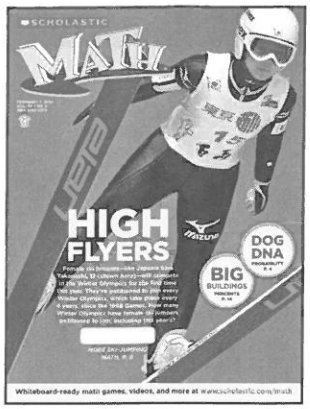

SCHOLASTIC

MATH

TEACHER'S GUIDE
SUPPLEMENT TO SCHOLASTIC *MATH*

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ISSUE DATES	9/2	9/16	10/7	10/28	11/18	12/9	1/13	2/3	3/3	3/24	4/14	5/5

Registration is now required for access to your online resources.
www.scholastic.com/math Your access code: exponent

Is your class excited about the Winter Olympic Games in Sochi, Russia, this month? Are there any winter sports that your students are especially eager to watch? The staff here can't wait to see the female ski jumpers from our cover story compete in this year's Games.

In "Ready for Takeoff!" on p. 8, your class will read about how these athletes have been fighting for more than a decade to be included in the Olympics and find out more about how the ratio of men's to women's events has changed over the years.

We're also very excited about a big addition to your subscription as well! Be on the lookout for a new app in the Apple iTunes store that will allow your class to view each issue of *MATH* on an iPad. We'll send you an e-mail with instructions once the app is available to download. I've gotten a few sneak peeks, and I can't wait for you to see it too!

Best wishes,
Karina Hamalainen, Editor
khamalainen@scholastic.com

SKILLS GUIDE

PAGE	SKILL & ARTICLE TITLE	COMMON CORE STATE STANDARDS	ONLINE RESOURCES: www.scholastic.com/math
4	**Probability** Tracing Doggie DNA	**Statistics & Probability:** Develop a probability model and use it to find probabilities of events.	• Download a skills sheet • Watch a background video
6	**Fractions** Piano Phenom	**The Number System:** Add and subtract fractions with unlike denominators.	• Download a skills sheets • Watch a background video
8	**Ratios** Ready for Takeoff!	**Ratios & Proportional Relationships:** Understand the concept of a ratio and use it to describe a relationship between two quantities.	• Download a skills sheet • Watch a background video
12	**Statistics** Be Mine	**Statistics & Probability:** Summarize numerical data sets in relation to their context.	• Access a Web link
14	**Percents** Lying About Your Height?	**Ratios & Proportional Relationships:** Find a percent of a quantity as a rate per 100.	• Download two differentiated skills sheets • Watch an instructional video
16	**Absolute Value** Royal Rock Star	**The Number System:** Understand ordering and absolute value of rational numbers.	• Play a game

LESSON PLANS

PAGE 4

PROBABILITY

Tracing Doggie DNA

STANDARDS

Statistics & Probability: Develop a probability model and use it to find probabilities of events.

OBJECTIVE

Calculate the probability of a dog inheriting certain traits using Punnett squares.

LESSON

1 Who in your class owns a dog? Ask: What kind of breed do you have? Some may have mixed breeds and not know the pedigree of their dogs. Explain that scientists can use DNA, the molecule that carries the instructions for life, to figure out a dog's specific ancestry and even the history of the entire species.

2 Go to **www.scholastic.com/math** and open your digital edition to page 4. Read the article together as a class. Then click on the "Watch a Video" button to view a background video about the migration of dogs to the Americas.

3 Explain that figuring out the chance of an animal inheriting a genetic trait is a real-world example of using probability. To calculate this probability, it helps to use a model—in this case, a Punnett square.

4 Enlarge and walk students through the "Probability & Punnett Squares" box on page 5. Then have students complete the questions that follow.

COMMON CORE CRITICAL THINKING

- Name other real-life instances where probability comes into play. (*Answers may include: coin tosses before sports games, chance of rain when forecasting the weather, batting averages, playing the lottery.*)

ONLINE RESOURCES

- Go to page 5 of the digital issue at **www.scholastic.com/math**. Click on the "5 More Questions" button to have students learn how to make a Punnett square and answer additional math questions about probability.
- Click on the blue Web Links tab along the bottom of the digital edition to play a game using Punnett squares.

PAGE 6

FRACTIONS

Piano Phenom

STANDARDS

The Number System: Add and subtract fractions with unlike denominators.

OBJECTIVE

Practice adding fractions with unlike denominators using musical notes.

LESSON

1 Go to **www.scholastic.com/math**. Open the digital edition to page 6, and read the article about 12-year-old pianist and composer Emily Bear.

2 Click on the "Watch a Video" button to watch Emily record one of her songs in a studio.

3 Ask your class: Who knows how to read music? Explain how it's done by drawing five horizontal lines on your whiteboard or projector. Explain that this is a musical staff used to write music. Each line and space on the staff represents a different pitch, the highness or lowness of a sound. Draw a few vertical lines at even intervals along the staff. These are measures, or sections in the music that hold notes that last a set number of beats. On the left end of the staff, write the fraction $\frac{4}{4}$. Explain that the numerator signifies the number of beats per measure and the denominator shows the value of the note that gets a full beat, in this case a quarter note.

4 Enlarge the "What to Do" box on page 7. Review the instructions as a class. Refer to the musical staff you drew, as needed.

S.T.E.M. CONNECTIONS

- Apply your fraction smarts by writing a short musical composition in $\frac{4}{4}$ time. On a piece of notebook paper, draw a staff with four measures. Put in notes that add up to four beats per measure. Use the tool provided in the Web links to hear what your composition sounds like.

ONLINE RESOURCES

- Go to page 7 of the digital issue at **www.scholastic.com/math**. Click on the "5 More Questions" button for additional fraction math questions.
- Click on the blue Web Links tab along the bottom of the digital edition to allow students to compose their own music using fractions.

PAGE 8

RATIOS

Ready for Takeoff!

STANDARDS

Ratios & Proportional Relationships: Understand the concept of a ratio and use it to describe a relationship between two quantities.

OBJECTIVE

Compare how the number of men's and women's Winter Olympic events has changed over time using ratios.

LESSON

1 Share with your class that the Winter Olympics will be held in Sochi, Russia, this month from February 7 to 23. To pique students' interest in the topic and encourage them to share their own background knowledge, ask: Who plans to watch the Games? Which events are you excited to see?

2 Go online to **www.scholastic.com/math**. Open the digital edition to the cover. Ask students whether they recognize the sport shown. (*ski jumping*) Have them read the cover line and text underneath. Call on students to predict what the article will be about based on these "text features." Write their predictions on a sticky note.

3 Open the digital edition to page 8. Click on the "Watch a Video" button on page 9 to learn about the Winter Olympics.

4 Have students read the article to themselves. When finished, return to the sticky note. Did students correctly predict what the text was about? Discuss how examining text features can help them better understand the central idea of an article.

5 Initiate a post-reading discussion: What do students think about the fact that it took 90 years for a women's ski-jumping event to be included in an Olympics?

6 Enlarge the chart on page 10. Ask: Is the lack of a women's ski-jumping event until recently part of an overall trend of lack of female sports at the Olympics? How could students find out how the number of men's and women's events have changed over time?

7 Explain that a ratio is a useful way to compare two quantities—like the number of women's and men's Olympic events. Have students read the "Writing Ratios" box on page 11 to review the different types of ratios and how to simplify ratios before they complete the questions that follow.

S.T.E.M. CONNECTIONS

- Graphs are another way to analyze data. Create a double line graph for men's and women's events from the chart on page 10. Label the *x*-axis "Years" and the *y*-axis "Number of Events." Don't forget to title your graph.

ONLINE RESOURCES

- Go to page 10 of the digital issue at **www.scholastic.com/math**. Click on the "5 More Questions" button for an algebraic formula activity about how ski-jumping scores are calculated.
- Click on the blue Web Links tab along the bottom of the digital edition to learn more about the U.S. women's ski jumping team.

DIGITAL ISSUE KEY:

SHOW ALL PAGES | HOME | MASK TOOL | DIGITAL STICKY NOTES | TEXT HIGHLIGHTER | DRAWING TOOL | GAME | POP-UP | VIDEO PLAYER

PAGE 12

STATISTICS

Be Mine

STANDARDS

Statistics & Probability: Summarize numerical data sets in relation to their context.

OBJECTIVE

Analyze data given in graphs, charts, and diagrams to learn how money is spent on Valentine's Day.

LESSON

1 After Christmas, the holiday Americans spend the most money on is Valentine's Day. Last year, people spent $18.6 billion! What do students think most people spend their money on? (*Answers may include: candy, chocolate, cards, flowers, and perfume.*)

2 Ask your class whether they know the origin of Valentine's Day. It's actually shrouded in mystery. Go online to **www.scholastic.com/math**, and open your digital issue to page 12. Have students silently read the introduction to learn about Valentine's Day and its traditions.

3 Use the masking tool to hide the titles for each graph and diagram. Review the visual elements of the article together as a class. Ask students to come up with their own titles for each. Remind them to consider not just the graph's data, but also its labels, footnotes, and source information. That will help them correctly interpret what the graph is about.

4 When finished, reveal the actual titles. Then have students complete the questions on page 13.

S.T.E.M. CONNECTIONS

- Have students keep a detailed budget of how much they spend on Valentine's Day this year. Make sure to include a description of the items purchased and the amount spent on each. At the end, have them tally their total spending.

ONLINE RESOURCES

- Click on the blue Web Links tab along the bottom of the digital edition for more Valentine's Day stats.

PAGE 14

PERCENTS

Lying About Your Height?

STANDARDS

Ratios & Proportional Relationships: Find a percent of a quantity as a rate per 100.

OBJECTIVE

Convert fractions to percents to discover what portion of a building's height is actually vanity height.

LESSON

1 Draw a graph on your interactive whiteboard or overhead projector. Divide the *y*-axis into increments of 500 feet. Call on volunteers to draw bars on the graph for the world's five tallest buildings: Burj Khalifa (2,717 feet), Shanghai Tower (2,073 feet), Mecca Royal Hotel Clock Tower (1,972 feet), One World Trade Center (1,776 feet), and Taipei 101 (1,670 feet).

2 There's a controversy over the height of some of these buildings. Ask: What might it be? (*Counting a building's spires and unused floors adds to what some call its "vanity height."*)

3 Go to **www.scholastic.com/math** and open your digital edition to page 14. Read the article out loud. When you reach the fifth paragraph, highlight the text "When finished, in 2019 it will be 3,281 feet tall. However, 49.8% of that height will be vanity height." Remind students that a percent expresses a portion of a whole. Percents are a number out of 100; they can be converted to fractions and vice versa.

4 Click on the "Watch a Video" button on page 15 to view an instructional video about calculating a percent.

COMMON CORE CRITICAL THINKING

- Do you think spires and unused floors should be included in a building's total height? Cite textual evidence to support your answer.

ONLINE RESOURCES

- Go to **www.scholastic.com/math**, and click on the orange Skills Sheets tab at the top of the page. Download and print two differentiated percents reproducibles for this article.
- Click on the blue Web Links tab along the bottom of the digital edition to see which buildings are predicted to be the height-record holders by 2020.

NAME: _____

Issue Skills Review

For use with the February 3, 2014, issue of Scholastic *MATH* magazine.
Fill in the letter of the correct answer, or write the correct answer.

1 What is the probability of rolling a 1 or a 3 on a number cube?

Ⓐ $\frac{1}{6}$
Ⓑ $\frac{1}{3}$
Ⓒ $\frac{2}{3}$
Ⓓ $\frac{3}{6}$

2 What is the probability of pulling a red marble out of a bag with 6 blue marbles, 4 red marbles, and 10 yellow marbles?

_____

3 How many beats does an eighth note take up in a measure in $\frac{4}{4}$ time?

_____

4 $\frac{3}{5} + \frac{1}{8} =$

_____

5 $|21| =$

_____

6 A classroom has 12 boys and 14 girls. What are 3 different ways to write, in simplest form, the ratio of boys to girls?

_____

7 What percent of 40 is 8?

Ⓐ 0.2%
Ⓑ 20%
Ⓒ 5%
Ⓓ 500%

8 In a school election, a total of 450 students voted and 300 voted for the winner. What percent of students voted for the winner, rounded to the nearest whole percent?

Ⓐ 1.5%
Ⓑ 7%
Ⓒ 67%
Ⓓ 150%

9 $|-98| =$

_____

10 In a fruit salad, there are 28 pieces of apple and 26 pieces of banana. What is the ratio of bananas to apples in simplest form?

_____

Answers on T8

NAME: _____

Problem of the Day

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

DAY 1 Legend has it that if Punxsutawney Phil sees his shadow on February 2, there will be 6 more weeks of winter after that day. If Phil sees his shadow, on what day will spring begin?	**DAY 2** The 2013 Super Bowl had the following number of U.S. TV viewers: $1 \times 10^8 + 8 \times 10^6 + 4 \times 10^5$. Write the number of TV viewers in standard form.	**DAY 3** Which of the following has a sum greater than 1? Note: There can be more than one. $\frac{5}{10} + \frac{3}{7}$ $\frac{14}{21} + \frac{11}{22}$ $\frac{4}{15} + \frac{5}{6}$ $\frac{3}{4} + \frac{3}{12}$ $\frac{16}{36} + \frac{8}{24}$	**DAY 4** Twelve-year-old Emily Bear has been playing the piano since the age of 2! For what percentage of her life has she been playing piano? Round your answer to the nearest tenth of a percent.	**DAY 5** From 22 feet above the ocean's surface, a brown pelican spots a fish 4 feet below the surface. How many feet farther from the surface is the pelican than the fish?
DAY 6 On the following spinner, what is the probability of spinning a multiple of 3? Express your answer in simplest form. 	**DAY 7** In the March 2013 World Cup ski jump, Sarah Hendrickson won by scoring 8.1 more points than second-place finisher, who scored 274.9 points. What was Hendrickson's final score?	**DAY 8** Lydia tracked the daily high temperature for 2 weeks and recorded 4 days each of 37°F and 40°F, 2 days each of 38°F and 34°F, and 1 day each of 36°F and 39°F. What was the median temperature?	**DAY 9** The Burj Khalifa in Dubai is 941 feet taller than the 1,776-foot-tall One World Trade Center. What percent of One World Trade Center's height is Burj Khalifa's? Round to the nearest whole percent.	**DAY 10** At the February 2014 Winter Olympics, there will be 50 men's events and 48 women's events. What percent, rounded to the nearest whole percent, of the total events will be women's events?
DAY 11 A box of candy hearts holds 6 yellow, 4 orange, 5 blue, 7 red, 5 purple, and 8 orange hearts. What fraction of the candy hearts, in simplest form, are red?	**DAY 12** What number, other than 4 and 36, is a multiple of 4 and a factor of 36?	**DAY 13** In music, if an eighth note lasts $\frac{1}{8}$ of a certain measure, and a half note lasts $\frac{1}{2}$ of that measure, what fraction of a half note does an eighth note last?	**DAY 14** Vera's shopping for Valentine's Day cards. She can buy 10 cards for $0.99 each, or a set of 10 for $5.99. Which costs less per card, and by how much? Round to the nearest cent.	**DAY 15** From 1924 on, 4 out of 22 Winter Olympics have been held in the U.S. In simplest form, what fraction of Winter Olympics from 1924 on have not been held in the U.S.?
DAY 16 Solve for x: $\frac{2}{3} + \frac{x}{5} = 1\frac{4}{15}$	**DAY 17** Put the following in order from greatest to least: $\lvert -7 \rvert$ $\lvert 3 \rvert$ $\lvert 1 \rvert$ $\lvert -5 \rvert$	**DAY 18** Which Valentine's Day card's front has the greater area and by how much? • 5.75 inches by 6.2 inches • 5 inches by 7 inches	**DAY 19** You can't decide what to name your new dog: Ralph, Mel, Rompers, Rudy, Zach, or Rusty. If you pick one of those at random, what is the probability, in simplest form, the name will begin with *R*?	**DAY 20** $\lvert -25 \rvert + \lvert 18 \rvert =$ ___

Answers on T8

ANSWERS

COVER

High Flyers

They petitioned to join 5 Winter Olympics.

PAGES 2-3

Numbers in the News

• EXPLORERS WANTED

Mammoth Cave is about 280 miles longer than the Gua Air Jernih Cave.

• ARTISTIC CHIMPS

The second-place prize was $5,000 ($y$), and the third place prize was $2,500 ($z$).

• STADIUM SHAKE-UP

A 7.0 earthquake is 1,000,000 times as strong as a 1.0 earthquake.

• DO THE MATH!

Gus and Elena Wimberger hiked 2,600 miles.

PAGE 4

Tracing Doggie DNA

1. $\frac{3}{4}$ or 3 in 4 or 75%
2. $\frac{0}{4}$ or 0 in 4 or 0%
3. $\frac{1}{2}$ or 1 in 2 or 50%
4. $\frac{1}{2}$ or 1 in 2 or 50%
5. Punnett Square 3; 50%

PAGE 6

Piano Phenom

1a. 2
1b. 8
1c. 4
1d. 1
2. $\frac{1}{4}$
3a. 2
3b. 4
4. $\frac{1}{8}$ of a beat
5. Answers will vary, but all notes must add up to the fraction specified.
b. Notes must add up to $\frac{2}{4}$. Example: 1 quarter note.
c. Notes must add up to $\frac{3}{4}$. Example: 2 quarter notes.
d. Notes must add up to $\frac{6}{8}$. Example: 2 eighth notes.

PAGE 8

Ready for Takeoff!

1. 7:1
2. 5:22
3. 1968 and 1972
4a. 10:11
4b. 10:21
5. 1952
6. 23:9
7. 1960
8a. 2014
8b. 24:49
9a. 12
9b. 2:3
9c. 2:1
10. In 1964, the ratio was 13:21, but by 1998, the ratio was 8:9. In 1998, the ratio was much closer to 1:1.

PAGE 12

Be Mine

1. C
2. C
3. A
4. A
5. C
6. B
7. $42.45
8. red roses
9. about 1,425,000 tons more
10. about 3,708,000,000 pounds (We used 12 pounds per capita, but please accept all reasonable answers.)

PAGE 14

Lying About Your Height?

1. 29%
2. 30%
3a. 39%
3b. 61%
4a. 12%
4b. 14%
5. 308 feet

BACK PAGE

Royal Rock Star

1. A
2. B
3. B
4. A
5. B

To find the answers online, click on "Teaching Resources."

ANSWERS

TG PAGE 5

Skills Review

1. B
2. $\frac{1}{5}$
3. half a beat
4. $\frac{29}{40}$
5. 21
6. $\frac{6}{7}$, 6:7, 6 to 7
7. B
8. C
9. 98
10. 13:14

TG PAGE 6

Problem of the Day

1. March 17
2. 108,400,000 viewers
3. $\frac{14}{21} + \frac{11}{22}$; $\frac{4}{15} + \frac{5}{6}$
4. 83.3% of her life
5. 18 feet farther
6. $\frac{1}{4}$
7. 283.0 points
8. 37.5°F
9. 153%
10. 49% of the events
11. $\frac{1}{5}$ of the candy hearts
12. 12
13. $\frac{1}{4}$ of a half note
14. The set of 10 for $5.99, by $0.39 per card
15. $\frac{9}{11}$
16. $x = 3$
17. $|-7|, |-5|, |3|, |1|$
18. 5.75 inches by 6.2 inches, by 0.65 square inches
19. $\frac{2}{3}$
20. 43

To find the answers online, click on "Teaching Resources."

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