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SCHOLASTIC

DynaMath

INSIDE

- Smashing Records
- America's Top Dogs
- Metric Monsters

Reindeer Racers

In this race in Finland, reindeer pull skiers very fast. Follow these steps to see how fast! A human can run up to 27 mph. A grizzly bear can run up to 3 mph faster. These reindeer run up to 7 mph faster than a grizzly bear. How fast are the reindeer racers? For more about reindeer races, see page 4.

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NAME _____



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LESSON-PLAN TOOL KITS



Build complete lesson plans with this issue! On page T2 are two "lesson-plan tool kits" built around pages 4-5 and 8-9. Page T2 details the standards covered in each article, provides background information to get students thinking about the math concepts, and gives additional discussion points that will help students grasp each skill.

The reproducibles on pages T3, T4, and T5 ask critical-thinking questions that will expand students' understanding of the material. Try them out with your class. And feel free to tell us what you think anytime at DynaMath@Scholastic.com.

Mathematically yours,

Matt Friedman

Matt Friedman, Editor

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CONTENT AND SKILLS GUIDE

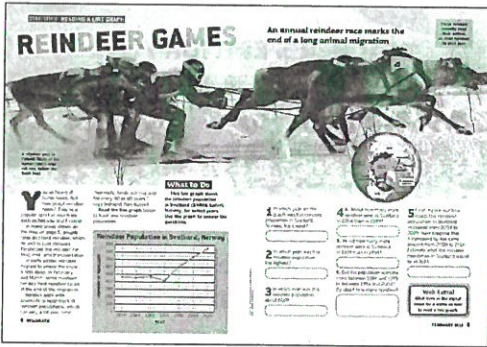
Difficulty Level: ★ = Easy ★★ = On-Level ★★★ = Challenging

PAGE(S)	ARTICLE TITLE, DIFFICULTY LEVEL	PRIMARY SKILL	COMMON CORE STATE STANDARDS (CCSS)*	NCTM STANDARDS*
Cover	Reindeer Racers ★★	Two-step problem	OA, NBT, MD	1, 2, 4, 6, 7
2-3	Numbers in the News ★	Mixed skills	OA, NBT	1, 4-7
4-5	Reindeer Games ★★	Reading a line graph	MD, NBT	1, 5-7
6-7	Record Breakers ★★★	Measuring $\frac{1}{2}$, $\frac{1}{4}$, and $\frac{1}{8}$ inches	NF, MD	1, 4, 9
8-9	Top Dogs ★★	Two-step problems	NBT, OA, MD	1, 2, 6, 7, 9
10-11	Metric Monsters ★★	Metric measurement	MD, NBT	1, 4
12-13	Time for Texts ★★	Elapsed time	MD, NBT	1, 4, 6
14-15	7 Billion and Counting! ★★	Reading a circle graph	MD, NF, SP	1, 5-7
16	The Puzzle Page ★	Mixed skills	NBT, NF	1, 6, 7
T3	Exploring Line Graphs ★★	pp. 4-5 comprehension activity	OA, MD, NBT	1, 2, 4-8, 10
T4	Two-Step Steps ★★	pp. 8-9 strategy page	OA, NBT	1, 2, 6-10
T5	Two-Step Steps (Example) ★★	pp. 8-9 strategy page	OA, NBT	1, 2, 6-10

*For details on standards, visit www.scholastic.com/dynamath.

Lesson-Plan Tool Kits

4–5 Reading a Line Graph



Lesson objective: To increase students' understanding of how to read a line graph.

INTRODUCING THE ARTICLE

Preparing your students

1. Ask students to identify what they know about line graphs. List their ideas on the board. *(Ideas may include the parts of a line graph and where students have seen line graphs.)*
2. At www.scholastic.com/dynamath, play the "Reading a Line Graph" video from pages 4–5 of the digital issue. After they watch the video, ask students to add new information about line graphs to the list on the board.

USING THE ARTICLE

Teach for understanding

Ask students to explain the meaning of the information from the graph on pages 4–5.

EXTENDING THE LEARNING

Have students complete the activity on page T3 to convey their understanding of line graphs.

NCTM Standard

- Data Analysis and Probability

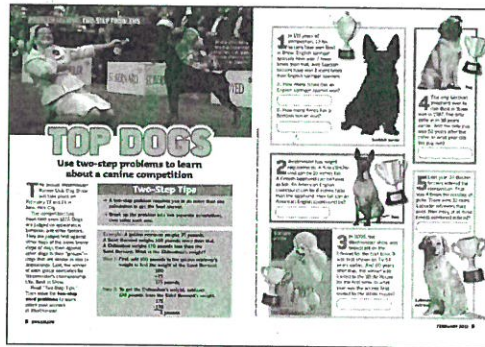
Common Core State Standards Content Standard

- Measurement and Data—Represent and interpret data.

Mathematical Practices Standards

- Construct viable arguments and critique the reasoning of others.
- Model with mathematics.

8–9 Two-Step Problems



Lesson objective: To help students learn a process for solving two-step word problems.

INTRODUCING THE ARTICLE

Preparing your students

Ask students to identify strategies they use to solve word problems. *(Strategies may include circling the question, highlighting important words, making a list, and making a drawing.)*

USING THE ARTICLE

Teach for understanding

Emphasize to students the importance of justifying their answers through written work. Their work should demonstrate conceptual understanding (such as using a drawing or a chart) as well as the ability to compute a correct answer (using an algorithm).

Resource tool

Have students use the template on page T4 as a tool to complete the problems on pages 8–9. See page T5 for an example of how to use the chart.

EXTENDING THE LEARNING

Ask: What strategies help you most when solving word problems? *(Answers will vary.)*

NCTM Standard

- Problem Solving
- Reasoning

Common Core State Standards Mathematical Practices Standards

- Make sense of problems and persevere in solving them.
- Reason abstractly and quantitatively.

Name _____

Pages 4-5

Comprehension Activity

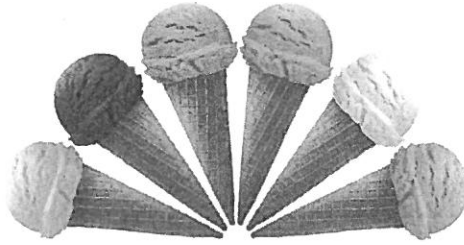
Exploring Line Graphs

Use this activity with the article on pages 4 and 5.

1 Look at the graph on page 4. Pretend you are explaining to a new student how to find the value of a point that is located between two lines on the graph. Use the point for the year 1994 as your example. Fill in the blanks in these directions that you might give to the new student:

- A.** Circle the point above the year 1994. This point stands for the number of _____ in Svalbard in 1994.
- B.** Look at the numbers along the _____ side of the graph. For the year 1994, the number at the line above the point must have a value of _____. (The number at the line below the point is _____.)
- C.** The point for the year 1994 is located between the two lines from **1b**. Because of where it is located between those two lines, a good estimate of that point's value would be _____.
- D.** Now, say your answer as a complete sentence: For the year 1994, the population of _____ in Svalbard was about _____.

2 What ideas would you add to the directions in **#1** to make it easier for a new student to find the value of a point on a line graph? Share your ideas with a partner. Discuss which of your ideas are alike and which are different. Ask your partner if your ideas make the directions easier to understand.



3 Say you were the owner of an ice cream shop. In which situation would a line graph best be used to show information? (Fill in the circle next to your answer.)

- A You are keeping a record of the number of cones you sell every day for one month.
- B You are keeping a record of the amount of chocolate, vanilla, and strawberry ice cream that you sold one Saturday.
- C You are keeping a record of how much of your total sales is sundaes.
- D You are keeping a record of which flavor of ice cream is most popular during the summer months.

4 In the space below, explain how you chose your answer for **#3**.

Two-Step Steps

Use these steps to find a solution for any two-step word problem. See page T5 for an example.

1 What do you have to find or solve?

2 Make a fast estimate of the answer before doing any written work.

My estimate:

3 List the facts you know.

4 Make a drawing, a chart, a list, or a model to show what the numbers mean. Label each part.

5 What do you have to find first?

6 Make a plan for how to solve the first part. (Is your answer reasonable?)

7 What do you have to find second?

8 Make a plan for how to solve the second part.

9 What is the final answer? Answer in a complete sentence. (Is your final answer reasonable?)

Two-Step Steps

EXAMPLE PROBLEM

A combination lock requires a three-digit number to open it. The first digit is 3 times the last digit.

The second digit is 1 more than the first digit. The last digit is 2. What is the lock's three-digit combination?

- 1** What do you have to find or solve?

I have to find the three-digit combination to the lock.

- 2** Make a fast estimate of the answer before doing any written work.

My estimate: 8-4-2

- 3** List the facts you know.

The first digit is 3 times the last digit.
 The second digit is 1 more than the first.
 The last digit is 2.

- 4** Make a drawing, a chart, a list, or a model to show what the numbers mean. Label each part.

These are all of the possibilities for each of the three digits.

0	0	0
1	1	1
2	2	② ← This is the last digit.
3	3	3
4	4	4
5	5	5
6	6	6
7	7	7
8	8	8
9	9	9

- 5** What do you have to find first?

The digit that comes first

- 6** Make a plan for how to solve the first part. (Is your answer reasonable?)

3 times the last digit is $3 \times 2 = 6$.
 So 6 is the digit that comes first!
 Yes, that answer is reasonable.

- 7** What do you have to find second?

The digit in the middle

- 8** Make a plan for how to solve the second part.

1 more than the first digit is $6 + 1 = 7$.
 So 7 is the digit in the middle!

- 9** What is the final answer? Answer in a complete sentence. (Is your final answer reasonable?)

The three-digit combination for the lock is 6-7-2.
 Yes, that answer is reasonable.



Name _____

SKILLS PAGE

Problem of the Day

Try one of these quick exercises each day as a fast, fun way to start your math lesson!

<p>DAY 1 One paper clip is made from 4 inches of wire. How many paper clips could be made from 3 yards of wire?</p>	<p>DAY 2 Which of these numbers is not evenly divisible by 3? 36, 45, 57, 61, 75</p>	<p>DAY 3 Which unit of measurement allows you to make the most exact measurement: meter, centimeter, or millimeter?</p>	<p>DAY 4 How many days does a leap year have?</p>	<p>DAY 5 Which three numbers below have a sum of 27? 12, 2, 8, 6, 7, 25</p>
<p>DAY 6 Anna was born in 1822. Nina was born 109 years later. Dana was born 18 years before Nina. In what year was Dana born?</p>	<p>DAY 7 Which expression has a greater value, $6 \times 7 + 18$ or $5 \times 9 + 17$?</p>	<p>DAY 8 Name 4 consecutive (in a row) numbers that have a sum of 18.</p>	<p>DAY 9 Which number is not a factor of 45? 1, 3, 5, 9, 15, 30, 45</p>	<p>DAY 10 How many seconds does a day have?</p>
<p>DAY 11 A snail can travel about .03 miles per hour (mph). A giant tortoise can travel about .17 mph. How many mph faster is the tortoise?</p>	<p>DAY 12 Choose a number from 2 to 10. Multiply it by 4. Subtract 6. Add 10. Divide by 2. Subtract 2. Subtract your original number. What is the result?</p>	<p>DAY 13 A new pencil is 19 cm long. About how many pencils would equal the length of a meter (100 cm)?</p>	<p>DAY 14 Take the number 2,845. Rearrange the digits to create the number with the greatest value.</p>	<p>DAY 15 Which would get you more money: to get 1 dime each day for two weeks (7 days per week) or to get 1 quarter each day for 5 days?</p>
<p>DAY 16 This year, how many days after 2/2 (February 2) is 3/3 (March 3)?</p>	<p>DAY 17 Two squares placed side by side make a rectangle with a perimeter of 18 cm. What is the perimeter of each square?</p>	<p>Day 18 Which two expressions have the same value? $58 \div 2$ 13×2 $23 + 6$ $37 - 9$</p>	<p>DAY 19 What whole number am I? ✓ Three different even digits. ✓ Hundreds digit + tens digit = ones digit ✓ Tens digit is 6</p>	<p>DAY 20 What are the next three numbers in the pattern? 1, 3, 6, 8, 16, 18, 36, — — — — —</p>

Problem of the Day by Dale Beltzner. Scholastic Inc. grants teachers permission to reproduce this page. ©2012 by Scholastic Inc. All rights reserved.

ANSWER BANK

(For student-edition answers, turn to page T8.)

PAGE T3: EXPLORING LINE GRAPHS

- 1a. reindeer
1b. left; 450; 400
1c. 410
1d. reindeer; 410
2. Answers will vary: Each thick horizontal line is an increment of 100, and each thin horizontal line is an increment of 50. Make sure that you understand the time labels along the bottom of the graph. Times along the bottom should be separated by even intervals.
3. A
4. Answer choice A is the one scenario that records a change over time.

PAGE T6: PROBLEM OF THE DAY

- DAY 1: 27 paper clips
DAY 2: 61

- DAY 3: millimeter
DAY 4: 366 days
DAY 5: 12, 8, and 7
DAY 6: 1913
DAY 7: $5 \times 9 + 17$
DAY 8: 3, 4, 5, 6
DAY 9: 30
DAY 10: 86,400 seconds
DAY 11: .14 mph faster
DAY 12: the number you started with
DAY 13: about 5 pencils
DAY 14: 8,542
DAY 15: 1 dime each day for two weeks
DAY 16: 30 days
DAY 17: 12 cm
DAY 18: $58 \div 2$ and $23 + 6$ both equal 29
DAY 19: 268
DAY 20: 38, 76, 78

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ANSWER BANK

(For Teacher's Edition answers, see previous page.)



This answer key as well as solutions for all of the online-only differentiated activities are at the Teacher tab at www.scholastic.com/dynamath.

COVER: REINDEER RACERS

37 mph

PAGES 2-3: NUMBERS IN THE NEWS

Cookies by the Numbers:

- A. Samoas
- B. Thin Mints

Why 2012 Is a Leap Year: 3 times (4 if you include the day she was born)

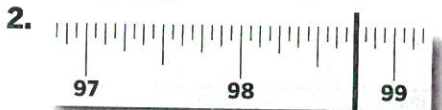
Tiny Horses or Big Table?: 19 feet, 3 inches

PAGES 4-5: REINDEER GAMES

- 1. 1994
- 2. 2009
- 3. 1999
- 4a. about 150 more reindeer
- 4b. about 200 more reindeer (accept answers ranging from 185 to 200 more reindeer)
- 4c. between 1994 and 1999, by about 50 more reindeer (accept answers ranging from 35 to 50 more reindeer)
- 5. about 950 reindeer

PAGES 6-7: RECORD BREAKERS

1. 237 inches



4. $39\frac{3}{4}$ inches

5. $111\frac{3}{8}$ inches

BONUS: 9 feet, $3\frac{3}{8}$ inches

PAGE 8-9: TOP DOGS

- 1a. 6 times
- 1b. 8 times
- 2. 26 inches (or 2 feet, 2 inches) tall
- 3. 2008
- 4. 1981
- 5. 68 dogs

PAGE 10-11: METRIC MONSTERS

- 1a. multiplication
- 1b. 180 mm
- 1c. 162 mm longer
- 2a. division
- 2b. 34 cm long
- 3a. 60 mm long
- 3b. 6 cm long
- 4. 18 cm long
- 5. 38 cm longer

PAGES 12-13: TIME FOR TEXTS

- 1. 3 hours and 25 minutes
- 2. 2 hours and 27 minutes
- 3a. 1 hour and 54 minutes
- 3b. 2 hours and 51 minutes
- 4. 12 more minutes
- 5. 10:45 a.m.

PAGES 14-15: 7 BILLION AND COUNTING!

- 1. Asia
- 2. 15%
- 3. North America
- 4. South America
- 5. Europe

PAGE 16: THE PUZZLE PAGE

J.Lo's Secret Hobby: A (cleaning up her house)

Triangle of Triangles: 13 triangles (9 small, 3 medium, 1 large)

Card Trick: 20 cards

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