

Real-World

Problem Solving

Graphic Novels



Glencoe

New York, New York
Columbus, Ohio
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BOOK

2

Illustrators: *Greg Lawhun, Wayno, Michael McParlane, Mark Ricketts, Shane McDermott, Joel Priddy, Scott Rolfs, Pat Lewis, Jim Callahan*



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Glencoe/McGraw-Hill
8787 Orion Place
Columbus, OH 43240-4027

ISBN: 978-0-07-878294-7
MHID: 0-07-878294-5

Printed in the United States of America.

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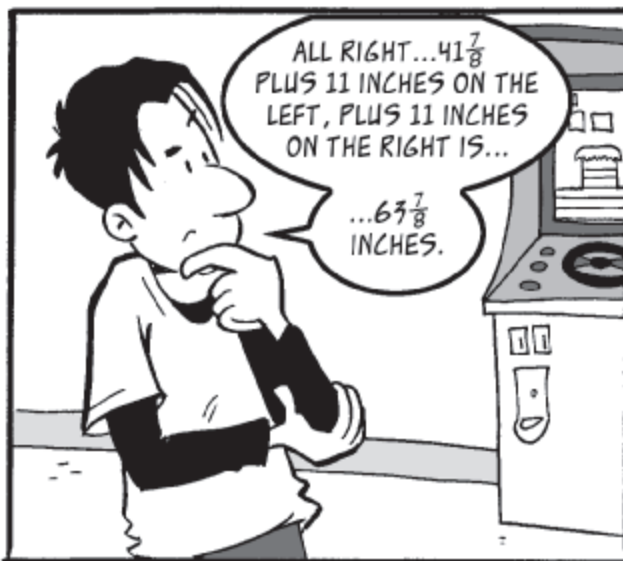
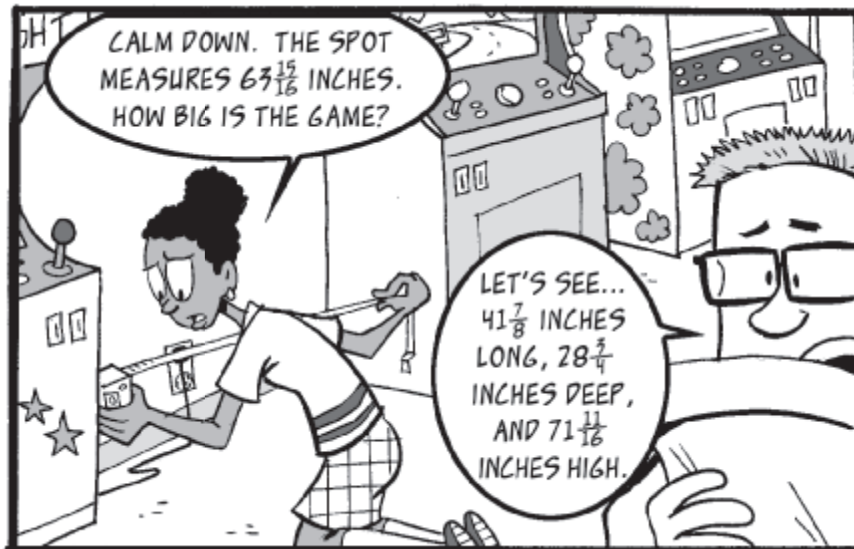
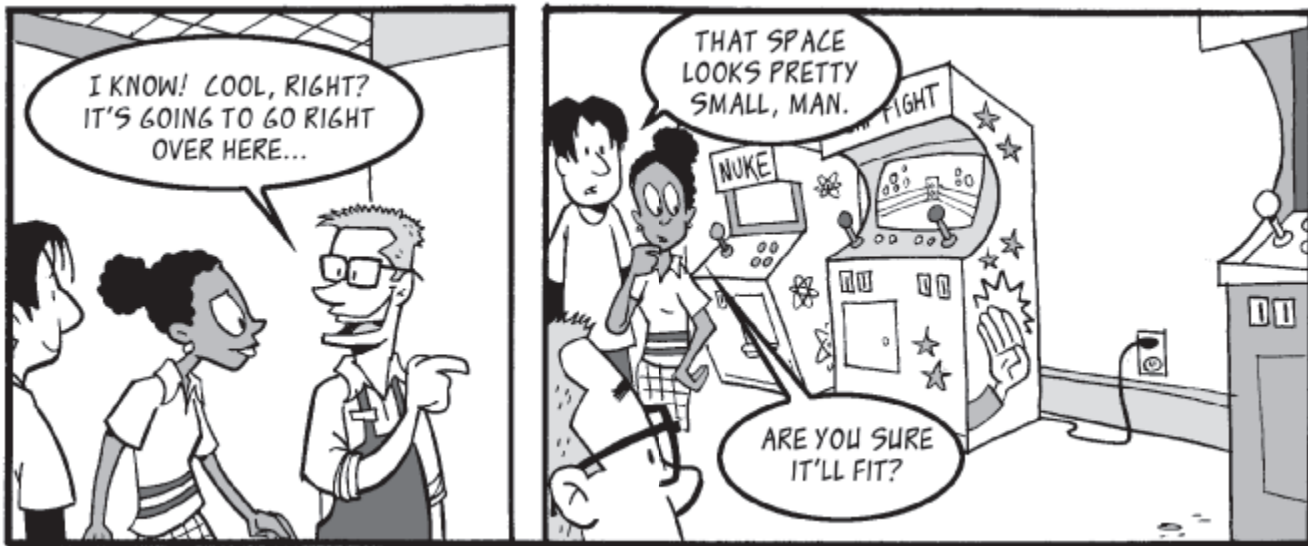
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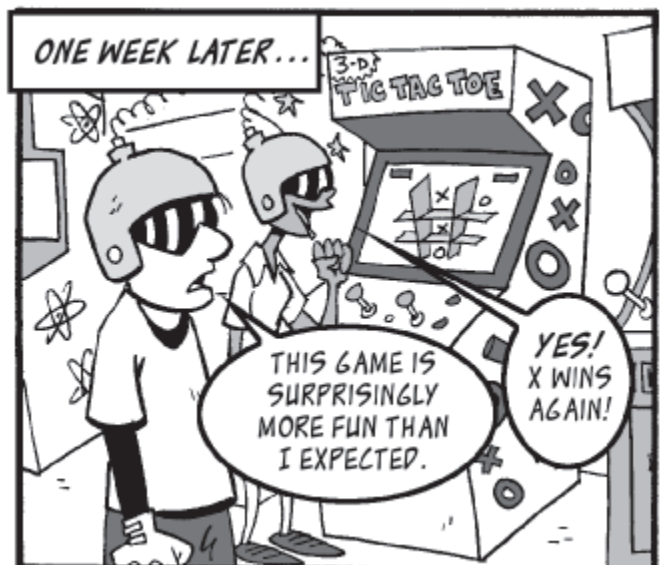
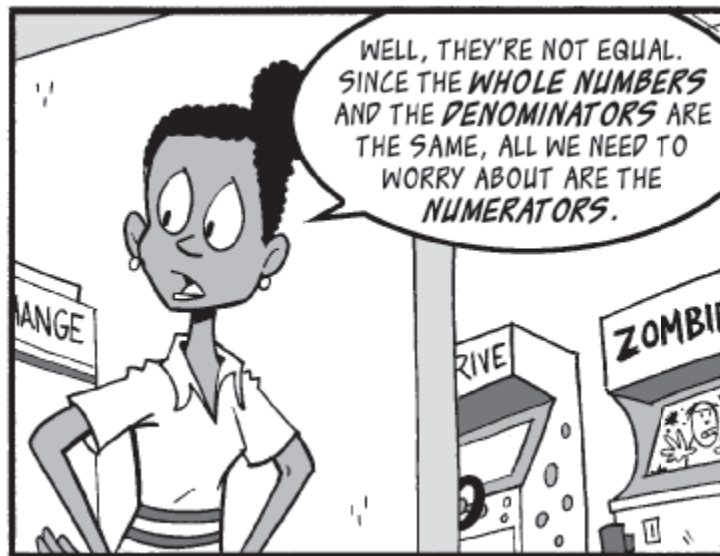
Number Sense 1: Compare Rational Numbers



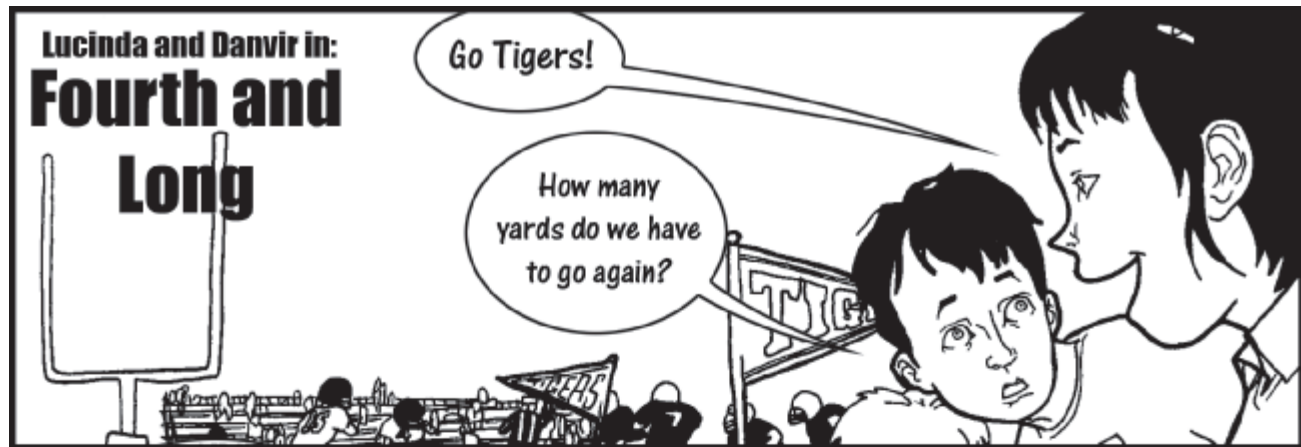
Number Sense 1: Compare Rational Numbers (continued)



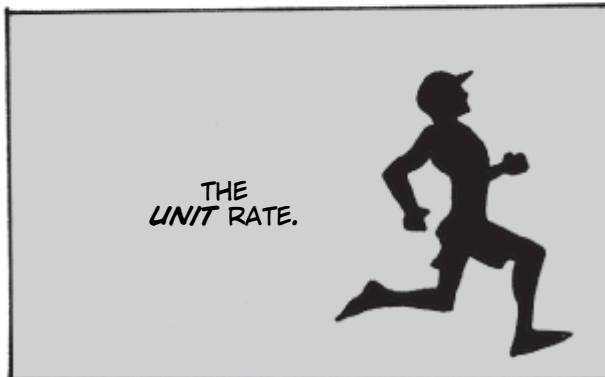
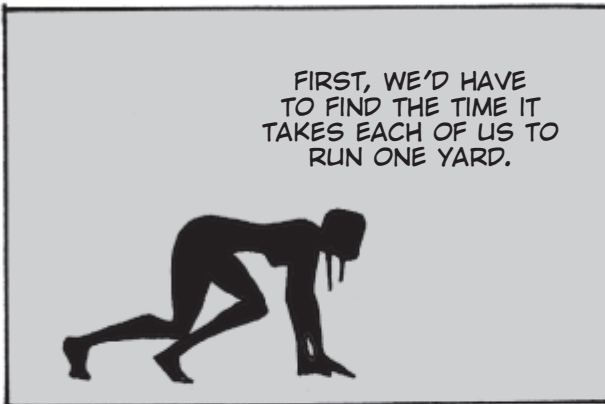
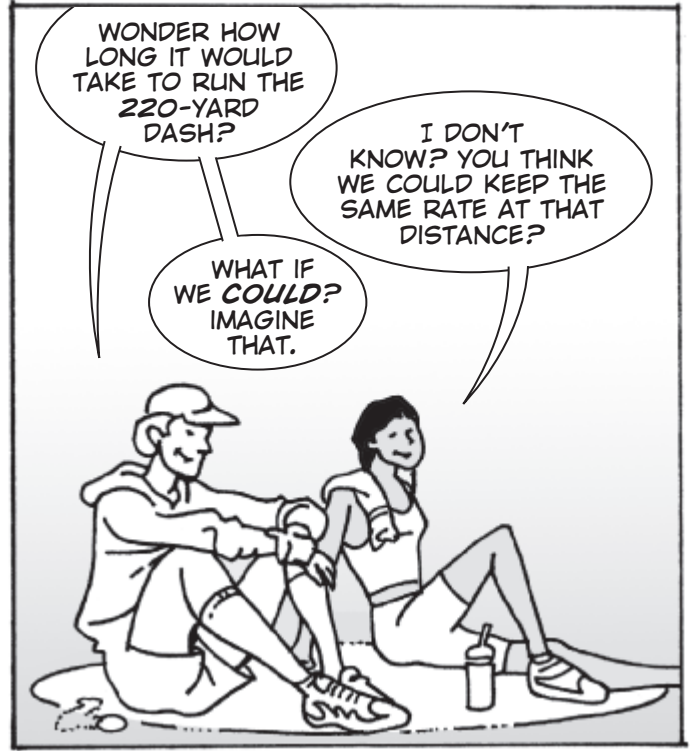
Number Sense 1: Compare Rational Numbers (continued)



Number Sense 2: Add Integers



TRACKING TIME WITH CANDIDA AND MALCOM

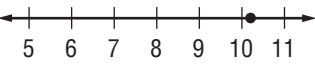
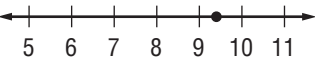

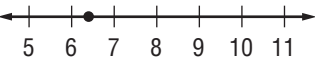


PRACTICE

On Your Own...

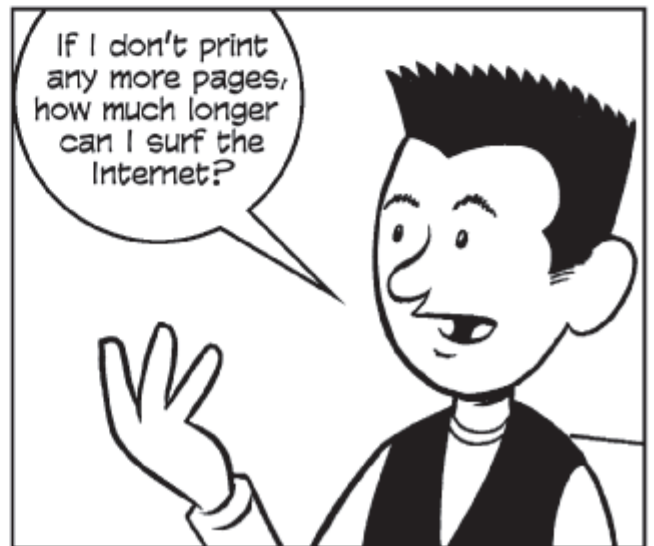
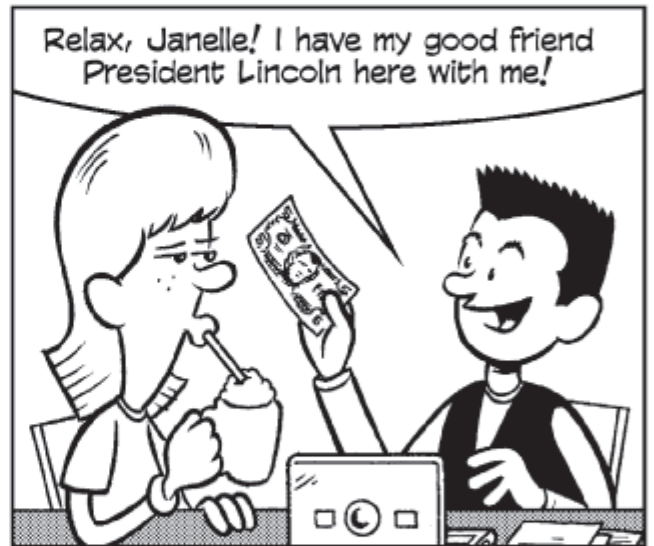
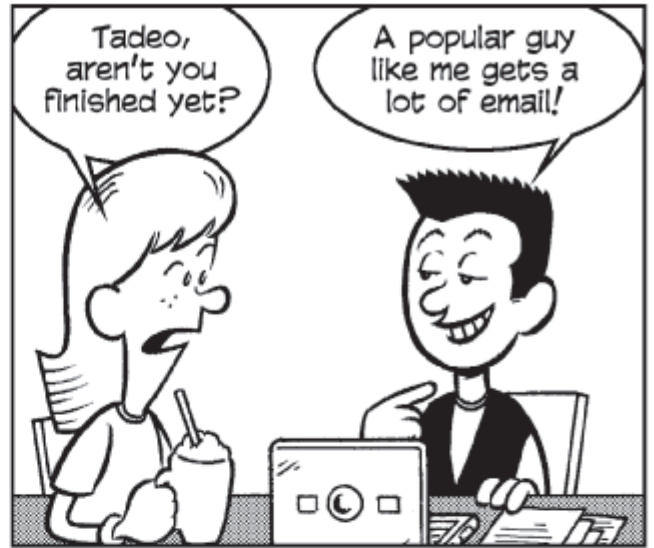
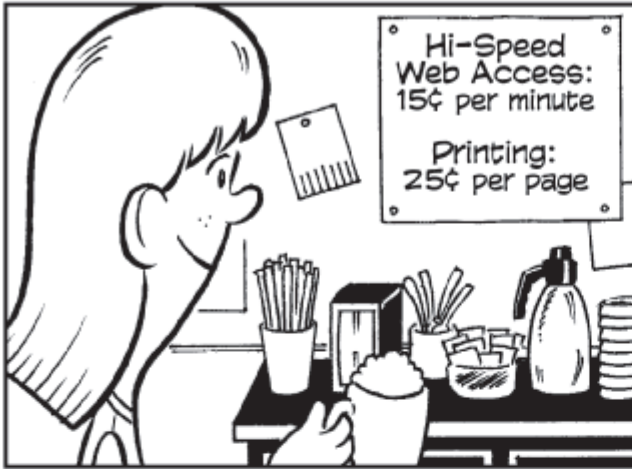
Number Sense

Read each question. Then, fill in the correct answer on the answer document provided by your teacher or on a sheet of paper.

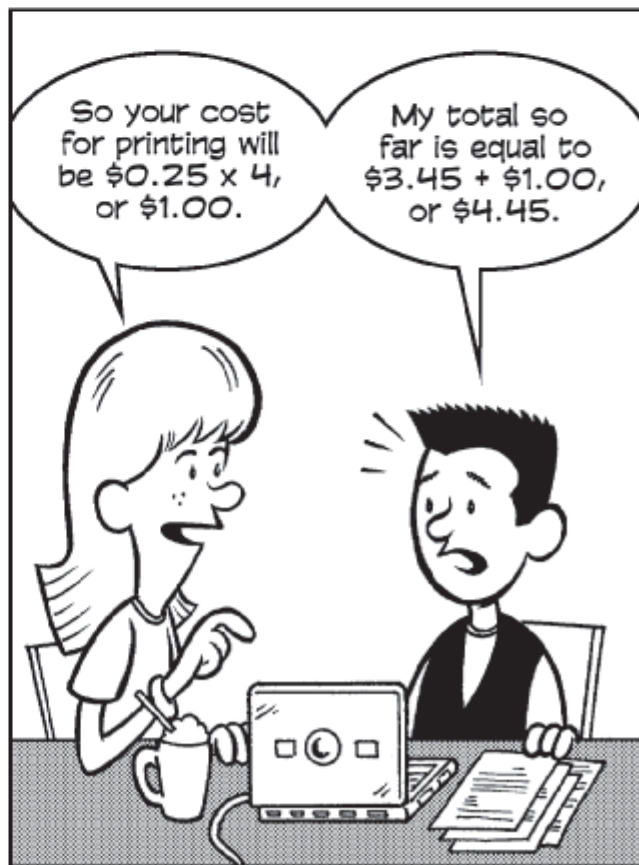
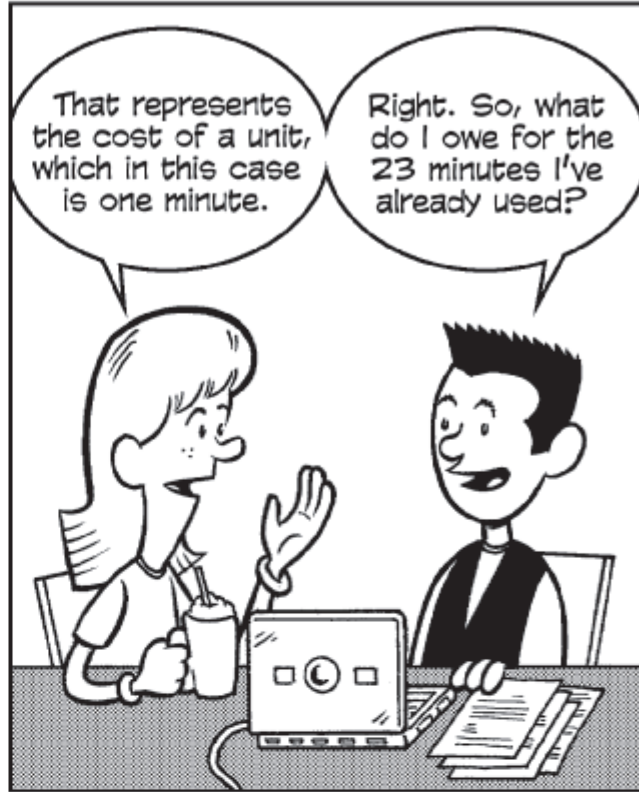
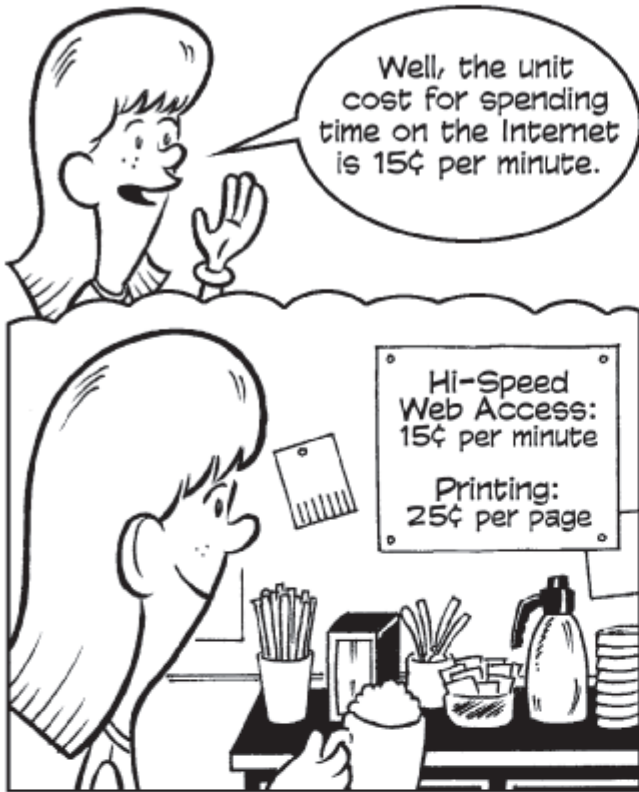
1. Order the set of integers below from least to greatest.
{24, -8, -12, 11, -2}
- A {11, 24, -2, -8, -12}
B {24, 11, -2, -8, -12}
C {-2, -8, -12, 11, 24}
D {-12, -8, -2, 11, 24}
2. The world's smallest bird is the bee hummingbird, which is 2.2 inches long. Write this length as a fraction.
- F $2\frac{1}{50}$ in.
G $2\frac{1}{5}$ in.
H $2\frac{11}{50}$ in.
J $2\frac{1}{2}$ in.
3. Which number line below best represents $\sqrt{89}$?
- A 
B 
C 
D 
4. How many $3\frac{1}{4}$ -inch pieces of ribbon can be cut from a spool containing $19\frac{1}{2}$ inches of ribbon?
- F 3 H 6
G 4 J 8
5. A snail travels at a rate of 0.03 miles per hour. At this rate, how far could a snail travel in 1.5 hours?
- A 0.045 miles
B 0.45 miles
C 4.5 miles
D 45 miles
6. A group of hikers hiked from Logan's Lake (elevation -25 feet) to Pete's Peak (elevation 432 feet). What is the difference between these elevations?
- F -432 feet H 407 feet
G -407 feet J 457 feet
7. Annie paid \$7.98 for a six-pack of bottled iced tea. What is the unit price for the iced tea?
- A \$1.15 per bottle
B \$1.33 per bottle
C \$1.43 per bottle
D \$1.82 per bottle
8. Evaluate the expression below.
- $$4 + 2(6 - 1) + 5 \cdot 3^2$$
- F 59 H 45
G 57 J 3

Algebraic Thinking 1: Unit Costs

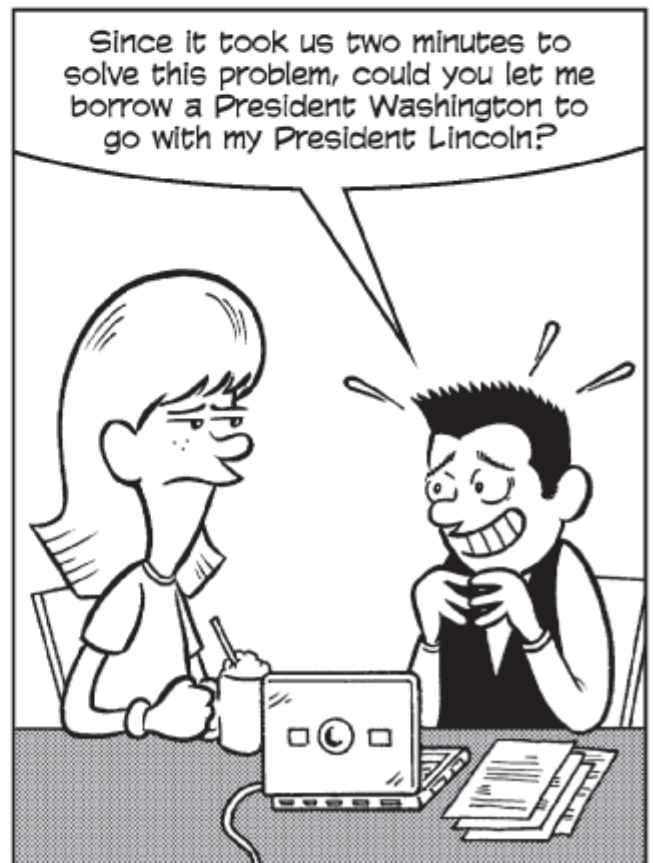
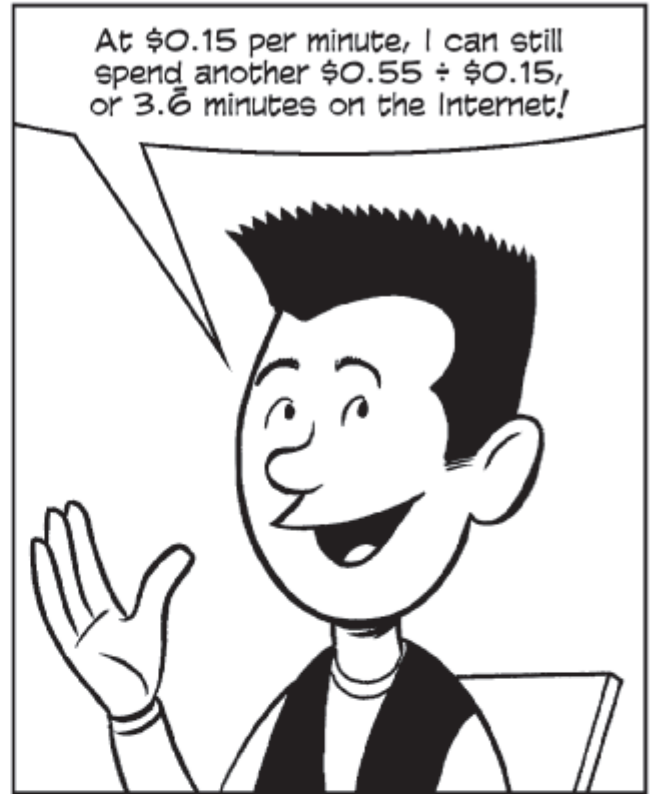
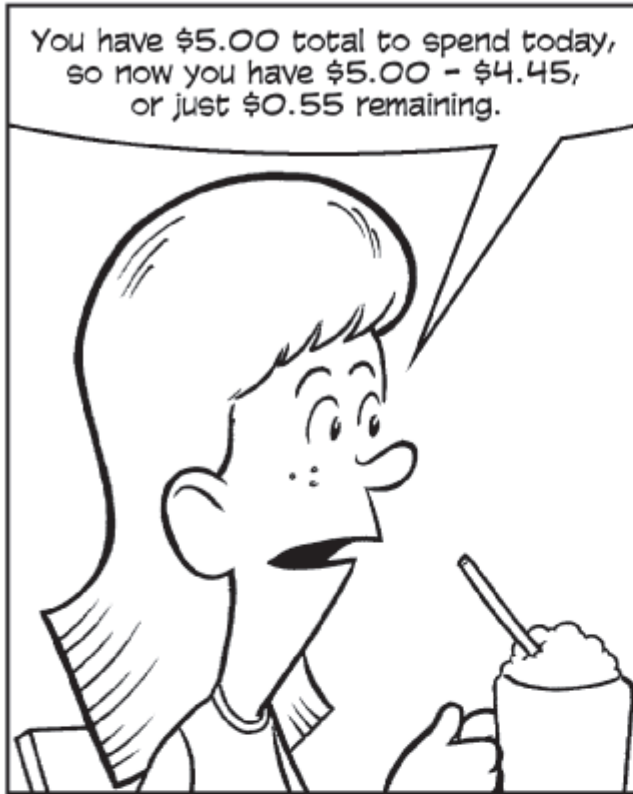
Janelle and Tadeo in: MISTER LINCOLN GOES SURFING!



Algebraic Thinking 1: Unit Costs (continued)



Algebraic Thinking 1: Unit Costs (continued)



Algebraic Thinking 2: Percent

ANNIKA, TOMÁS, AND BASHIRA IN WITS FOR TIPS

THAT LUNCH WAS AWESOME, BASHIRA.

GREAT IDEA TO COME TO YOUR PARENTS' RESTAURANT.

THANKS, GUYS...

I'LL TELL THEM THAT ANNIKA AND TOMÁS APPROVE.

LET'S ESTIMATE THE TOTAL COST OF THE MEAL BEFORE WE GET THE CHECK.

I HAD CHICKEN SHWARMA AND A SODA. THAT COSTS \$7.15.

FALAFEL AND A DRINK IS \$6.15.

TABOULI AND JUICE COMES TO \$5.65.

THAT'S A TOTAL OF \$18.95 WITHOUT A TIP.

NOW, WE NEED TO ESTIMATE A 20% TIP.

HERE COMES THE CHECK.

HERE'S YOUR CHECK. HAVE A PLEASANT AFTERNOON.

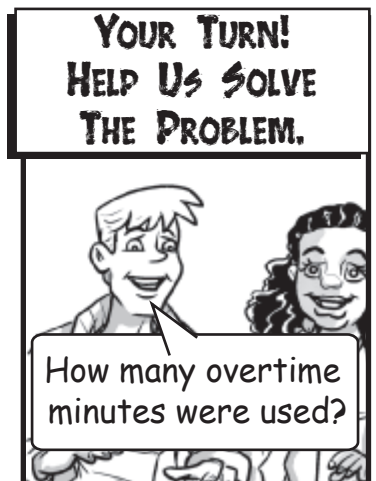
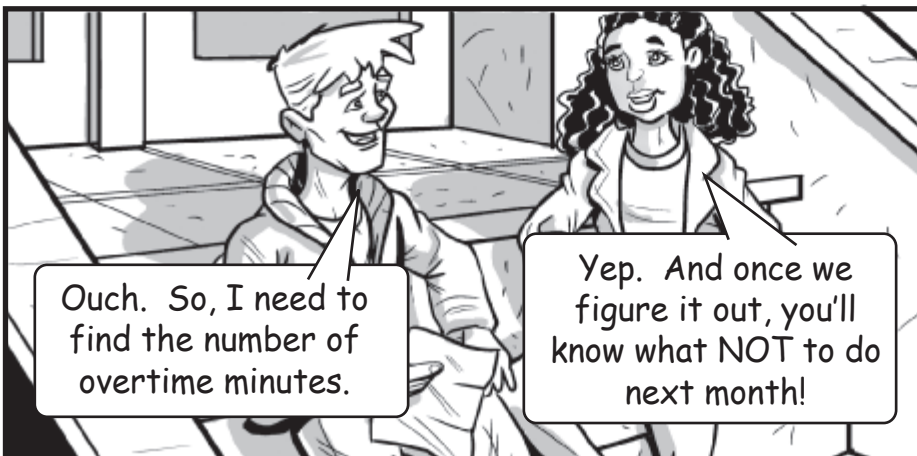
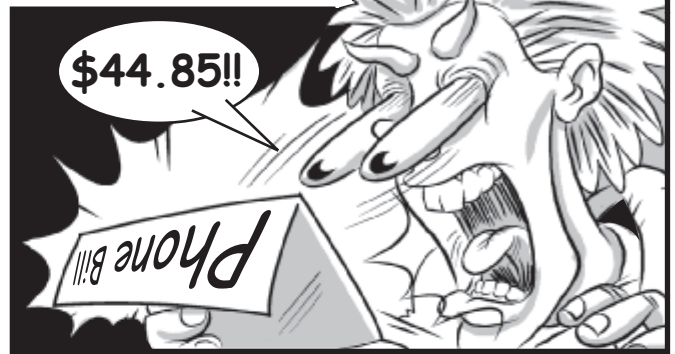
IS \$3.00 ENOUGH FOR THE TIP?

SHOULDN'T IT BE MORE LIKE \$5.00?

HOW DO WE FIGURE THIS OUT?

YOUR TURN!
HELP TOMÁS, BASHIRA, AND ANNIKA ESTIMATE A 20% TIP.

Algebraic Thinking 3: Write Equations



PRACTICE

On Your Own...

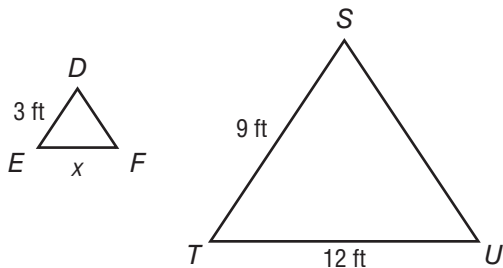
Algebraic Thinking

Read each question. Then, fill in the correct answer on the answer document provided by your teacher or on a sheet of paper.

1. Emma's current allowance is \$12 per week. Each week, she saves 15% of her allowance to deposit into her savings account. How much does she have left each week for spending money?

A \$11.82 C \$1.80
B \$10.20 D \$0.18

2. Triangle DEF is similar to triangle STU . What is the value of x ?



F 4 ft H 8 ft
G 6 ft J 10 ft

3. Which problem situation represents the equation $g = 2(b) + 4$?

A Brad scored b points. Gabriel scored 2 more than 4 times as many points as Brad. How many points g did Gabriel score?
B Brad scored b points. Gabriel scored 4 more than twice as many points as Brad. How many points g did Gabriel score?
C Gabriel scored g points. Brad scored 4 more points than Gabriel. How many points b did Brad score?
D Gabriel scored g points. Brad scored 2 times as many points as Gabriel. How many points b did Brad score?

4. The Empire State Building is 1,250 feet tall. The Sears Tower is 204 feet taller than the Empire State Building. Which equation could be used to find h , the height in feet of the Sears Tower?

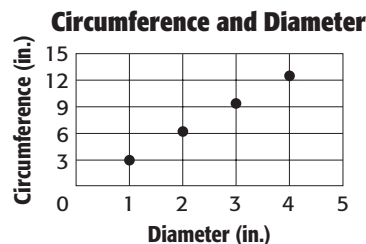
F $1,250 = 204h$
G $204 = 1,250 + h$
H $1,250 = h + 204$
J $h = 1,250 + 204$

5. Let n represent a term's position in a sequence. Which algebraic expression can be used to find the n th term in the sequence below?

1, 3, 5, 7, 9, ...

A $n + 1$ C $n + 2$
B $2n - 1$ D $2n + 1$

6. The graph shows the relationship between the diameter d of a circle and its circumference C .



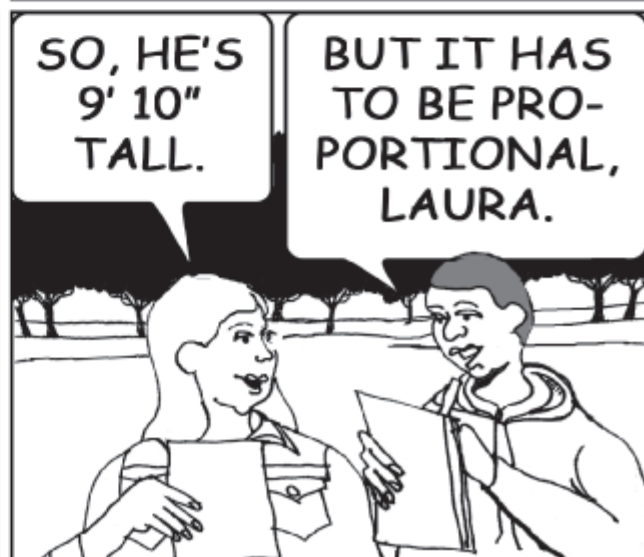
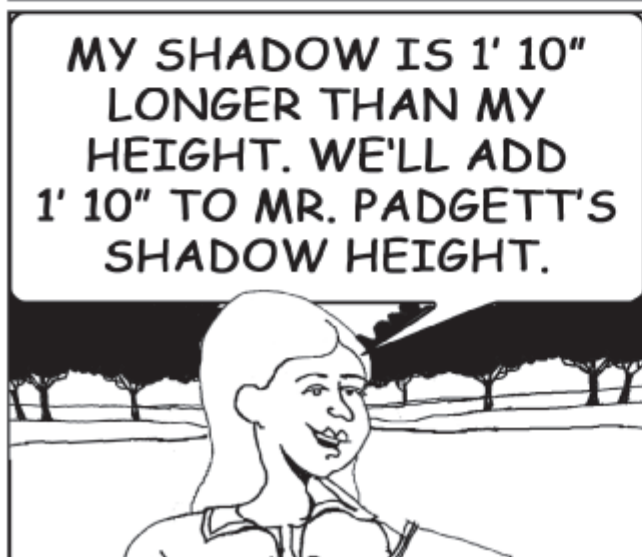
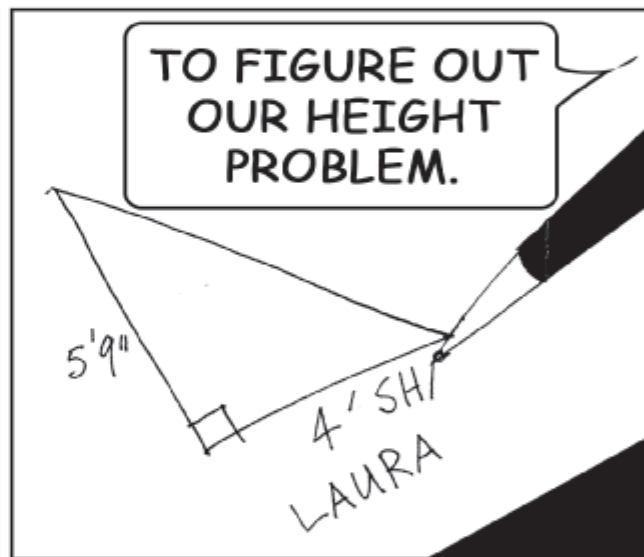
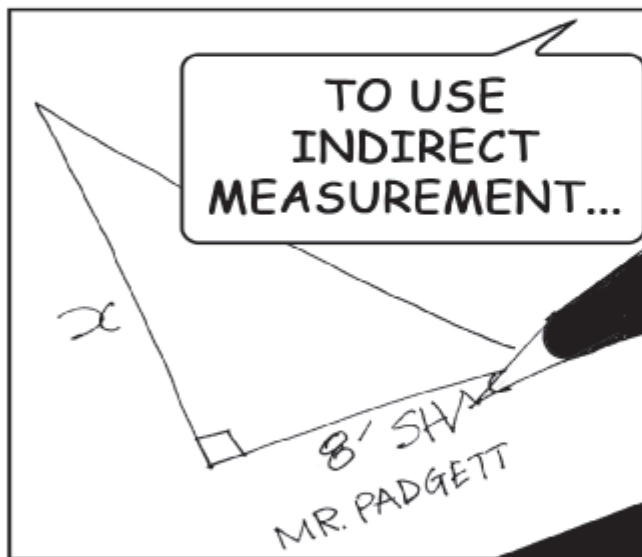
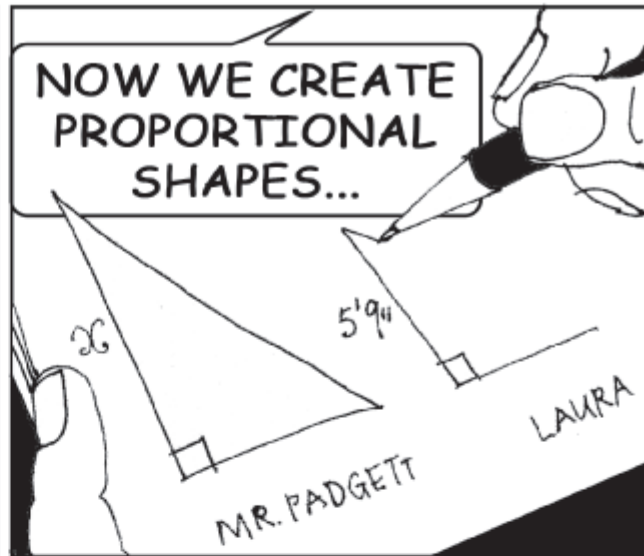
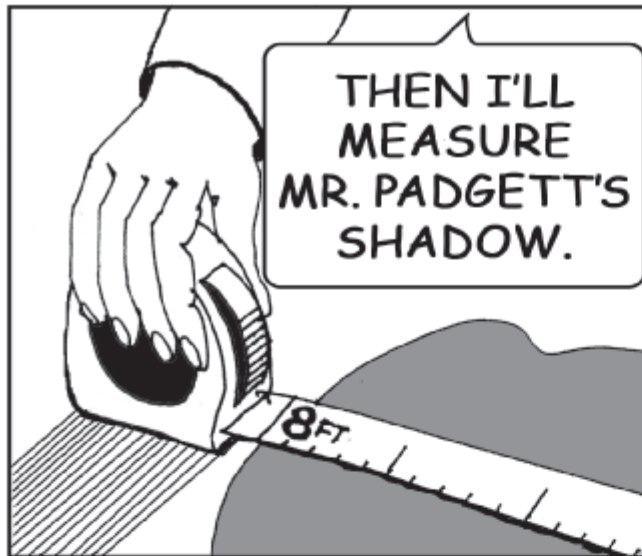
Which equation best represents the data in the graph?

F $C = \pi + d$
G $C = \pi - d$
H $C = \pi d$
J $C = \pi \div d$

Geometry 1: Similar Figures




Geometry 1: Similar Figures (continued)



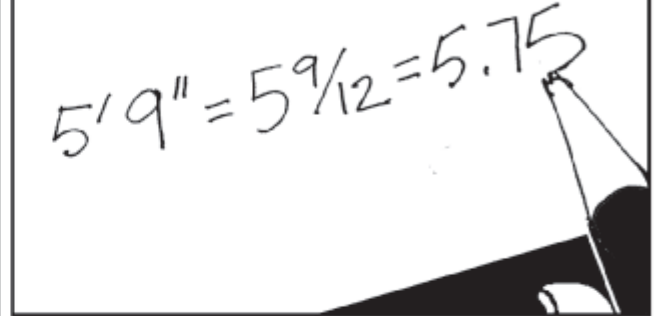
Geometry 1: Similar Figures (continued)

FIRST, WE CONVERT THE MEASUREMENTS TO DECIMALS.

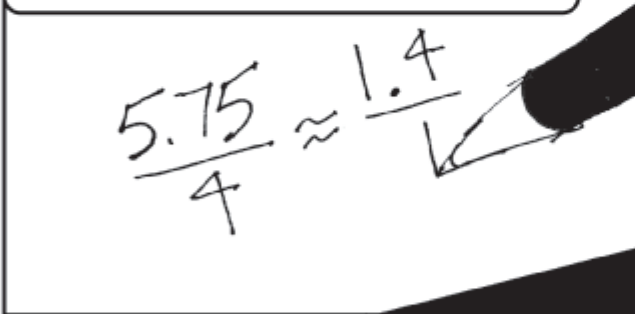
SO WE'RE USING THE SAME UNITS.



LET'S CONVERT 5' 9" TO A DECIMAL, 5.75 FEET.

$$5'9" = 5\frac{9}{12} = 5.75$$


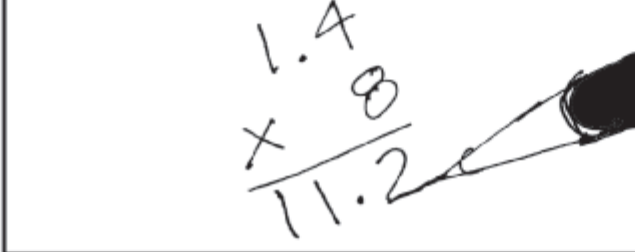
DIVIDE THE HEIGHT BY THE LENGTH OF THE SHADOW TO FIND THE UNIT RATE.

$$\frac{5.75}{4} \approx 1.4$$


SO, EACH FOOT OF SHADOW CORRESPONDS TO ABOUT 1.4 FEET IN HEIGHT.



MULTIPLYING THE LENGTH OF THE STATUE'S SHADOW BY 1.4 GIVES A RESULT OF 11.2 FEET.

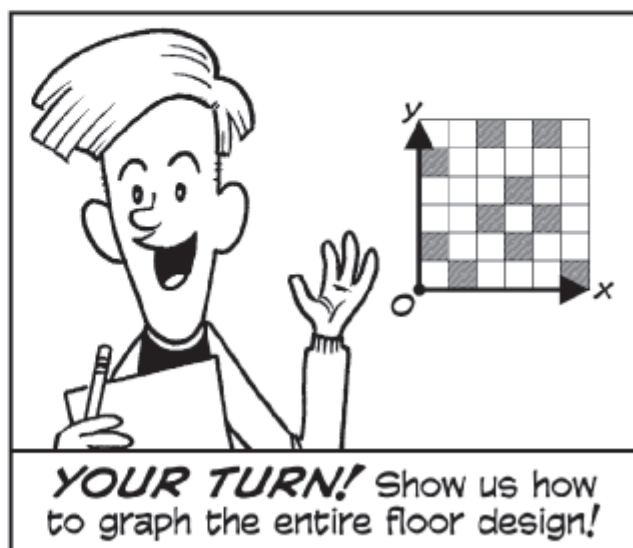
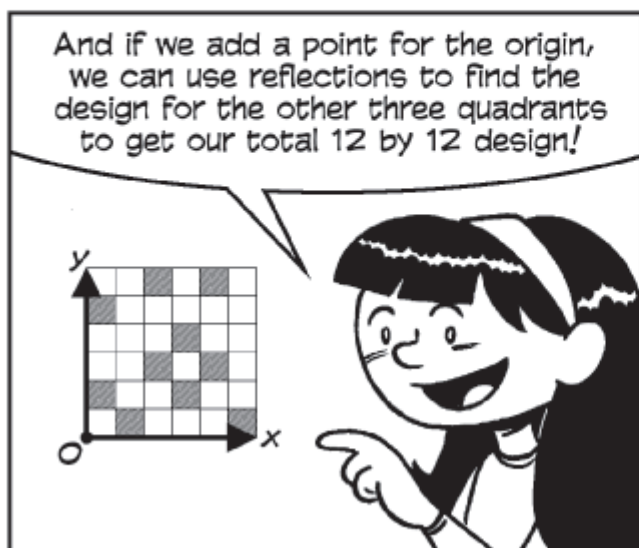
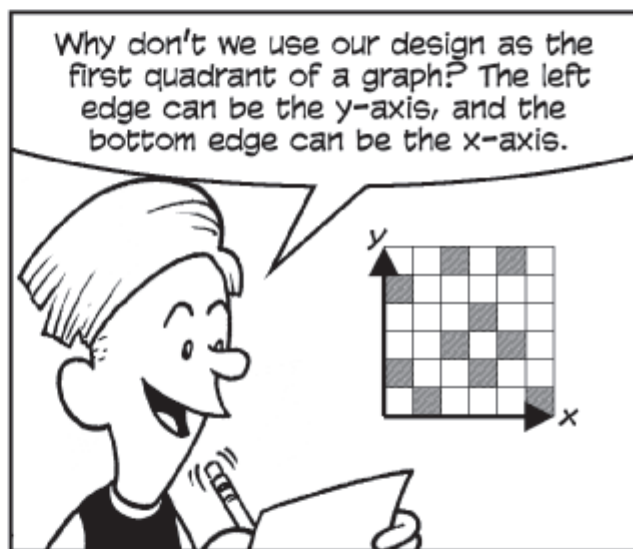
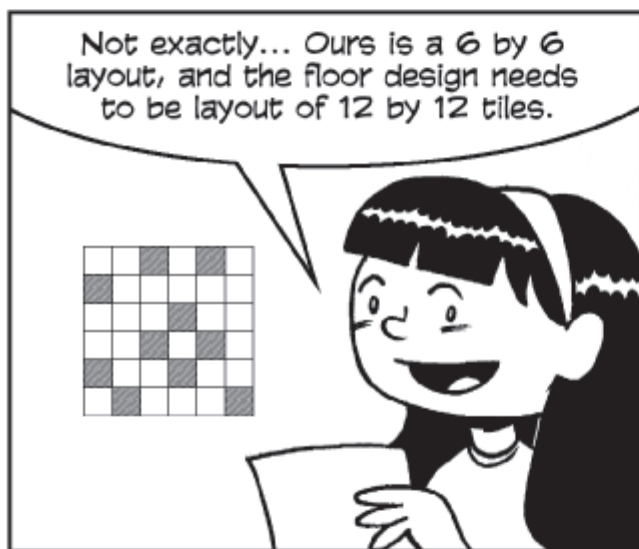
$$\begin{array}{r} 1.4 \\ \times 8 \\ \hline 11.2 \end{array}$$


THE RESULT IS ALSO AN ICE CREAM SUNDAE, LAURA.

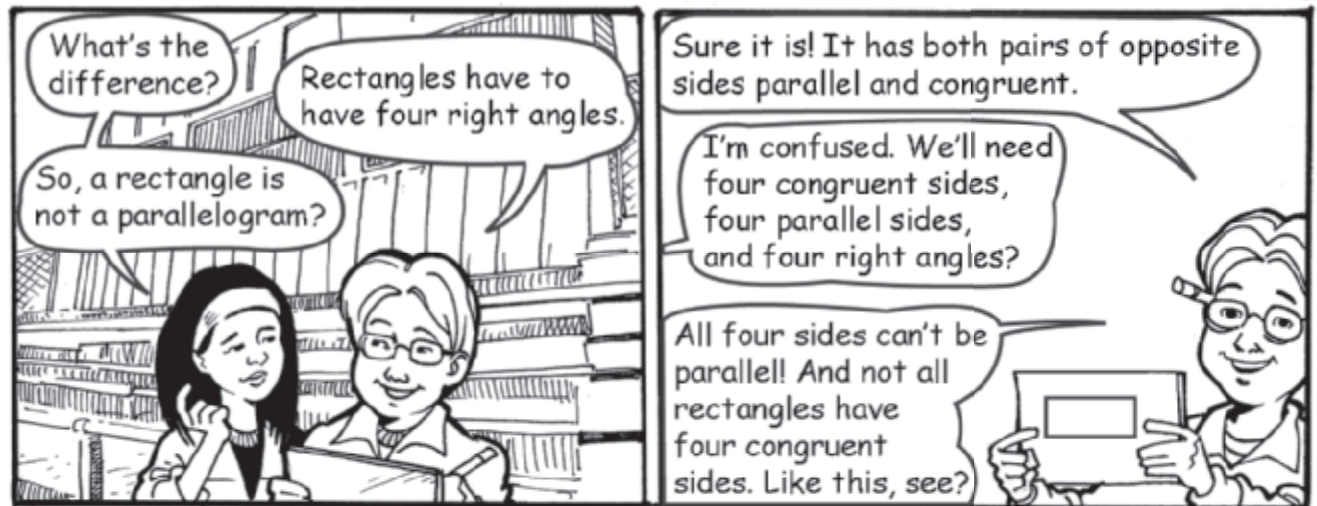


Geometry 2: Reflections

Emilia & Patrick in... **FLOOR SHOW!**



Geometry 3: Quadrilaterals



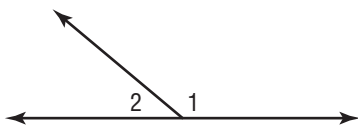
PRACTICE

On Your Own...

Geometry

Read each question. Then, fill in the correct answer on the answer document provided by your teacher or on a sheet of paper.

1. Which of the following statements is true concerning $\angle 1$ and $\angle 2$ shown?

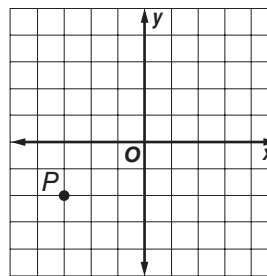


- A Both angles are acute.
B Both angles are straight.
C $\angle 1$ and $\angle 2$ are complementary angles.
D $\angle 1$ and $\angle 2$ are supplementary angles.
2. If the point $(3, -4)$ is reflected across the x -axis, what will be the coordinates of the point after the reflection?
- F $(-3, 4)$
G $(3, 4)$
H $(-3, -4)$
J $(0, 0)$
3. Triangle XYZ has $m\angle X = 108^\circ$ and $m\angle Y = 22^\circ$. What is $m\angle Z$?
- A 50°
B 68°
C 72°
D 130°

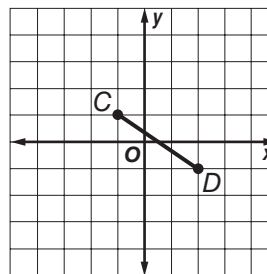
4. A quadrilateral with four congruent sides, opposite sides parallel, and opposite angles congruent is best classified by which of the following terms?

F parallelogram
G rectangle
H rhombus
J trapezoid

5. Which ordered pair names point P ?

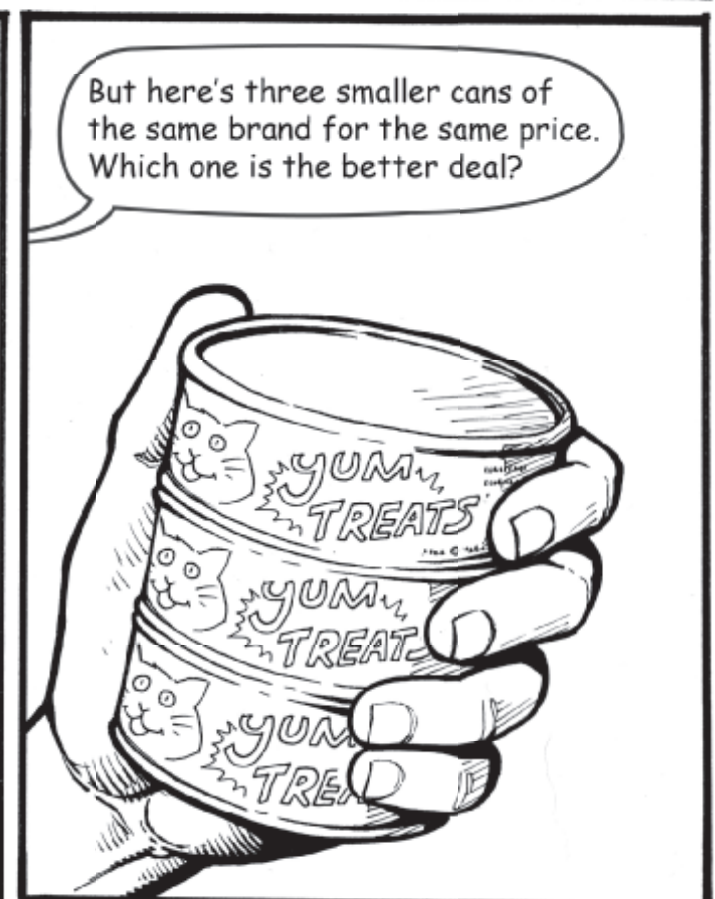


- A $(-2, -3)$ C $(-3, -2)$
B $(-3, 2)$ D $(2, -3)$
6. A triangle with no congruent sides and exactly one right angle is best classified by which of the following terms?
- F scalene and right
G scalene and obtuse
H isosceles and right
J equilateral and acute
7. If segment CD is translated 2 units right and 4 units down, what will be the coordinates of point C and point D in their new position?

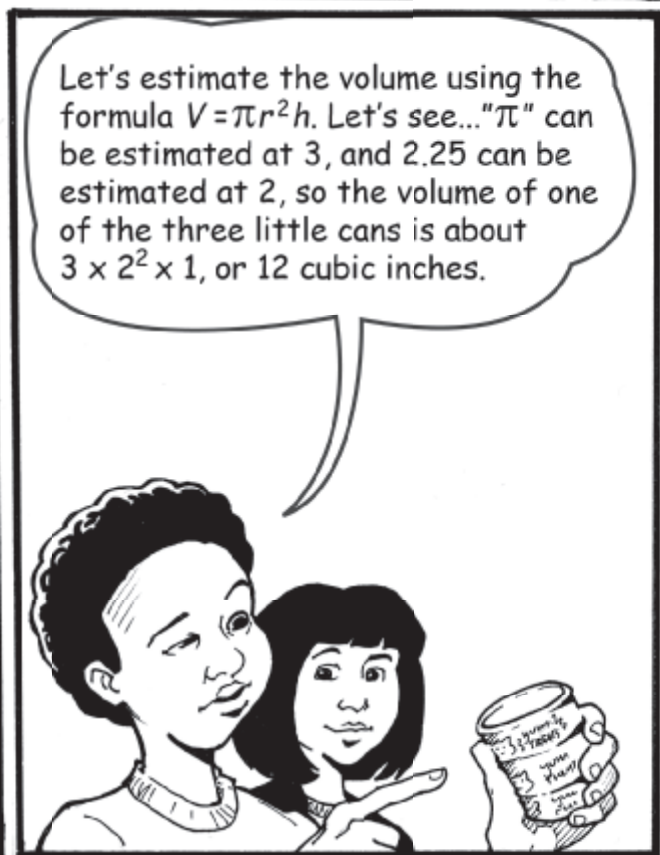


- A $C'(-3, -3), D'(0, -5)$
B $C'(1, -3), D'(4, -5)$
C $C'(1, 5), D'(4, 3)$
D $C'(5, 1), D'(3, 4)$

Measurement 1: Volume of Cylinders



Measurement 1: Volume of Cylinders (continued)



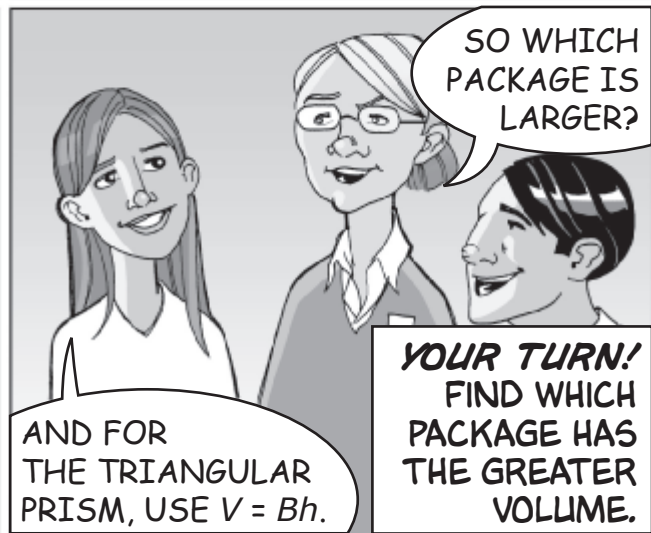
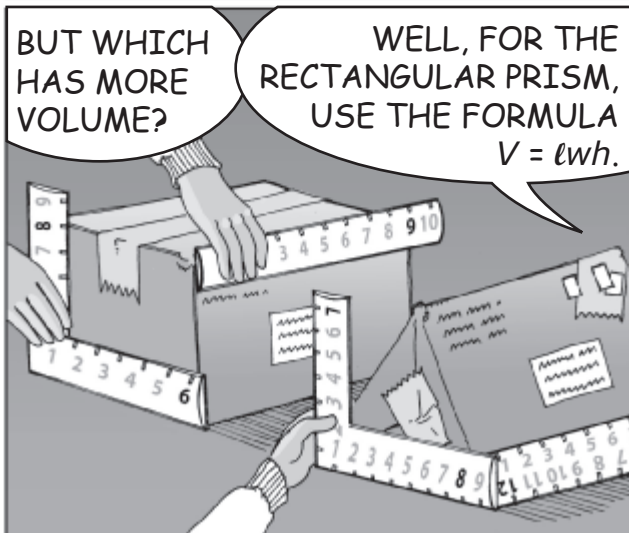
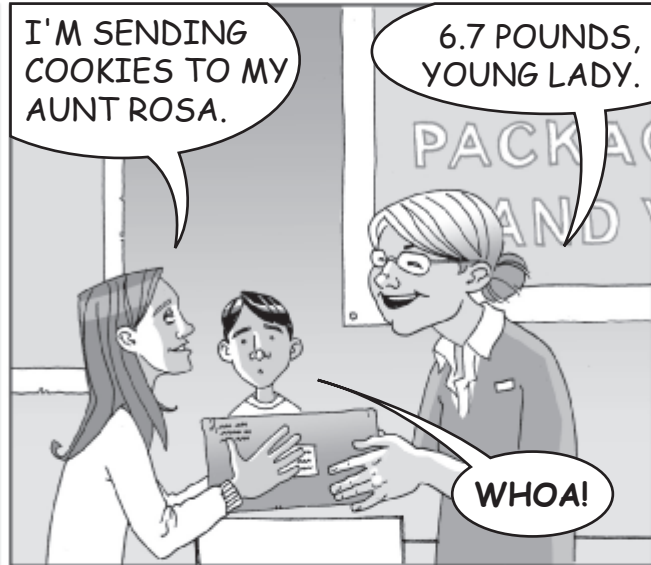
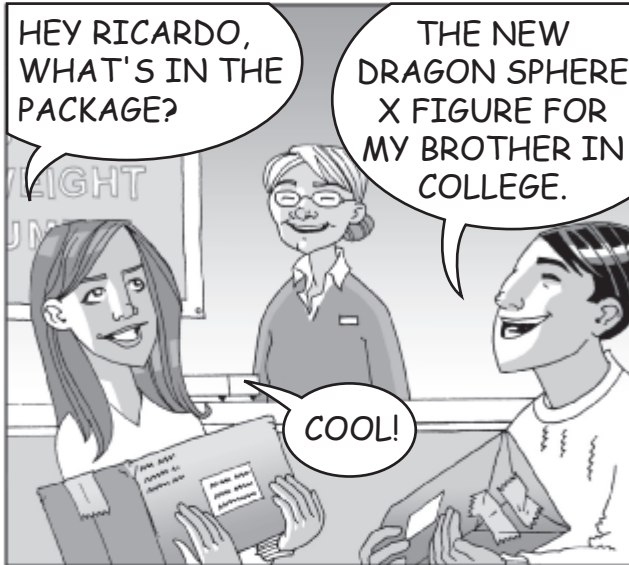
Measurement 1: Volume of Cylinders (continued)



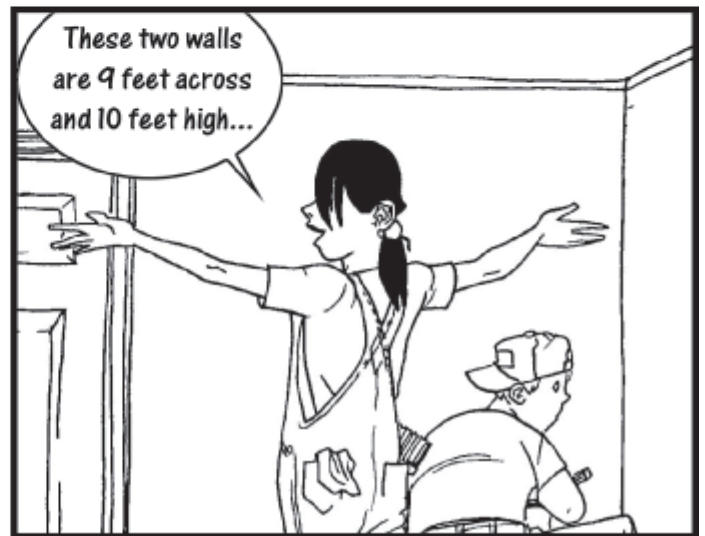
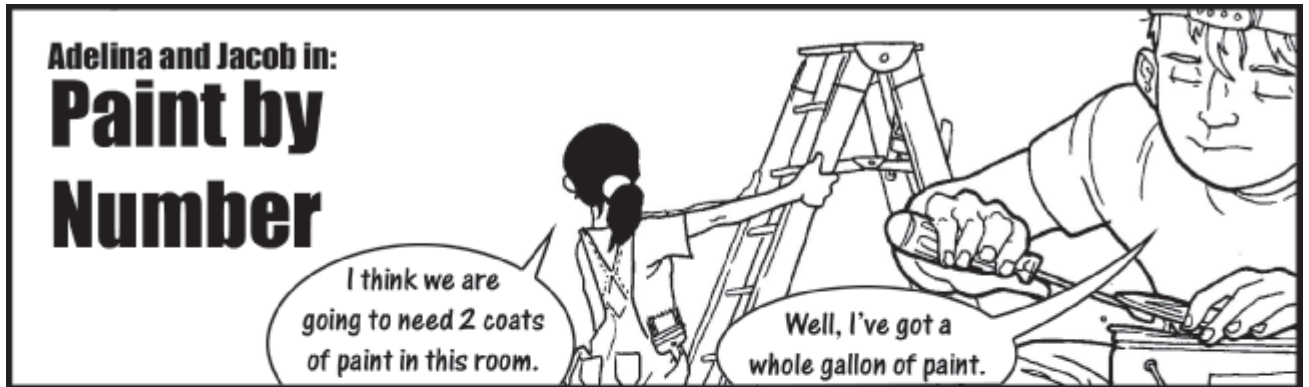
Measurement 2: Volume of Prisms and Cylinders

MARTA AND RICARDO IN:

SHIPPING SHENANIGANS



Measurement 3: Area of Polygons



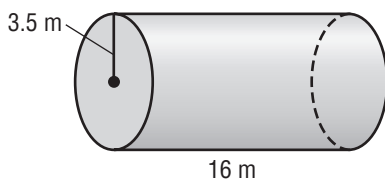
PRACTICE

On Your Own...

Measurement

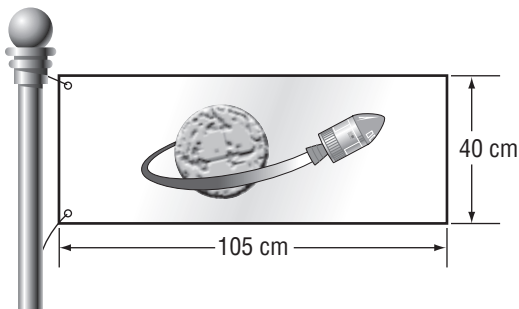
Read each question. Then, fill in the correct answer on the answer document provided by your teacher or on a sheet of paper.

1. Which equation can be used to find the volume of the solid?



- A $V = \pi(8)^2(3.5)$
B $V = \pi(16)^2(3.5)$
C $V = \pi(3.5)^2(16)$
D $V = \pi(7)^2(16)$

2. Find the area of the flag.

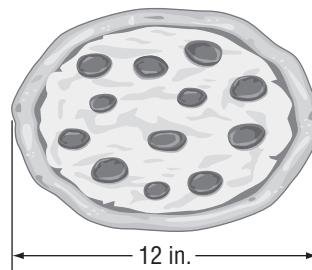


- F 290 cm^2 H $4,200 \text{ cm}^2$
G 420 cm^2 J $4,200 \text{ cm}^3$

3. A suitcase is in the shape of a rectangular prism. It is 25 inches long, 18 inches wide, and 8 inches deep. Which equation should be used to find the volume of the suitcase?

- A $V = \left(\frac{1}{2} \cdot 18 \cdot 8\right)25$
B $V = \left(\frac{1}{2} \cdot 25 \cdot 18\right)8$
C $V = 25 \cdot 18 \cdot 8$
D $V = 8^2 \cdot 18 \cdot 25$

4. Find the circumference of the pizza. Use 3.14 for π .

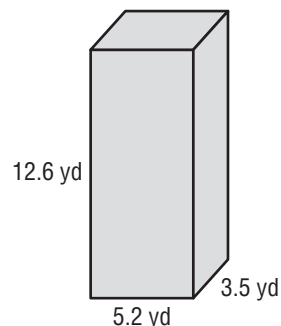


- F 18.84 in. H 113.0 in.
G 37.68 in. J 452.2 in.

5. Which of the following would give the best estimate for the volume of a can of juice that is 12.9 centimeters tall with a diameter of 6.08 centimeters?

- A $V = \pi(3^2)(13)$ C $V = \pi(6^2)(6)$
B $V = \pi(6^2)(13)$ D $V = \pi(13^2)(6)$

6. Find the volume of the prism below. Round to the nearest tenth.



- F 21.3 yd^3
G 83.7 yd^3
H 114.7 yd^3
J 229.3 yd^3

LUCKY COUNT

with Awenita and Paz



HERE'S HOW IT WORKS--I THROW THREE COINS IN THE AIR AND IF AT LEAST TWO TURN UP TAILS...

I WIN, AND I GET TO DECIDE WHAT WE DO TODAY.

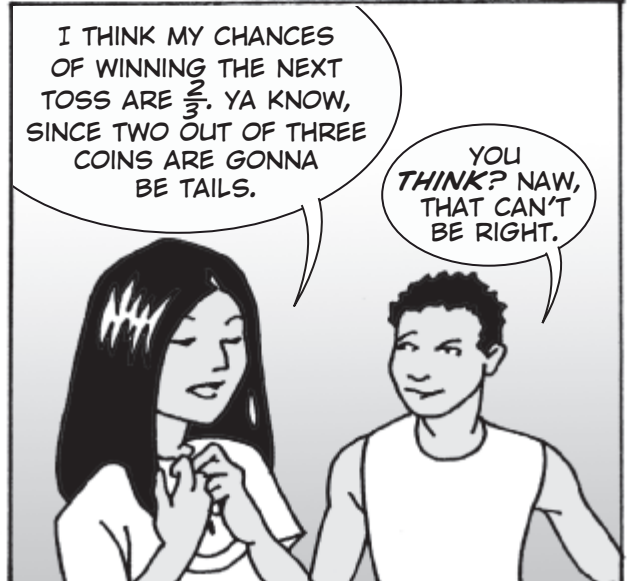


YUP, THAT'S RIGHT, BUT REMEMBER, IF I WIN, WE GO TO THE BALL GAME AND YOU HAVE TO WEAR THE MULTI-COLORED CLOWN WIG.

O-KAAAY, I GUESS, BUT LET'S DO A PRACTICE TOSS FIRST.



HA! ONLY ONE OF THE COINS IS TAILS. LOOKS LIKE I WON THE PRACTICE TOSS.



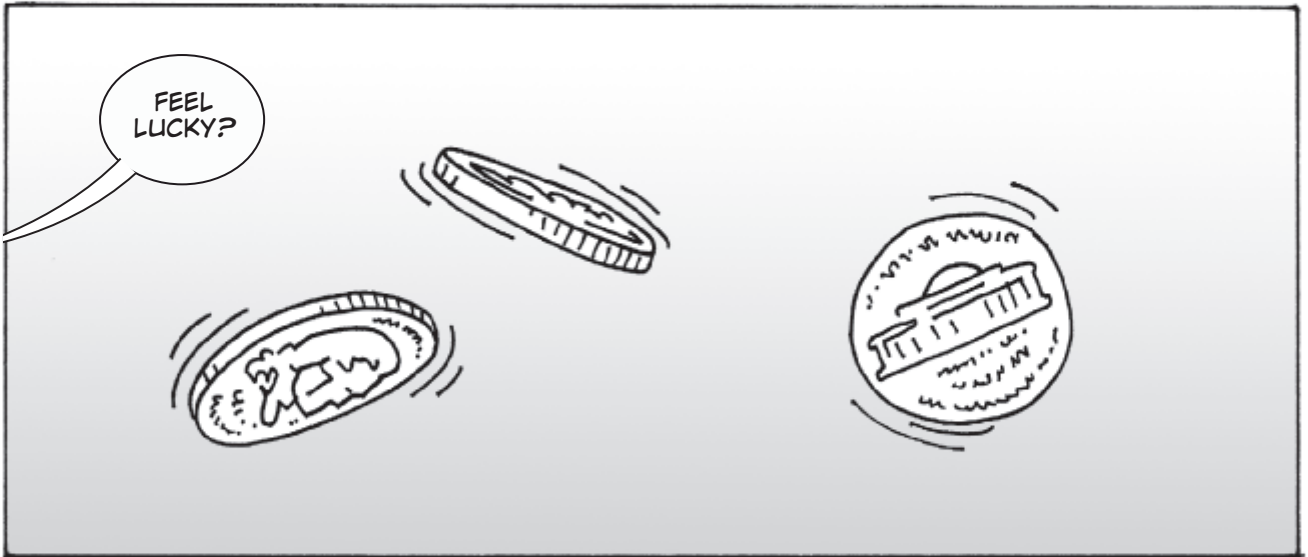
I THINK MY CHANCES OF WINNING THE NEXT TOSS ARE $\frac{2}{3}$. YA KNOW, SINCE TWO OUT OF THREE COINS ARE GONNA BE TAILS.

YOU THINK? NAW, THAT CAN'T BE RIGHT.

Statistics and Probability 1: Probability (continued)



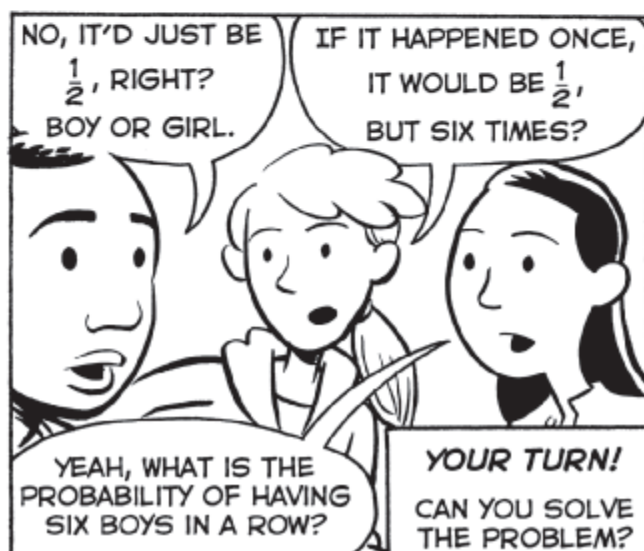
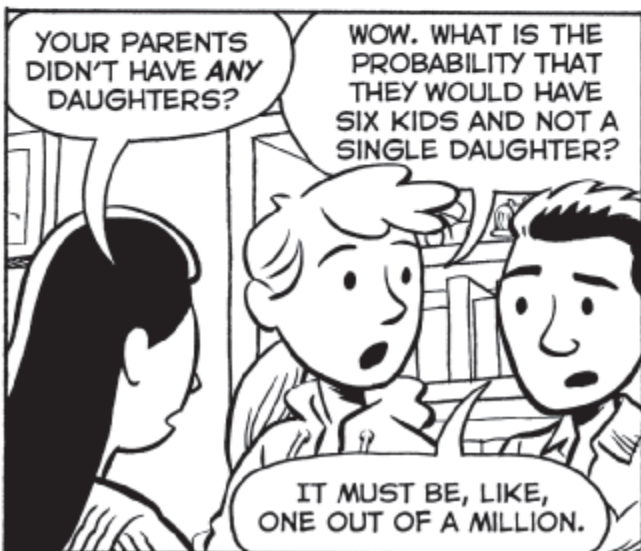
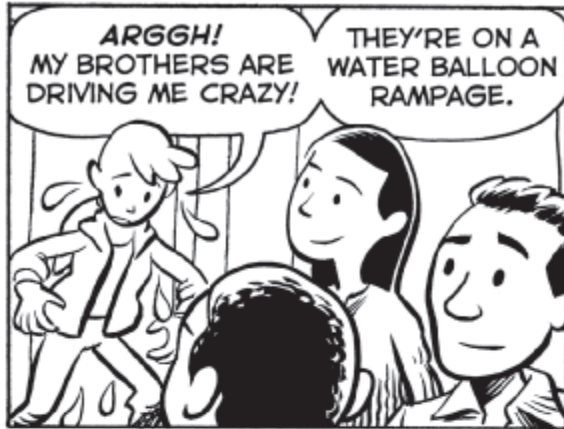
Statistics and Probability 1: Probability (continued)



Statistics and Probability 2: Independent Events

Sibling Probabilities

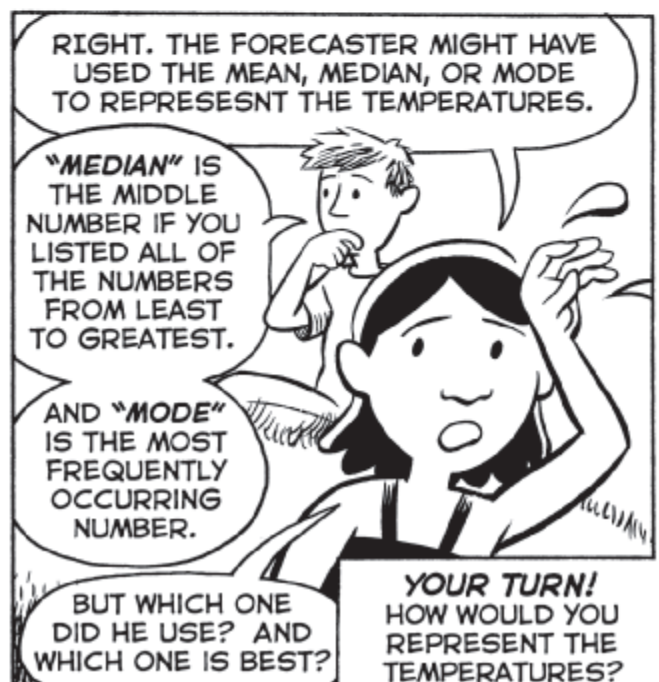
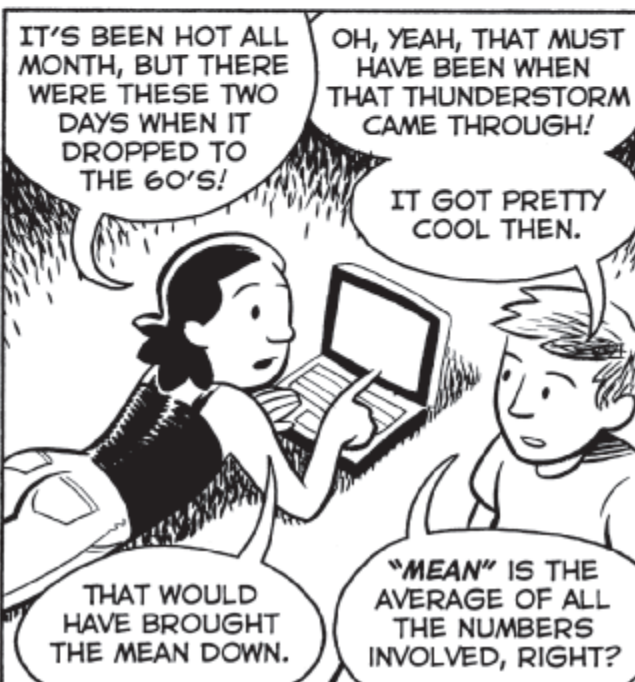
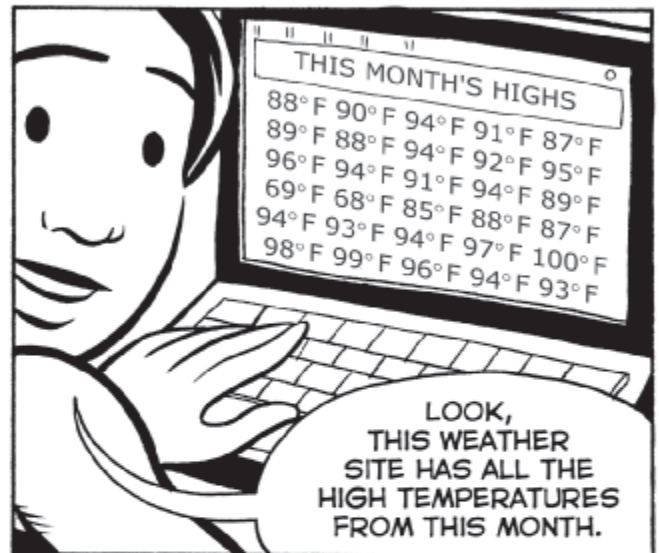
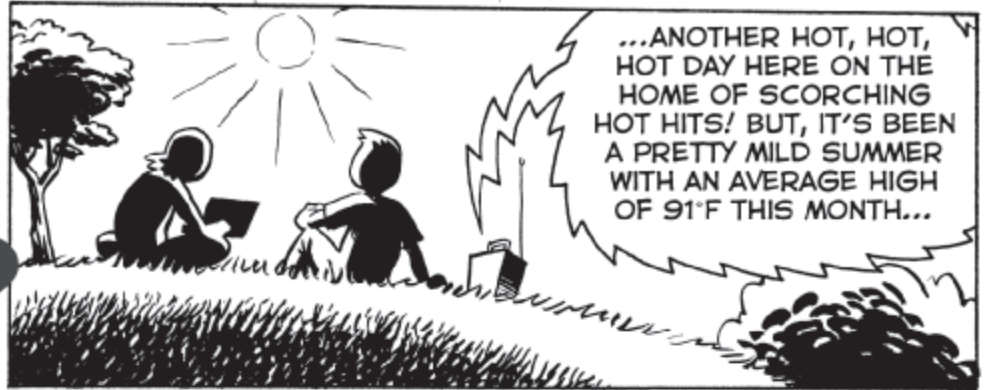
WITH SKYLER, JORDAN, RUBEN, AND MEI-YIN



Statistics and Probability 3: Measures of Central Tendency

hot! hot! hot?

WITH ISABEL AND ETHAN



PRACTICE

On Your Own...

Statistics and Probability

Read each question. Then, fill in the correct answer on the answer document provided by your teacher or on a sheet of paper.

1. An ice cream shop offers a special in which customers can choose a cone or a cup with one scoop of chocolate, vanilla, or strawberry ice cream for \$1.50. Which list shows all the possible outcomes?

A

Outcomes	
cone	vanilla
cup	strawberry
cone	chocolate

C

Outcomes	
cup	vanilla
cup	chocolate
cone	strawberry

B

Outcomes	
cone	vanilla
cup	vanilla
cone	chocolate
cup	chocolate
cone	strawberry
cup	strawberry

D

Outcomes	
cone	vanilla
cup	chocolate
cone	strawberry
cone	vanilla
cup	chocolate
cup	strawberry

2. A box contains 3 yellow markers, 4 red markers, and 2 green markers. Another box contains 4 black pens and 6 blue pens. If Marcus chooses a marker and a pen at random, what is the probability that he will choose a red marker and a blue pen?

F $\frac{8}{45}$

H $\frac{4}{15}$

G $\frac{3}{15}$

J $\frac{10}{19}$

3. Grace's test scores in History are listed below. What is her mean test score?

77, 90, 82, 95, 86, 70, 92, 91, 82

A 25

C 85

B 82

D 86

4. Isabelle has a collection of 12 DVDs. She chooses a DVD from her set of DVDs at random. Then, she chooses a second DVD from the same set at random without replacing the first DVD chosen. What is the probability that she will select her favorite DVD first and her least favorite DVD second?

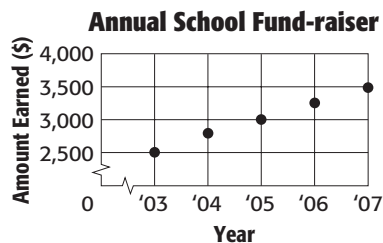
F $\frac{1}{12}$

H $\frac{1}{121}$

G $\frac{1}{23}$

J $\frac{1}{132}$

5. The graph shows the amount earned each year from the annual fund-raiser at Raheem's school. Predict about how much his school will earn from the fund-raiser in 2015 if the trend continues.



A \$6,500

C \$4,500

B \$5,500

D \$4,000

6. Which measure is best used to describe the center of the data set below?

5, 13, 11, 10, 14, 12, 5, 74

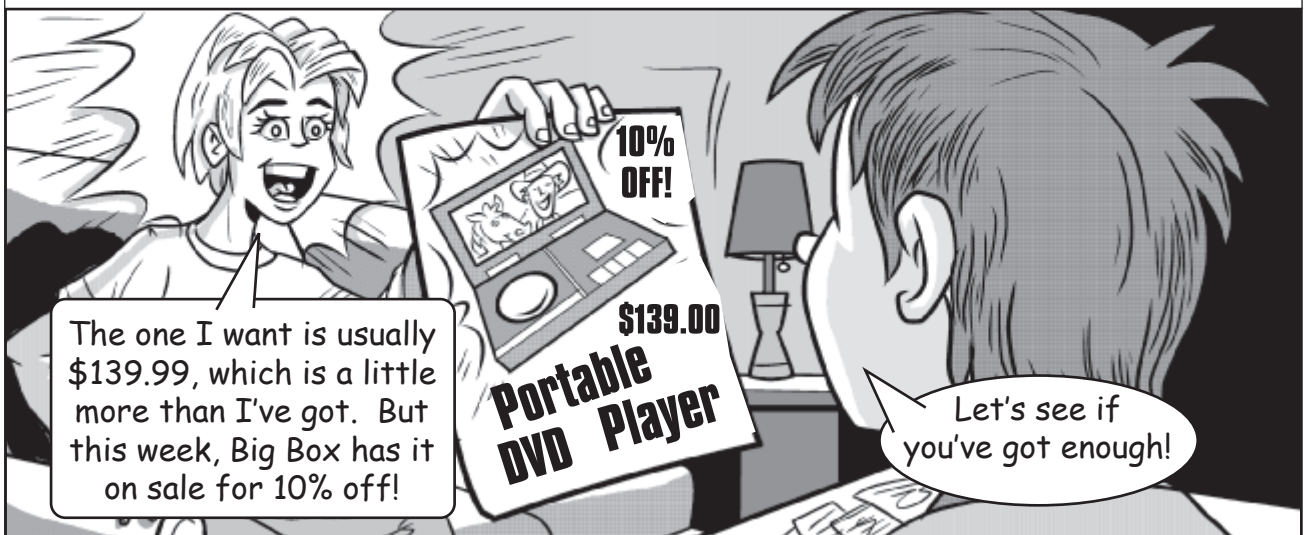
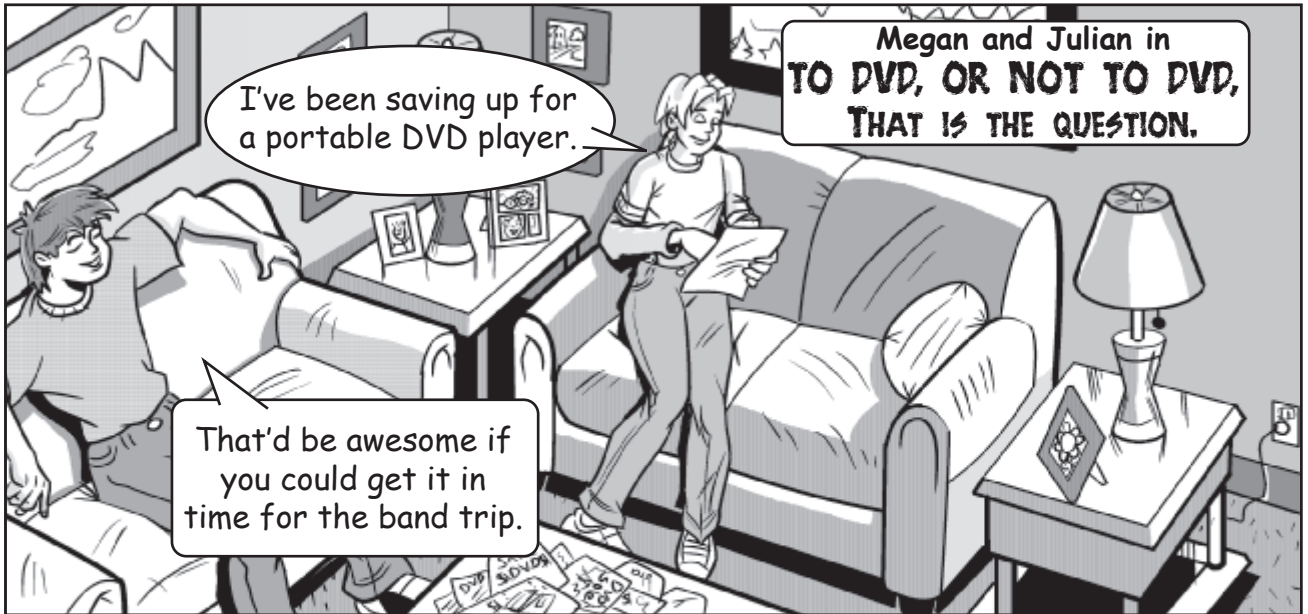
F mean

G median

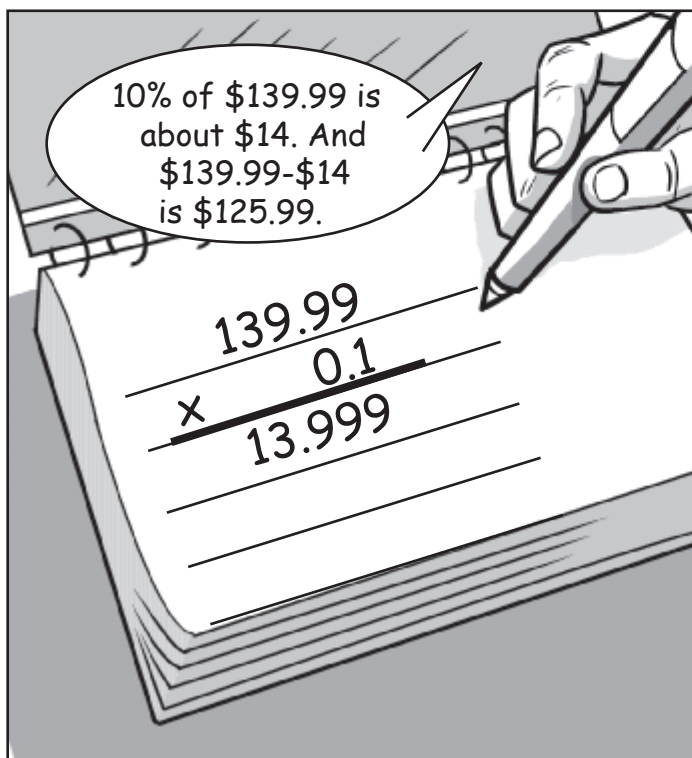
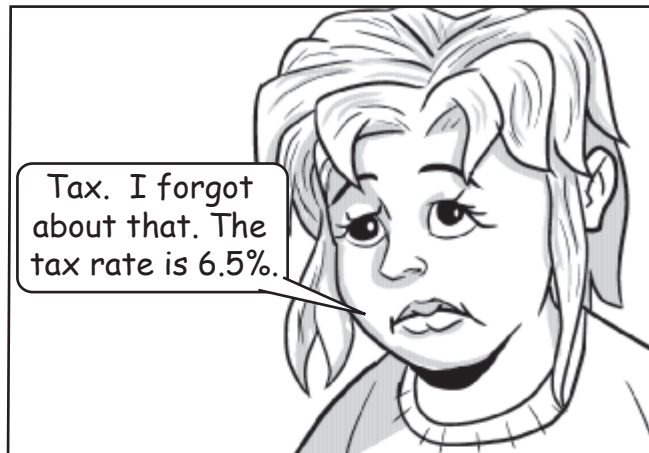
H mode

J range

Mathematical Reasoning 1: Four-Step Plan



Mathematical Reasoning 1: Four-Step Plan (continued)



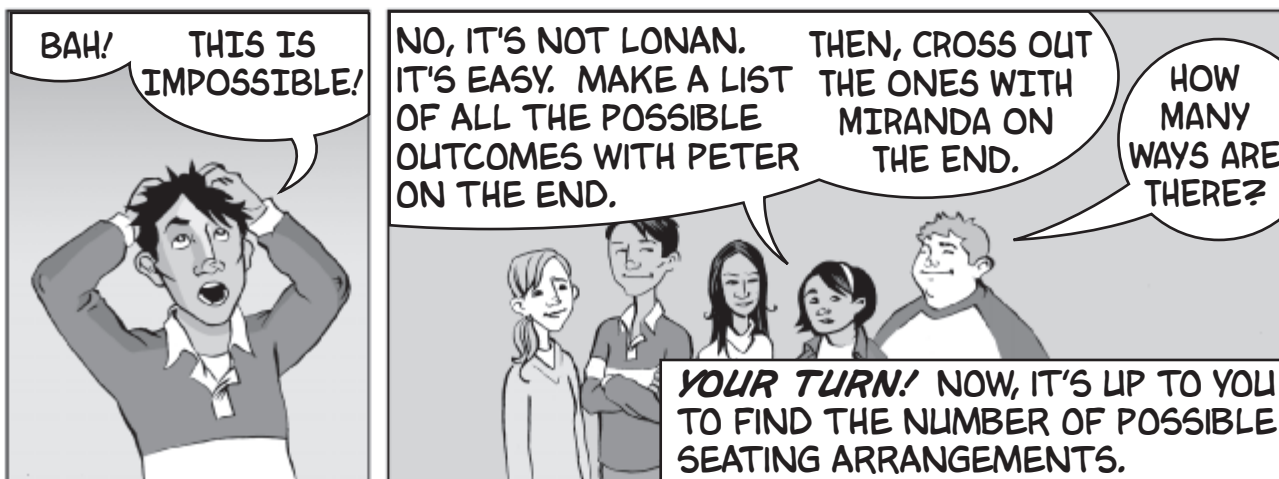
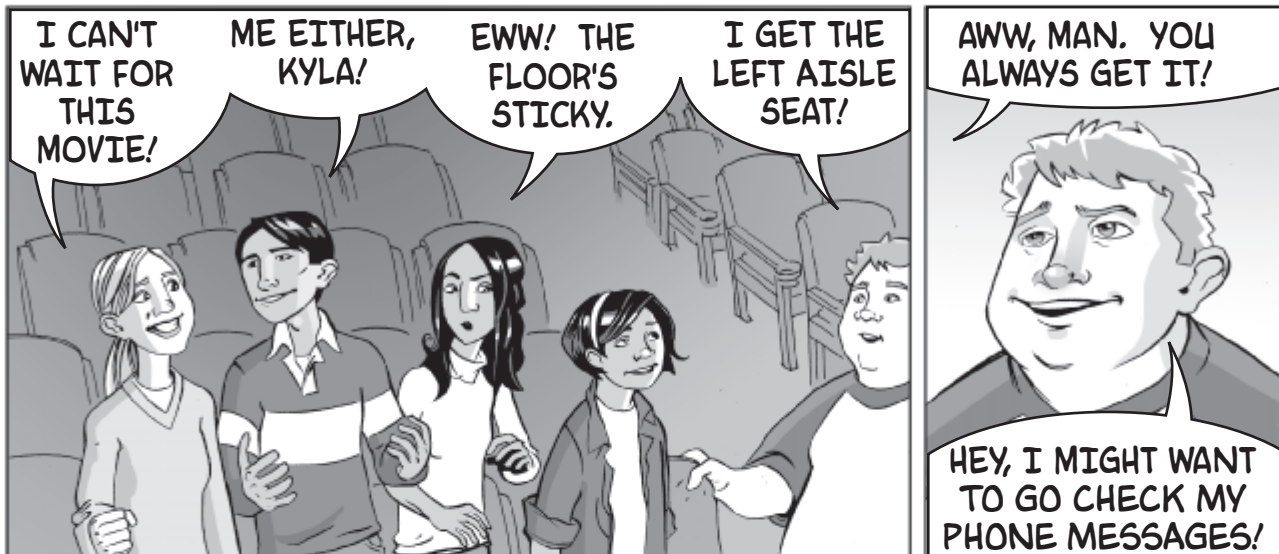
Mathematical Reasoning 1: Four-Step Plan (continued)



Mathematical Reasoning 2: Make an Organized List

KYLA, LONAN, PETER, RAMONA, AND MIRANDA IN:

Cinema Dilemma



Mathematical Reasoning 3: Look for a Pattern



PRACTICE

On Your Own...

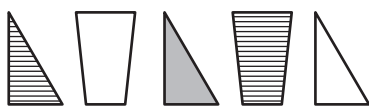
Mathematical Reasoning

Read each question. Then, fill in the correct answer on the answer document provided by your teacher or on a sheet of paper.

1. The circumference of the Earth is about 24,901 miles. Which expression can be used to find the approximate diameter d of the Earth?

A $24,901 + \pi$ C $24,901 \times \pi$
 B $24,901 - \pi$ D $24,901 \div \pi$

2. What are the next two figures in the pattern shown?



3. A number is multiplied by 5. Then, 4 is subtracted from the product. Finally, the difference is divided by 2. The result is 23. Which of the following equations could be used to find the number n ?

A $5 + n - 4 = \frac{23}{2}$
 B $5n + 4 = 23$
 C $\frac{5n - 4}{2} = 23$
 D $\frac{5n + 4}{23} = 2$

4. Elena spent \$12.50 at dinner. Then, she spent \$9.95 at the mall and \$15 at the movies. She had \$3.65 left. How much did Elena have originally?

F \$33.80 H \$41.10
 G \$37.45 J \$42.00

5. Which of the following expressions would best estimate the perimeter P in feet of a garden that is 12.15 feet long and 8.89 feet wide?

A $P = 2(12) + 2(8)$
 B $P = 2(12) + 2(9)$
 C $P = 2(13) + 2(8)$
 D $P = 2(13) + 2(9)$

6. The table shows the attendance at a high school marching band pops concert for several years.

Pops Concert	
Year	Attendance
2003	586
2004	601
2005	631
2006	676
2007	736

If the trend continues, what will be the attendance in 2010?

F 811
 G 1,006
 H 1,126
 J 1,261

7. Over the summer, Carlos works about 25 hours a week at the library. He earns \$8.25 per hour. At this rate, how much will Carlos earn in 7 weeks?

A \$2,887.50
 B \$1,443.75
 C \$206.25
 D \$57.75