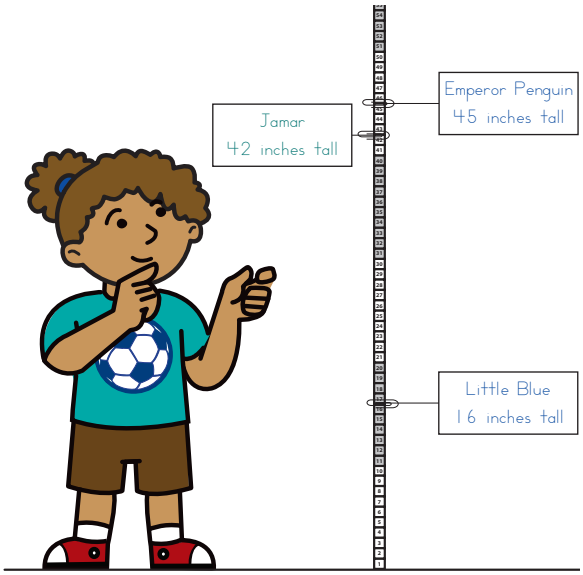
Bridges in Mathematics
Grade 1 Unit 5

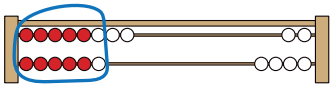
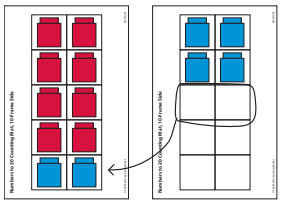
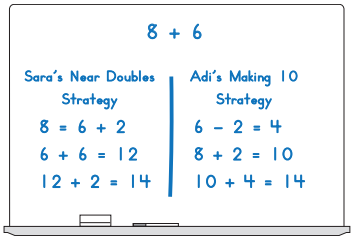
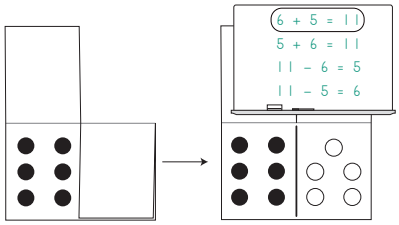
Figure the Facts with Penguins



In this unit, your student will:

- Use foundational facts to develop and practice efficient strategies for adding within 20
- Tell, write, and solve increasingly complex addition and subtraction word problems within 20
- Learn more about the relationship between addition and subtraction
- Determine whether equations involving addition and subtraction are true or false
- Measure, order, and compare heights in inches

Your student will practice these skills by solving problems such as these:

PROBLEM	COMMENTS
What is 8 + 6? *"I put 8 on top and 6 on the bottom. I see 6 and 6, and then 2 extra beads. I know 6 and 6 is 12, and 2 more is 14."*  *"I put 8 on one frame and 6 on the other. After that, I took 2 cubes from the 6 and put them with the 8 to make 10. Then I had 10 and 4, which is 14."* 	When students know and understand the foundational facts, they draw on them to solve more challenging combinations. Tools such as the number rack and 10-frames make it easier for students to devise, show, and explain derived fact strategies. 
Choose one of the combinations you wrote for your double-flap card, and think of a word problem to match.  *"There were 6 penguins in the water. Then 5 more jumped in. How many are in the water now?"*	Double-flap cards, first introduced in Unit 2, return in Unit 5 as a tool to deepen students' understanding of the relationship between addition and subtraction. Students generate fact families by writing the addition and subtraction equations corresponding to the part-part-whole images shown on the card. Then they come up with math stories to match selected addition or subtraction equations.

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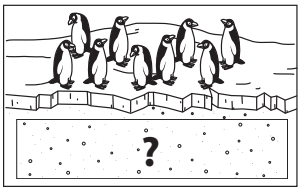
PROBLEM	COMMENTS
Solve these problems: **1.** Some penguins were in the water. Three more joined them. Now there are 12. How many penguins were in the water at the start? _____ + 3 = 12 **2.** There are 12 penguins in all. Nine of them are in front of the hill. The rest are behind the hill. How many penguins are behind the hill? 9 + _____ = 12 or 12 – 9 = _____ **3.** There were 9 penguins on the ice. There are 3 penguins in the water. How many more penguins are on the ice than in the water? 9 – 3 = _____ or 3 + _____ = 9	Penguins standing on ice ledges, huddling in groups, laying eggs, and catching fish provide story settings for first graders as they are introduced to a variety of addition and subtraction problems. These problems include situations where numbers are joined (added), separated (subtracted), or compared. Students write equations to go with these word problems, substituting a box for the unknown number.

Frequently Asked Questions About Unit 5

Q: Why are students solving word problems? Wouldn't it be simpler to have them solve addition and subtraction problems with numbers on a worksheet?



A: While it might seem that way, story contexts help students develop a more robust understanding of numbers, addition, and subtraction. For example, math equations with a missing subtrahend such as 16 – _____ = 9 are challenging for many first graders. When the same problem is put into a story context such as *There were 16 penguins on the ice. Some jumped into the water. Then there were only 9 penguins left on the ice. How many penguins jumped into the water?* it takes on meaning, and students are able to act out the story or use math materials to make sense of the problem. Then they can write the equation that matches the word problem.

Q: How can I support my student's learning??

A: Read and discuss assigned word problems together, and provide counters or paper and pencil for drawings. As your student solves the problems, encourage them to explain their thinking. Ask questions such as, "How did you solve that problem?" and "Is there another way you could have solved it?" These questions can help students share their reasoning and practice using strategies they have learned at school.

To further support your student in learning mathematics, you can:

- Visit mathathome.mathlearningcenter.org and work through some or all of the activities in Grade 1: Set 5 together. These activities complement the learning that takes place in the classroom during Unit 5 and provide fun ways to engage in mathematical thinking. This set also includes digital versions of games your student has learned at school, such as Spin to Win Bingo and True or False?
- Visit apps.mathlearningcenter.org and invite your student to explore the Number Rack and Number Frames apps. Throughout Unit 5, students use these tools in their physical forms in the classroom.
- Read some of the following books aloud with your student. Any of these picture books offer rich opportunities to pose and solve addition and subtraction word problems:
  - *Anno's Counting House* by Mitsumasa Anno
  - *Pigeon Math* by Asia Citro, illustrated by Richard Watson
  - *Twenty is Too Many* by Kate Duke
  - *How Many Snails?: A Counting Book* by Paul Giganti, Jr., pictures by Donald Crews
  - *Splash!* by Ann Jonas
  - *12 Ways to Get to 11* written by Eve Merriam, illustrated by Bernie Karlin
  - *Math for All Seasons: Mind-Stretching Math Riddles* by Greg Tang, illustrated by Harry Briggs

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