Increasing Yield per Square Foot

Home Link 8-1 SRB 49-50

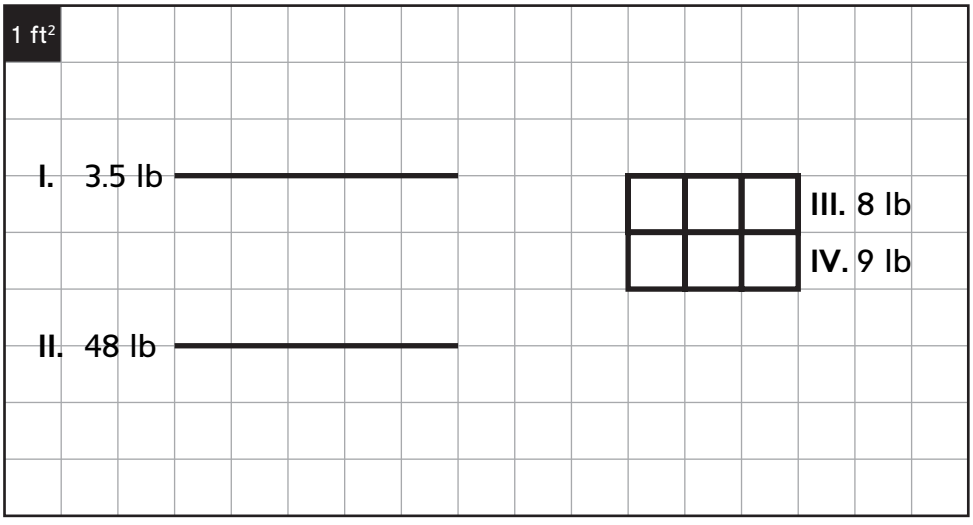
NAME DATE TIME

The diagram below shows the layout of a garden that has both rows and squares.

Use the yields on the diagram and the table information to determine which plant is in each row or square foot.

Plant	Distance between Plants	Plant Yield Rate
Beets (1 beet per plant)	4"	3 beets per lb
Carrots (1 carrot per plant)	3"	6 carrots per lb
Lettuce	6"	2 lb per plant
Peppers	12"	8 lb per plant

(1) Label each garden bed to show what kind of plant and how many of the plants fill the row or square foot.



(2) **a.** What is the total expected yield for the garden in Problem 1? _____

b. What is the overall rate of plants per square foot? _____

(3) **a.** About how much more should the garden yield if beds I and II are changed from row garden beds to square-foot garden beds? (Assume the same plant would still be planted in each.) _____

b. What would the overall rate of plants per square foot be? _____

Practice

Solve the equations.

(4) $\frac{1}{2}p = 87$; $p =$ _____ (5) $\frac{2}{3}d = 56$; $d =$ _____ (6) $\frac{7}{8}k = 84$; $k =$ _____

Using Scale Drawings

Home Link 8-2 SRB 79-80

NAME DATE TIME

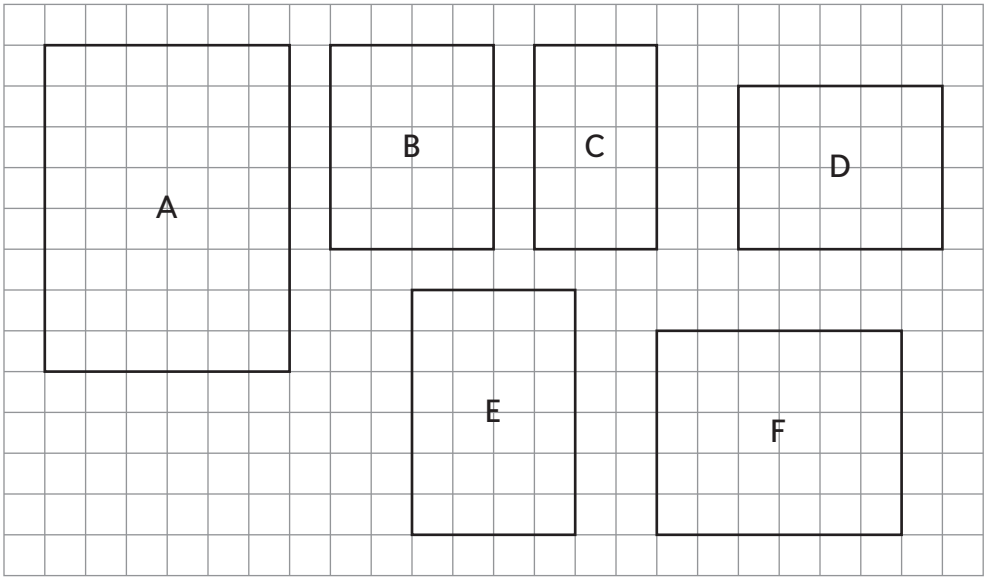
① Julian made a scale drawing of his bedroom wall. He has artwork that he and his brother made hanging on the wall. His wall is 7 feet high and 12 feet long.

a. What scale did he use?

_____

b. Use his scale drawing to complete the table.

Letter	Scaled Dimensions (height × width)	Actual Dimensions (height × width)
A		
B		
C		
D		
E		
F		



② Explain how you found the actual dimensions for Artwork B.

_____

_____

③ Why might someone make a scale drawing of a planned artwork arrangement?

_____

_____

Practice Solve.

④ 15% of x is 6. 100% of x is _____.

⑤ 90% of y is 18. 100% of y is _____.

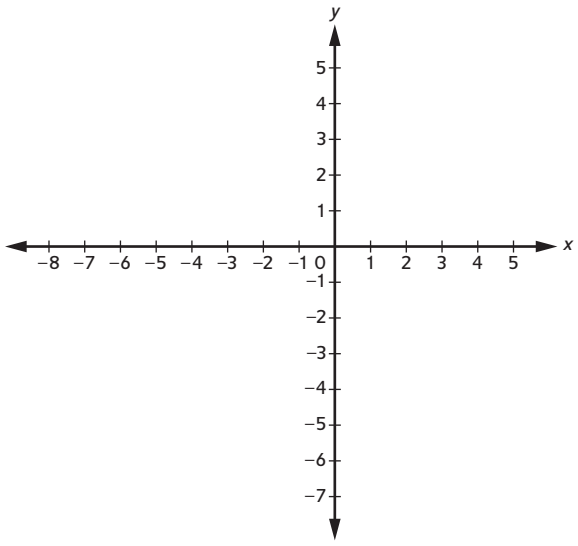
Stretching Triangles

Home Link 8-3

NAME DATE TIME

SRB 95-96

(1) Plot the original ordered pairs from the table in Problem 2, and connect points to make triangle *ABC* and triangle *ADE*.



(2) If you want to make triangle *ABC* and triangle *ADE* twice as tall and twice as wide, what would the new coordinates be? Write them in the table below.

Point	Original Ordered Pair	Ordered Pair for Enlargement
A	(−2, −1)	(−2, −1)
B	(0, −4)	
C	(−2, −4)	
D	(−5, −1)	
E	(−5, 1)	

(3) What is the distance from *D* to *E* in the enlarged figure? _____

(4) What is the distance from *D* to *E* in the original figure? _____

(5) Use ratio notation to represent the ratio of side length $\overline{DE}$ in the enlarged figure to side length $\overline{DE}$ in the original figure. _____

Practice Solve.

(6) $\frac{3}{4}\left(4 - \frac{2}{3}\right) =$ _____ (7) $3 + \frac{1}{2} \div 3 =$ _____ (8) _____ $= 2\frac{1}{2} \div \left(\frac{4}{3} - \frac{1}{2}\right)$

Modeling Distances in the Solar System

Home Link 8-4 SRB 34

NAME DATE TIME

Today the class made scale models of celestial bodies.
Imagine you are modeling the distance of each planet from the Sun.

(1) Calculate the distance from the Sun in your model using the scale given in the table. Complete the table.

Celestial Body	Average Distance from the Sun (km)	Average Distance from the Sun for the Model (Scale: 1 cm = 1,000,000 km)
Mercury	58,000,000	
Venus	110,000,000	
Earth	150,000,000	
Mars	230,000,000	
Jupiter	780,000,000	
Saturn	1,400,000,000	
Uranus	2,900,000,000	
Neptune	4,500,000,000	
Pluto	5,900,000,000	
Sun		

(2) Would this scale work for building the model in your classroom? Why or why not?

_____

_____

(3) What scale for distance might work for a model in your classroom?

_____

Practice

Solve.

(4) $\frac{t}{12} = 8$ _____ (5) $p \div 9 = 11$ _____ (6) $n + 0.35 = 5$ _____

Comparing Player Density

Home Link 8-5

NAME DATE TIME

The dimensions of the playing surfaces for four sports are listed below.

SRB 49-50

Football: 360 ft by 160 ft **Hockey:** 200 ft by 85 ft (Ignore round corners)

Basketball: 50 ft by 94 ft **Baseball:** 108,500 ft^2 (Average for major league parks)

During a game, there are 22 players on a football field, 10 on a basketball court, 10 on a baseball diamond (not counting base runners), and 12 on an ice hockey rink. Calculate the square feet of playing area per player for each sport.

1. Football playing area: _____ Area per player: _____
2. Basketball playing area: _____ Area per player: _____
3. Hockey playing area: _____ Area per player: _____
4. Baseball playing area: _____ Area per player: _____
5. **a.** Which sport is the most "crowded"? _____

   b. Justify your answer.

   _____

   _____
6. Describe the relationship between square feet per player and player density.

   _____

   _____
7. If the player density is lower, how might that affect their role in the game?

   _____

   _____

Practice Simplify the expressions.

8. $7t - 4t$ _____
9. $5 + 7r - 1.5 - 2r$ _____
10. $9(3c)$ _____
11. $\frac{1}{2}(4b + 12)$ _____

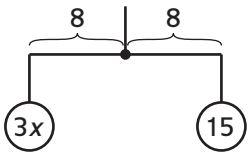
Mobiles

Home Link 8-6

NAME DATE TIME

SRB 226-227

The mobiles shown in Problems 1 and 2 are in balance.
All measures are in feet for distances or pounds for weight.



(1) What is the weight of the object on the left of the fulcrum?

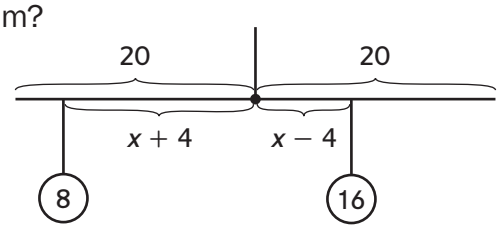
$W =$ _____ $D =$ _____

$w =$ _____ $d =$ _____

Equation: _____

Solution: _____ Weight: _____

(2) What is the distance of each object from the fulcrum?



$W =$ _____ $D =$ _____

$w =$ _____ $d =$ _____

Equation: _____

Solution: _____

Distance on the left of the fulcrum: _____

Distance on the right of the fulcrum: _____

(3) **a.** Sketch a mobile that will balance.
Label all lengths and weights.

b. Use the mobile formula to explain why your mobile balances.

_____

_____

Practice

Divide.

(4) 34.5 ÷ 0.5 = _____

(5) 8.46 ÷ 4.7 = _____

(6) _____ = 1.22 ÷ 4

(7) _____ = 26.88 ÷ 0.48

Collecting Data for Lesson 8-8

Home Link 8-7

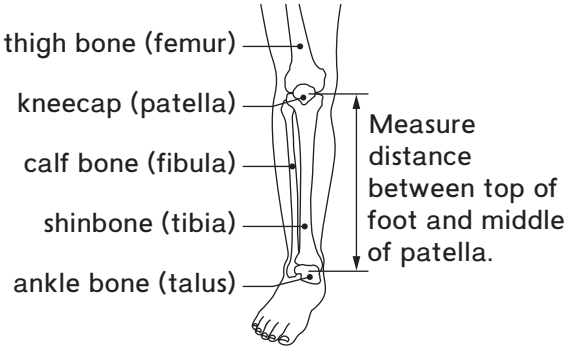
NAME DATE TIME

Collect the data on this page to use in Lesson 8-8.
Read about **anthropometry,** the subject of Lesson 8-8, on pages 408–409 of your *Student Reference Book*s.

SRB 408-409

Tibia, Height, Neck, and Wrist Data

① Use a tape measure or ruler to measure the tibias of two adults. Then have one of the adults measure your tibia.



Tibia (to the nearest $\frac{1}{4}$ inch)

Adult male: _____ in.

Adult female: _____ in.

You: _____ in.

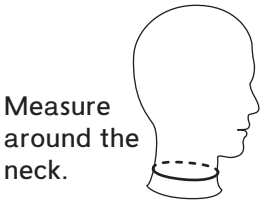
② Measure the height of the same two adults and your own height.
Be sure that each person removes her or his shoes before being measured.

Height (to the nearest $\frac{1}{2}$ inch)

Adult male: _____ in. Adult female: _____ in.

You: _____ in.

③ Measure the neck as shown at right.
Use a tape measure or string and a ruler. Be gentle!



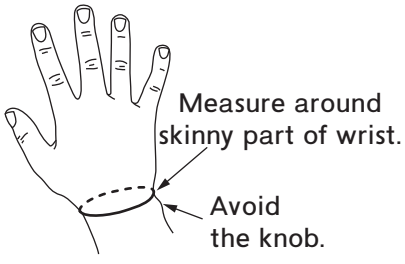
Circumference of the **neck** (to the nearest $\frac{1}{4}$ inch)

Adult male: _____ in.

Adult female: _____ in.

You: _____ in.

④ Measure the wrist around the thinnest part as shown at right. Use a tape measure or a string and ruler.



Circumference of the **wrist** (to the nearest $\frac{1}{8}$ inch)

Adult male: _____ in.

Adult female: _____ in.

You: _____ in.

Using Anthropometry

Home Link 8-8

NAME DATE TIME

The following passage is from *Gulliver's Travels* by Jonathan Swift. The setting is Lilliput, a country where the people are only 6 inches tall.

SRB 222

"Two hundred seamstresses were employed to make me shirts . . . . The seamstresses took my measure as I lay on the ground, one standing at my neck, and another at my mid leg, with a strong cord extended, that each held by the end, while the third measured the length of the cord with a rule of an inch long. Then they measured my right thumb and desired no more; *for by a mathematical computation, that twice round the thumb is once round the wrist, and so on to the neck and the waist*, and by the help of my old shirt, which I displayed on the ground before them for a pattern, they fitted me exactly."

1. Four body parts are referenced in the text. What are they? Choose a variable to represent each one.

   _____ _____

   _____ _____

2. Take these four measures on yourself, measuring to the nearest $\frac{1}{4}$ inch.

   _____ _____ _____ _____

3. Use the variables you recorded in Problem 1 to write three rules described in the text.

   _____ _____ _____

4. Based on your data, how well do you think Gulliver's new clothes fit? Explain.

   _____

   _____

Practice

Evaluate.

5. $5\frac{1}{2} \div \frac{1}{4} =$ _____

6. _____ $= 2\frac{2}{3} \div \frac{3}{4}$

Which Would You Rather Have?

Home Link 8-9 SRB 228-230

NAME DATE TIME

Don's boss is offering him two choices to get paid for June.

- Choice #1 is to receive $10 on June 1st, $20 on June 2nd, $30 on June 3rd, and so on through June 30th.
- Choice #2 is to receive 1 penny the first day, 2¢ the second day, 4¢ the third day, and so on, doubling the amount each day for the rest of the month.

(1) **a.** Predict which is the better plan. _____

b. Explain how you made your choice. _____

_____

(2) Enter formulas to complete the table for the first five days of each plan.

Boxes

C16 fx

	A	B	C	D	E
1	June Date	Choice 1	Choice 1 Total So Far	Choice 2	Choice 2 Total So Far
2	1	10.00	10.00	0.01	0.01
3	2				
4	3				
5	4				
6	5				

(3) Use a spreadsheet program or a calculator to determine how much Don would receive for the day on June 30th for each choice.

Choice 1: _____ Choice 2: _____

(4) If you have a spreadsheet program, find the total amount Don receives for both choices. If you do not, explain how to find the totals on the back of this page.

Choice 1: _____ Choice 2: _____

Practice Write three equivalent ratios for each ratio.

(5) 2.5 to 2 _____

(6) 1 : 1.4 _____

(7) $\frac{1}{2}$ to 3 _____

(8) $\frac{1}{2} : \frac{3}{4}$ _____

End-of-Year Family Letter

Home Link 8-10

NAME DATE TIME

Congratulations!

By completing *Sixth Grade Everyday Mathematics*, your child has accomplished a great deal. Thank you for your support.

This Family Letter is intended as a resource for you to use throughout your child's vacation. It includes an extended list of Do-Anytime Activities, directions for games that you can play at home, a list of mathematics-related books to get from your local library, and a preview of what your child might be learning in seventh grade.

Do-Anytime Activities

Mathematics means more when it is rooted in real-world situations. To help your child review many of the concepts learned in sixth grade, we suggest the following activities for you to do with your child during vacation. These activities will help your child build on the skills that he or she has learned this year and are good preparation for a seventh-grade mathematics course.

1. Practice quick recall of multiplication facts. Include extended facts, such as $70 * 8 = 560$ and $70 * 80 = 5{,}600$.
2. Practice calculating mentally with percents. Use a variety of contexts, such as sales tax, discounts, and sports statistics.
3. Use measuring devices—rulers, metersticks, yardsticks, tape measures, thermometers, scales, and so on. Measure in both U.S. customary and metric units.
4. Estimate the answers to calculations, such as the bill at a restaurant or store, the distance to a particular place, miles per gallon on a trip, the number of people at an event, and so on.
5. Play games like those in the *Student Reference Book*.
6. If you are planning to paint or carpet a room, consider having your child measure and calculate the area. Have him or her write the formula for area ($A = l * w$) and then show you the calculations. If the room is an irregular shape, divide it into separate rectangular regions and have your child find the area of each one.
7. Ask your child to halve, double, or triple the amount of each ingredient in a particular recipe. Have your child explain how he or she calculated each amount.
8. Help your child use ratios in relation to the wins and losses of a favorite sports team. Ask him or her to decide which ratio is being used. For example, wins to losses (such as 5 to 15) or losses to wins (15 to 5) are part-to-part ratios. Part-to-whole ratios are used to compare wins to all games played (5 out of 20) or losses to all games played (15 out of 20).
9. Provide extra practice with partial-quotients division by having your child divide 3-digit numbers by 2-digit numbers, 4-digit numbers by 3-digit numbers, and so on. Ask your child to explain the steps of the algorithm to you as she or he works through them.

Building Skills through Games

The following section lists directions for games that can be played at home. Regular playing cards can be substituted for the number cards used in some games. Other cards can be made from index cards.

Name That Number

Materials	number cards 0–10 (4 of each) and 11–20 (1 of each)
Players	2 or 3
Skill	Naming numbers with expressions
Object of the Game	To collect the most cards

Directions

1. Shuffle the deck and deal five cards to each player. Place the remaining cards number-side down on the table between the players. Turn over the top card and place it beside the deck. This is the **target number** for the round.
2. Players try to match the target number by adding, subtracting, multiplying, or dividing the numbers on as many of their cards as possible. A card may only be used once.
3. Players write their solutions on a sheet of paper. When players have written their best solutions:
   - Each player sets aside the cards they used to match the target number.
   - Each player replaces the cards they set aside by drawing new cards from the top of the deck.
   - The old target number is placed on the bottom of the deck.
   - A new target number is turned over, and another round is played.
4. Play continues until there are not enough cards left to replace all the players' cards. The player who has set aside the most cards wins the game.

Getting to One

Materials 1 calculator
Players 2
Skill Estimation
Object of the Game To correctly guess a mystery number in as few tries as possible

Directions

1. Player 1 chooses a mystery number that is between 1 and 100.
2. Player 2 guesses the mystery number.
3. Player 1 uses a calculator to divide Player 2's guess by the mystery number. Player 1 then reads the answer in the calculator display. If the answer has more than 2 decimal places, only the first 2 decimal places are read.

NOTE For a decimal number, the places to the right of the decimal point with digits in them are called *decimal places.* For example, 4.06 has two decimal places, 123.4 has one decimal place, and 0.780 has three decimal places.

4. Player 2 continues to guess until the calculator result is 1. Player 2 keeps track of the number of guesses. Player 2 may wish to keep track of guesses by recording them in a "What's My Rule?" table such as this:

in	out

5. When Player 2 has guessed the mystery number, players trade roles and follow Steps 1–4 again. The player who guesses his or her mystery number in the fewest number of guesses wins the round. The first player to win three rounds wins the game.

Vacation Reading with a Mathematical Twist

Books can contribute to learning by presenting mathematics in a combination of real-world and imaginary contexts. Teachers who use *Everyday Mathematics* in their classrooms recommend the titles listed below. Look for these titles at your local library or bookstore.

Problem-Solving Practice

Math for Smarty Pants by Marilyn Burns (Yolla Bolly Press, 1982)

Brain Busters! Mind-Stretching Puzzles in Math and Logic by Barry R. Clarke (Dover Publications, 2003)

Wacky Word Problems: Games and Activities That Make Math Easy and Fun by Lynette Long (John Wiley & Sons, Inc., 2005)

My Best Mathematical and Logic Puzzles by Martin Gardner (Dover Publications, 1994)

Math Logic Puzzles by Kurt Smith (Sterling Publishing Co., Inc., 1996)

Skill Maintenance

Delightful Decimals and Perfect Percents: Games and Activities That Make Math Easy and Fun by Lynette Long (John Wiley & Sons, Inc., 2003)

Dazzling Division: Games and Activities That Make Math Easy and Fun by Lynette Long (John Wiley & Sons, Inc., 2000)

Fun and Recreation

Mathamusements by Raymond Blum (Sterling Publishing Co., Inc., 1999)

Mathemagic by Raymond Blum (Sterling Publishing Co., Inc., 1991)

Kids' Book of Secret Codes, Signals, and Ciphers by E. A. Grant (Running Press, 1989)

The Seasons Sewn: A Year in Patchwork by Ann Whitford Paul (HMH Books for Young Readers, 1996)

Looking Ahead

Everyday Mathematics experiences in sixth grade prepare your child to do the following in future math classes:

- Use proportional reasoning to solve problems.
- Compute with fractions and decimals.
- Continue to write equivalent algebraic expressions to model and solve problems.
- Solve equations.
- Use formulas to solve problems.

Thank you for your support this year. Have fun continuing your child's mathematical experiences throughout the summer!

Best wishes for an enjoyable vacation.