



SCHOLASTIC  
**MATH**<sup>®</sup>  
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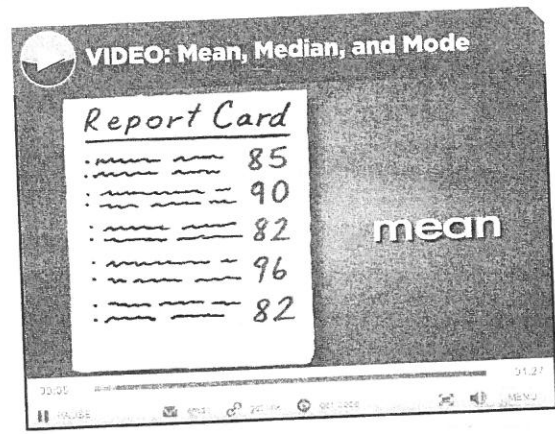
**TEACHER'S GUIDE**  
**OCTOBER 27, 2014**  
 VOL. 35, NO. 4 ISSN 1041-1410  
 SUPPLEMENT TO SCHOLASTIC MATH



ISSUE DATES	9/1	9/15	10/6	10/27	11/17	12/8	1/12	2/2	3/2	3/23	4/13	5/4
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Registration is now required for access to your online resources.  
 YOUR ACCESS CODE: [www.scholastic.com/math](http://www.scholastic.com/math)

Dear Teacher,  
 We're betting your students have Halloween on the brain right about now, and this issue of *MATH* won't disappoint! This month, readers can analyze data to learn fun Halloween facts, apply formulas to prepare for a zombie outbreak, and use ratios to calculate the artificial dyes that may be lurking in their trick-or-treat bags. They'll also get a sneak peek at the 3-D stars in their trick-or-treat bags. They'll also get a sneak peek at the 3-D stars of Disney's upcoming animated feature *Big Hero 6*, and learn how these dynamic characters were built out of ordinary geometric shapes.  
 For access to additional teaching resources—instructional videos, games, Common Core skills sheets, and more—don't forget to register at [www.scholastic.com/math](http://www.scholastic.com/math) using this year's access code: **numera1014**.  
 Best wishes, The Editors  
**mathmag@scholastic.com**



**SKILLS GUIDE**

PAGE	SKILL & ARTICLE TITLE	COMMON CORE STATE STANDARDS	ONLINE RESOURCES <a href="http://www.scholastic.com/math">www.scholastic.com/math</a>
4	<b>Formulas</b> WHEN ZOMBIES ATTACK!	<b>Expressions &amp; Equations:</b> Evaluate expressions at specific variable values. Include expressions that arise from formulas used in real-world problems.	<ul style="list-style-type: none"> <li>Download a differentiated Common Core skills sheet, plus 5 More Questions.</li> </ul>
6	<b>Ratios</b> DYE-LICIOUS CANDY?	<b>Ratios &amp; Proportional Relationships:</b> Use ratio and rate reasoning to solve real-world and mathematical problems.	<ul style="list-style-type: none"> <li>Download a differentiated Common Core skills sheet, plus 5 More Questions.</li> <li>Learn more with Web links.</li> </ul>
8	<b>2-D Cross Sections</b> BUILDING BIG HEROES	<b>Geometry:</b> Describe the two-dimensional figures that result from slicing three-dimensional shapes.	<ul style="list-style-type: none"> <li>Download a differentiated Common Core skills sheet, plus 5 More Questions.</li> <li>Watch a background video.</li> </ul>
12	<b>Statistics</b> TRICK OR TREAT?	<b>Statistics &amp; Probability:</b> Summarize numerical data sets in relation to their context.	<ul style="list-style-type: none"> <li>Watch a background video.</li> <li>Learn more with Web links.</li> </ul>
14	<b>Mean, Median, Mode, Range</b> NAME THAT GORILLA	<b>Statistics &amp; Probability:</b> Give quantitative measures of center (median and/or mean), and describe any overall pattern and deviations with reference to the context in which the data were gathered.	<ul style="list-style-type: none"> <li>Download a differentiated Common Core skills sheet, plus 5 More Questions.</li> <li>Watch an instructional video.</li> <li>Watch a background video.</li> </ul>
16	<b>Greatest Common Factor</b> HOCKEY'S YOUNGEST STAR	<b>The Number System:</b> Find the greatest common factor of whole numbers less than or equal to 100.	<ul style="list-style-type: none"> <li>Play a game.</li> </ul>

## PAGE 4 • Formulas

### WHEN ZOMBIES ATTACK!



#### STANDARD

Apply and extend previous understandings of arithmetic to algebraic expressions.

#### OBJECTIVE

Choose the correct formula to solve word problems about the spread of a zombie outbreak.

#### LESSON

- 1 Go to [www.scholastic.com/math](http://www.scholastic.com/math) and open your digital issue to page 4. Explain to your class that although zombies aren't real, mathematicians still study them. Can students guess why? (*To learn about real diseases that could spread in the same way as the make-believe zombie infection.*)
- 2  Call on volunteers to take turns reading the article out loud. In the second paragraph, highlight the word *formula*. Explain that a formula is a type of equation that shows the relationship between *variables*, which are symbols that stand for different values.
- 3  Continue reading, and then enlarge the "Using Formulas" box on page 5. Discuss how to choose the correct formula for a given problem and how to substitute values for variables to solve the equation.
- 4 Answer the questions on page 5 as a class. Make sure students understand the concept of "transmission rate," or the likelihood that a person infected with a disease will pass it on.

#### S.T.E.M. CONNECTION

- An outbreak of the deadly disease Ebola is currently affecting Africa: <http://magazines.scholastic.com/news/2014/08/A-Deadly-Virus-Strikes-Africa>. How could understanding how it spreads protect people from getting sick?

#### ONLINE RESOURCES

- Visit [www.scholastic.com/math](http://www.scholastic.com/math) to download a differentiated Common Core reproducible, plus five more formula questions.
- See how the Centers for Disease Control and Prevention used zombies to teach about emergency preparedness: [www.cdc.gov/phpr/zombies.htm](http://www.cdc.gov/phpr/zombies.htm).

## PAGE 6 • Ratios

### DYE-LICIOUS CANDY?


#### STANDARD

Understand ratio concepts and use ratio reasoning to solve problems.

#### OBJECTIVE

Calculate the amount of artificial food coloring in popular foods, given the ratio of dye per serving.

#### LESSON

- 1 Ask students if they've ever thought about what gives processed foods like cereals, chips, and candy their bright colors. Have them read the article on page 6 to find the answer.
- 2 Assess students' reading comprehension by asking them to summarize why scientists are concerned about artificial food coloring. Have students cite the text to back their conclusions.
- 3 Introduce the idea of ratios—a relationship that compares two different values—by polling your students on whether they ate cereal for breakfast. Write the number of students who ate cereal on the board, along with the total number of students in your class. Ask students how they'd express these two numbers as a ratio. (*Separate the numbers by the word "to" or a colon, or write them as a fraction.*)
- 4  Go to [www.scholastic.com/math](http://www.scholastic.com/math) and enlarge the "Solving With Ratios" box on page 6. Review how to write and use ratios to find the total amount out of a whole. Have students use this information to answer the problems on the following page.

#### COMMON CORE CRITICAL THINKING

- Divide your class into two groups and have them debate the pros and cons of Europe's decision to put warnings on foods that contain artificial dyes.

#### ONLINE RESOURCES

- Visit [www.scholastic.com/math](http://www.scholastic.com/math) to download a differentiated Common Core reproducible, plus five more ratio questions.
- View an interactive infographic of food dyes and health concerns they raise: [www.fastcodesign.com/3020148/infographic-just-how-dangerous-is-the-dye-in-your-food#1](http://www.fastcodesign.com/3020148/infographic-just-how-dangerous-is-the-dye-in-your-food#1).

## BUILDING BIG HEROES

### STANDARD

Draw, construct, and describe geometrical figures and describe the relationships between them.

### OBJECTIVE

Determine which 2-D figures result from slicing 3-D shapes.

### LESSON

**1** This issue's cover story is about the upcoming animated film *Big Hero 6*. Click on the video button on page 9 in your digital issue at [www.scholastic.com/math](http://www.scholastic.com/math) to view the movie's trailer. Have students read about how a type of animator called a modeler turns 2-D drawings into 3-D characters fit for the big screen.

**2** Ask students to describe the difference between a 2-D and a 3-D figure and give examples of each. (2-D examples: square, rectangle, trapezoid, triangle, circle, ellipse; 3-D examples: rectangular pyramid, cylinder, cone, sphere, cube, rectangular prism)

**3** Explain that the *D* in 2-D and 3-D stands for *dimensional*. When you talk about dimensions, you are referring to a measure of length in one direction. On your board, draw the following: a point, a line, a square, and a cube. Write 0 under the point, 1 under the line, 2 under the square, and 3 under the cube. Explain that a point has zero dimensions, or no length. A line has one dimension, which you can illustrate by drawing a directional arrow to show its length. Do the same to show that the square has two dimensions (*length and width*) and that the cube has three dimensions (*length, width, and height*).

**4** Enlarge the "2-D Cross Sections" box on page 10. Explain that a cross section is the shape created when you cut straight through an object along a plane. By slicing 3-D shapes, you reveal 2-D figures.

**5** Access the blue Web links at the bottom of your digital issue to watch a short video that explains how slicing into 3-D shapes forms 2-D figures. After viewing, ask: What are the three different ways you could slice a 3-D shape? (*vertically, horizontally, or diagonally*)

**6** Have students work together in pairs to answer the questions on pages 10-11. To help students better visualize this lesson, you can provide groups with clay to form shapes and dental floss to slice them.

### COMMON CORE CRITICAL THINKING

→ Ask your class to consider the uses of 3-D models outside of animation. Can they think of any other applications of model-making in the real world? What other professions might involve 3-D modeling?

### ONLINE RESOURCES

→ Visit [www.scholastic.com/math](http://www.scholastic.com/math) to download a differentiated Common Core reproducible, plus five more cross-section questions.

→ Visit [www.scholastic.com/math](http://www.scholastic.com/math) to watch a trailer for *Big Hero 6*.

→ This PBS video explains how slicing 3-D shapes creates 2-D figures:  
[www.pbslearningmedia.org/resource/muen-math-g-slicing-3d-figures/slicing-three-dimensional-figures/](http://www.pbslearningmedia.org/resource/muen-math-g-slicing-3d-figures/slicing-three-dimensional-figures/).

→ For a literacy connection, have students read *Flatland: A Romance of Many Dimensions* by Edwin A. Abbott, a fictional tale about 2-D and 3-D shapes come to life.

### DIGITAL ISSUE KEY:



# LESSON PLANS

PAGE 12 • Statistics

## TRICK OR TREAT?


### STANDARD

Develop understanding of statistical variability.

### OBJECTIVE

Analyze data given in graphs, charts, and diagrams to learn about Halloween spending and trends.

### LESSON

- 1 Open your digital issue at [www.scholastic.com/math](http://www.scholastic.com/math) to page 12. Have students read about the history of Halloween and how modern traditions came to be.
- 2  Mask all but the last two paragraphs on page 12. Explain that this section of the text contains three statistics. Ask students to identify these pieces of numerical data and consider how they might have been collected and analyzed. (*total money spent on Halloween, largest percent of money spent on costumes, amount spent on dressing up pets*)
- 3 Statistical data can be expressed in words or in a visual format, such as a graph. Ask:
  - Why might you choose one method of expression over another?
  - Why might one method give a fuller picture of the data gathered?
- 4 Use the information from the text and graphics to answer the questions on page 13 as a class.

### S.T.E.M. CONNECTION

- Create your own Halloween statistic. Gather data to determine the most popular costumes kids in your grade plan on wearing. Then find the best way to organize and present this data.

### ONLINE RESOURCES

- Discover more Halloween stats: [www.statisticbrain.com/halloween-statistics/](http://www.statisticbrain.com/halloween-statistics/).
- Watch a background video about Halloween traditions around the world at [www.scholastic.com/math](http://www.scholastic.com/math).

PAGE 14 • Mean, Median, Mode, Range

## NAME THAT GORILLA



### STANDARDS

Summarize and describe distributions.

### OBJECTIVE

Analyze a data set of mountain gorillas named each year using mean, median, mode, and range.

### LESSON

- 1 Go to [www.scholastic.com/math](http://www.scholastic.com/math) and open your digital issue to page 14. Explain that mountain gorillas are an endangered species—one threatened with extinction. Have students read the article. Then call on volunteers to explain why apes have had difficulty thriving in the past. (*decades of habitat destruction, hunting, and war*)
- 2  Click the video button on page 15 to watch a background video about Gorilla Doctors, the organization mentioned in the article.
- 3  Enlarge the “Mean, Median, Mode, Range” box on page 15 and direct students’ attention to the data set provided. Although a data set can look like a jumble of numbers, there are tools to help you make sense of this information. Review the four methods listed and their definitions. Share this mnemonic device to help students remember the difference: *Hey, diddle diddle, the median’s the middle/You add then divide for the mean/The mode is the one that you see the most/And the range is the difference between.* Then have students answer the questions on page 15.

### COMMON CORE CRITICAL THINKING

- Find evidence in the text to support the statement “Mountain gorillas are the only great ape species whose numbers are growing in the wild.” (*People are helping gorillas rebound through extreme conservation measures and collaboration between parks and locals.*)

### ONLINE RESOURCES

- Visit [www.scholastic.com/math](http://www.scholastic.com/math) to download a differentiated Common Core reproducible plus five more questions, and to watch an instructional video on mean, median, and mode.
- Learn more about endangered mountain gorillas: [www.worldwildlife.org/species/mountain-gorilla](http://www.worldwildlife.org/species/mountain-gorilla).

# ISSUE SKILLS REVIEW

For use with the October 27, 2014, issue of Scholastic *MATH* magazine.

**FILL IN THE LETTER OF THE CORRECT ANSWER, OR WRITE THE CORRECT ANSWER ON THE LINE.**

**1** The percent chance of one person surviving a zombie outbreak can be represented as the percent chance of killing one zombie ( $k$ ), written as a decimal, raised to the power of the total number of zombies ( $z$ ). Express this as a formula using the variables  $k$  and  $z$ .

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**2** Using your formula from question 1, calculate your percent chance of survival if there are 3 zombies in your vicinity and your percent chance of killing one is 20%, or 0.2. (Remember to convert your answer into a percent by multiplying by 100.)

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**3** A serving of fruit-flavored cereal contains 31 mg of artificial dye and 135 mg of sodium. What is the ratio of dye to sodium in one serving?

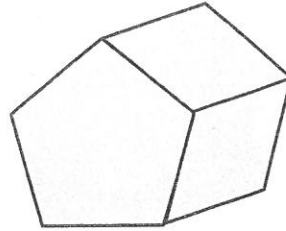
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**4** An 8-ounce serving of a berry-flavored drink contains 18.8 mg of artificial dye. If you drink 12 oz. of this drink, how much dye will you have consumed?

---

**5** What is the greatest common factor of 15 and 35?

---



**6** If you made a vertical slice through the shape shown above, how many sides would the resulting cross section have?

---

**7** If you made a horizontal cut through the shape shown above, how many sides would the resulting cross section have?

---

**8** Gorillas live in small social groups. In one group, the four female members weigh 197 pounds, 225 pounds, 198 pounds, and 180 pounds. What is the mean weight of these gorillas?

---

**9** The median of the number of baby gorillas named at Kwita Izina in the past three years is 18. Which of the following sets of values could represent the number of gorillas named during this time period?

- (A) 14, 12, 16    (C) 18, 20, 22  
(B) 20, 12, 18    (D) 17, 17, 20

**10** What is the greatest common factor of 28, 42, and 63?

---

# Problem of the Day

NAME \_\_\_\_\_

TRY ONE OF THESE QUICK EXERCISES EACH DAY AS A FAST, FUN WAY TO START YOUR MATH LESSON!

<p><b>DAY 1</b></p> <p>In a formula, a symbol that stands for different values is called a(n) _____.</p> <p>A. expression    C. exponent B. variable      D. constant</p>	<p><b>DAY 2</b></p> <p>Solve the following proportion: <math>\frac{16}{x} = \frac{5}{30}</math></p>	<p><b>DAY 3</b></p> <p>A hockey team plays six games and scores the following number of goals during each: 6, 1, 2, 3, 3, and 1. What is this data set's mode?</p>	<p><b>DAY 4</b></p> <p>Find the least common denominator for the two fractions <math>\frac{5}{12}</math> and <math>\frac{4}{9}</math>.</p>	<p><b>DAY 5</b></p> <p>Which of the following are not integers? -25, 17, <math>6\frac{1}{2}</math>, 3.29</p>
<p><b>DAY 6</b></p> <p>Find the area of a triangle whose base (<math>b</math>) equals 24 inches and height (<math>h</math>) equals 20 inches, using the formula <math>\text{Area} = \frac{1}{2}bh</math>.</p>	<p><b>DAY 7</b></p> <p>Solve the following equation: <math> 2x + 1  = 9</math></p>	<p><b>DAY 8</b></p> <p>If you sliced a cone perpendicular to its base in two different places, would the shapes of both cross sections look the same or different?</p>	<p><b>DAY 9</b></p> <p>One serving of cereal weighs 27 grams, and 44 percent of that weight is sugar. How many grams of sugar does the cereal contain, rounded to the nearest whole number?</p>	<p><b>DAY 10</b></p> <p>What is the slope of a line with the points (3, 5) and (5, 8)?</p>
<p><b>DAY 11</b></p> <p>A line bisects a right angle to form two angles. What are their measures?</p>	<p><b>DAY 12</b></p> <p>Write the fraction <math>\frac{20}{140}</math> in simplest terms.</p>	<p><b>DAY 13</b></p> <p>A zombie can travel a distance of 1 mile in 20 minutes. What is this rate in miles per hour?</p>	<p><b>DAY 14</b></p> <p>Would you use a circle, bar, or line graph to show the most popular Halloween costumes by the percent of people wearing them?</p>	<p><b>DAY 15</b></p> <p>Which of the following would you use to show the spread of numbers in a data set? A. mean      C. mode B. median    D. range</p>
<p><b>DAY 16</b></p> <p>In 1989, 620 mountain gorillas lived in the wild. That number has increased to 880 today. What has been the percent increase in their population? Round your answer.</p>	<p><b>DAY 17</b></p> <p>Write the following improper fraction as a mixed number in simplest form: <math>\frac{78}{4}</math></p>	<p><b>DAY 18</b></p> <p>A bite-sized candy contains 5 milligrams of artificial food coloring for every 7 pieces. If a person eats 28 pieces, how much dye would he or she consume?</p>	<p><b>DAY 19</b></p> <p>Disney's <i>Frozen</i> earned \$400 million at the U.S. box office. Write an equation to show how many people saw the film in theaters if the average ticket price was \$8.</p>	<p><b>DAY 20</b></p> <p>What is the greatest common factor of the numbers 36 and 60?</p>

## PAGES 2-3

### NUMBERS IN THE NEWS

#### A GREAT MIGRATION

10.33 miles

#### DRACULA'S CASTLE

264 million leu

#### LEGO'S LEADING LADIES

42.7 minifigures (or  $42\frac{2}{3}$  minifigures)

#### DO THE MATH!

31

## PAGE 4

### WHEN ZOMBIES ATTACK!

1a.  $N \times R$

1b. 5 people

2a. 23 new zombies

2b. 30 new zombies (and a total of 109 zombies after 2 hours)

3. 12 people

4. 81 people

5a. 4,800 zombies

5b. 20,736 new infections

5c. 22,464 humans

5d. No, because nearly half the total human population was turned into zombies when there were just 4,800 zombies, and now there are more than 20,000 zombies spreading the infection.

## PAGE 6

### DYE-LICIOUS CANDY?

1a. 36.4 mg to 32 g (ratio may be expressed any one of three ways)

1b. 51.2 mg

2a. 32.8 mg

2b. 47.5 g to 32.8 mg (ratio may be expressed any one of three ways)

3a. 12.2 mg

3b. 19 g

3c. About 5 teaspoons

4a. 6.6 mg

4b. Starburst

5a. 17.6 mg

5b. Yes, you would have consumed 66.3 mg.

## PAGE 8

### BUILDING BIG HEROES

1a. A square

1b. A triangle

1c. A trapezoid

2. A, B, C

3. A, B

4. A circle

5. An oval or ellipse

## PAGE 12

### TRICK OR TREAT?

1. C

2. D

3. C

4. D

5. B

6. B

7. 43%

8. About 134 people

9. About 741 people

10. \$54.82

## PAGE 14

### NAME THAT GORILLA

1. 19

2. 19.5

3. 20

4. 18

5a. Answers will vary, but estimates should be in the high teens (16-19).

5b. 18

5c. Answers will vary based on students' original estimates.

## BACK PAGE

### HOCKEY'S YOUNGEST STAR

1. B

2. A

3. A

4. A

5. B

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

# ANSWERS

## TG PAGE 5

### SKILLS REVIEW

1.  $k^z$
2. 0.8%
3. 31 mg to 135 mg (ratio may be expressed any one of three ways)
4. 28.2 mg
5. 5
6. Five sides
7. Four sides
8. 200 pounds
9. B
10. 7

## TG PAGE 6

### PROBLEM OF THE DAY

1. B
2.  $x = 96$
3. 1 and 3
4. 36
5.  $6\frac{1}{2}$  and 3.29
6. 240 inches
7.  $x = 4, -5$
8. Same
9. 12 g
10.  $\frac{3}{2}$
11. 45 degrees and 45 degrees.
12.  $\frac{1}{7}$

13. 3 miles per hour
14. Circle graph
15. Range
16. 42%
17.  $19\frac{1}{2}$
18. 20 mg
19.  $\frac{400,000,000}{8} = x$
20. 12

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

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## BIGGER THAN WORDS

A LIVE WEBCAST WITH USHER

THURS, NOV 6, 2014  
1:00 p.m. ET / 10:00 a.m. PT

Join superstar Usher for a live performance and special program where students will learn how to take informed action, become reading advocates, and help make a difference in their schools, communities, and the world.

**SIGN UP TODAY!**  
[scholastic.com/usherwebcast](http://scholastic.com/usherwebcast)