Teachers Guide

Volume 7 Module 5

Sample

bridges® intervention

Module 5

Area Problems

Major Instructional Targets

- Find the area of a rectangle with whole-number side lengths by tiling it
- Demonstrate that the area of a rectangle with whole-number side lengths can be found by multiplying the side lengths
- Find the area of a rectangle by multiplying its side lengths
- Apply the area formula for a rectangle to solve a problem

Planner

Session	Warm-Up 1	Warm-Up 2	Activity
21 From Array to Area	Multiplication 6s–9s	Getting Ready to Play Equation Bingo, Set 1	From Array to Area
22 Area Problems, Multiplication		Playing Equation Bingo, Set 1	Solving Area Problems, Multiplication
23 Area Problems, Division		Getting Ready to Play Equation Bingo, Set 2	Solving Area Problems, Side Length Unknown
24 Multiplication & Division Area Problems		Playing Equation Bingo, Set 2	Which Operation?
Assessment Skills & Concepts Assessed			
Session 25 Progress Monitoring 7-5	• Find the area of a rectangle by multiplying its side lengths • Apply the area formula for a rectangle to solve a problem		

Recommended Grade Level for Starting Intervention

- Mid grade 4

Materials Preparation

You can use this to-do list to prepare materials ahead of time for the entire module.

Type	Items & Notes	Done
Copies	Make copies of each print original according to the instructions at the top of the page.	
Cards & Mats	*If you are making cards and mats from the component originals, refer to the pages noted below for information about copying and assembly.* **Number Cards** C2–C3 **Graphic Organizer 4** C6 You'll need specially prepared sets of Number Cards for activities in this module. To prepare one of these sets, take the 6, 7, 8, and 9 cards from 4 decks (so you have 16 of each card). You'll use one set for group play in Sessions 21 and 22, and a set for each pair of students in Sessions 23 and 24.	
Other Items	Cut the following rectangles from construction paper for use in Session 21: • 1 orange 6″ × 5″ • 1 white 4″ × 6″ • 1 black 3″ × 5″ • 1 purple 3″ × 9″ *per student pair* You'll also need a single 5" × 7" paper rectangle (any color) for the Progress Monitoring interview in Session 25.	

See the Preparation section of the Volume 7 Introduction for information about general classroom materials, game supplies, and math manipulatives needed for activities in this and other modules.

Sample

Session 21

From Array to Area

Materials

Cards & Mats	Other Materials	Print Originals
• Number Cards (6s–9s from 4 decks)	• red and blue colored pencils • 3 construction paper rectangles: orange 6″ × 5″, white 4″ × 6″, and black 3″ × 5″ • purple 3″ × 9″ construction paper rectangles, 1 per student pair • colored 1″ square tiles, about 120 • red linear pieces, about 12 • rulers marked in inches	**P1** Multiplication 6s–9s **P2** Equation Bingo Problems, Set 1 **P3** Equation Bingo Board **P4–P5** Measure & Multiply

Copy instructions are located at the top of each print original.

Instructional Goals

Find the area of a rectangle with whole-number side lengths by tiling it

Demonstrate that the area of a rectangle with whole-number side lengths can be found by multiplying the side lengths

Find the area of a rectangle by multiplying its side lengths

Warm-Up 1 Multiplication 6s–9s

Collect the 6s, 7s, 8s, and 9s from four decks of Number Cards, and shuffle them to make a single deck of only numbers 6–9 (16 of each). You'll also need a red and a blue colored pencil and a Multiplication 6s–9s sheet.

1 Explain that students will work as a team to play Multiplication 6s–9s with 6s through 9s Number Cards instead of 3s through 6s. Display the game sheet and place the cards face-down.

2 With input from students, briefly review the rules of the game.

Play proceeds as in Module 4, Session 16. Teams take turns drawing two cards, multiplying the numbers, and coloring in the product. At the end of the game, each team circles their products that fall 3, 4, or 5 in a row horizontally or vertically, and scores a point for each. High score wins.

3 Choose a student to do the recording for the group. Remind the others that they will take turns drawing cards and multiplying for their team, but the recorder will decide where to color in the products on the sheet.

4 When the game is over, loop any groups of 3, 4, or 5 products in a row for yourself, and invite a student to do so for the group. Each team scores 1 point for every product they've looped; high score wins the game.

Warm-Up 2 Getting Ready to Play Equation Bingo, Set 1

1 Give each student an Equation Bingo Board, and explain that they're going to prepare these boards to play the game next session. You will read some problem situations, and they'll each write an equation to match the problem in any one of the nine spaces on their bingo board, using a box for the unknown. They'll solve the equations when they play the game next session.

2 Read the first problem on the Equation Bingo Problems, Set 1 sheet aloud.

> Trevon was working in his grandmother's garden. He counted 9 ladybugs on one of the rose bushes. If each ladybug had 6 legs, how many legs was that in all?

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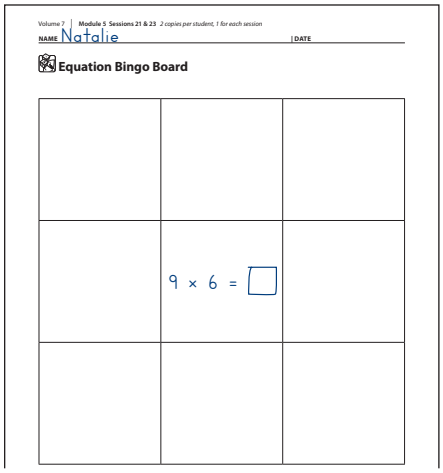
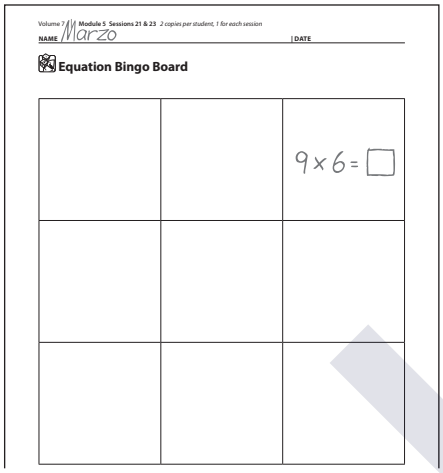
3 Work with student input to write a matching equation on the board. Then have students write the equation in any of the nine spaces on their bingo board.

Encourage students to choose different spaces so everyone winds up with a unique bingo board.





4 Repeat until you've read all nine problem situations. Collect students' bingo boards and save them, along with the sheet of problem situations, for use next session.

Activity From Array to Area

You'll need the construction paper rectangles, tiles, and linear pieces for this activity. You'll also need rulers marked in inches for each pair of students and yourself.

1 Let students know that they're going to be solving some problem situations having to do with area over the next few days.

Today, you'll review the term and practice measuring and determining area.

- Write the word *area* on the board and read it with the group.
- Ask: *What do you know about area?* Add clarification and information as needed. Explain that when people measure area, they find out how many square units it takes to cover a shape. When people talk about the area of a rectangle—such as a sandbox, a basketball court, or a football field—they report it in square inches, square feet, square meters, square yards, or—if the area is large enough—in square kilometers or square miles.

2 Display a colored tile and explain that it has an area of exactly 1 square inch. Then lay the orange construction paper rectangle beside the tile and invite students to estimate the area of the rectangle in square inches—that is, the number of colored tiles it would take to cover the rectangle completely without gaps or overlaps. Ask them to explain their estimates.

3 Next, set a container of colored tiles out and ask a couple of the students to cover the paper rectangle with tiles, working as quickly as possible.

Encourage them to take handfuls of tiles out of the container and push them together to cover the rectangle. Discourage students from counting the tiles one by one.

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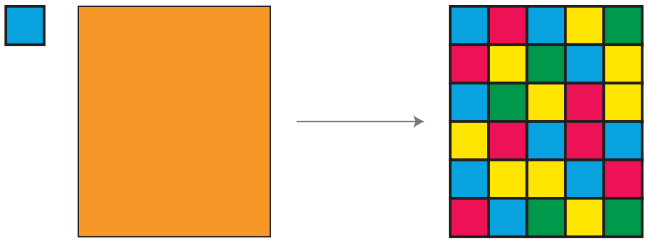

4 Ask students to determine how many tiles are covering the paper rectangle without counting them one by one. When they're finished, invite volunteers to share their solutions and strategies.

Students will likely count by 5s or 6s to find the total. If no one makes reference to 6 rows of 5 or 5 columns of 6, prompt for those strategies using the questioning strategies in the sidebar.

Student I got 30. How I did it was I saw 5 in the top row, so I went 5, 10, 15, 20, 25, 30.

Student I got 30, but I went up and down instead of across. It's 6 down. Six and 6 is 12, then 2 more 6s is 24, then 1 more 6 makes 30.

5 Record the area of the orange rectangle on the board, and read the information with the group: *the area of the orange rectangle is 30 square inches because it takes 6 rows of 5 square-inch tiles to cover it.*

6 Next, display the white rectangle and pose the following question:

If you knew the number of tiles in one row and the number of rows for this paper rectangle, could you find the area of the rectangle without having to cover it with tiles?

7 Set linear units above the upper edge of the rectangle and ask students to use the information to tell how many tiles in each row. Next, set red linear pieces beside the left edge of the rectangle and have them tell how many rows of tiles in the rectangle. Finally, pose the question again: *Can you find the area of this rectangle without covering it in tiles? If so, how, and what is the area?*

SUPPORT Place a red linear piece beside one of the tiles so students can see that its length matches that of the tile.

Student OK, you can see that there would be 6 tiles in each row.

Student And there would be 4 rows.

Teacher Do you have enough information to find the area of this rectangle without covering it with tiles?

Questioning Strategies

How could you figure out how many tiles were covering the paper rectangle without counting them one by one?

Does anyone have a different idea?

What strategy did you use?

How many rows of tiles are there?

How many tiles in each row?

Is that a reasonable answer?

Did anyone do it a different way?

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Student I think so, because you know it's 4 rows of 6, and that's 24.

Student 24 because it would be 6 and 6 on the top half, and the same on the bottom.

8 Work with input from the group to record the area of the white rectangle on the board: *the area of the white rectangle is 24 square inches because it's 4 rows of 6, and 4 × 6 = 24.*

SUPPORT Have students cover the paper rectangle with colored tiles to confirm that it actually takes 4 rows of 6, or 24 tiles.

9 Distribute rulers, and have each student measure the length of one of the red linear pieces to confirm that it is exactly 1 inch long. Then place the black construction paper rectangle in the middle of the workspace and pose the following question:

If we use a ruler to measure the length and the width of this paper rectangle, can you find its area without having to cover it with tiles?

10 Have a volunteer measure the length and width of the rectangle and report the dimensions to the group. Ask students if they have enough information to find the area of the rectangle without covering it with tiles. *If so, how, and what is the area?*

Students I think it's going to be 15, like 15 of those tiles.

That's what I think. We know the little red pieces are 1 inch long. So, it would take 5 of them across the top because the black rectangle is 5 inches long. It's 3 inches on the side, so that would be like 3 rows of 5 tiles, and that's 15.

11 Work with input from the group to record the area of the black rectangle on the board: *the area of the black rectangle is 15 square inches because it's 3″ wide and 5″ long, and 3 × 5 = 15.*

SUPPORT Have a student cover the rectangle with tiles to confirm that it actually takes 3 rows of 5, or 15 tiles.

Ask students how they can find the area of any rectangle without covering it with tiles. Guide them to the generalization that the area of a rectangle can be found by measuring and then multiplying its dimensions.

12 Pair students. Give each student pair a purple construction paper rectangle. Ask them to work together to measure the dimensions of the rectangle in inches, multiply length times width to find the area of the rectangle in square inches, and use colored tiles to confirm the results. [3″ wide, 9″ long, 27 square inches]

Let them know that they don't have to cover the entire rectangle with colored tiles if they can demonstrate that their answer is correct with fewer; by, for instance, building a row of 9 across the top, a column of 3 along the side, and noting that 3 rows of 9 is 27.

Practice Page Measure & Multiply

Assign a Measure & Multiply Practice Page.

Read the instructions and review the example at the top of the page.

Note that each student will need a ruler marked in inches and access to colored tiles to complete this assignment.

Sample

Session 22

Area Problems, Multiplication

Materials

Cards & Mats	Other Materials	Print Originals
• Number Cards (6s–9s from 4 decks) • Graphic Organizer 4 (1 per student and 1 for display)	• red and blue colored pencils, 1 each per student and teacher • students' prepared Equation Bingo Boards from Session 21 • small paper sack or gift bag • blue and red dry-erase markers, 1 each per student and teacher	**P1** Multiplication 6s–9s **P2** Equation Bingo Problems, Set 1 (cut apart) **P6–P7** Pet Habitats

Copy instructions are located at the top of each print original.

Instructional Goals

Solve multiplication and division problem situations involving situations of equal groups, arrays, and multiplicative comparisons

Apply the area formula for a rectangle to solve a problem

Warm-Up 1 Multiplication 6s–9s

1 Have students work as a team to play Multiplication 6s–9s against you again. Follow the game rules and procedures described in Session 21, Warm-Up 1.

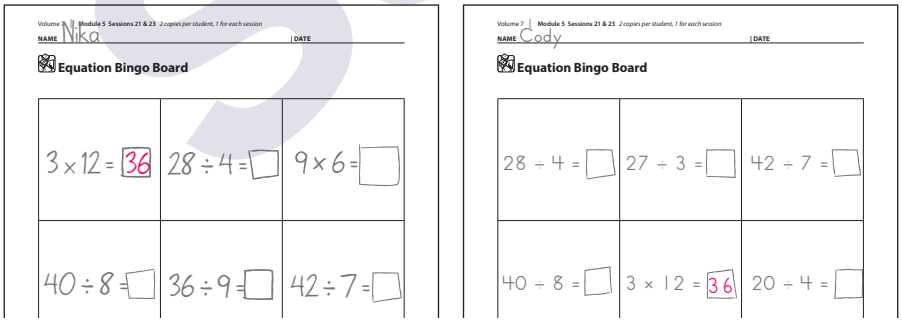
Warm-Up 2 Playing Equation Bingo, Set 1

Cut a Equation Bingo Problems, Set 1 sheet apart to form 9 separate problem strips. Fold each strip in half and place all 9 of them in a small paper sack or gift bag. You will also need students' prepared Equation Bingo Boards and a red pencil for each student.

1 Give each student their prepared Equation Bingo Board sheet and a red pencil, and explain that you're going to play Equation Bingo today.

2 Show students the bag of problem strips. Then shake the bag well, pull out a strip, and read it to the group. Have each student locate the matching equation on his or her board and use a red pencil to fill in the answer.

> **Teacher** Trevon's little brother, André, saw 3 rows of ants marching in the garden. There were 12 ants in each row. How many ants in all?
>
> **Student** I remember that one! OK, now where did I write the equation for that one? Oh, right here in the middle!
>
> **Student** We have to write the answer now. Let's see … 12 and 12 is 24, then 12 more is 36.



3 Continue in this fashion until a student gets a "4-square" by filling in 4 boxes each adjacent on 2 sides to form a square. If 2 or more students mark 4 adjacent boxes that form a square at the same time, it's a tie game.

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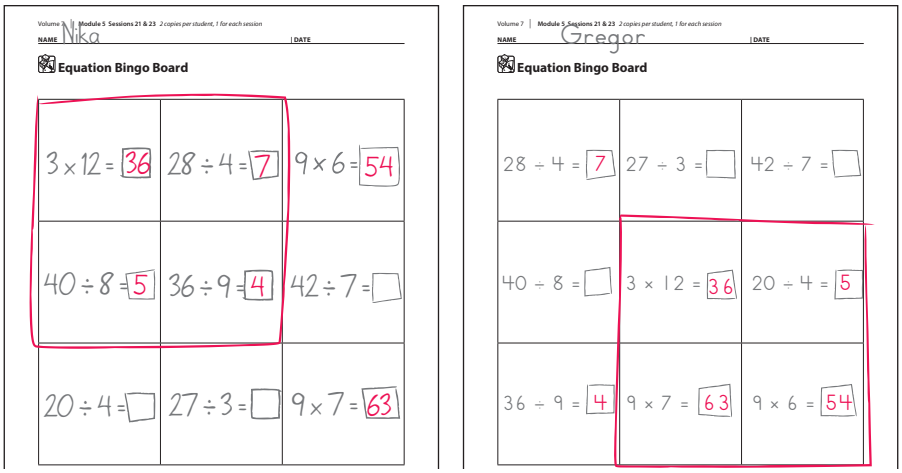

Students Four-square!

Activity Solving Area Problems, Area Unknown

1 Let students know that they'll solve some more problem situations today. Display an Area Problems graphic organizer, and remind them that a *graphic organizer* is a tool people use to record and organize information so they can see and work with it more easily. This particular organizer is helpful in solving multiplication and division problem situations that involve area.

2 Share the first problem:

> Aaron has finally convinced his mom to let him have a pet. He's not yet sure what kind of pet he wants, so he decides to start by cleaning out the corner of his room and measuring it to see how much space he has for a cage. It turns out that the space in the corner of his room is 40 inches long and 20 inches wide. What is the area of that space in square inches?

3 Work with student input to enter the information on the Area Problems organizer.

- Read the problem a second time if needed.
- Draw a red box to represent the unknown in the problem—in this case, the area.

4 Work with student input to write an equation to match the display. Have them give the answer, and invite volunteers to explain their thinking. Then record the solution in the red box, and circle the corresponding number in the equation in red.

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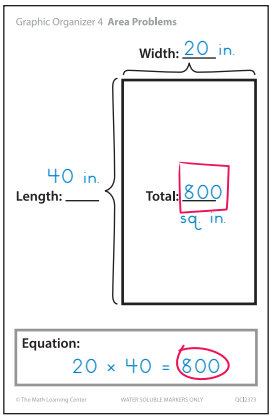


5 Give each student an Area Problems organizer and dry-erase markers in red and blue. Repeat steps 2–4 with the problems below, and have the students work on their mats as you work on yours.

Aaron thought some more about the kind of pet he wanted. He thought about fish, turtles, frogs, lizards, geckos, but finally decided that he wanted something cute and furry. He went online to read up on small pets, and discovered that gerbils, mice, and hamsters all need cages that are at least 12 inches long and 12 inches wide. How many square inches of living space do these tiny pets need? [12 × 12 = ____, 144 square inches]

Aaron did some more reading, and discovered that guinea pigs and rats need cages that are at least 24 inches long and 12 inches wide. How many square inches of living space do these small pets need? [24 × 12 = ____, 288 square inches]

Then Aaron read that rabbits and chinchillas need cages that are at least 30 inches long and 30 inches wide. How many square inches of living space do these pets need? [30 × 30 = ____, 900 square inches]

Aaron thought and thought, and finally decided that he wanted a guinea pig. When he went to the pet store to start looking at guinea pigs, he found a great cage on sale, but it was almost as big as the space in the corner of his bedroom. So, he started moving things as soon as he got back home, and managed to clear a space that was 45 inches long and 25 inches wide. How many square inches of space did he have then? [45 × 25 = ____, 1125 square inches]

SUPPORT Work with student input to break the last combination, 45 × 25, into 4 partial products (40 × 20, 40 × 5, 5 × 20, and 5 × 5). Have students solve each and then add the products to get the total—1,125.

Practice Page Pet Habitats

Assign a Pet Habitats Practice Page.

Read the instructions and review the example at the top of the page. Complete the first problem with the students, and support them as needed in completing the other two.

Sample

Sample

Session 23

Area Problems, Division

Materials

Cards & Mats	Other Materials	Print Originals
• a prepared set of Number Cards for each student pair, each set made of the 6, 7, 8, and 9 cards from 4 decks • Graphic Organizer 4 (1 per student and 1 for display)	• red and blue colored pencils for students • student whiteboards, markers, and erasers • blue and red dry-erase markers for teacher and students	**P1** Multiplication 6s–9s **P3** Equation Bingo Board **P8** Equation Bingo Problems, Set 2 **P9–P10** The Art Supply Store

Copy instructions are located at the top of each print original.

Instructional Goals

Apply the area formula for a rectangle to solve a problem

Warm-Up 1 Multiplication 6s–9s

1 With student input, review the rules of Multiplication 6s–9s so students can play in pairs.

- Each pair gets a prepared set of Number Cards, a red and a blue colored pencil, and a record sheet to share.
- Players take turns drawing 2 cards from the stack, multiplying the numbers, and coloring in the product on the game sheet using their own color.
- Each player circles the products they've colored that fall 3, 4, or 5 in a row, either horizontally or vertically, and scores a point for every product they've looped. High score wins.

2 Pair students, distribute materials, and have students play the game.

Warm-Up 2 Getting Ready to Play Equation Bingo, Set 2

1 Give each student an Equation Bingo Board, and explain that they're going to prepare these boards to play the game next session. You will read some problem situations, and they'll each write an equation to match the problem in any one of the nine spaces on their bingo board, using a box for the unknown. They'll solve the equations when they play the game next session.

2 Read the first problem on the Equation Bingo Problems, Set 2 sheet aloud.

> Kama is taking a class at the zoo this week. Today, her teacher said that a small elephant needs 90 liters of water a day. How much water would the elephant need for a week?

3 Work with student input to write a matching equation on the board. Then have students write the equation in any of the nine spaces on their bingo board.

Encourage them to choose different spaces so everyone winds up with a unique bingo board.

4 Repeat until you've read all nine problems and students have finished preparing their sheets.

Collect students' bingo boards and save them, along with the sheet of problem situations, for use next session.

Sample

Activity Solving Area Problems, Side Length Unknown

1 Let students know that they'll solve some problem situations today, similar to those they solved last session with one important difference. Challenge them to see if they can figure out what it is. Then share the first problem:

> Today, Aaron went to the pet store to get his new guinea pig, a cage, and some food and bedding. As he and his mom were driving home, he started worrying about how far the cage would stick out in the corner he's cleared. He remembered that the area of the cage was 800 square inches, and the length was 40 inches, but he couldn't remember the width. Help Aaron solve his problem.

2 Read the problem again, and work with student input to record the key information on the board.

area = 800 sq. in.
length = 40 in.

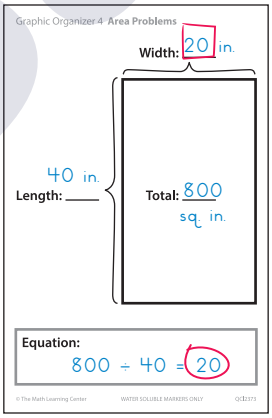
3 Work with student input to record the information on your organizer. Use blue to show the known information, and red to highlight the unknown part. Then write a division equation to represent the situation, and read it to the students in the context of the problem.

> **Teacher** Aaron's cage has an area of 800 square inches. We know the length is 40 inches, and now we have to find the width of the cage. *Since we multiply length times width to find the area of a rectangle, what can we do to find the width?*
>
> **Student** I think if you take the area, 800, and divide it by 40, it'll work.
>
> **Student** I agree. It's like you have 800 tiles put into 40 rows, and you're trying to find out how many there are in each row, so if you go 800 divided by 40, you can find out.

4 Give students a minute to solve the problem mentally or on their whiteboards. Then invite volunteers to share and explain their thinking.

SUPPORT Encourage students to solve 800 ÷ 40 by thinking of it as a multiplication combination with a missing factor: 40 × ___ = 800.

5 Finally, record the solution on your mat and label it with the correct units.



6 Distribute blue and red markers and organizers. Repeat the process with the situations below, having students work on their organizers as you do the same.

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Soon, everyone in the family loved Aaron's new pet, Pickles. Aaron's mom even gave him permission to set up a playpen in the family room where Pickles could have more space to run and play. Pickles' playpen was 1,500 square inches, nearly twice the size of her cage. It was 30 inches wide. How long was it? [1,500 ÷ 30 = ___ or 30 × ___ = 1500, 50 inches long]

After about a week, Aaron discovered that Pickles needed a place inside her cage where she could hide when she got nervous. So, his mom helped him build a little wooden box with a doorway for Pickles. The box was 70 square inches, so there was plenty of room to put it in the corner of her cage. It was 10 inches long. How wide was Pickles' little hiding box? [70 ÷ 10 = ___, 7 inches wide]

Pickles started to seem very sad after she'd been with Aaron for about a month. That's when Aaron found out that guinea pigs do best in pairs. So he got a friend for Pickles and named her Peaches. There was more than enough room for the two guinea pigs in the cage, but Aaron decided to build them a pen in the backyard where they had lots of space to run around in the sunshine. The pen was 3 feet wide, and had an area of 15 square feet. What was the length of the pen? [15 ÷ 3 = ___, 5 feet long]

Pickles and Peaches loved their outdoor pen, but they got scared when the neighbor's dog barked. So, Aaron built a wooden box for them to hide in when they were in their outdoor pen. This hiding box was 10 inches wide and 130 square inches. How many inches long was the box? [130 ÷ 10 = 13 inches long]

7 Conclude by asking students to compare these problems with the ones they solved last session. *How are they alike? How are they different?*

Draw out the fact that each of the problems they solved last session involved multiplying the dimensions of a rectangle to find its area, while today's problems each involved dividing the area of a rectangle by one of its dimensions to find the other dimension.

Practice Page The Art Supply Store

Assign an Art Supply Store Practice Page.

Read the instructions and review the example at the top of the page. Complete the first problem with the students, and support them as needed in completing the other two.

Sample

Sample

Session 24

Multiplication & Division Area Problems

Materials

Cards & Mats	Other Materials	Print Originals
• a prepared set of Number Cards for each student pair, each set made of the 6, 7, 8, and 9 cards from 4 decks • Graphic Organizer 4 (1 for display)	• red and blue colored pencils for students • a timer set for 4 minutes • students' prepared Equation Bingo Board sheets from Session 23 • small paper sack or gift bag • blue and red dry-erase markers • student whiteboards, markers, and erasers	**P1** Multiplication 6s–9s **P8** Equation Bingo Problems, Set 2 (cut apart) **P11–P12** The Ladybugs' New Yard

Copy instructions are located at the top of each print original.

Instructional Goals

Solve problem situations involving mass, liquid volume, and length using multiplication or division

Apply the area formula for a rectangle to solve a problem

Warm-Up 1 Multiplication 6s–9s

1 Explain that students will play Multiplication 6s–9s in pairs again today. Follow the game rules and procedures described in Session 23, Warm-Up 1.

Warm-Up 2 Playing Equation Bingo, Set 2

Cut a Equation Bingo Problems, Set 2 sheet apart to form nine separate problem strips. Fold each strip in half and place all of them in a small paper sack or gift bag. You will also need students' prepared Equation Bingo Boards and a red pencil for each student.

1 Give each student his or her prepared Equation Bingo Board sheet and a red pencil, and explain that you're going to play Equation Bingo again today.

2 Show students the bag of problem strips. Then shake the bag well, pull out a strip, and read it to the group. Have each student locate the matching equation on his or her board and use a red pencil to fill in the answer.

3 Continue in this fashion until a student gets a "4-square" by filling in 4 boxes each adjacent on 2 sides to form a square. If 2 or more students mark 4 adjacent boxes that form a square at the same time, it's a tie game.

Activity Which Operation?

1 Explain that you're going to read a problem situation that involves area. Students will tell you where to enter the information on the Area Problems organizer. Then they'll write and solve an equation to match.

2 Share the first problem:

> Mr. and Mrs. Ladybug have a growing family. They have 3 little girl ladybugs, and Mrs. Ladybug just had twin baby boy bugs. So, they've started sketching plans for a new house. They already know that the entire house will be 12 centimeters wide and 15 centimeters long. What will the area of their new house be—how many square centimeters?

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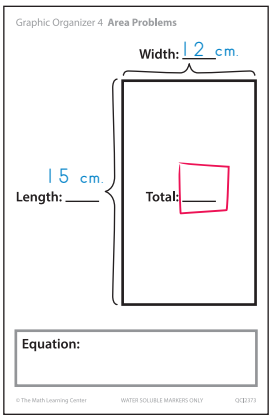
3 Have the students guide you in entering the known information on the organizer and identifying the unknown.



4 Distribute whiteboards, markers, and erasers. Ask students to write and solve an equation to represent the information you entered on the organizer. Invite volunteers to share their thinking with the group.

SUPPORT Encourage students to solve 12 × 15 using the distributive property: 10 × 15 plus 2 × 15, or 150 + 30.

As they share, press students to explain how they decided which operation to use—multiplication or division.

5 Repeat steps 2–4 with the following problem situations:

The Ladybugs really like to spend time together, so the family room will be as large as possible. Right now, they're planning to make it 7 centimeters long and 5 centimeters wide. What will the area of the family room be in square centimeters? [7 × 5 = ___, 35 square centimeters]

Their new kitchen will be across the hall from the family room. It will have an area of 24 square centimeters, and a length of 6 centimeters. How many centimeters wide will the kitchen be? [24 ÷ 6 = ___, 4 centimeters wide]

They're going to build a room at the back of the house for the girls to use as a playroom until the twin baby boy bugs get big enough to have their own room. The playroom will be 4 centimeters wide and have an area of 20 square centimeters. How long will the playroom be? [20 ÷ 4 = ____, 5 centimeters long]

The girls' bedroom will be 7 centimeters long and 4 centimeters wide. What will the area of the room be in square centimeters? [7 × 4 = ___, 28 square centimeters]

Mr. and Mrs. Ladybug will keep the twin baby boy bugs in their bedroom for now. They plan to make a little space in the corner of their bedroom with an area of 9 square centimeters. The width of the little baby space will be 3 centimeters. How long will the baby space be? [9 ÷ 3 = ____, 3 centimeters long]

Practice Page The Ladybugs' New Yard

Assign a Ladybugs' New Yard Practice Page.

Read the instructions and solve the first problem with the students. Support them as needed in solving the other three.

Note that students will each need a ruler marked in centimeters, a regular pencil, and some colored pencils to complete this assignment.

Sample

Session 25

Progress Monitoring 7-5

Materials

Cards & Mats	Other Materials	Print Originals
• Graphic Organizer 4 (1 for interview)	• one 5″ × 7″ piece of construction paper • ruler marked in inches • student whiteboard, marker, and eraser	**P13** Progress Monitoring 7-5 Record Sheet **P14** Progress Monitoring 7-5 Scoring Guide **Student Progress Monitoring Record, Volume 7** (Module 1 Print Originals, P1)

Copy instructions are located at the top of each print original.

Instructional Goals

Find the area of a rectangle by multiplying its side lengths

Apply the area formula for a rectangle to solve a problem

Part 1 Written Progress Monitoring

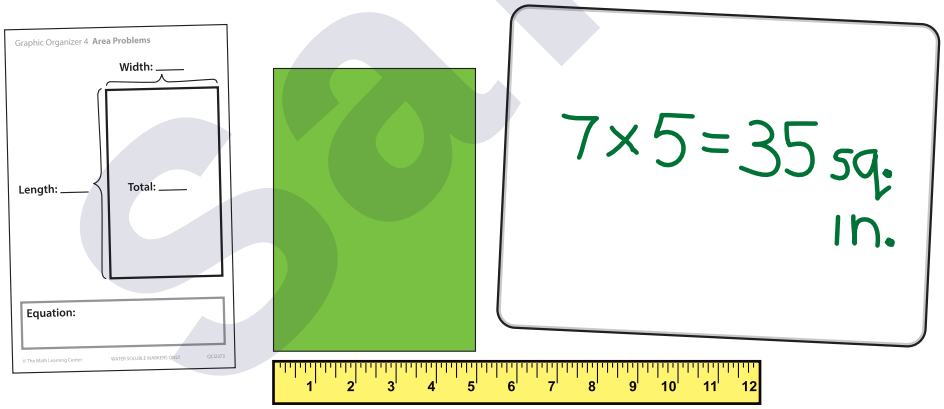
Give each student a copy of the Progress Monitoring 7-5 Record Sheet. Read the instructions and both problems to the group, clarifying as needed. When students understand what to do, give them time to complete the problems as you pull individuals aside one at a time to do the interview task with you.

Part 2 Individual Interview

Interview each student individually as the others complete the written tasks and go on to do a game or practice page from a previous session.

1 Set out the Area Problems organizer where the student can see it, along with the piece of construction paper and the ruler. Ask the student to estimate the area of the construction paper. Then ask the student to explain how to use the ruler to help find the actual area of the paper.

2 Have the student find the area of the paper and write an equation on the whiteboard to match. Then ask the student to label the answer with the correct units.



Scoring

Use the Progress Monitoring 7-5 Scoring Guide to determine scores. Use copies of the Student Progress Monitoring Record (found in the Module 1 Print Originals) to track individual students' progress.

Sample

Sample

Print Originals

Volume 7 Module 5

Sample

bridges® intervention

Sample

NAME | **DATE**

Multiplication 6s–9s

Blue Player _____ **Red Player** _____

49	63	56	42	36
81	72	36	48	54
48	56	49	72	81
64	42	54	42	63
72	48	54	56	64

Blue Score _____ **Red Score** _____

Sample

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Equation Bingo Problems Set 1

Trevon was working in his grandmother's garden. He counted 9 ladybugs on one of the rose bushes. If each ladybug had 6 legs, how many legs was that in all?

Trevon's big sister, Kiara, lifted up a rock and saw a bunch of spiders crawling around. She counted 40 spider legs in all. If each spider had 8 legs, how many spiders were there under the rock?

Trevon's little brother, André, saw 3 rows of ants marching along in the garden. There were 12 ants in each row. How many ants in all?

Trevon saw 7 ladybugs on another rose bush, and 9 times that many aphids on the same bush. How many aphids were there on the bush?

André saw 4 times as many orange butterflies as white butterflies in the garden. If he saw 20 orange butterflies, how many white butterflies did he see?

Kiara counted 36 black ants by the fence and 9 red ants under a bush. How many times more black ants than red ants did Kiara count?

Trevon saw 28 ants marching along the fence in 4 equal rows. How many ants were there in each row?

At dusk, the three children caught 27 fireflies. If they divided the fireflies evenly among themselves, how many did they each get?

In his dreams that night, Trevon saw 42 red ladybugs arrange themselves in rows of 7. How many rows did they make?

Sample

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NAME | **DATE**

Equation Bingo Board

Sample

NAME | **DATE**

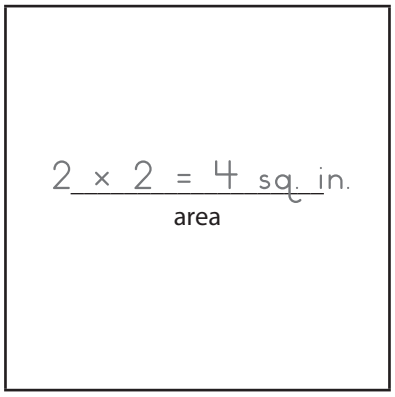
Measure & Multiply Version A

- Measure and label the length and width of the rectangle in inches.
- Multiply length times width to find the area of the rectangle in square inches.
- Cover the rectangle with colored tiles to check your answer if you'd like.

ex

2 in. width

2 in. length

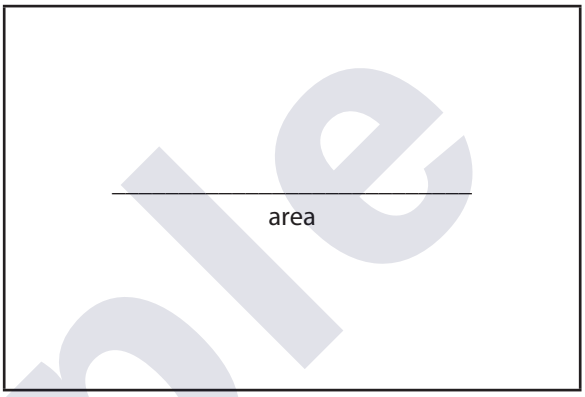


2 × 2 = 4 sq. in. area

1

_____ width

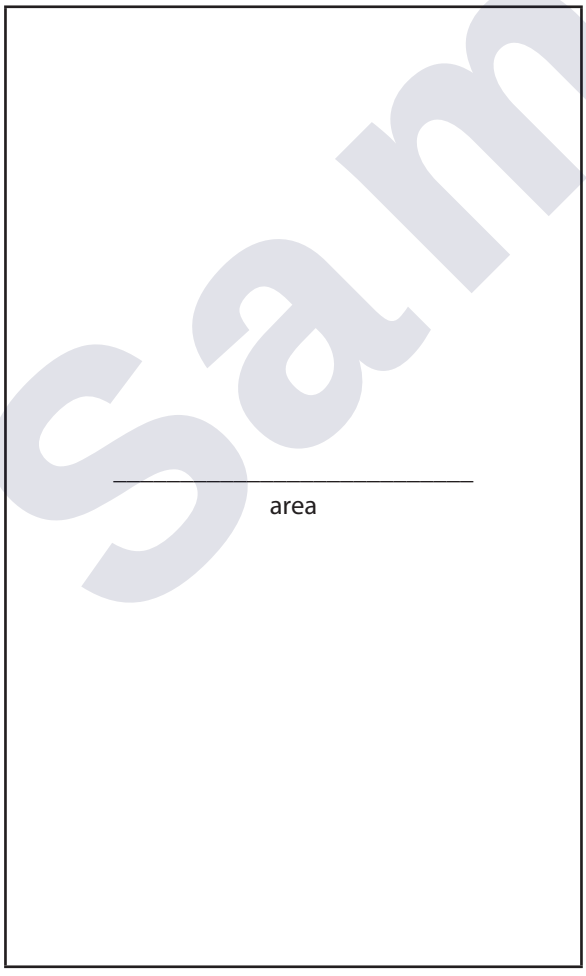
_____ length



_____ area

2

_____ width



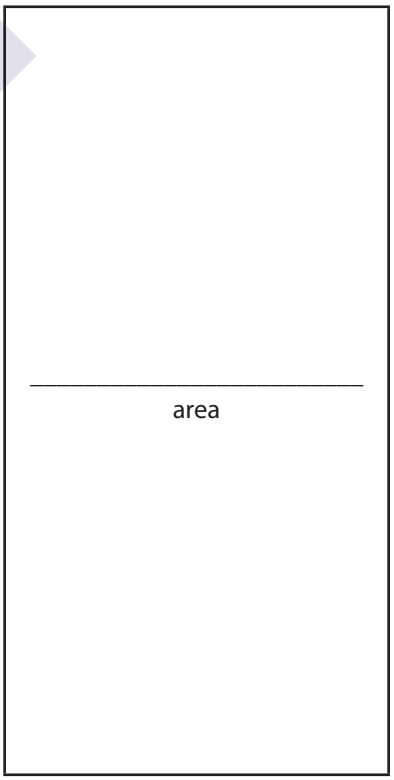
_____ length

_____ area

3

_____ width

_____ length



_____ area

Sample

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NAME | **DATE**

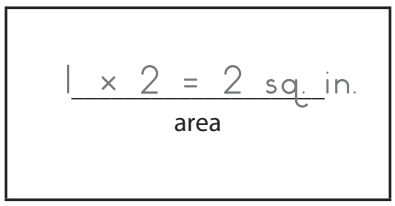
Measure & Multiply Version B

- Measure and label the length and width of the rectangle in inches.
- Multiply length times width to find the area of the rectangle in square inches.
- Cover the rectangle with colored tiles to check your answer if you'd like.

ex

2 in.
width

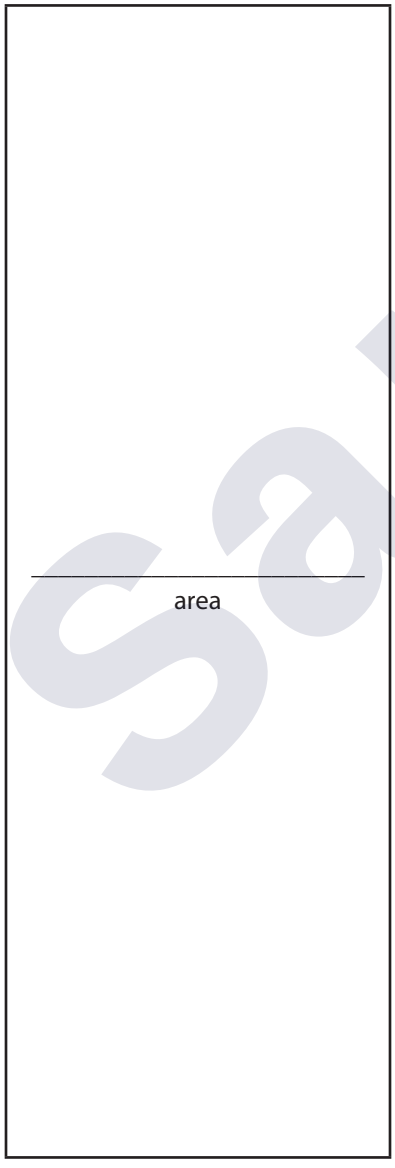
1 in.
length



1 × 2 = 2 sq. in.
area

1

_____
width



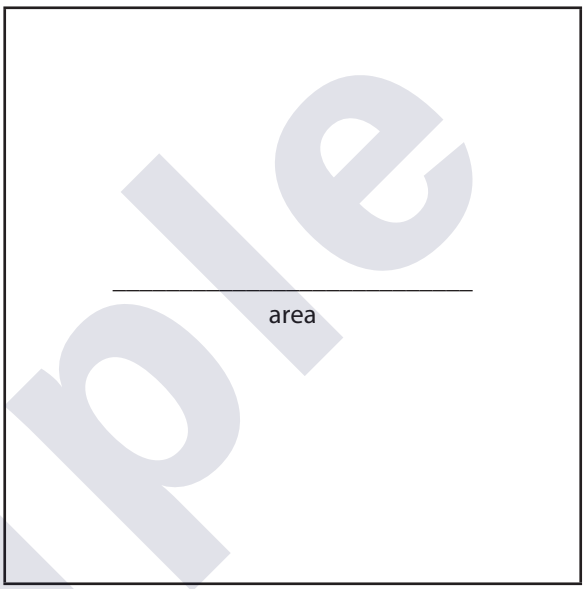
_____
length

_____
area

2

_____
width

_____
length

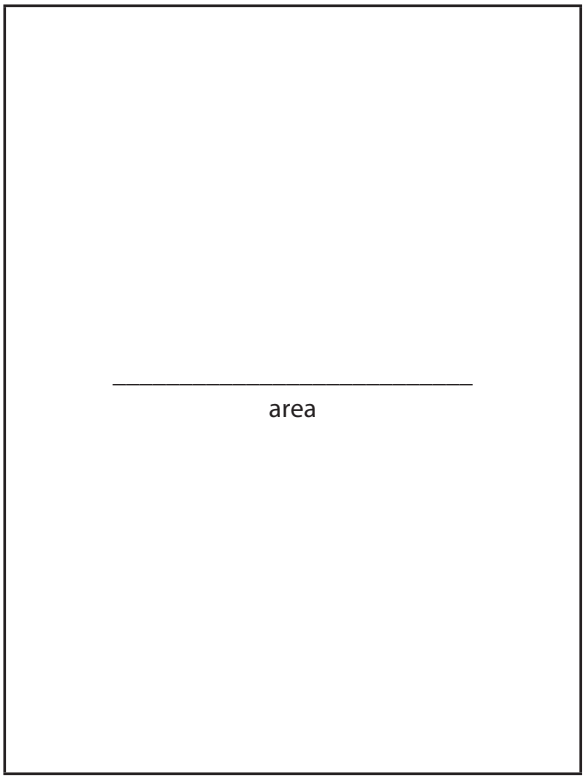


_____
area

3

_____
width

_____
length



_____
area

Sample

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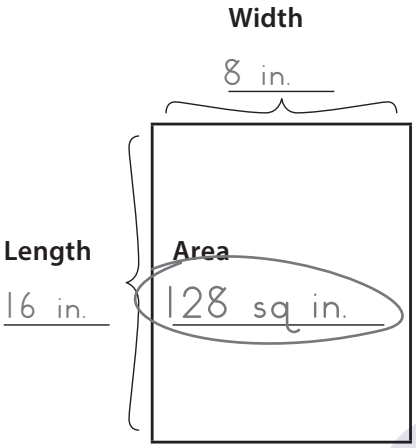
NAME | **DATE**

Pet Habitats Version A

When Aaron was doing his online research, he learned some interesting information about setting up habitats for turtles, lizards, and other small pets.

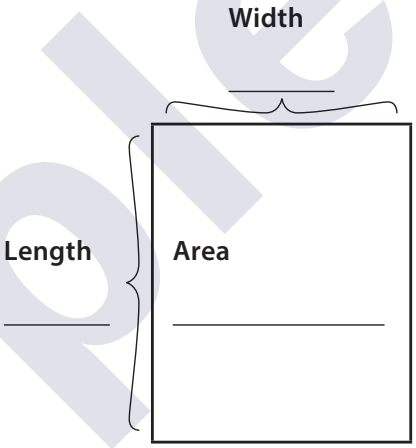
Read each problem and record information on the organizer. Then write and solve an equation to match, write and circle the answer on the organizer, and label it with the correct units.

ex A leopard gecko needs a terrarium that is 16″ long and 8″ wide. How many square inches of space is this?



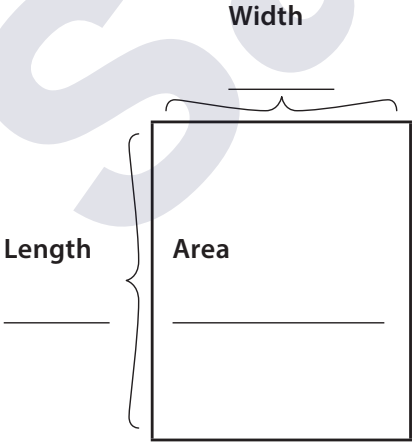
Equation: 16 × 8 = 128

a A red-eared slider turtle needs an aquarium that is 40″ long and 20″ wide. How many square inches of space is this?



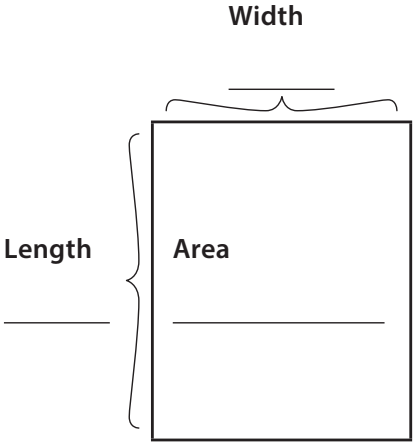
Equation: _____

b A frog needs an aquarium that is 20″ long and 10″ wide. How many square inches of space is this?



Equation: _____

c A baby chameleon needs a screen cage that is 20″ long and 18″ wide. How many square inches of space is this?



Equation: _____

Sample

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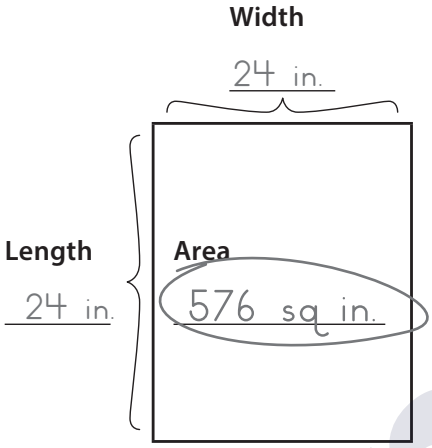
NAME | **DATE**

Pet Habitats Version B

Here is some more of the information Aaron found online about setting up habitats for small pets of different kinds.

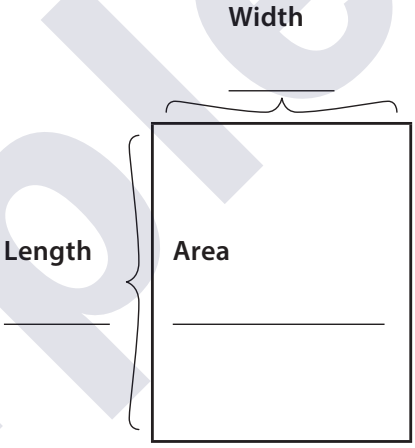
Read each problem and record information on the organizer. Then write and solve an equation to match, write and circle the answer on the organizer, and label it with the correct units.

ex An adult male chameleon needs a screen cage at least 24″ long and 24″ wide. How many square inches is this?



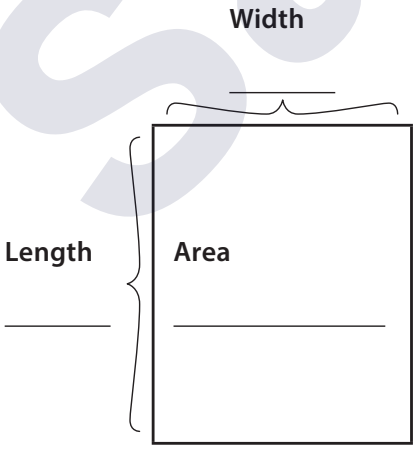
Equation: 24 × 24 = 576

a An adult female chameleon needs a screen cage at least 20″ long and 20″ wide. How many square inches of space is this?



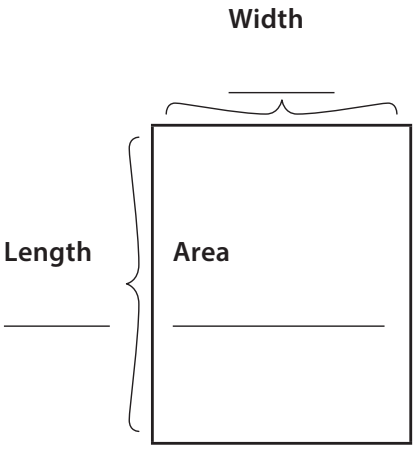
Equation: _____

b A group of 5–6 small tropical fish need an aquarium that is at least 20″ long and 10″ wide. How many square inches is this?



Equation: _____

c Larger tropical fish should have an aquarium that is 30″ long and 12″ wide. How many square inches is this?



Equation: _____

Sample

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Equation Bingo Problems Set 2

Kama is taking a class at the zoo this week. Today, her teacher said that a small elephant needs 90 liters of water a day. How much water would the elephant need for a week?

Kama learned that elephants are herbivores (plant eaters). Elephants living at the zoo eat about 57 kilograms of food a day. Elephants in the wild eat 2 times that much. How many kilograms would that be?

Kama's friend Andrew is going to zoo class as well. He was surprised to find out that a koala can sleep as much as 140 hours a week. How many hours of sleep would that be per day if the koala slept the same amount each day?

Kama and Andrew also learned that there was a 30-foot anaconda at the zoo. Their teacher said the snake was 15 times as long now as when it was born. How long was the snake at birth?

An adult male gorilla eats 18 kilograms of food a day. How many kilograms of food does it take to feed the 3 adult male gorillas each day at the zoo where Kama is taking her class?

One of the zebras at the zoo weighed 25 kilograms when it was born. Now that it's an adult, it weighs 250 kilograms. How many times as much does it weigh now as when it was born?

One of the ocelots at the zoo just had a litter of kittens. Together, the 3 kittens weigh 660 grams. If they are equal in weight, how many grams does each kitten weigh?

The warthog also just had a litter of 4 babies. If each baby weighs 500 grams, how many grams do the 4 of them weigh in all?

One of the giraffes weighed 100 pounds when she was born. Now she weighs 1,500 pounds. How many times as much does she weigh now as when she was born?

Sample

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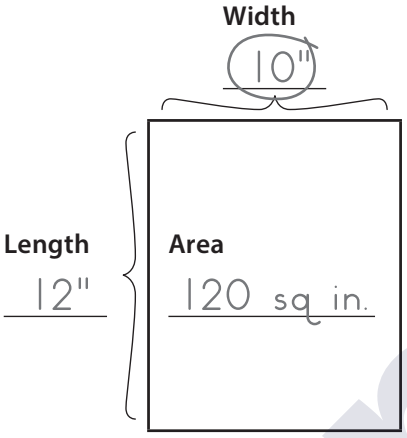
NAME | **DATE**

The Art Supply Store Version A

Talia works in her aunt's art supply store every Saturday. People come in looking for paper and cardboard in all kinds of colors and sizes for their art projects. If Talia can't find exactly what they need, she cuts it to the right size on the big paper cutter.

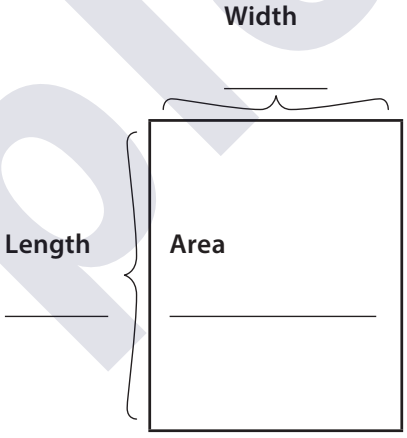
Read each problem and record the information on the organizer. Then write and solve an equation to match, write and circle the answer on the organizer, and label it correctly.

ex One customer needs a rectangle of black cardboard with an area of 120 square inches and a length of 12″. How wide does the piece of cardboard need to be?



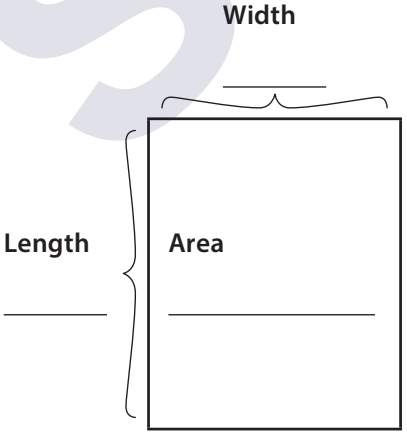
Equation: 120 ÷ 12 = 10

a A woman came in asking for a piece of shiny red paper with an area of 600 square inches and a width of 20″. How long does the piece of red paper need to be?



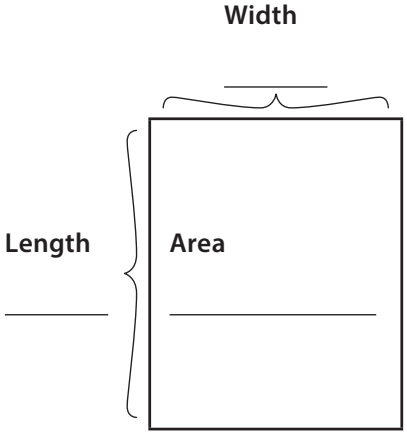
Equation: _____

b A boy asked for three pieces of green matboard. Each piece needs an area of 180 square inches and a length of 18″. How wide should Talia cut each piece?



Equation: _____

c A girl asked for a sheet of bright yellow poster board 20″ wide with an area of 800 square inches. How long does the sheet of poster board need to be?



Equation: _____

Sample

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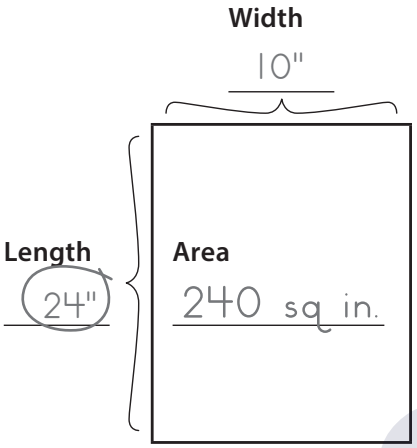
NAME | **DATE**

The Art Supply Store Version B

Talia's cousin Noah also works in the art supply store on Saturdays. Noah helps in the frame department, where he cuts sheets of glass to the right size for framing different pieces of artwork.

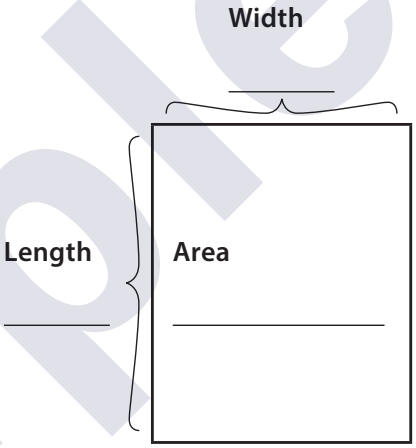
Read each problem and record the information on the organizer. Then write and solve an equation to match, write and circle the answer on the organizer, and label it correctly.

ex A young man brought in a painting that was 10″ wide and had an area of 240 square inches. How long does Noah need to cut the glass for framing this painting?



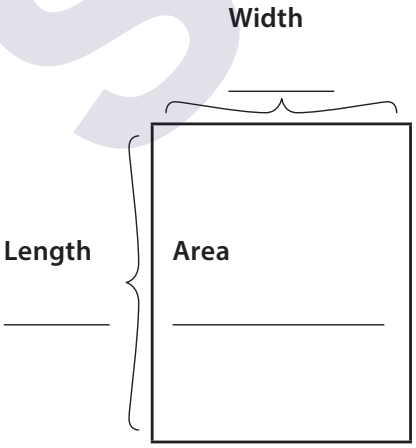
Equation: 240 ÷ 10 = 24

a A girl came in with a collage that was 20″ wide and had an area of 400 square inches. How long does Noah need to cut the glass for framing the girl's collage?



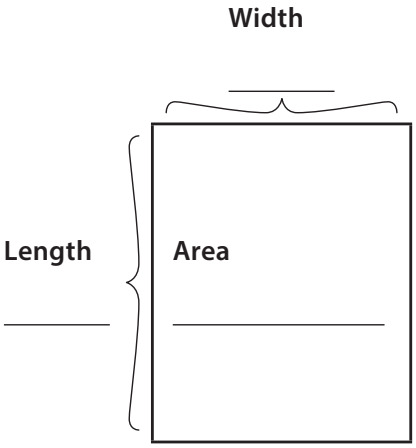
Equation: _____

b A woman brought in a picture her son had painted in preschool. It was 9″ long and had an area of 72 square inches. How wide does Noah need to cut the glass for framing this picture?



Equation: _____

c A boy wants a drawing he made to be framed for his dad's birthday. The drawing is 6″ wide and has an area of 48 square inches. How long does Noah need to cut the glass for the frame?



Equation: _____

Sample

NAME | **DATE**

The Ladybugs' New Yard Version A

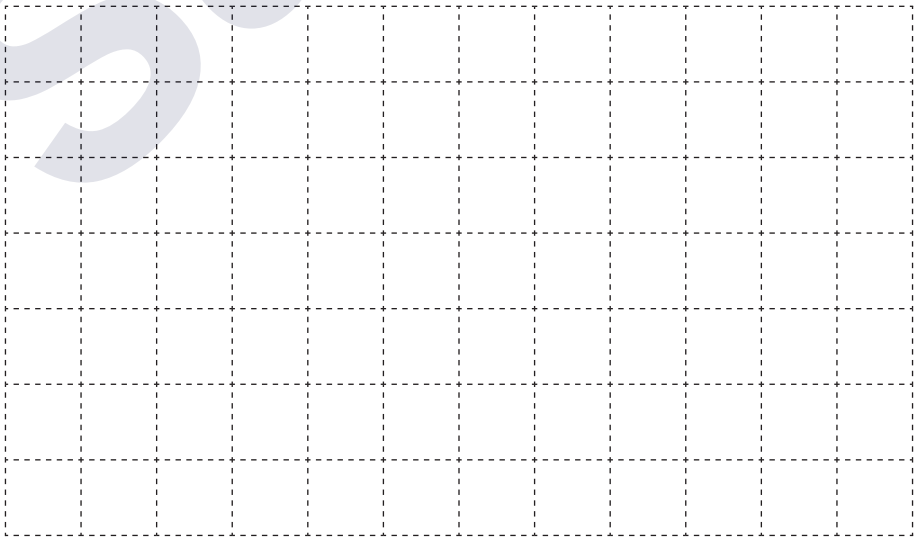
Follow the instructions below to help Mr. and Mrs. Ladybug plan the backyard for their new house. You will need some colored pencils.

1 The grid below is a life-size map of the entire backyard. Each square on the grid is 1 centimeter long, 1 centimeter wide, and has an area of 1 square centimeter. Write and solve an equation to show the area of the backyard in square centimeters.

2 The Ladybugs need a large garden to feed themselves and their 5 children. Mark off and label a space at one end of the grid that's 7 centimeters long and has an area of 28 square centimeters for the garden. Then write and solve an equation below to show the width of the garden in centimeters.

3 Mr. Ladybug wants to put in a deck along one side of the backyard. Mark off and label a space on the grid that's 8 centimeters long and 3 centimeters wide. Then write and solve an equation to show the area of the deck in square centimeters.

4 Label the dimensions of the rectangle that will be left after the Ladybugs put in a garden and a deck. This is where they'll plant their lawn. Then write and solve an equation to show the area of the lawn in square centimeters.



Sample

NAME | **DATE**

The Ladybugs' New Yard Version B

Follow the instructions below to help Mr. and Mrs. Ladybug plan the front yard for their new house. You will need some colored pencils.

1 The grid below is a life-size map of the entire front yard. Each square on the grid is 1 centimeter long, 1 centimeter wide, and has an area of 1 square centimeter. Write and solve an equation to show the area of the front yard in square centimeters.

2 The Ladybugs want to put in a walkway that goes from the front edge of the yard to their door. Mark off and label a walkway that runs all the way across the yard, going the short way. Make it 3 centimeters wide with an area of 15 square centimeters. Then write and solve an equation below to show the length of the walkway in centimeters.

3 Mrs. Ladybug wants to put in 2 flower beds, each 2 centimeters wide and 4 centimeters long. Mark and label these wherever you think they'd look best. Then write and solve an equation to show the area of one of the flowerbeds in square centimeters.

4 Find the area of all the rest of the space in the front yard and record the total below in square centimeters. The Ladybugs will use this space to plant grass and trees.

sample

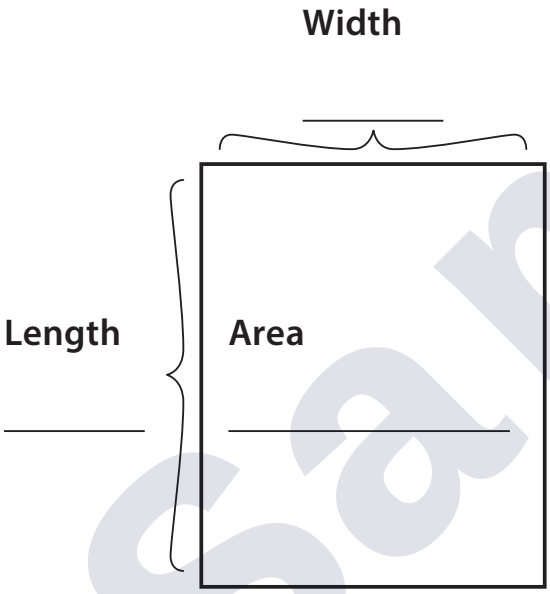
NAME | **DATE**

Progress Monitoring 7-5 Record Sheet

Read each problem below. Then:

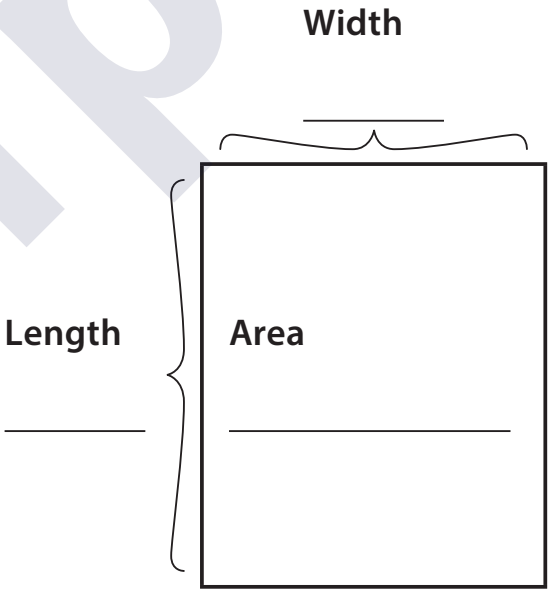
- Record the information on the organizer.
- Write and solve an equation to match (either multiplication or division, depending on the problem).
- Write and circle the answer on the organizer.
- Label the answer with the correct units.

1 Ebony is making a little bookbag for her sister. She is going to use a piece of fabric that is 10 inches wide and 20 inches long. What is the area of this piece of fabric?



Equation: _____

2 Ebony needs 80 square inches of fabric for another sewing project. She has a piece of fabric that is 10 inches long. How wide does it need to be?



Equation: _____

Sample

Progress Monitoring 7-5 Scoring Guide

Skill Assessed	Scoring	Student Name											
Part 1 Written Progress Monitoring													
1 Solves an "Area, Unknown Product" problem situation: enters the information on an organizer, solves the problem, circles the answer and labels it with the correct units, and writes an equation to match. *Length: 20; Width: 10; Area/Unknown: 200 sq. inches; 20 × 10 = 200 or 10 × 20 = 200*	**3 pts:** • **1 pt** for placing the information in the correct locations on the organizer • **1 pt** for writing a multiplication equation that accurately represents the problem situation • **1 pt** for the correct answer, labeled with the correct units												
2 Solves an "Area, Side Length Unknown" problem situation: enters the information on an organizer, solves the problem, circles the answer and labels it with the correct units, and writes an equation to match. *Length: 10; Width/Unknown: 8 inches; Area: 80; 80 ÷ 10 = 8*	**3 pts:** • **1 pt** for placing the information in the correct locations on the organizer • **1 pt** for writing a division equation that accurately represents the problem situation • **1 pt** for the correct answer, labeled with the correct units												
Part 2 Individual Interview													
1 Estimates the area of a 5" × 7" piece of construction paper and explains how to use a ruler to help find the actual area. Finds the area of the paper, writes an equation to match, and labels the answer with the correct units. *Estimates and explanations will vary. 7 × 5 = 35 sq. in. or 5 × 7 = 35 sq. in.*	**4 pts possible:** • **1 pt** for explaining (telling/showing) how a ruler can be used to help find the area of the paper in a way that makes sense and demonstrates an understanding of the concept, e.g., "You can measure the side and the top of the paper with the ruler. Then you can multiply those numbers to get the area." • **1 pt** for writing a multiplication equation to represent the area of the paper • **1 pt** for the correct answer • **1 pt** for labeling the answer with the correct units												
TOTAL SCORE	**10 pts.**												

sample

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