Each person has \$100. They color the amount of the item on a 100s grid. The person with the most money “left over” wins the game.

Note A challenge version uses \$200 and money amounts that are not landmark numbers. See Blacklines on p. A10.16–A10.18 in this Supplement Set.

Penguins on Board Addition, see p. 454 (Make 3 game sets.)

This game provides practice with adding doubles and neighbors facts. Using coordinate cards, students select a door to open and answer a math fact. Students get the amount of money on the door. At the end of the game, students count their money.

Help! A Skua! see p. 472 (Make 8 sets.)

In this game the students read and match 2-digit numbers to their 10s and 1s pictorial equivalent, as done in previous Number Corner sessions. The game is played like Old Maid where the person without the Skua card at the end of the game is the winner. The Skua is a penguin predator.

Spin to Win Bingo, see p. 481 (Make 3 game boards and 3 sets of cards.)

This partner game provides practice with $+9$ and $+10$ facts. The cards are not actually part of the game, but can be used by the students for review or laid out to provide a visual model for solving the problem. Students spin the attached spinners to generate an equation and place a marker on their board's answer. The first person with 4 in a row (horizontally, vertically, or diagonally) wins.

Old Orca Subtraction, see p. 499 (Make 8 sets.)

This game is played like *Help! A Skua!* The students match subtraction facts with their differences. The card to avoid is the orca whale, another penguin predator.

Number Line Race, see p. A10.19 (Make 3 game boards.)

This game has been added to the unit to provide a total of six Work Places. This game provides additional practice using a number line for addition and subtraction. Students start with their markers in the middle of the number line. They take turns spinning the spinner and moving their markers. The first person to land on the last number on the line, wins. Students may choose between a 0–10 and a 0–20 number line.

Complete directions and instructions for making the first five games are found in the Bridges Teacher's Manual. Number Line Race Directions are included in this Supplement Set. See p. A10.9 of this supplement for additional information on how to prepare the Work Place baskets.

Unit Four Planner (Replaces Bridges, Grade 1, Vol. 2, pp. 409–411)

The activities originally designed to take 17 full days of classroom instruction have been resequenced, and in some cases, modified or eliminated so that the unit can be taught over the course of 30 math sessions instead. The Blacklines you'll need for the activities in each session below have been included on this planner for your convenience.

| SESSION 1 | SESSION 2 | SESSION 3 | SESSION 4 | SESSION 5 |
|---|--|--|---|--|
| <p>Problems & Investigations</p> <ul style="list-style-type: none"> Introducing Antarctica, pp. 423–425 (See Advance Preparation Guide on p. A10.7 of this Supplement Set for a suggested Penguin video.) <p>Work Places</p> <ul style="list-style-type: none"> Count & Compare Coins Add & Compare Sea Creature... 20¢ or Bust An Hour or Bust Polydrons—Box or House? <p>Blacklines</p> <ul style="list-style-type: none"> Song & Poetry Portfolio, pp 4.1–4.3, 1 copy each BL 4.1, class set | <p>Problems & Investigations</p> <ul style="list-style-type: none"> Preparing Unit Folders, pp. 425–426 Preparing Penguin Passports, pp. 426–427 (Measure and weigh students for their passports today; have them make their own Measuring Strips tomorrow.) <p>Work Places</p> <p>Blacklines</p> <ul style="list-style-type: none"> BL 4.2–4.3, 1 copy each on cardstock BL 4.4, class set | <p>Problems & Investigations</p> <ul style="list-style-type: none"> Reading Ten Little Penguins, p. 444 Making Measuring Strips, pp. 426–428 (Students who finish making their measuring strips before others can measure objects around the classroom; see suggestion on p. A10.2 in this Supplement Set.) <p>Blacklines</p> <ul style="list-style-type: none"> BL 4.2–4.3, class set BL 4.15–4.25, 1 copy each | <p>Problems & Investigations</p> <ul style="list-style-type: none"> A Travel Game: Journey to Antarctica, pp. 433–434 (Use OH 4.1 or one of the gameboards you've prepared to teach this game to the class. Ignore the instructions to have children make their own copies of the game and prepare Travel Game envelopes.) <p>Work Places</p> <ul style="list-style-type: none"> Add Journey to Antarctica Remove Count & Compare Coins <p>Blacklines</p> <ul style="list-style-type: none"> BL 4.5, class set A10.12, class set BL 4.6–4.7, 3 sets on cardstock | <p>Problems & Investigations</p> <ul style="list-style-type: none"> Where Are the Polar Seas? p. 440 Exploring Water Temperatures, pp. 441–443 <p>Home Connection</p> <p>Practice Book, p. 39: Bath Water and January Ocean Temperatures</p> <p>Blacklines</p> <ul style="list-style-type: none"> BL 4.11–4.13, 1 copy each on cardstock BL 4.14, class set Practice Book, pg. 39, class set |
| SESSION 6 | SESSION 7 | SESSION 8 | SESSION 9 | SESSION 10 |
| <p>Problems & Investigations</p> <ul style="list-style-type: none"> Telling the Story: The Antarctic Cold & the Rockhoppers, pp. 447–448 The Rockhopper Penguin Poem, pp. 449–450 Measuring Height & Weight: Rockhopper Penguins, pp. 450–452 (See revised wight activity on p. A10.2 in this Supplement Set; ignore instructions to have students fill in Penguin Weights sheet and make the travel game.) <p>Work Places</p> <p>Blacklines</p> <ul style="list-style-type: none"> Song & Poetry Portfolio, pp 4.4–4.5, 1 copy each BL's 4.26, & 4.28, class set of each | <p>Problems & Investigations</p> <ul style="list-style-type: none"> A Travel Game: Penguins on Board Addition, p. 455 (Use one of the cardstock gameboards and sets of cards you have prepared to introduce this game. Ignore the instructions to have children make their own copies.) <p>Work Places</p> <ul style="list-style-type: none"> Add Penguins on Board Addition Remove Add & Compare <p>Blacklines</p> <ul style="list-style-type: none"> BL 4.31 & 4.33, 3 copies each on cardstock BL 4.32, 3 copies r BL 4.34–4.35, 3 copies each | <p>Problems & Investigations</p> <ul style="list-style-type: none"> Telling the Story: Beautiful King Penguins, pp. 459–460 The King Penguin Poem, pp. 460–461 The King Penguin Data Sheet, pp. 461–462 <p>Work Places</p> <p>Blacklines</p> <ul style="list-style-type: none"> Song & Poetry Portfolio, pp 4.6–4.7, 1 copy each BL 4.37, class set BL 4.38, class set | <p>Problems & Investigations</p> <ul style="list-style-type: none"> The Graphic Organizer: Gathering Information, p. 470 Rockhopper Penguins & King Penguins: A Sorting Worksheet, p. 471 Complete the How Tall is Each Penguin? sheet for Rockhoppers & Kings, p. 452 <p>Work Places</p> <p>Blacklines</p> <ul style="list-style-type: none"> BL 4.39–4.44, optional, 1 copy each label graphic organizer BL's 4.45 & 4.46, class set BL 4.27, class set | <p>Work Places</p> <p>A Day of Work Places:</p> <ul style="list-style-type: none"> Sea Creature... 20¢ or Bust An Hour or Bust Polydrons—Box or House? Journey to Antarctica Penguins on Board Addition <p>Home Connection</p> <ul style="list-style-type: none"> Practice Book, pp. 37 & 38, Doubles & Neighbors, More Doubles & Neighbors Addition <p>Blacklines</p> <ul style="list-style-type: none"> Practice Book, pp. 37 & 38, class set |

Unit 4 Planner (cont.)

| SESSION 11 | SESSION 12 | SESSION 13 | SESSION 14 | SESSION 15 |
|--|--|---|---|--|
| <p>Problems & Investigations</p> <ul style="list-style-type: none"> Telling the Story: Penguin Predators, p. 469 A Travel Game: Help, a Skua!, pp. 472–473 (Use one set of the cards you have prepared to model the game. See further suggestions for introducing the game on p. A10.2 in this Supplement Set. Ignore the instructions to have students make their own copies of the game.) <p>Work Places</p> <ul style="list-style-type: none"> Add Help! A Skua! (Place at least 6 decks of cards in the Work Place tub.) Remove Sea Creatures Sorting & Graphing <p>Blacklines</p> <ul style="list-style-type: none"> BL 4.47–4.50, 8 copies each on cardstock | <p>Problems & Investigations</p> <ul style="list-style-type: none"> Telling the Story: The Littlest Penguins, pp. 477–478 The Little Blue Penguin Poem & the Graphic Organizer, pp. 479–480 The Height and Weight of Little Blue Penguins, pp. 484–486 (Just the Little Blue Data Sheet, not the height comparison or weight sheets) <p>Work Places</p> <p>Blacklines</p> <ul style="list-style-type: none"> Song & Poetry Portfolio, pp 4.10–4.11, 1 copy of each sheet BL 4.51, class set BL 4.56, class set | <p>Problems & Investigations</p> <ul style="list-style-type: none"> A Travel Game: Spin to Win Bingo, pp. 481–484 (After you've prepared the materials for this Work Place, use one set of the cards at the pocket chart, and one of the game boards at the document camera to introduce the game to the class. Ignore the instructions to have students make their own copies of the game.) <p>Work Places</p> <p>Blacklines</p> <ul style="list-style-type: none"> 4.52–4.54, 3 sets on cardstock 4.55, 3 copies on cardstock | <p>Problems & Investigations</p> <ul style="list-style-type: none"> Another Look at the Addition Facts in Spin to Win Bingo, pp. 491–492 <p>Work Places</p> <ul style="list-style-type: none"> Add Spin to Win Bingo Remove 20¢ or Bust <p>Work Places</p> <p>Home Connection</p> <ul style="list-style-type: none"> Practice Book, p. 41: Fast 9s & Fast 10s Addition <p>Blacklines</p> <ul style="list-style-type: none"> Song & Poetry Portfolio, pp 4.8–4.9, 1 copy each BL 4.57, class set BL 4.58, class set Practice Book, p. 41, class set | <p>Problems & Investigations</p> <ul style="list-style-type: none"> Telling the Story: The Gentoo Penguins, pp. 489–490 The Gentoo Penguin Poem & the Graphic Organizer, pp. 490–491 The Height & Weight of the Gentoo Penguin, p. 493 (Just the Gentoo Penguin Data Sheet, not the Weight sheet.) <p>Work Places</p> <p>Home Connection</p> <ul style="list-style-type: none"> Practice Book, p. 41: Fast 9s & Fast 10s Addition <p>Blacklines</p> <ul style="list-style-type: none"> Song & Poetry Portfolio, pp 4.8–4.9, 1 copy each BL 4.57, class set BL 4.58, class set Practice Book, p. 41, class set |
| SESSION 16 | SESSION 17 | SESSION 18 | SESSION 19 | SESSION 20 |
| <p>Problems & Investigations</p> <ul style="list-style-type: none"> Little Blues & Gentoo Penguins: A Sorting Worksheet, p. 494 Complete How Tall is Each Penguin? for Little Blue and Gentoo Penguins, p. 485 (Students will need their How Tall is Each Penguin Sheets from Session 9. These sheets should be in their Penguin folders.) <p>Work Places</p> <p>Blacklines</p> <ul style="list-style-type: none"> BL 4.59 & 4.60, class set | <p>Work Places</p> <ul style="list-style-type: none"> A Travel Game: Old Orca Subtraction, pp. 499–500 (Use one set of the cards you have prepared to model the game. See further suggestions for introducing the game on p. A10.2 in this Supplement Set. Ignore the instructions to have students make their own copies of the game) <p>Work Places</p> <ul style="list-style-type: none"> Add Old Orca Subtraction (Place at least 6 decks of cards in the Work Place tub.) Remove An Hour or Bust <p>Blacklines</p> <ul style="list-style-type: none"> BL 4.62–4.64, 8 copies each on cardstock | <p>Problems & Investigations</p> <ul style="list-style-type: none"> Telling the Story: The Chinstrap Penguins, p. 497 The Chinstrap Penguin & the Graphic Organizer, p. 498 The Height and Weight of the Chinstrap Penguin, pp. 500–501 (Just the Chinstrap Penguin Data Sheet, not the Weight or the How Tall is Each Penguin Sheets.) <p>Work Places</p> <p>Blacklines</p> <ul style="list-style-type: none"> Song & Poetry Portfolio, pp 4.12–4.13, 1 copy each BL 4.61, class set BL 4.65, class set | <p>Problems & Investigations</p> <p>Number Line Race, pp. A10.19–A10.21 in this Supplement Set (Follow the instructions on these pages to teach the game to your students.)</p> <p>Work Places</p> <ul style="list-style-type: none"> Add Number Line Race Remove Polydrons Box or House? <p>Blacklines</p> <ul style="list-style-type: none"> A10.22, 3 copies on cardstock A10.23, 3 copies on cardstock (optional) | <p>Problems & Investigations</p> <ul style="list-style-type: none"> Telling the Story: The Emperor Penguins, p. 505–506 The Emperor Penguin Poem & the Graphic Organizer, pp. 506–507 Student Weights & Emperor Weights, a Class Graph, pp. 508–510 Measuring the Height of the Emperor Penguins, pp. 510–511 (Data Sheet only.) <p>Home Connection</p> <ul style="list-style-type: none"> Practice Book, p. 40, Penguin Subtraction <p>Blacklines</p> <ul style="list-style-type: none"> Song & Poetry Portfolio, pp 4.14–4.15, 1 copy BL 4.66, class set BL 4.67–4.68, 1 copy each, label graph as on p. 510. BL's 4.73 & 4.69, class set Practice Book, p. 40, class set |

Unit 4 Planner (cont.)

| SESSION 21 | SESSION 22 | SESSION 23 | SESSION 24 | SESSION 25 |
|--|---|---|---|--|
| <p>Problems & Investigations</p> <ul style="list-style-type: none"> • Chinstrap & Emperor Penguins: A Sorting Worksheet, pp. 512–513 • Complete How Tall is Each Penguin? Sheet for Chinstrap & Emperor Penguins, p. 485 (Students will need their How Tall is Each Penguin Sheets from Session 9. These sheets should be in their Penguin folders.) <p>Work Places</p> <p>Blacklines</p> <ul style="list-style-type: none"> • BL 4.70–4.71, class set of each sheet | <p>Problems & Investigations</p> <ul style="list-style-type: none"> • Which Life-Size Penguin Will You Make? A Graph, pp. 519–520 • Review Graphic Organizer with students and create a list of paper lengths and quantities needed, pp. 520–521 <p>Work Places</p> | <p>Problems & Investigations</p> <ul style="list-style-type: none"> • Penguin Pairs: A Growing Pattern, p. 522 (Have children each make a penguin pair today.) • Have children begin drawing life-size penguins, pp. 523 & 529–531 <p>Work Places</p> | <p>Problems & Investigations</p> <ul style="list-style-type: none"> • A Growing Pattern of Penguin Pairs, pp. 525–528 • Penguin Pairs: Counting by Twos, pp. 535–538 (Children complete BL 4.76 after discussing the chart.) <p>Work Paces</p> <p>Blacklines</p> <ul style="list-style-type: none"> • BL 6.74–6.75, 1 copy of each for your Penguin Pairs chart • BL 4.76, class set | <p>Problems & Investigations</p> <p>Painting Life-Size Penguins, pp. 538–539 (As children finish, they go to Work Places.)</p> <p>Work Places</p> <p>Home Connection</p> <ul style="list-style-type: none"> • Practice Book, pp. 42 & 46, Comparing Penguin Heights & Skip Counting by 2s <p>Blacklines</p> <ul style="list-style-type: none"> • Practice Book, pp. 42 & 46, class set of each sheet |
| SESSION 26 | SESSION 27 | SESSION 28 | SESSION 29 | SESSION 30 |
| <p>Problems & Investigations</p> <ul style="list-style-type: none"> • Measuring Up: A Worksheet, pp. 549–551 <p>Work Places</p> <p>Blacklines</p> <ul style="list-style-type: none"> • BL's 4.78–4.79, class set of each sheet | <p>Problems & Investigations</p> <ul style="list-style-type: none"> • Penguin Sorting, pp. 555–559 • Solving Penguin Picture Problems, pp. 543–546 <p>Work Places</p> | <p>Problems & Investigations</p> <ul style="list-style-type: none"> • Solving Penguin Picture Problems, Continued, pp. 559–560 • Making the Penguin Problem Backgrounds, pp. 560–561 <p>Work Places</p> | <p>Problems & Investigations</p> <ul style="list-style-type: none"> • More Penguin Sorting, pp. 565–567 • Creating Penguin Picture Problems, pp. 568–570 <p>Work Places</p> | <p>Problems & Investigations</p> <ul style="list-style-type: none"> • Solving Student Penguin Problems, pp. 573–575 <p>Work Places</p> <p>Home Connection</p> <ul style="list-style-type: none"> • Practice Book, pp. 44 & 45, A Penguin Problem & More Penguin Problems <p>Blacklines</p> <ul style="list-style-type: none"> • Practice Book, pp. 44 & 45, class set of each sheet |

Set A10 ★ Advance Preparation Planning Guide

Miscellaneous Information:

- Online resource for penguin information and pictures <<http://www.seaworld.org>>
- How to pronounce Skua (skūā) howjsay.com (a talking dictionary)
- The video on day 1, *Behind the News: Antarctica* is from Discovery Education. If you don't have a subscription to Discovery Streaming, consider substituting an alternate video that sets the stage for journeying to Antarctica.

Penguin Folders See p. 425

During Session 2 of Penguins, students will make penguin folders similar to the one shown on page 425 to keep their work in through the unit. You'll want to have paper cut to the following sizes for these folders. The quantities listed below are enough for one student to make a folder, so just multiply everything by the number of children in your class plus a few extra.

- 12" × 18" piece of blue construction paper folded in half for a folder cover
- 3" × 9" piece of white construction paper (snow)
- 4" × 6" piece of black construction paper (penguin body)
- 3" × 3" piece of white construction paper (penguin tummy)
- 3" × 3" piece of orange and/or yellow construction paper (penguin beak and feet)
- 2 plastic wobble eyes (optional)

Teaching Charts & Other Demonstration Materials

Revised Weight Activity

This replaces the weight part of "Measuring Height & Weight" found on pp. 450, 484, and 500.

Penguin Weights

- A10.11–A10.14 Run one copy each. Cut on solid line and attach to paper bag.

Make this activity a bit easier unless you have an assistant or good parent volunteers. As you study each of the lighter weight penguins, glue a picture of each one on a grocery bag filled with food cans or other items to match the weight of each. Ideally, you'll have several bags available after studying 3 or 4 penguins so kids can compare weights by lifting. Share this task and the bags with team members and it won't feel so hard. Don't be surprised if many of your children mix up the idea of weight and height.



This activity was modified by Donna Burk, Bridges in Mathematics author, and is used with permission.

Advance Preparation Planning Guide (cont.)**Measuring Height Activity Materials Preparation**

See page 450 in the teacher's guide. You will need to wrap a half class set of popsicle sticks or tongue depressors with 8 yards of string each.

Thermometers and Ocean Temperature Cards (Needed for Session 5)

- Blackline 4.9, Teacher Thermometer (optional)
- Blackline 4.10, Student Thermometers (optional)
- Blacklines 4.11–4.13, Ocean Temperatures Cards

If you've been doing the temperature lessons from Number Corner this year, you won't need to make a large teaching thermometer and small cardstock student thermometers. If you haven't, you might want to use Blacklines 4.9–4.10 to make these in order to familiarize your students with reading thermometers. In either case, you'll need to run single copies of the Ocean Temperature Cards on cardstock, cut them apart, and laminate them for the water temperature experiments on Session 5.

Graphic Organizer Chart (Needed for Session 6 and Beyond) See page 413 for visual.

- Blacklines 4.39–4.44, Graphic Organizer Labels 1–6

Pull a large piece of butcher paper and create columns and rows as shown on page 413, either by folding the paper or using a yardstick and marking pen. Use the labels provided in the blacklines to create the headings on the chart or print them in yourself.

A Graph See page p. 519

- Which Life-size Penguin Will You Make?

Pull a large piece of butcher paper and create columns and rows as shown on page 520, either by folding the paper or using a yardstick and marking pen. Use file cards or cut construction paper for graph markers.

Penguin Pairs: A Growing Pattern See p. 522

- $4\frac{1}{2}$ " \times 6" pieces of black construction paper (2 for each child)
- 3" \times $4\frac{1}{2}$ " pieces of gray construction paper (for little blue penguins)
- 3" \times $4\frac{1}{2}$ " pieces of white construction paper (2 for each child)
- 3" \times 3" squares of yellow, orange, pink, and black (for beaks, feet, rockhopper feathers)

A Growing Pattern of Penguin Pairs See p. 525

- 3" \times 9" white construction paper (1 per child & a few extras)
- two 36" \times 60" pieces of blue butcher paper glued together to hold the finished Penguin Pair arrangement (See p. 528.)
- Counting by 2s sheets, Blacklines 4.74–4.75 (1 copy of each, see p. 528.)

Measuring & Drawing the Life-Size Penguins See p. 529

- a piece of butcher paper for each child, cut to approximate length of the penguin he/she wants to make.
- a piece of butcher paper about 39" long for your demonstration

Advance Preparation Planning Guide (cont.)

Making the Penguin Problem Backgrounds See p. 568

- one 9" × 12" piece of dark blue or aqua construction paper (per student)
- one 4½" × 12" piece of white construction paper
- one 4½" × 12" piece of light blue construction paper

Books & Wall Charts

The Penguin Poems (Large teacher versions needed throughout the first twenty sessions.)

Create a collection of wall charts or big books for this unit.

- Poems & Songs Portfolio, pages 4.1–4.3, Going to Antarctica (Session 1)
- Poems & Songs Portfolio, pages 4.4–4.5, Rockhopper Penguins (Session 6)
- Poems & Songs Portfolio, pages 4.6–4.7, King Penguins (Session 8)
- Poems & Songs Portfolio, pages 4.10–4.11, Little Blue Penguin (Session 12)
- Poems & Songs Portfolio, pages 4.8–4.9, Gentoo Penguin (Session 15)
- Poems & Songs Portfolio, pages 4.12–4.13, Chinstrap Penguin (Session 18)
- Poems & Songs Portfolio, pages 4.14–4.15, Emperor Penguin (Session 20)

Ten Little Penguins: A Subtraction Book (needed for Session 3)

Run copy of each blackline, collate in order, from 10 little penguins to 1 little penguin, and bind to make a subtraction book children will be able to read for themselves.

- Blacklines 4.15–4.25, Ten Little Penguins Book, pages 1–11

Work Places

Work Place Planner

- A10.15 Work Place Planner for Unit 4, Run a class set

Gameboards

Run 3 sets of each of the following games on cardstock to allow for 6 students per Work Place. See the page listings for directions for making the games.

- Journey to Antarctica, p. 433 also see p. A10.16–A10.18 for challenge version of this game
- Penguins on Board Addition, p. 454
- Spin to Win Bingo, p. 481
- Number Line Race Game, p. A10.22 and A10.23 in this Supplement

Card Games

Run 8 sets of the following card games on colored cardstock. Ideally, each set should be a different color to keep the sets separate. If this is not possible, use different colors of permanent marker or small stickers to label each set.

- Old Orca Subtraction p. 499
- Help, A Skua! p. 472

Advance Preparation Planning Guide (cont.)

Blacklines Needed by Students

Run class set plus a few extra on copy paper unless otherwise indicated

Poems

- 4.1, Going to Antarctica
- 4.26, Rockhoppers
- 4.37, King Penguins
- 4.51, Little Blue Penguin
- 4.57, Gentoo Penguin
- 4.61, Chinstrap Penguin
- 4.66, Emperor Penguin

Math Worksheets

- 4.2 and 4.3, How Tall Are You? Measuring strips sheets 1 and 2
- 4.4, Penguin Passport
- 4.14, Exploring Average Winter Ocean Temperatures
- 4.27, How Tall Is Each Penguin?
- 4.28, Rockhopper Data Sheet
- 4.38, King Penguin Data Sheet
- 4.56, Little Blue Penguin Data Sheet
- 4.58, Gentoo Data Sheet
- 4.65, Chinstrap Penguin Data Sheet
- 4.69, Emperor Penguin Data Sheet
- 4.73, Range 100 Worksheet
- 4.76, Penguin Pairs: Counting by 2s
- 4.78 and 4.79, Measuring Up Worksheets

Penguin Sorting Worksheets

- 4.45–4.46, Rockhopper & King Penguins
- 4.59–4.60, Little Blue & Gentoo Penguins
- 4.70– 4.71, Chinstrap & Emperor Penguins

Optional Writing Worksheets:

- 4.36, A Journey to Antarctica
- 4.72, A Trip to Antarctica Stationary
- 4.77, Guess Who? (A penguin riddle)

Optional Practice Worksheets

May be used for homework. These come from the Practice Book blacklines. See the Unit 4 Planner in this Supplement Set for suggestions on when to send these home.

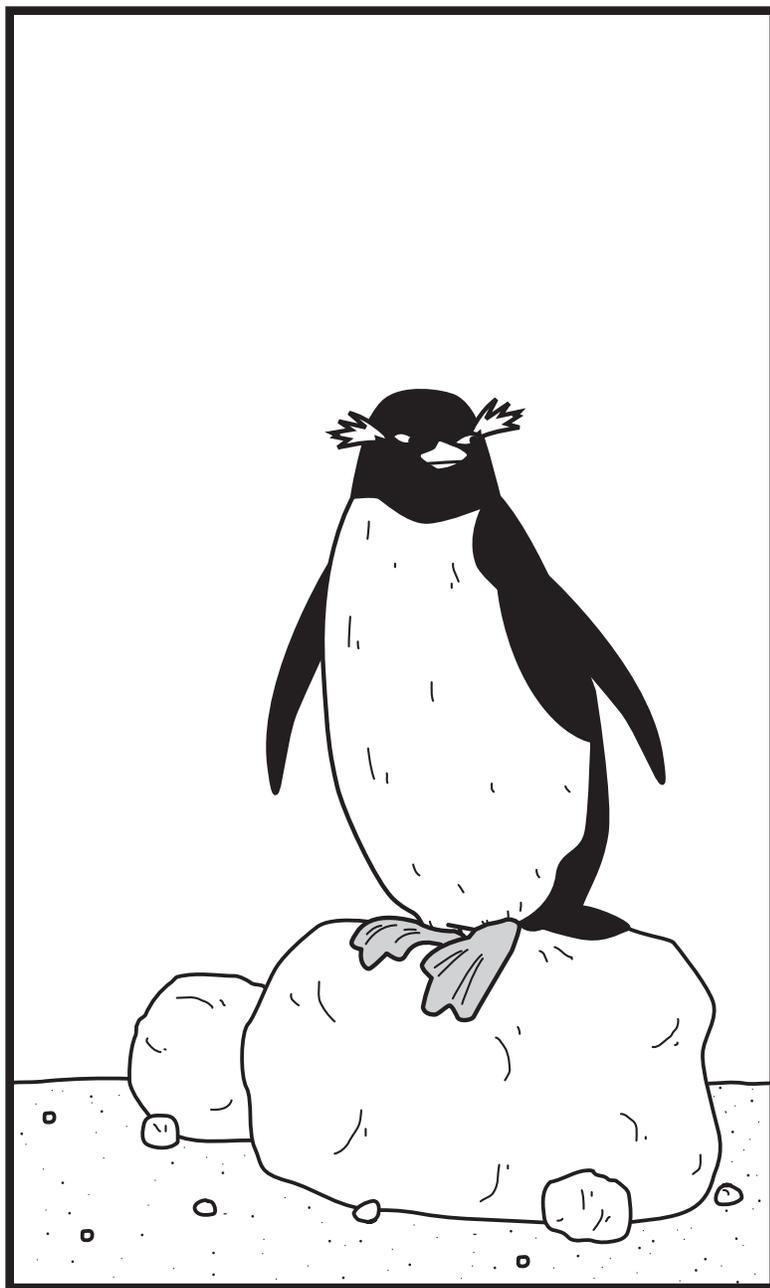
- 37, Doubles & Neighbors
- 38, More Doubles & Neighbors Addition
- 39, Bath Water & January Ocean Water Temperatures
- 40, Penguin Subtraction
- 41, Fast Nines & Fast Tens Addition
- 42, Comparing Penguin Heights
- 44, A Penguin Problem
- 45, More Penguin Problems
- 46, Skip Counting by 2s

Chinstrap Penguin



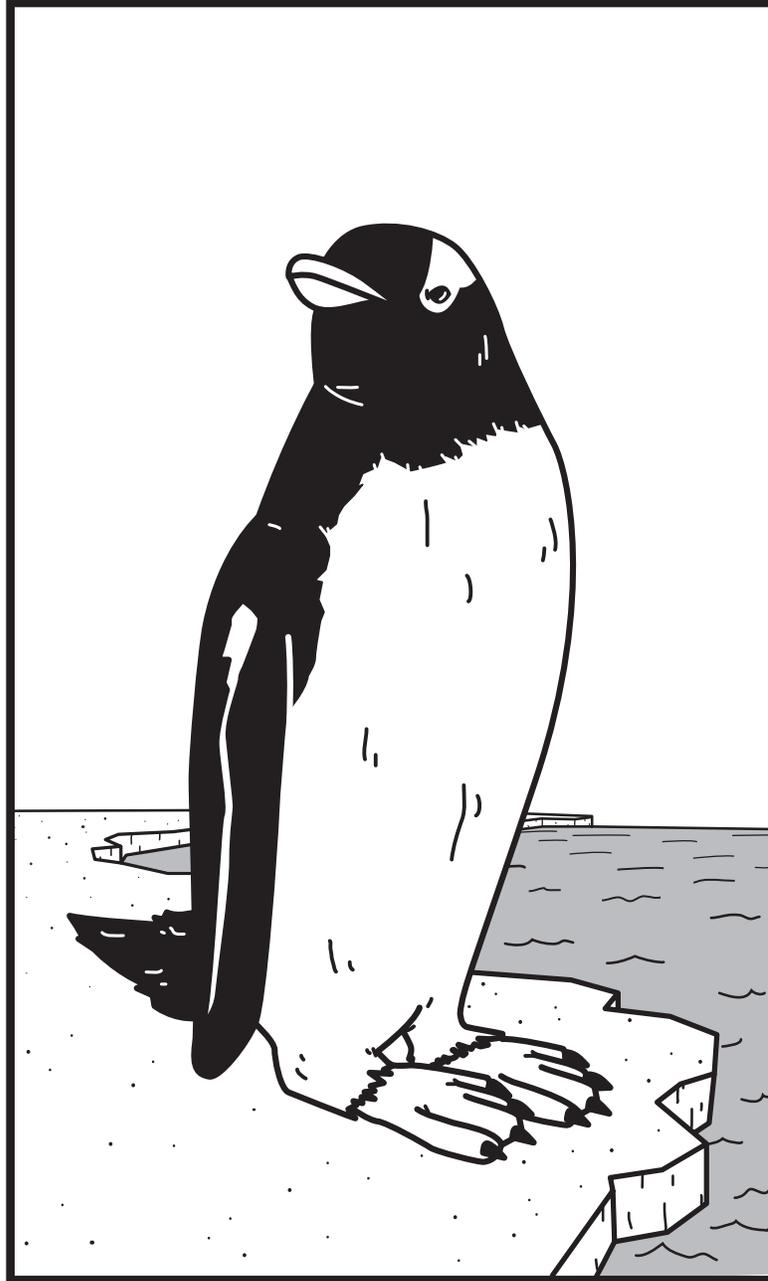
**A Chinstrap Penguin
weighs about 9 pounds.**

Rockhopper Penguin



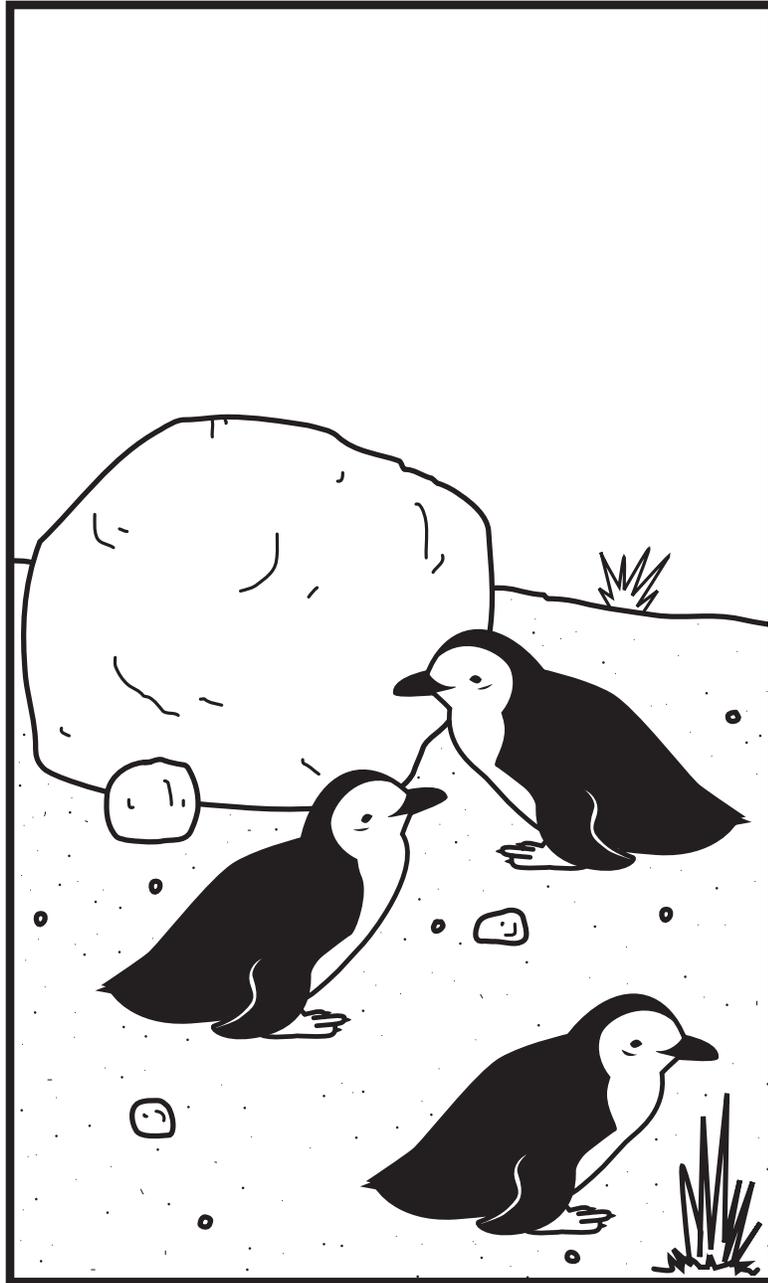
**A Rockhopper Penguin
weighs about 5–6 pounds.**

Gentoo Penguin



**A Gentoo Penguin weighs
between 12 and 13 pounds.**

Little Blue Penguin



**A Little Blue Penguin
weighs about 2 pounds.**

NAME _____

DATE _____

Work Places Planner for Unit 4

Addition, Subtraction & Place Value

4A Journey to Antarctica

| | | |
|---|--|--|
| ★ | | |
|---|--|--|

4B Penguins on Board Addition

| | | |
|---|--|--|
| ★ | | |
|---|--|--|

4C Help, a Skua!

| | | |
|---|--|--|
| ★ | | |
|---|--|--|

4D Spin to Win Bingo

| | | |
|---|--|--|
| ★ | | |
|---|--|--|

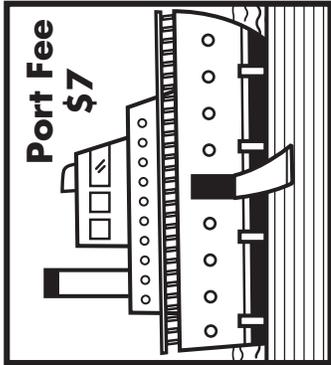
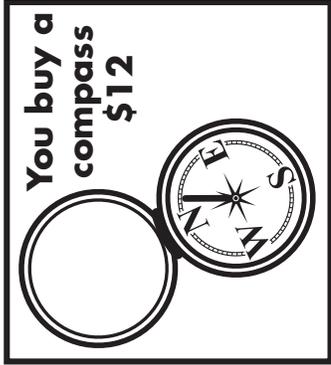
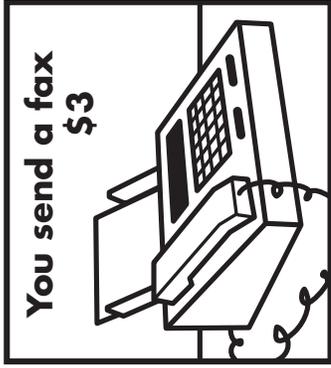
4E Old Orca Subtraction

| | | |
|---|--|--|
| ★ | | |
|---|--|--|

4F Number Line Race

| | | |
|---|--|--|
| ★ | | |
|---|--|--|

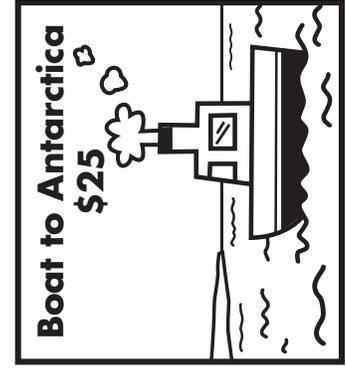
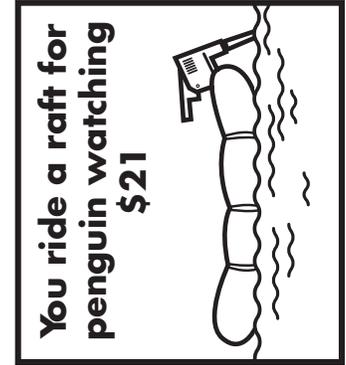
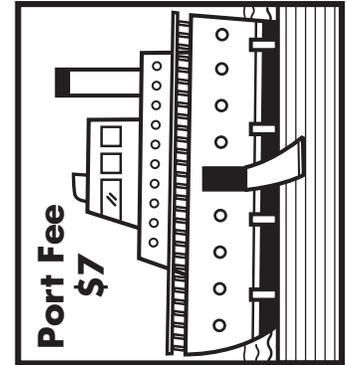
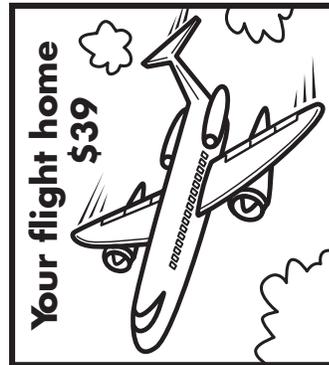
A Journey to Antarctica \$200 Challenge



A Journey to Antarctica \$200 Challenge

Game Rules

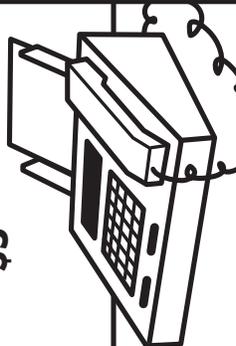
1. Each player must start at the first square and record the required air fare on his or her record sheet.
2. Spin the spinner to move around the board. You must spend the indicated amount of money each time you land in a box. Be sure to record each "purchase" on your record sheet.
3. You can't fly home until you land in the final box. You may need to spin more than once to reach that box.
4. The player with more money left at the end of the journey wins the game.



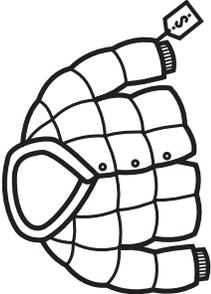
You buy a sweater
\$15



You send a fax
\$5



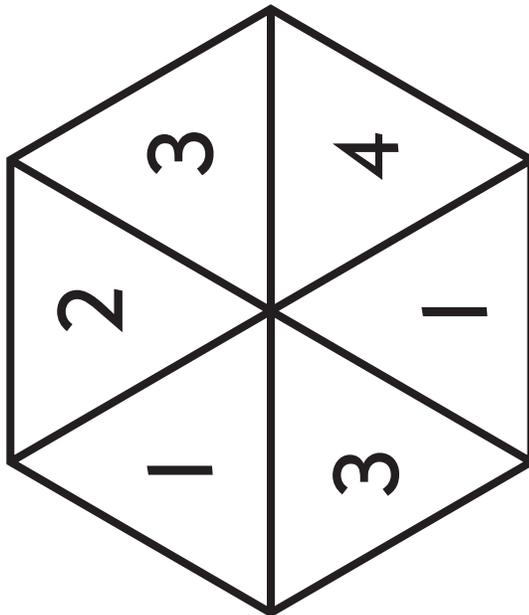
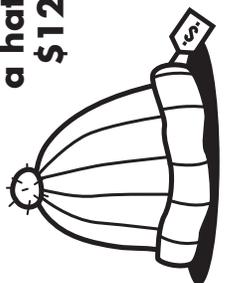
You buy a coat
\$29



You buy binoculars
\$15



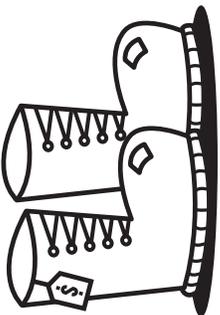
You buy a hat
\$12



You buy postcards
\$3



You buy boots
\$35



You buy a gift
\$8



Set A10 ★ Activity 1



ACTIVITY

Number Line Race Game

Overview

Number Line Race to 10 is a simple game that serves to introduce the idea that numbers can be represented as points on a line. This activity provides students with opportunities to locate and name points on the line, and also reinforces their understandings of addition and subtraction.

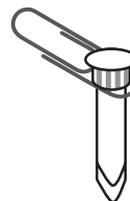
Skills & Concepts

- ★ add and subtract whole numbers on a number line

You'll need

- ★ Number Line Race to 10 Gameboard (page A10.22, see Advance Preparation)
- ★ a red and a blue game marker
- ★ black overhead pen

Advance Preparation Use page A10.22 to make an overhead transparency of the gameboard. Use $\frac{1}{4}$ " sections of drinking straw, regular paperclips, and brass fasteners as shown below to create an arrow for each spinner on the gameboard. Poke a small hole through the center of each spinner. Keeping the straw and the paperclip on the brass fastener, insert it into the hole. Once it has been pushed through to the back, bend each side of the fastener flat against the underside of the transparency.



Instructions for Number Line Race to 10

1. Ask children to sit where they can see the screen and show them the Number Line Race to 10 gameboard at the overhead. Give them a moment to pair-share what they notice about the display. Then invite a few volunteers to share their observations with the class.

***Students** There's a spinner with pluses and minuses on it, and another with numbers.*

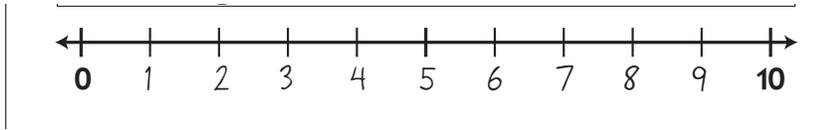
The numbers only go 1, 2, 3.

There's a line at the bottom with a bunch of marks on it.

The first mark says 0 and the last one says 10.

There aren't any other numbers on that line.

2. Explain that you'll be using the spinners to play a game with them in a minute. The line they see at the bottom of the gameboard is called a *number line*. Call their attention to the heavy mark in the middle of the line, and ask them to pair-share ideas about the number they think you should use to label that mark. Then invite a few of them to share their ideas with the class.

Activity 1 Number Line Race Game (cont.)

Students *It should be a 5 because 5 is right in the middle of 0 and 10.*

That mark is halfway, and if you cut 10 in half, it's 5.

If you count the marks before that one, they go 1, 2, 3, 4, and that one is 5.

3. When there's general agreement, label the middle mark with the number 5, and then work with student input to label the other 8 marks along the line.

4. Place a blue game marker in the rectangle above the 5 and a red one below the 5. Explain that you're going to take turns with the class spinning the 2 spinners and moving your marker along the line. The first team—you or the class—that lands on 10 wins the game.

5. Spin both spinners and move your marker accordingly.

Teacher *Oh no, I got minus 3! That means I have to hop back 3 numbers on the line. Where will I land?*

Students *You'll land on 2! Now we're closer to 10 than you are!*

I hope we get plus 3 on our turn!

Number Line Race to 10 Gameboard

Player 1

Player 2

6. Take turns back and forth until either you or the students have landed on 10. Invite a different volunteer to take each of the students' turns. Ask students to predict where the marker will land after each spin and press them to explain their answers. If their marker is on 7, for instance, and they spin minus 3, where will the marker land? Why?

Students *It'll land on 4 because we have to take 3 hops back.*

$7 - 3$ is 4, so we'll land on 4.

Activity 1 Number Line Race Game (cont.)

Throughout the game, ask students to report how far from 10 they are.

Students *We're on 4 now. We have to get 6 hops up to get to 10.*

$4 + 10$ is 6, so we have to go 6.

I hope we spin plus 3 and then plus 3 again!

7. When one team has landed on 10, place both markers back in their starting position, above and below the 5, and play again.

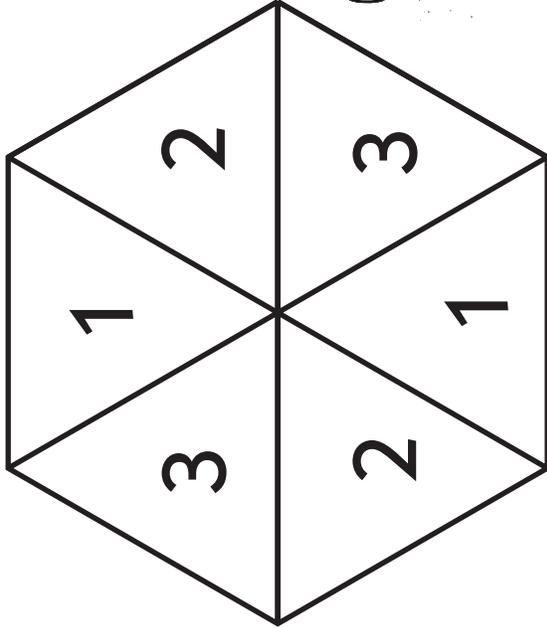
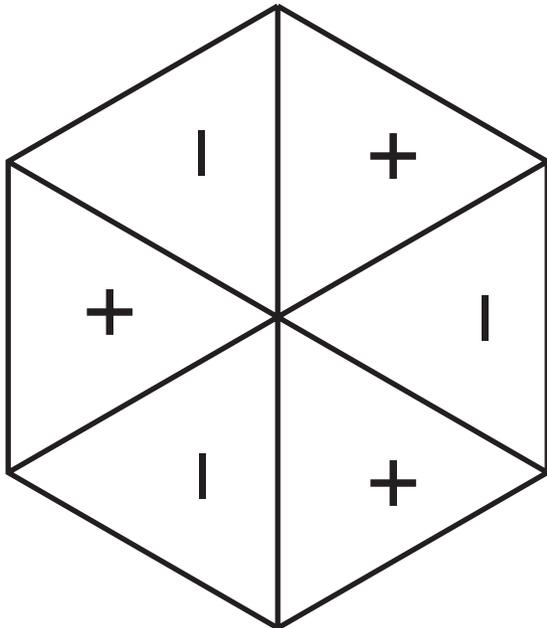
Note *If one team or the other makes a spin that will take them off the line (e.g., their marker is on 9 and they spin plus 3), there are several different ways to handle it. Choose the one you think best suits the needs and strengths of your class.*

- *That team spins again (and again if necessary) until they make a spin that won't take them off the line.*
- *That team loses their turn, and has to wait until they make a spin that won't take them off the line.*
- *Explain that a number line extends infinitely far in both directions, and add numbers to both ends of the line as needed. This may involve the use of negative numbers, which fascinate many primary students. The one thing you don't want to do is tell the students that there are no numbers less than 0, because that's not true.*

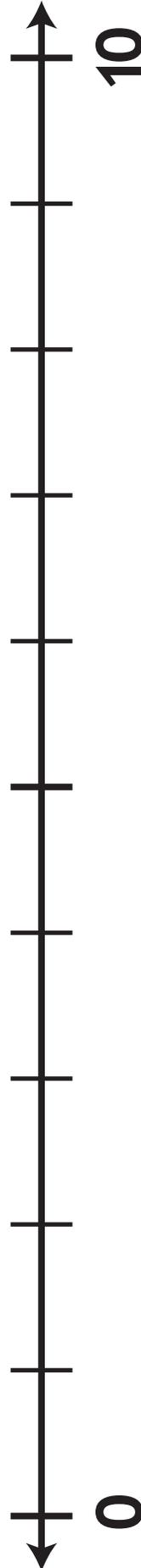
Extensions

- Play the game more than once with your class. This is a great “sponge activity.”
- Use pages A10.22 and A10.23 in this Supplement Set to make a Work Place version of the Number Line Race Game for use during Unit 4. Run 3 copies of the Number Line Race to 10 Gameboard on cardstock, laminate if possible, and attach spinners as described on page A10.13 in the Advance Preparation Notes. Place these, along with 6 game markers in a Work Place tub. Depending on the needs of your class, you might want to prepare 1 or more of the Number Line Race to 20 Gameboards to place in the Work Place tub as well.
- Have students make their own versions of the game to play at school and/or take home to share with their families. Some students may enjoy making number lines that go considerably higher than 10, and spinners that go from 1–6, or even 1–8.

Number Line Race to 10 Gameboard

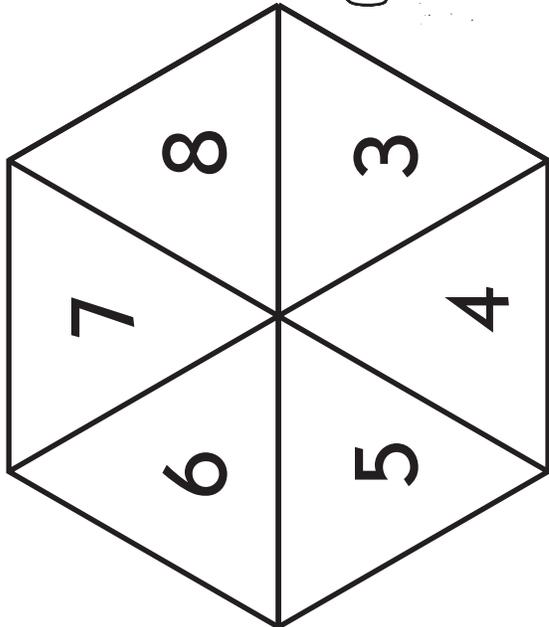
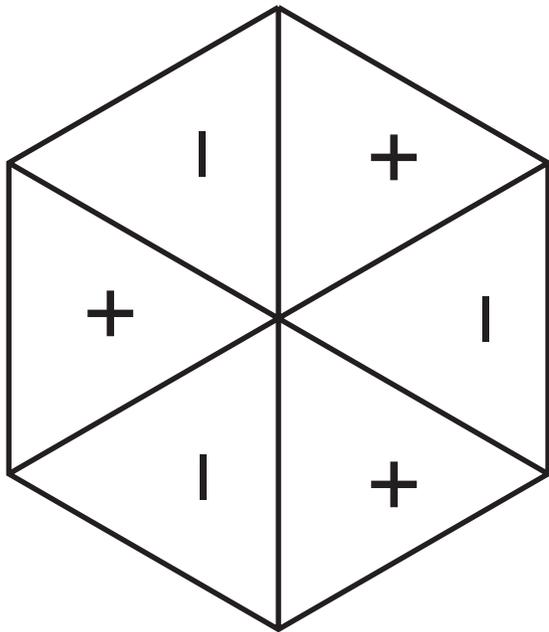


Player 1



Player 2

Number Line Race to 20 Gameboard



Player 1



Player 2

