Real-World Problem Solving

Graphic Novels

BOOK 1

Glencoe

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

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Send all inquiries to:

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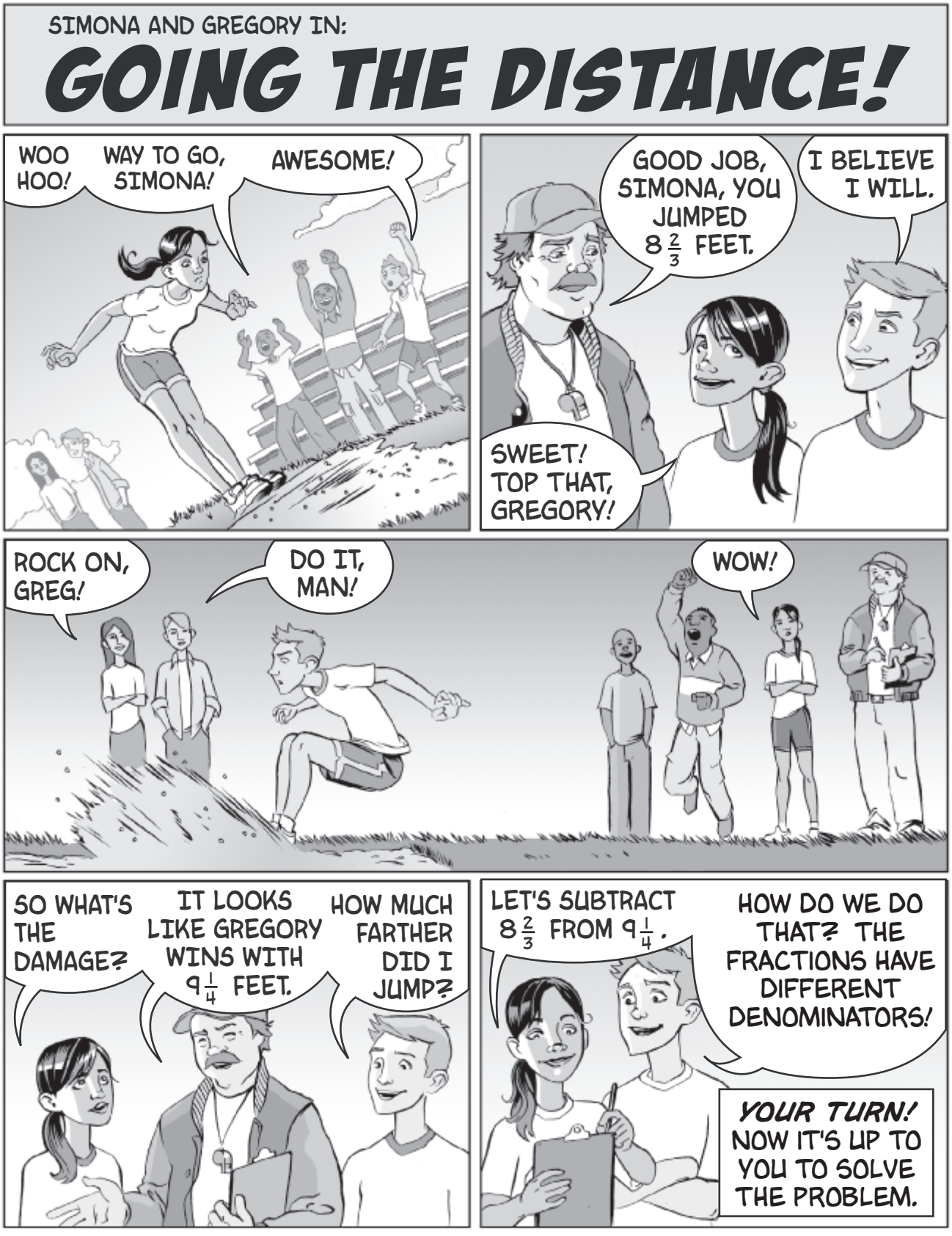
Number Sense 1: Multiply Whole Numbers


First, let's calculate what I'll make tutoring the Rollins kids.
Okay. You're paid eight dollars per hour per kid, and they have three kids.
They want me to work from 5:30 p.m. until 8:30 p.m., which is three hours.
So, multiplying 3 kids times 8 dollars per hour gives you a total pay rate of $24 per hour.
And $24 per hour times three hours equals $72!
Okay! Now how about the Fords?
They need me from 7 to 10 p.m., but the pay per hour changes after 8 p.m. We'll have to calculate two amounts and then add them up.

Number Sense 1: Multiply Whole Numbers (*continued*)

Number Sense 2: *Order Rational Numbers*

Number Sense 3: Subtract Fractions



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 fractions $\frac{2}{3}$, $\frac{1}{4}$, $\frac{5}{12}$, and $\frac{1}{2}$ from least to greatest.

A $\frac{1}{2}, \frac{1}{4}, \frac{2}{3}, \frac{5}{12}$

B $\frac{1}{2}, \frac{2}{3}, \frac{1}{4}, \frac{5}{12}$

C $\frac{2}{3}, \frac{1}{2}, \frac{5}{12}, \frac{1}{4}$

D $\frac{1}{4}, \frac{5}{12}, \frac{1}{2}, \frac{2}{3}$

2. Annabel bought 2.8 pounds of apples to make pies. Express this amount as a mixed number in simplest form.

F $2\frac{4}{5}$ **H** $2\frac{1}{2}$

G $2\frac{2}{3}$ **J** $2\frac{1}{8}$

3. Write the prime factorization of 252 using exponents.

A $2^2 \times 3^3 \times 5$ **C** 2×3^2

B $2^2 \times 3^2 \times 7$ **D** $2^3 \times 3$

4. Refer to the table. If a small boat and a large boat both leave the dock at the same time, how long will it be before a small boat and a large boat depart at the same time again?

Water Ride	
Boat	**Departs**
small	every 5 minutes
large	every 8 minutes

F 16 minutes **H** 40 minutes

G 25 minutes **J** 56 minutes

5. Find the greatest common factor of 27, 36, and 72.

A 3

B 6

C 9

D 12

6. Derek ran 1.6 miles on Monday, 2.7 miles on Wednesday, and 4.2 miles on Friday. How many miles did he run altogether?

F 7.3 miles

G 7.5 miles

H 8.5 miles

J 8.8 miles

7. Which of the following shows an equivalent way to represent the cost of cupcakes?

Bake Sale	
Brownies	3 for $1
Cookies	8 for $2
Cupcakes	12 for $9

A 8 for $5

B 6 for $4

C 16 for $12

D 20 for $16

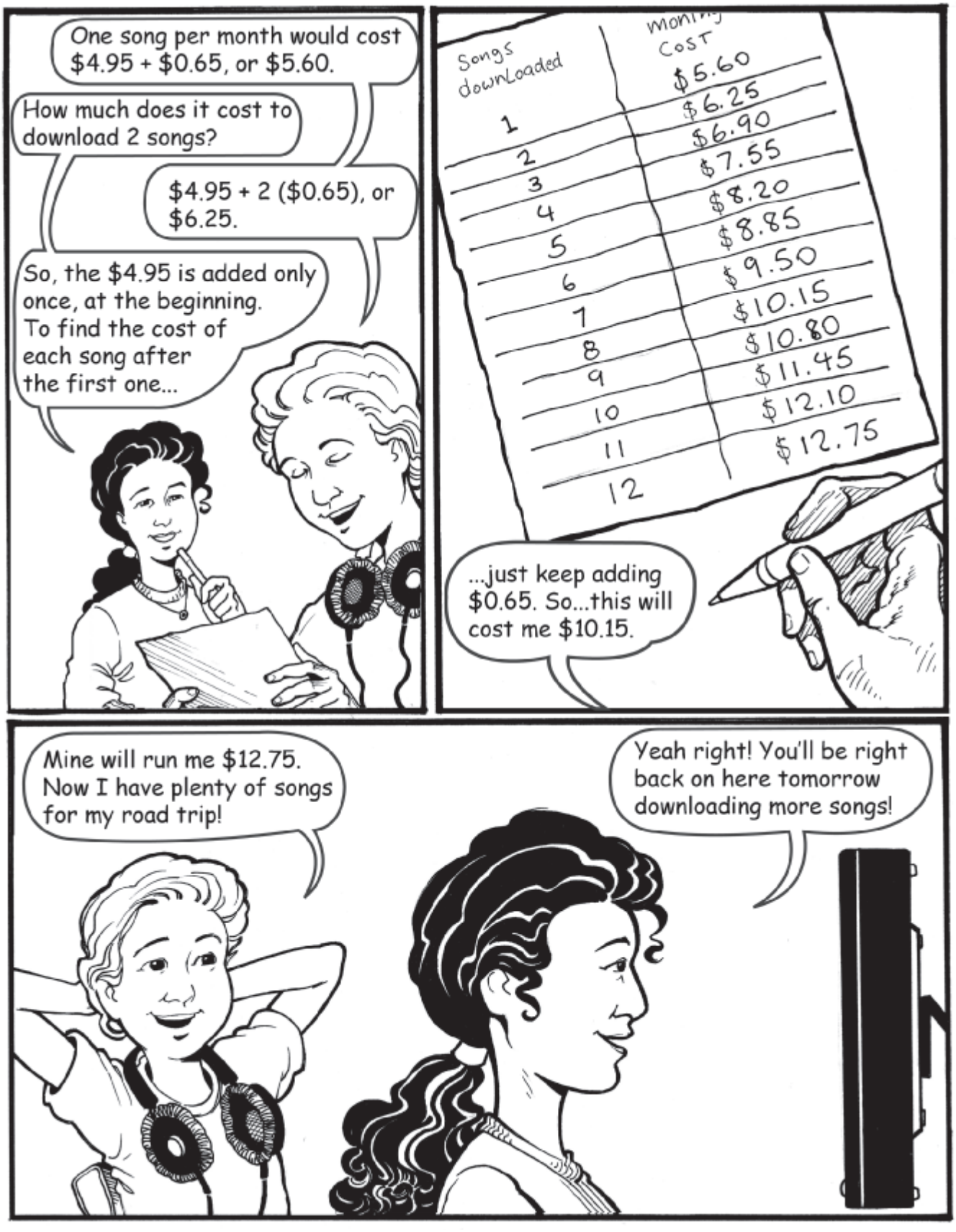
8. Admission to a county fair is $8 for adults and $5 for children. Find the total cost of admission for 3 adults and 4 children.

F $20 **H** $47

G $44 **J** $116


Jason and Jacinta in
DOWNLOAD DILEMMA
Looks cool!
Here's the site I was telling you about!
COLA
$4.95 Per Month
65¢ Per Song
Here are the prices... not bad!
I wonder how much it would cost me to download 8 songs this month?
I'm going to download 12!


Why 12?
My family is about to go on a long road trip, and I don't want to get bored!
Ok, so I'm guessing this will cost me about...9 or 10 dollars?
um... 10, 11....12?
Ok, we need a better system than guessing. Let's make a table!


One song per month would cost $4.95 + $0.65, or $5.60.
How much does it cost to download 2 songs?
$4.95 + 2 ($0.65), or $6.25.
So, the $4.95 is added only once, at the beginning. To find the cost of each song after the first one...
Songs downLoaded
Cost
1 $5.60
2 $6.25
3 $6.90
4 $7.55
5 $8.20
6 $8.85
7 $9.50
8 $10.15
9 $10.80
10 $11.45
11 $12.10
12 $12.75
...just keep adding $0.65. So...this will cost me $10.15.
Mine will run me $12.75. Now I have plenty of songs for my road trip!
Yeah right! You'll be right back on here tomorrow downloading more songs!


Sunil and Courtney in NET WORTH?
Wasn't the state fair fun, Courtney?
For sure! Hey, before we leave, let's see if we can win a nice stuffed animal!
We're both good at basketball. Let's try "Honest Ernie's Hoops Booth."
Ernie charges $5 for three basketballs.
3 BALLS $5
WIN A BEAR!
I saw another booth nearby where you can also shoot baskets for prizes.
Let's compare prices and see which booth has the better deal.
Here it is! "B-Ball Bargains - 5 balls for $8."
They have the same prizes as Honest Ernie.
5 BALLS
$8
Should we pay $5 for 3 balls at Honest Ernie's, or $8 for 5 balls here at B-Ball Bargains?
Which one is the better deal??
YOUR TURN!
Can you help Courtney and Sunil choose?


ROSAMARIA, GARY, AND OWEN IN:
CRUNCHING NUMBERS
I'LL BUY ENOUGH BOXES OF SNACK BARS TO GET US THREE FREE MOVIE PASSES!
ROSAMARIA, TELL OWEN THIS IS CRAZY!
OWEN, THIS IS CRAZY.
DUDE, IT'S NOT! I LOVE CINNAMON CRUNCH BARS!
IT SAYS ONE OUT OF SIX BOXES HAS A FREE MOVIE PASS. HOW MANY BOXES DO WE NEED FOR THREE PASSES?
CINNAMON CRUNCH
THAT DEPENDS. IF THE FIRST 3 BOXES WE BUY EACH HAVE A MOVIE PASS...
...THEN WE'RE ALL SET! WHAT IF WE HAVE TO BUY 50 BOXES?
THEN WE'LL HAVE TONS OF CRUNCH BARS.
SURE, YOU LOVE CINNAMON CRUNCH BARS, MAN...
BUT DO YOU LOVE THEM ENOUGH TO EAT THAT MANY?
YES!
OH, BROTHER.
YOUR TURN! DESCRIBE AND PERFORM A SIMULATION THAT WOULD PREDICT, ON AVERAGE, THE NUMBER OF BOXES THE TEENS WOULD NEED TO BUY TO GET 3 FREE MOVIE PASSES.

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. Which of the following pairs of ratios is proportional?

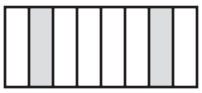
A 5 winners out of 20 participants
6 winners out of 35 participants

B 6 footballs out of 16 balls
9 footballs out of 24 balls

C 8 girls out of 20 students
15 girls out of 35 students

D 9 cars out of 26 automobiles
24 cars out of 62 automobiles

2. Which percent represents the shaded portion of the model?



F 20%
G 25%
H 40%
J 75%

3. Jacob deposits $25 each week into his savings account. Which equation represents t, the total amount deposited in w weeks?

A $t = 25 + w$
B $t = 25w$
C $t = w - 25$
D $t = \frac{w}{25}$

4. Use the ratio table to find the number of inches in 6 feet.

Feet	1	5	6	8
Inches	12	60	?	96

F 36 in.
G 48 in.
H 72 in.
J 84 in.

5. If the pattern continues, which expression can be used to complete the table below?

Position	Value of Term
1	6
2	8
3	10
n	?

A $2n$
B $4n + 2$
C $2n + 4$
D $n + 2$

6. An appliance technician charges $50 for a service call plus an additional $20 for each hour of labor. Which equation represents c, the cost in dollars for a service call that requires h hours of labor?

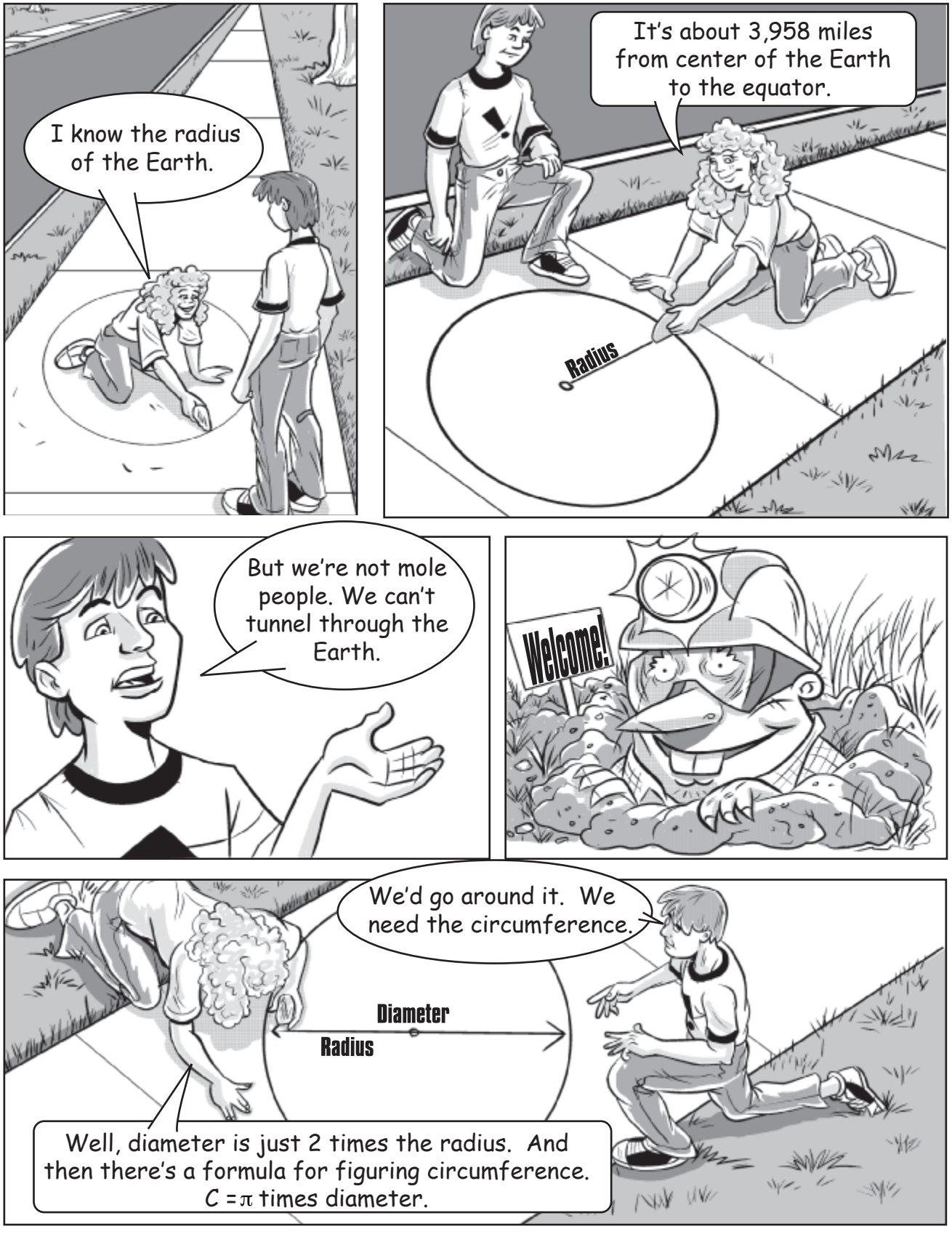
F $c = 20(h + 50)$
G $c = 50(h + 20)$
H $c = 50h + 20$
J $c = 20h + 50$

7. Tamika surveyed her classmates and found that 12 out of 30 students had a dog for a pet. If there are 280 students in Tamika's school, predict how many students in the school have a dog, based on her survey.

A 112
B 124
C 180
D 216

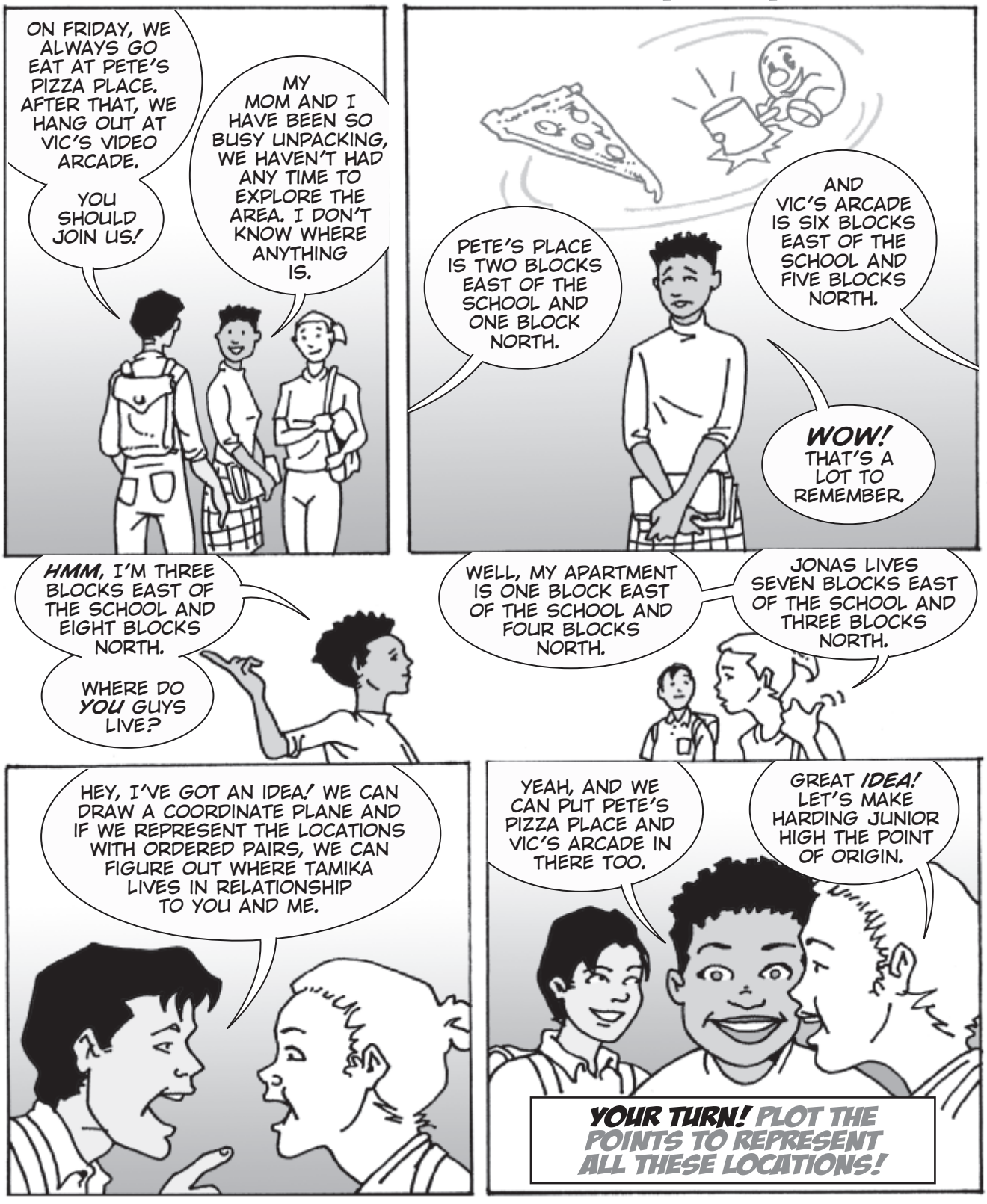
Geometry 1: Circumference, Radius, and Diameter

Geometry 1: Circumference, Radius, and Diameter (*continued*)

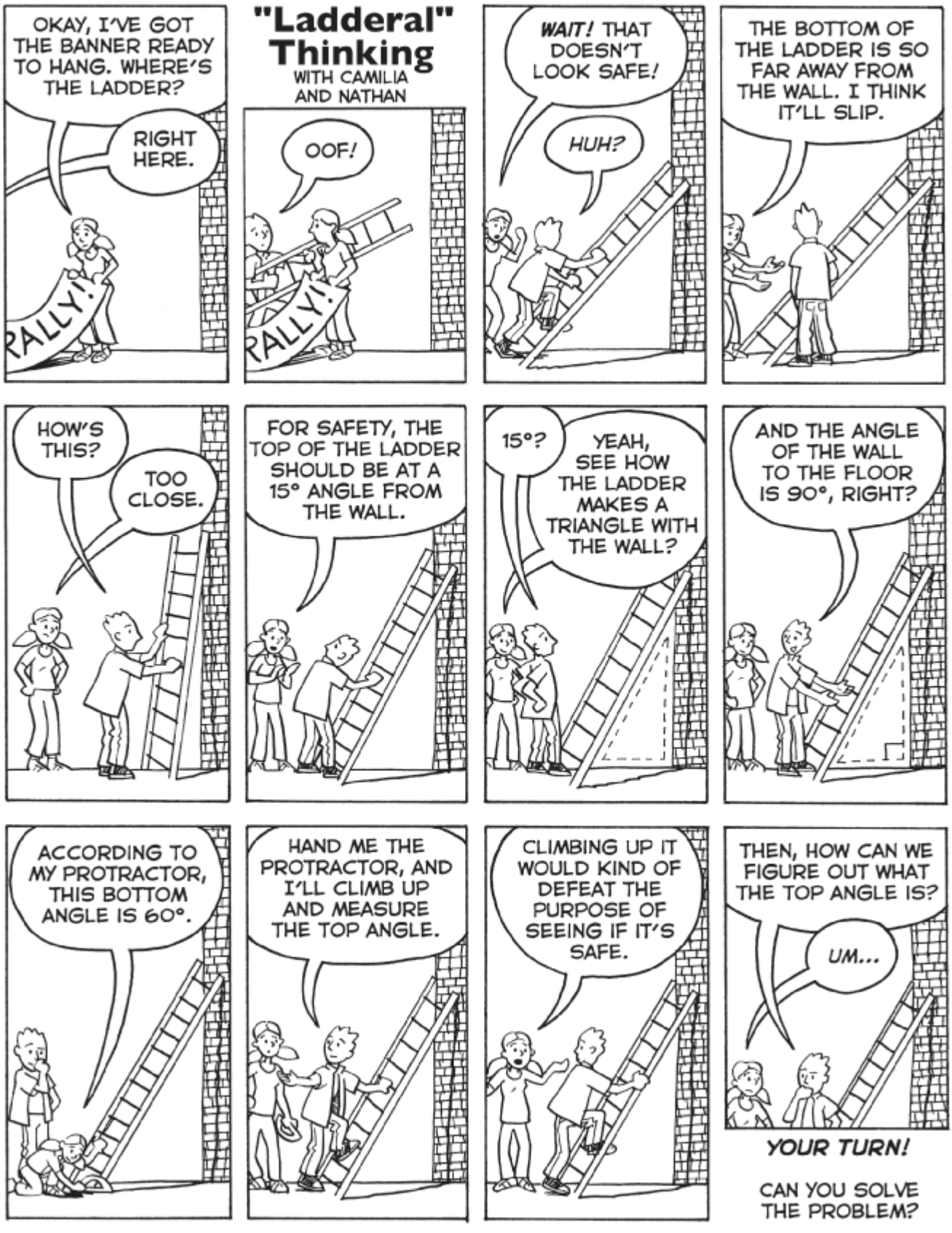


Geometry 1: Circumference, Radius, and Diameter (*continued*)

MEET ME THERE WITH TAMIKA, JONAS, & HILARY



Geometry 3: Angles of Triangles



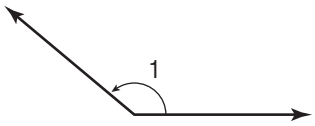
PRACTICE

On Your Own...

Geometry

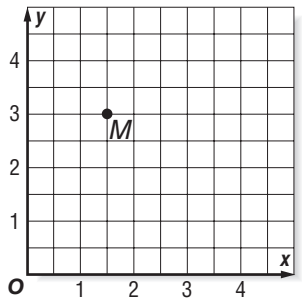
Read each question. Then, fill in the correct answer on the answer document provided by your teacher or on a sheet of paper.

1. Find the measure of $\angle 1$.



A 45°
B 90°
C 140°
D 180°

2. Which ordered pair names point *M*?



F (3, 1.5)
G (1.5, 3)
H (1, 3)
J (3, 1)

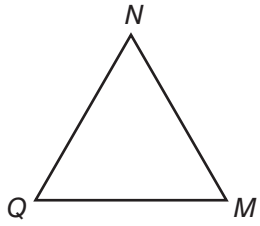
3. Which one of the following statements is always true concerning the relationships between the angles in quadrilaterals?

A All angles of a square are acute angles.
B All angles of a rhombus are right angles.
C Opposite angles of a parallelogram are congruent.
D Opposite angles of a trapezoid are congruent.

4. Which equation represents the relationship between the radius *r* and the diameter *d* of a circle?

F $d = 2r$
G $r = 2d$
H $d = \frac{r}{2}$
J $r = \frac{2}{d}$

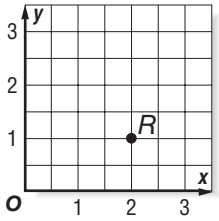
5. Classify $\angle M$ on triangle *MNQ*.



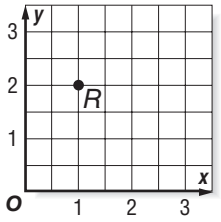
A acute
B obtuse
C right
D straight

6. Which of the following correctly displays the graph of point *R*(2.5, 1)?

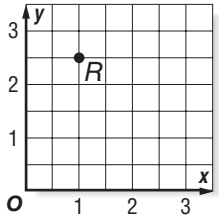
F



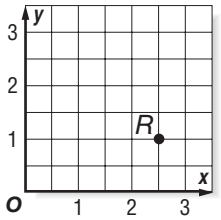
H



G



J



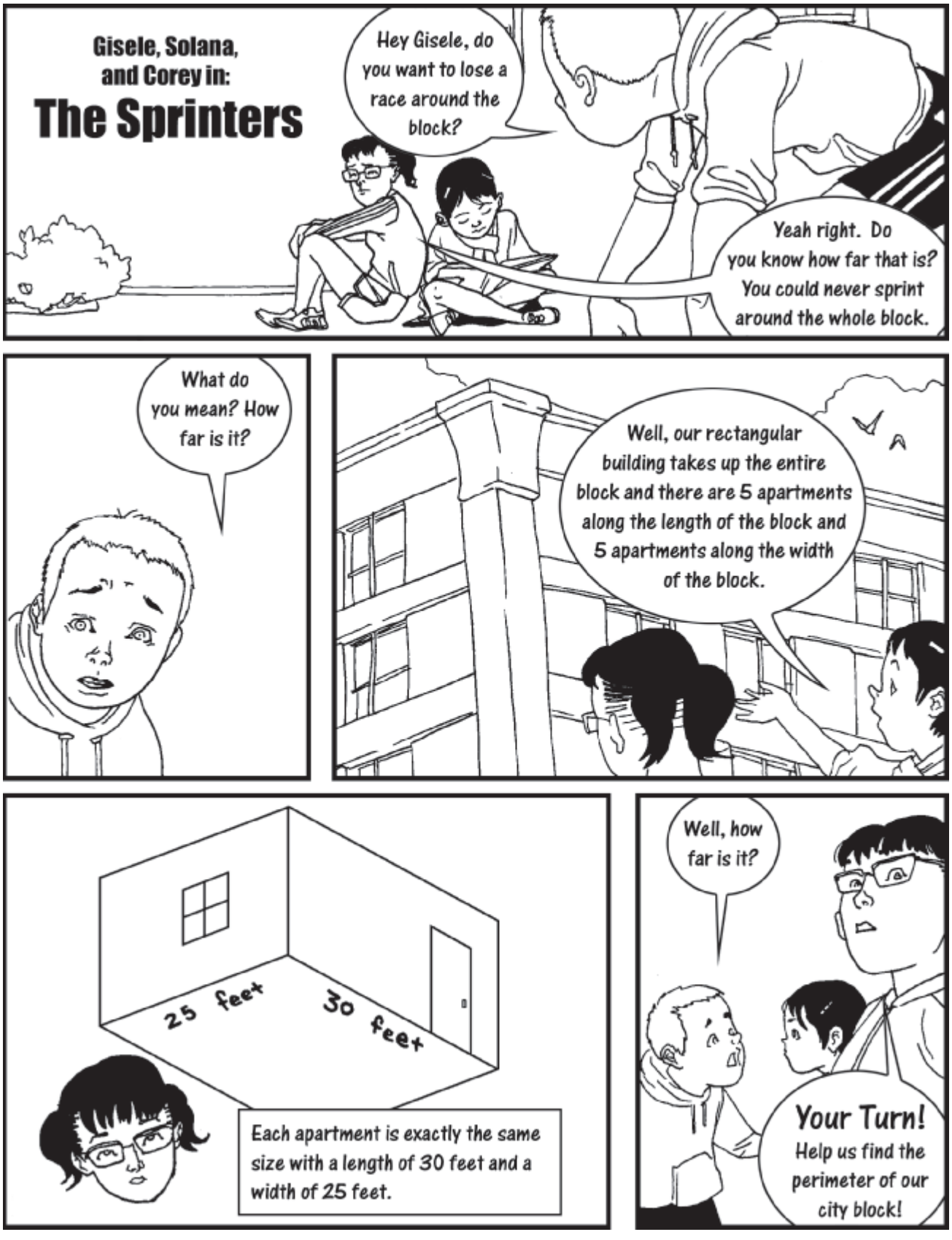
Measurement 1: *Circumference*

Measurement 1: Circumference (*continued*)

Measurement 1: Circumference (*continued*)


Isabel, Tonisha, and Calvin in
THE PLANE FACTS
Hey, check out the plane!
How many miles up do you think they are?
The last time I flew, we were at 35,000 feet for most of the flight.
We've now reached our cruising altitude of 35,000 feet and the seat belt sign has been turned off.
35,000 feet! That makes my head spin. I need it in miles!
I bet we can figure it out. We know what a mile is.
Yeah, 1,760 yards.
And there are 3 feet in 1 yard.
So, how many miles is 35,000 feet?
YOUR TURN!
NOW IT'S UP TO YOU TO SOLVE THE PROBLEM.

Measurement 3: Perimeter



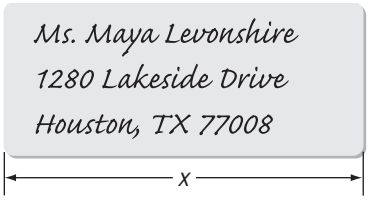
PRACTICE

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 of the following is the most reasonable estimate for the length x of the address label below?

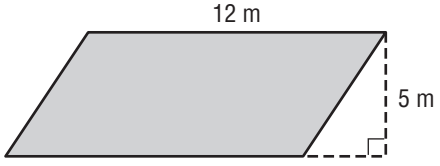


A 1 ft
B 6 in.
C 4 cm
D 10 mm

2. Latanya wants to put wallpaper border along the top of each wall of her bedroom. Her bedroom is 14 feet long and 12 feet wide. How many feet of wallpaper border will she need?

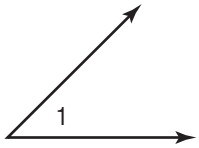
F 26 ft
G 48 ft
H 52 ft
J 168 ft

3. A plot of land is in the shape of a parallelogram with dimensions shown. Find the area of the plot.



A 17 m^2
B 30 m^2
C 34 m^2
D 60 m^2

4. Use a protractor to find the measure of $\angle 1$.



F 30°
G 45°
H 60°
J 85°

5. At 45 feet long, the whale shark is the world's largest fish. What is the length of the whale shark in yards?

A 540 yd
B 135 yd
C 15 yd
D 5 yd

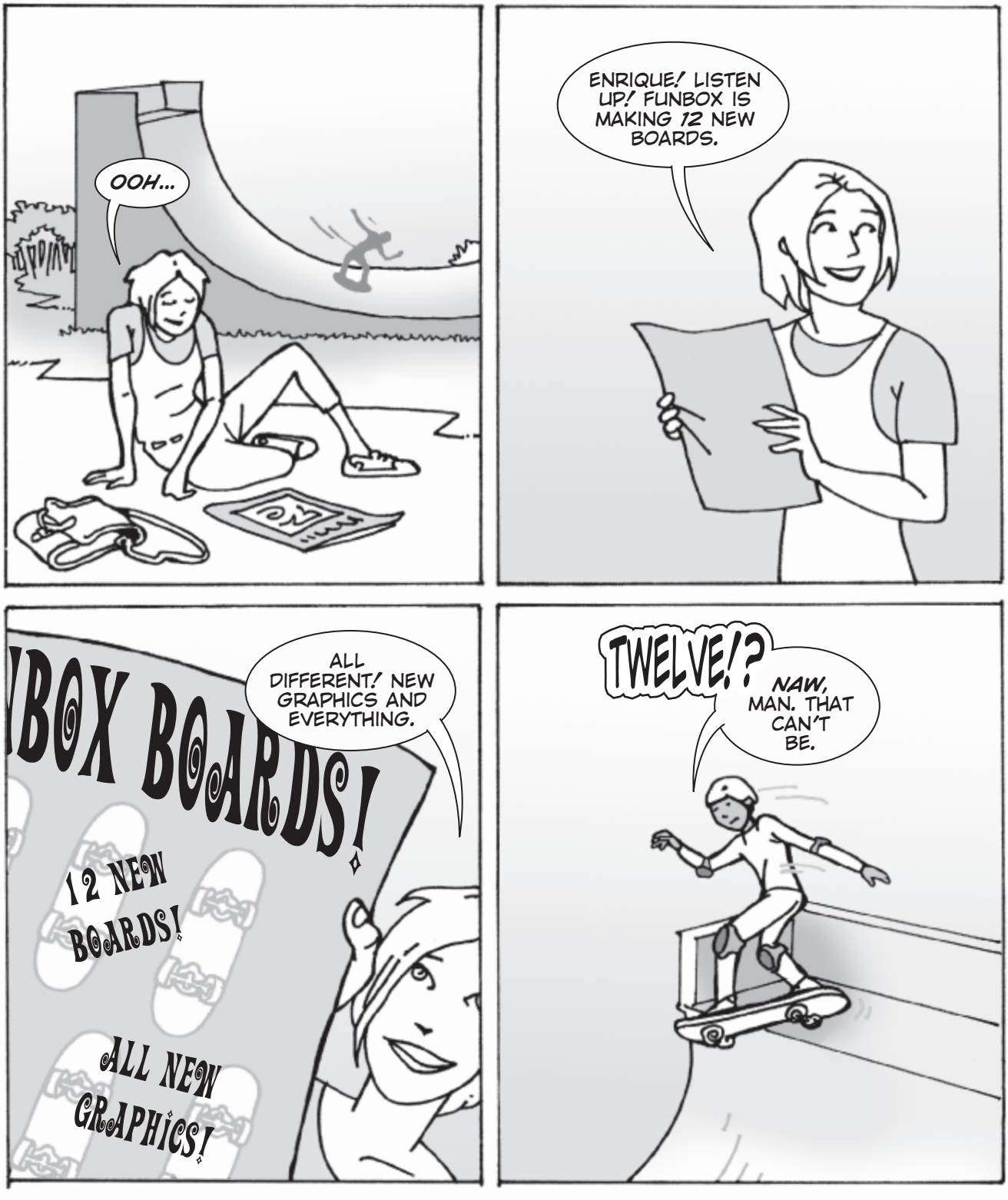
6. Mario is participating in a 10-kilometer walk for a charity organization. At 11:15 A.M., he reads a sign which lets him know that there are only 250 meters to the finish line. At this time, how many meters has Mario already walked?

F 750 m
G 875 m
H 8,750 m
J 9,750 m

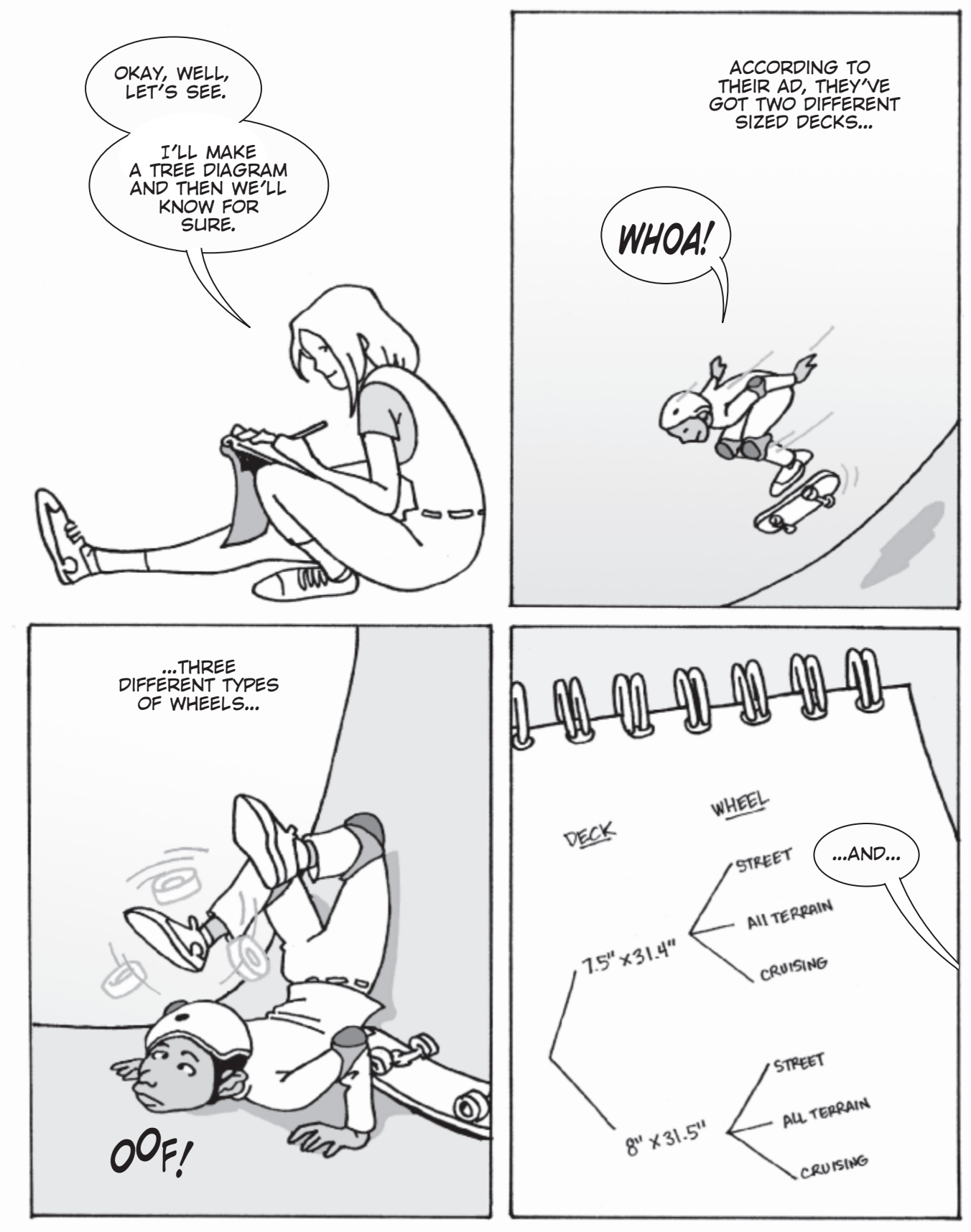
6. Jamal started studying for his science test at 7:25 P.M. and finished studying at 9:10 P.M. For how long did he study?

A 1 h 15 min
B 1 h 45 min
C 2 h 15 min
D 2 h 45 min

NO TRICKS WITH KRISTIN AND ENRIQUE

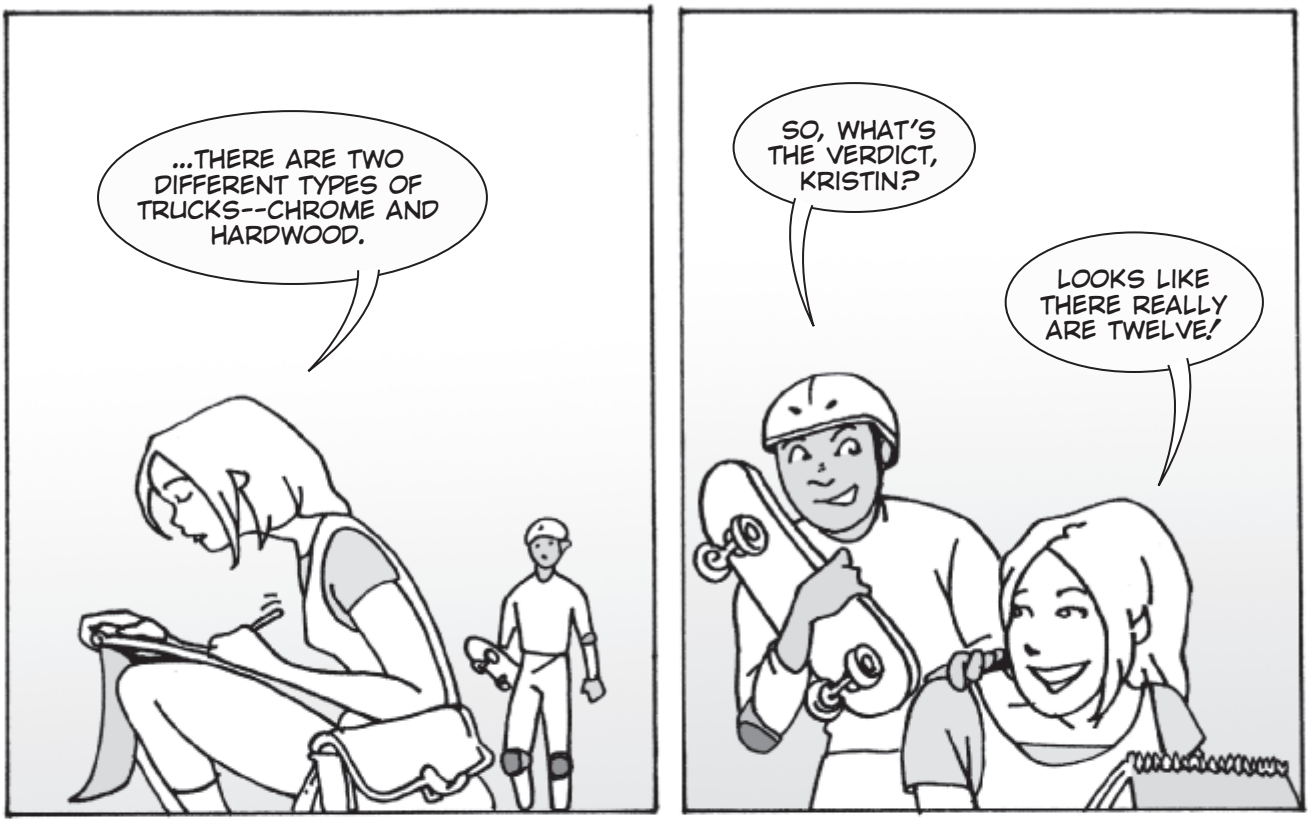


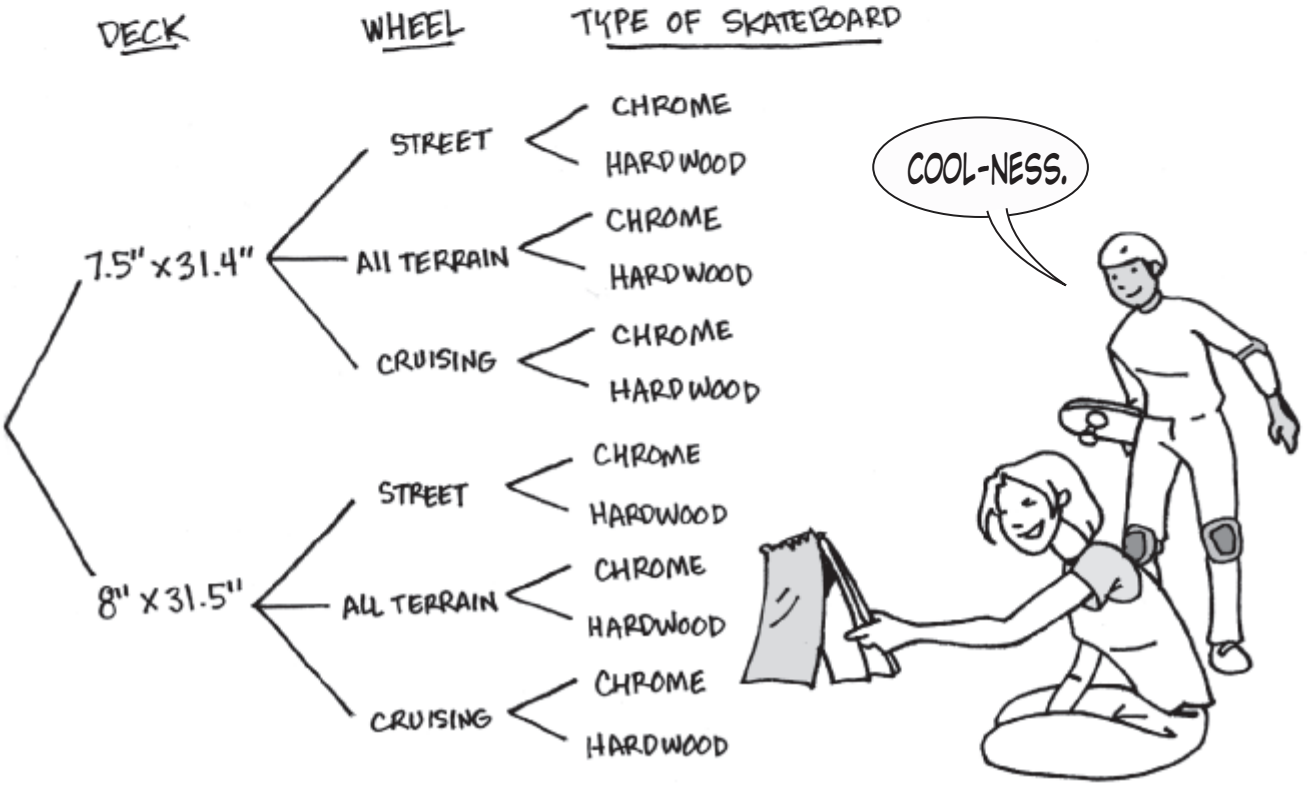
Statistics and Probability 1:
Sample Spaces and Tree Diagrams (continued)

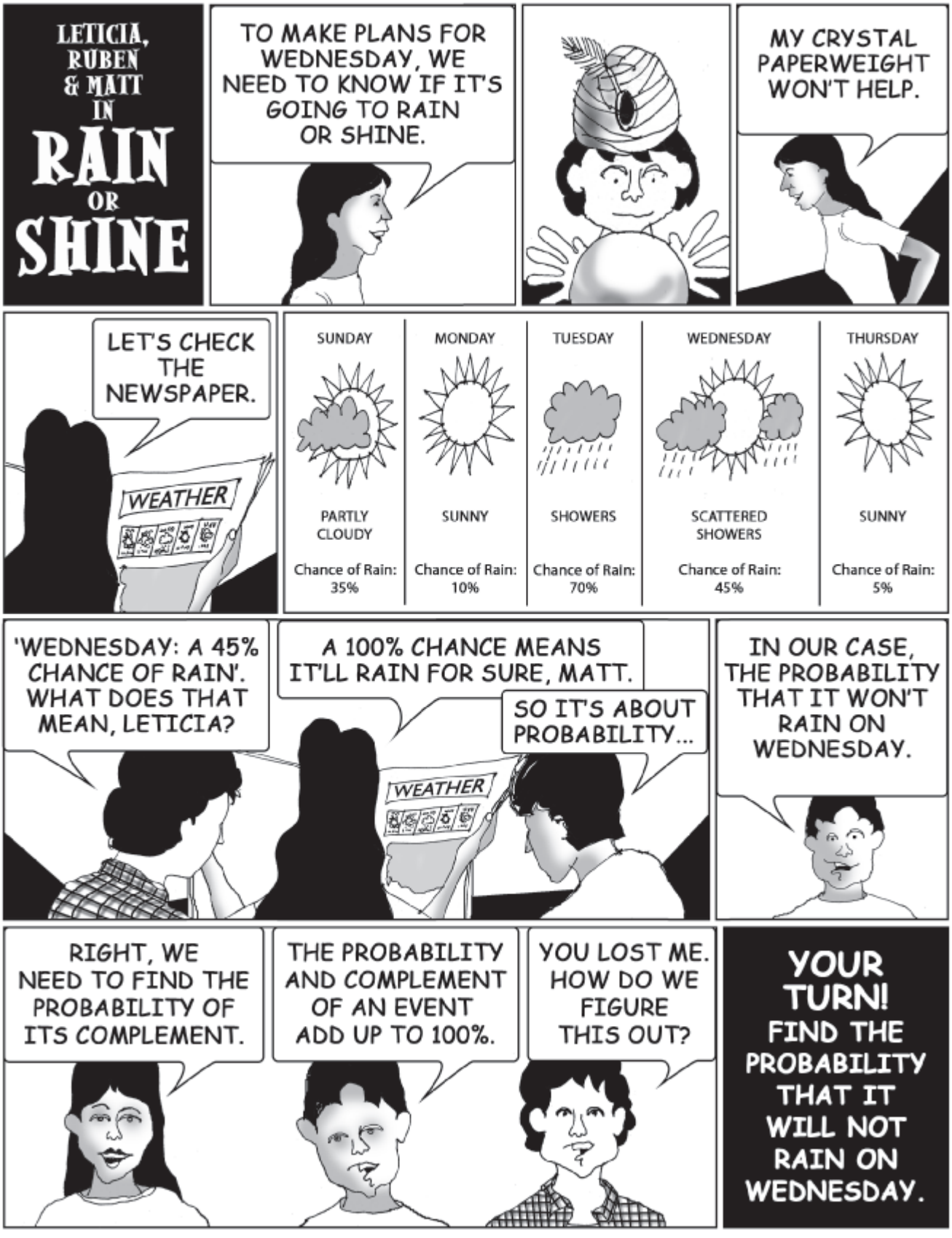


Statistics and Probability 1:

Sample Spaces and Tree Diagrams (continued)






LETICIA, RUBEN & MATT IN
RAIN OR SHINE
TO MAKE PLANS FOR WEDNESDAY, WE NEED TO KNOW IF IT'S GOING TO RAIN OR SHINE.
MY CRYSTAL PAPERWEIGHT WON'T HELP.
LET'S CHECK THE NEWSPAPER.
WEATHER
SUNDAY
PARTLY CLOUDY
Chance of Rain: 35%
MONDAY
SUNNY
Chance of Rain: 10%
TUESDAY
SHOWERS
Chance of Rain: 70%
WEDNESDAY
SCATTERED SHOWERS
Chance of Rain: 45%
THURSDAY
SUNNY
Chance of Rain: 5%
'WEDNESDAY: A 45% CHANCE OF RAIN'. WHAT DOES THAT MEAN, LETICIA?
A 100% CHANCE MEANS IT'LL RAIN FOR SURE, MATT.
SO IT'S ABOUT PROBABILITY...
WEATHER
IN OUR CASE, THE PROBABILITY THAT IT WON'T RAIN ON WEDNESDAY.
RIGHT, WE NEED TO FIND THE PROBABILITY OF ITS COMPLEMENT.
THE PROBABILITY AND COMPLEMENT OF AN EVENT ADD UP TO 100%.
YOU LOST ME. HOW DO WE FIGURE THIS OUT?
YOUR TURN! FIND THE PROBABILITY THAT IT WILL NOT RAIN ON WEDNESDAY.

Riding the Line

WITH ELENA, NICHOLAS, PAT, AND SARA

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. The number of points David's basketball team scored in each of seven games is listed. Find the median of the set of data.

34, 28, 47, 24, 52, 38, 47

A 28 **C** 39

B 38 **D** 47

2. If the probability of randomly selecting a cherry lollipop from a package of lollipops is 35%, what is the probability of *not* randomly selecting a cherry lollipop from the same package?

F 15% **H** 65%

G 35% **J** 70%

3. The table shows the number of students in Mr. Hill's class who own each type of pet. What is the probability that a student chosen at random will own a bird?

Pet	Number of Students
Dog	27
Cat	16
Bird	10
Other/None	22

A $\frac{2}{15}$ **C** $\frac{1}{65}$

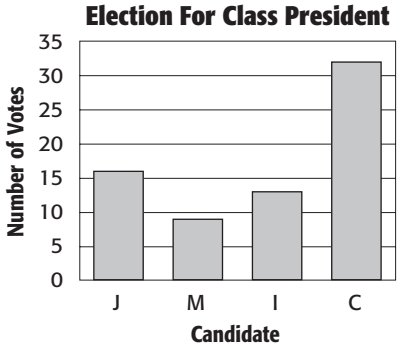
B $\frac{1}{7}$ **D** $\frac{2}{13}$

4. Which type of display would be the most appropriate for showing the change in a puppy's weight over the first several months after the puppy is born?

F bar graph **H** line graph

G line plot **J** stem-and-leaf plot

5. Which set of data is displayed in the graph?



A

Candidate	Votes
Juan	14
Mary	10
Isabel	16
Caleb	28

C

Candidate	Votes
Juan	20
Mary	6
Isabel	10
Caleb	35

B

Candidate	Votes
Juan	13
Mary	9
Isabel	8
Caleb	32

D

Candidate	Votes
Juan	16
Mary	9
Isabel	13
Caleb	32

6. Which set lists all the possible outcomes of choosing the order in which Sara, Tad, and Jun play golf?

F {(Sara, Tad, Jun), (Sara, Jun, Tad), (Tad, Jun, Sara)}

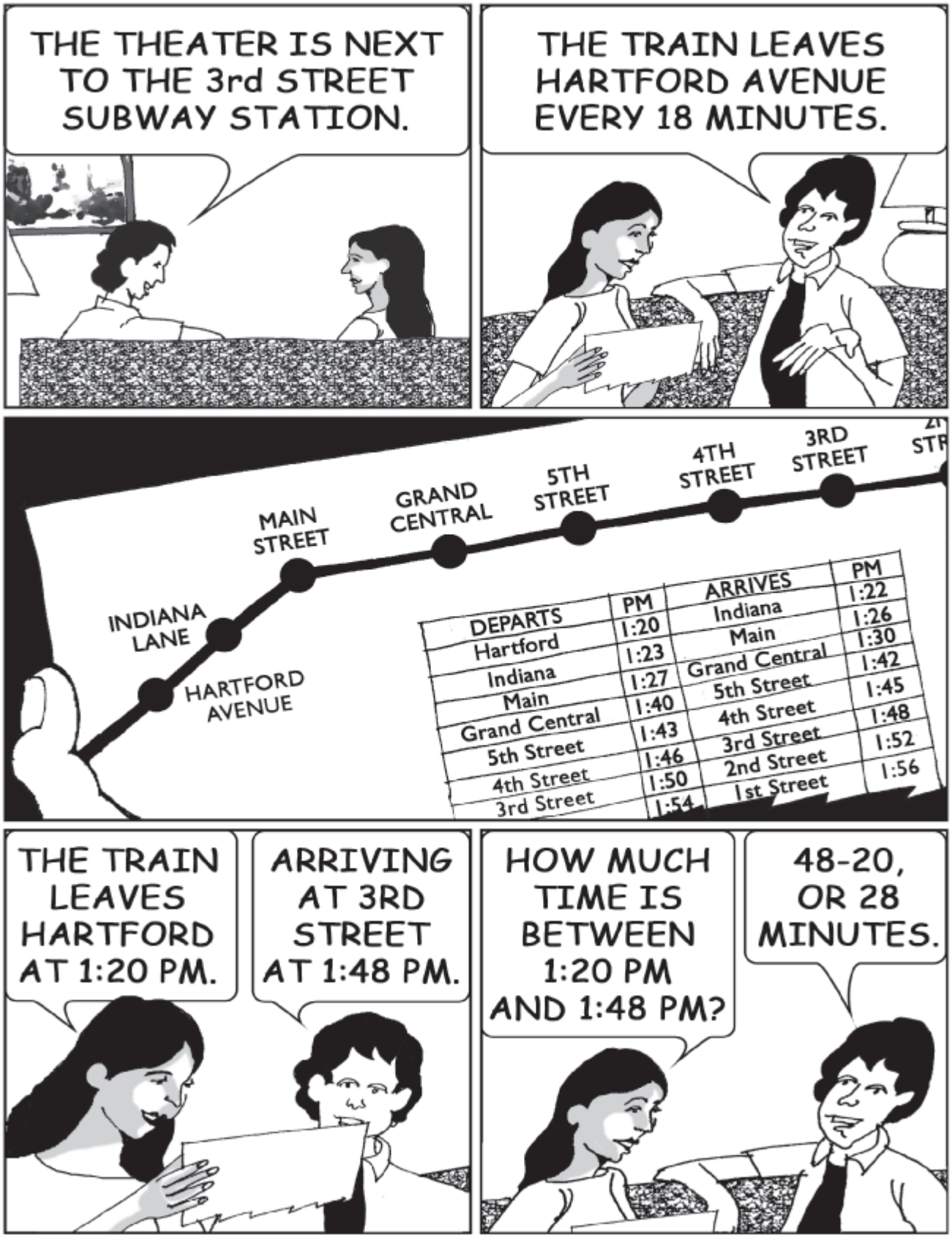
G {(Sara, Tad, Jun), (Sara, Jun, Tad), (Tad, Sara, Jun), (Tad, Jun, Sara), (Jun, Sara, Tad), (Jun, Tad, Sara)}

H {(Sara, Tad, Jun), (Jun, Tad, Sara)}

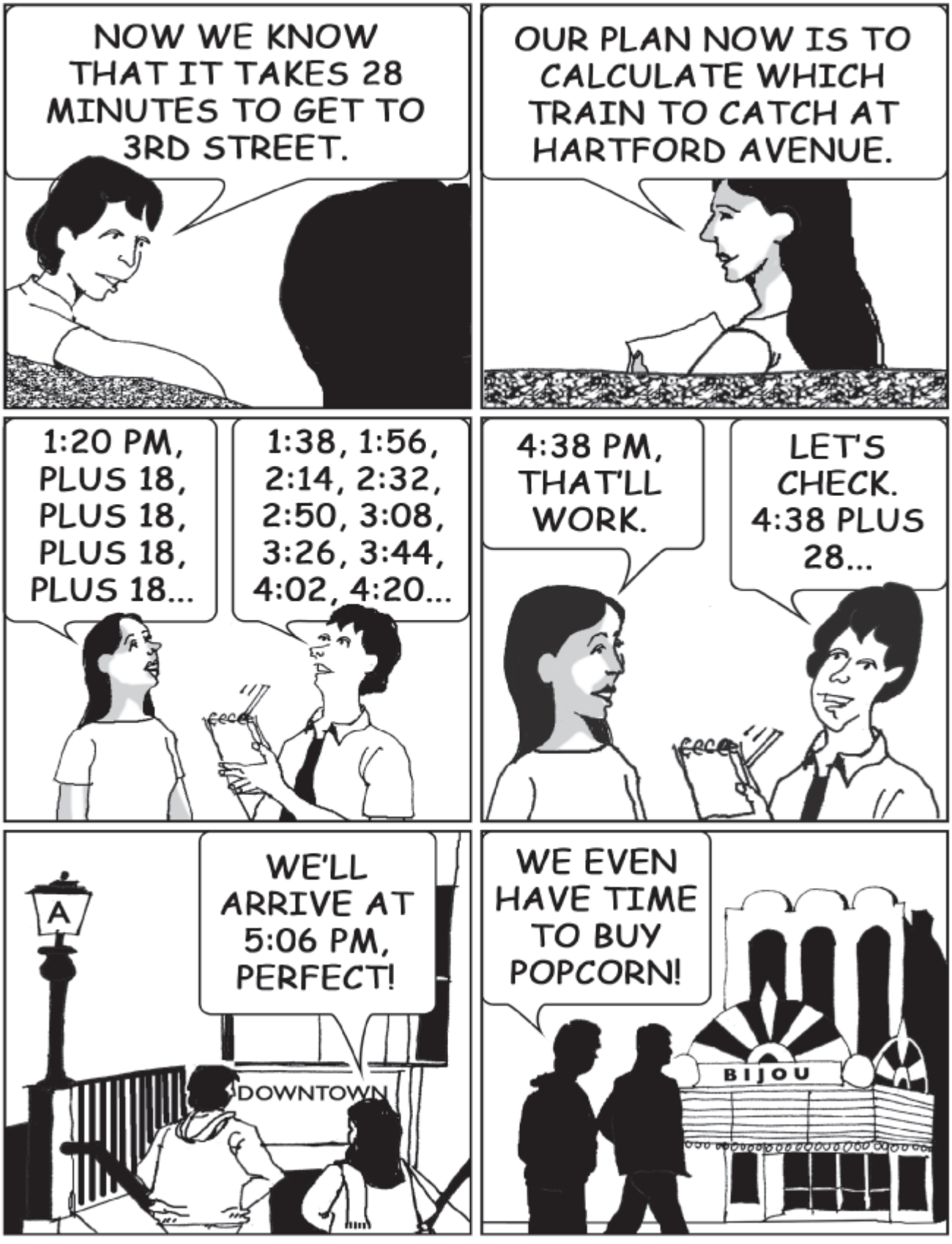
J {(Jun, Sara, Tad), (Sara, Jun, Tad)}

Mathematical Reasoning 1: Four-Step Plan

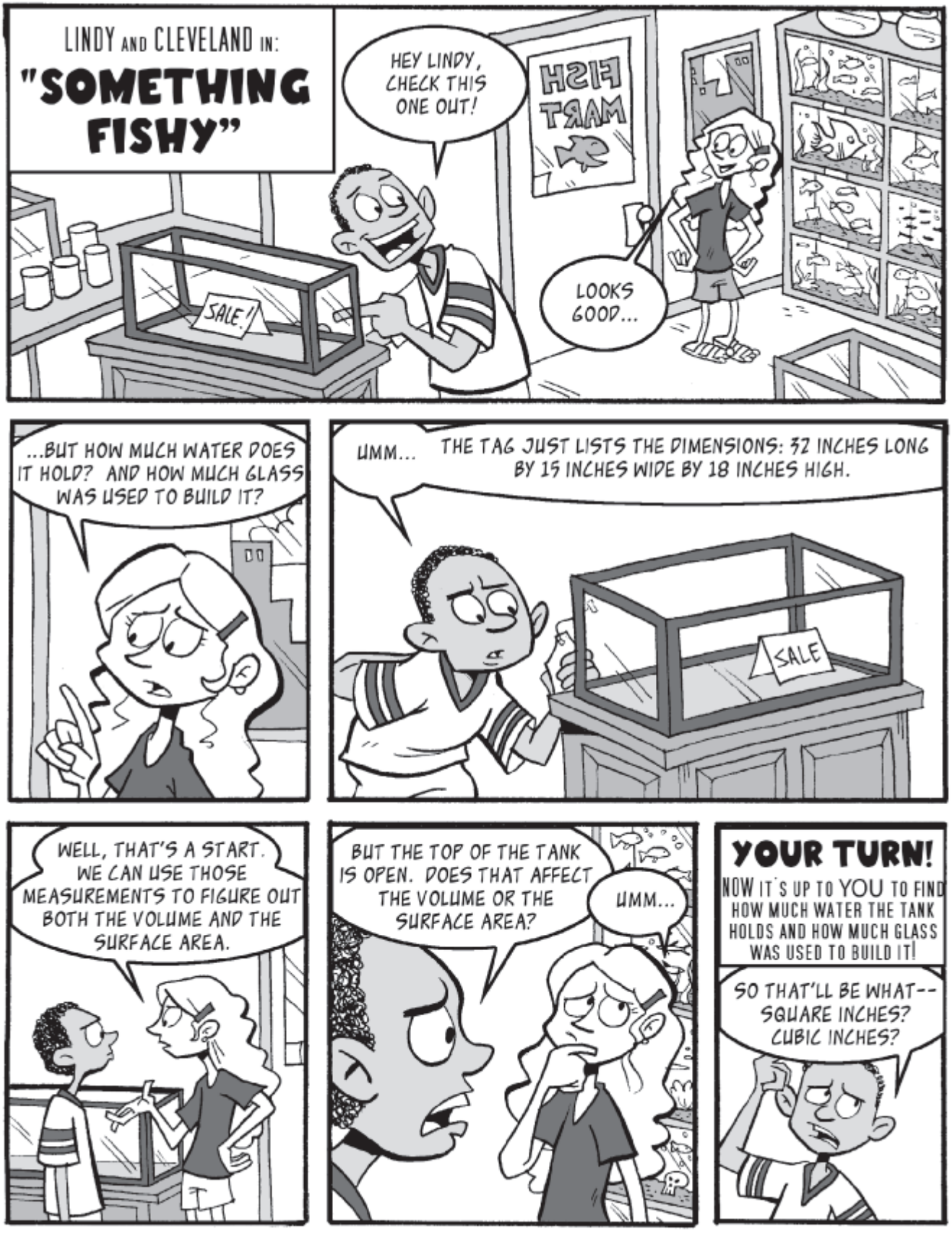
Mathematical Reasoning 1: Four-Step Plan (*continued*)



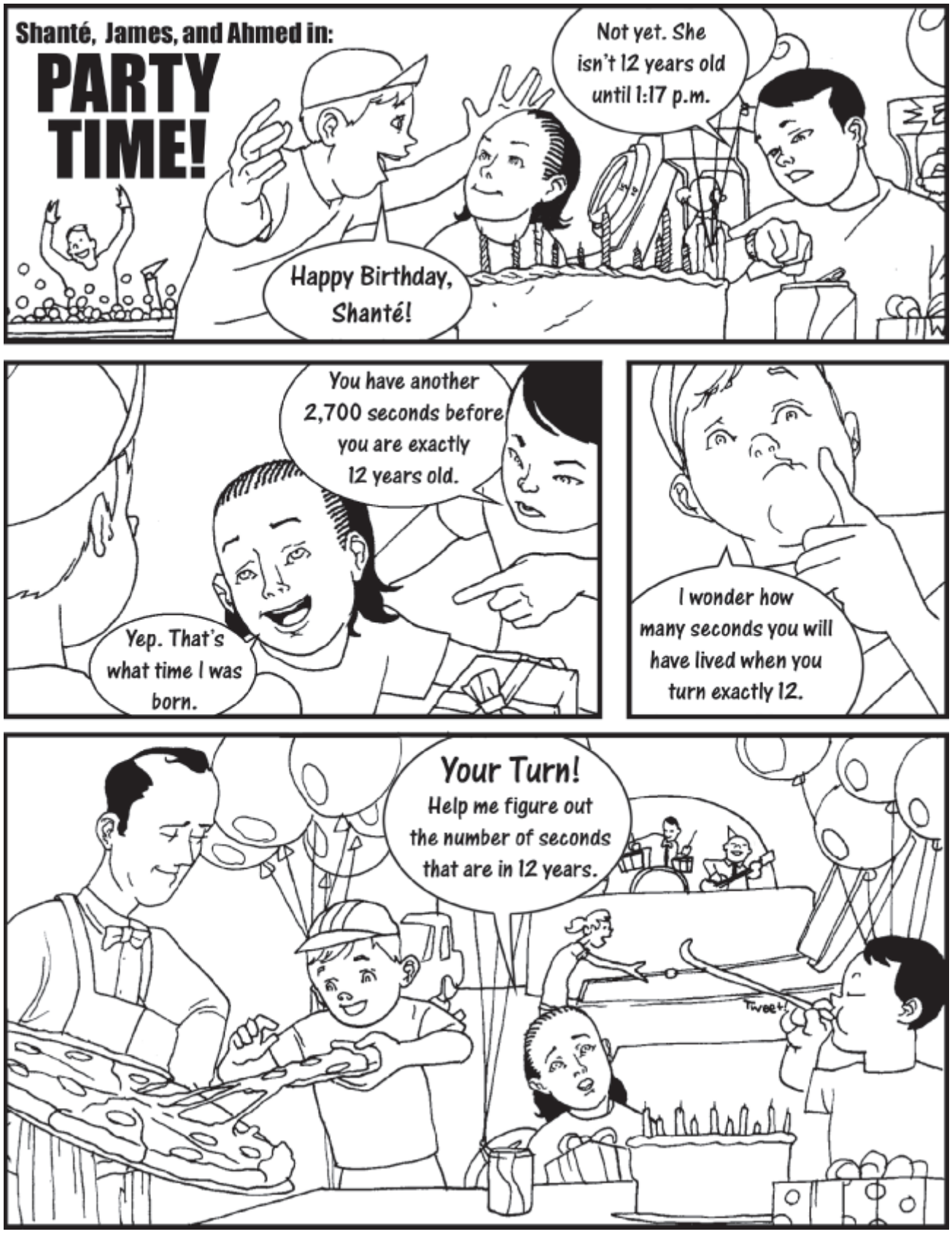
Mathematical Reasoning 1: Four-Step Plan (*continued*)



Mathematical Reasoning 2: Use Appropriate Units



Mathematical Reasoning 3: *Solve a Simpler Problem*



PRACTICE

On Your Own...

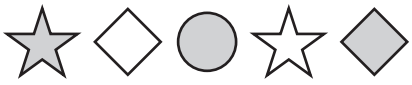
Mathematical Reasoning

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 population of Tokyo, Japan, is about 34,997,300. The population of Shanghai, China, is about 12,759,000. Which of the following operations could be used to find how many more people live in Tokyo than Shanghai?

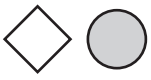
A addition
B subtraction
C multiplication
D division

2. If the pattern below is extended, which two figures would come next?



F 

H 

G 

J 

3. Julia has 5 bills that total $22. Which of the following could represent the bills?

A three $5 bills, two $1 bills
B one $10 bill, one $5 bill, seven $1 bills
C two $10 bills, two $1 bills
D one $10 bill, two $5 bills, two $1 bills

4. Ethan earns $125 per week working at a grocery store. At this rate, how much will he earn in 6 weeks?

F $500
G $750
H $875
J $1,000

5. Refer to the table below. How many days had a high temperature between 59°F and 69°F?

Daily High Temperature (°F)			
65	68	72	53
76	60	58	74
75	62	66	71

A 3
B 5
C 6
D 8

6. Which of the following is a correct method for finding the number of hours in 10 days?

F Add 10 and 24.
G Multiply 10 by 60.
H Multiply 10 by 24.
J Divide 24 by 10.

7. The table shows the number of each type of animal at a zoo.

Animals at the Zoo	
Penguins	18
Otters	12
Manatees	4
Zebras	8
Monkeys	32

Which type of display is most appropriate to compare the number of each type of animal?

A bar graph
B line graph
C line plot
D stem-and-leaf plot