

Building Skills with Brick Math

A 10-Day Program to Sharpen Basic Math Skills

Multiplication

Program Overview

During this **Building Skills with Brick Math** program, students dive deeply into addition. They use a variety of learning techniques including manipulatives, drawing, verbal explanation, physical movement, and song. Students work with a partner, use the vocabulary fluently in math conversations, and assess themselves on their abilities.

The program is written in the following daily format:

1. Introduction to the topic
2. Teacher and students work together on the new concepts
3. Student practice
4. Movement related to concepts
5. Student independent practice
6. Content assessment
7. Story problems
8. Self-assessment on content and partnering

The Brick Math program is successful because students transfer knowledge from using manipulatives to drawing and verbal explanations.

Take the time your students need to learn each concept. Some classes will find one concept easily learned and a second concept much harder, requiring a slower pace. If all the daily activities are not completed during a session, you can choose to move the remaining activities to the following day or truncate an activity if you feel the students have fully learned the math concepts.

Brick Math is FUN!

Third and Fourth Grade
Multiplication
10 - day summer program
1.5 - 2 hours a day

Program Overview

Day 1

Welcome

Finding Factors

- Define factors
- Find all the factors of a number
- Make models of factor families

Vocabulary

- Factors

Day 2

Multiplication Using Set Models

- Model multiplication as sets of numbers
- Learn the structural design of multiplication problems
- Learn the meanings for the numbers in multiplication problems

Vocabulary

- Set
- Group
- Multiplicand
- Multiplier
- Product
- Factors

Day 3

Fact Families

- Model all the facts within one fact family

Vocabulary

- Fact family

Day 4	<p>Blocks and Bricks Game</p> <ul style="list-style-type: none"> • Practice multiplication facts through 6x6 <p>Vocabulary</p> <ul style="list-style-type: none"> • Multiplier • Multiplicand • Frame of Reference
Day 5	<p>Multiplication Using Place Value/Bundling Models</p> <ul style="list-style-type: none"> • Model multiplication based on place value bundles <p>Vocabulary</p> <ul style="list-style-type: none"> • Product
Day 6	<p>Multiplication Using Array/Area Models</p> <ul style="list-style-type: none"> • Model multiplication using arrays <p>Vocabulary</p> <ul style="list-style-type: none"> • Product • Factor
Day 7	<p>Multiplication Modeling Challenge</p> <ul style="list-style-type: none"> • Model multiplication using set models • Model multiplication using place value models • Model multiplication using array models <p>Vocabulary</p> <ul style="list-style-type: none"> • Product • Factor
Day 8	<p>Multiplying Two-Digit Numbers by One-Digit Numbers</p> <ul style="list-style-type: none"> • Multiply two-digit numbers by one-digit numbers • Learn the role of place value in reading and understanding numbers • Use expanded form when writing a number by its place value • Discover multiplication is repeated addition <p>Vocabulary</p> <ul style="list-style-type: none"> • Multiplier • Multiplicand

Day 9	<p>Multiplying Larger Numbers</p> <ul style="list-style-type: none"> • Multiply larger numbers by single-digit numbers • Learn the role of place value in reading and understanding numbers • Use expanded form when writing a number by its place value • Discover multiplication is repeated addition <p>Vocabulary</p> <ul style="list-style-type: none"> • Multiplier • Multiplicand
Day 10	<p>Multiplying Two-Digit Numbers by Two-Digit Numbers</p> <ul style="list-style-type: none"> • Use both the place value and the array models to determine products when multiplying a two-digit number by another two-digit number <p>Vocabulary</p> <ul style="list-style-type: none"> • Multiplier • Multiplicand • Product

Common Core Math Standards Addressed

CCSS.MATH.CONTENT.3.OA.A.1

Interpret products of whole numbers, e.g., interpret 5×7 as the total number of objects in 5 groups of 7 objects each. *For example, describe a context in which a total number of objects can be expressed as 5×7 .*

CCSS.MATH.CONTENT.3.OA.A.2

Interpret whole-number quotients of whole numbers, e.g., interpret $56 \div 8$ as the number of objects in each share when 56 objects are partitioned equally into 8 shares, or as a number of shares when 56 objects are partitioned into equal shares of 8 objects each. *For example, describe a context in which a number of shares or a number of groups can be expressed as $56 \div 8$.*

CCSS.MATH.CONTENT.3.OA.A.3

Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.¹

CCSS.MATH.CONTENT.3.OA.A.4

Determine the unknown whole number in a multiplication or division equation relating three whole numbers. *For example, determine the unknown number that makes the equation true in each of the equations $8 \times ? = 48$, $5 = _ \div 3$, $6 \times 6 = ?$*

CCSS.MATH.CONTENT.3.OA.C.7

Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division (e.g., knowing that $8 \times 5 = 40$, one knows $40 \div 5 = 8$) or properties of operations. By the end of Grade 3, know from memory all products of two one-digit numbers.

CCSS.MATH.CONTENT.3.OA.D.9

Identify arithmetic patterns (including patterns in the addition table or multiplication table), and explain them using properties of operations. *For example, observe that 4 times a number is always even, and explain why 4 times a number can be decomposed into two equal addends.*

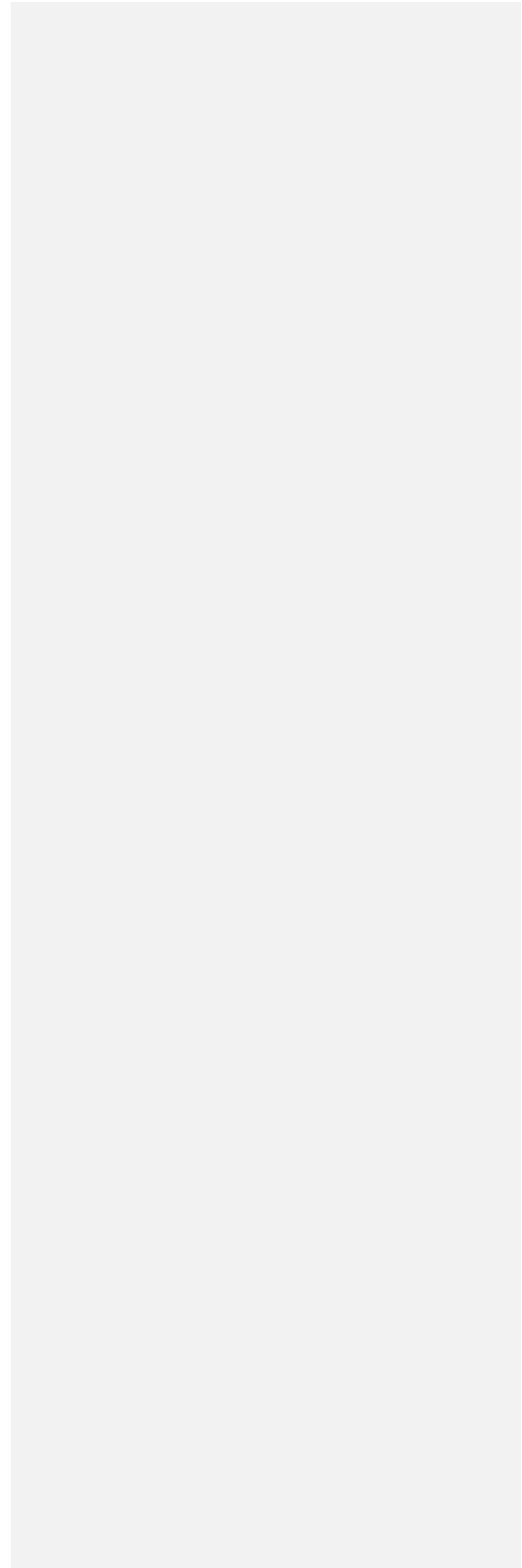
Materials Needed

- Brick Math brick sets – one per student or one per pair of students
- Brick Math Multiplication Teacher Edition
- Brick Math Multiplication Student Edition – one per student
- Number cubes (one set per pair of students)
- Chart paper
- Markers (one set per pair of students)
- Crayons (one set per pair of students)
- Sticky notes
- Cardstock
- Yarn
- Paper plate (or large circles cut from tagboard or cardstock)
- NERF Ball
- Brick Math journal (one per student)
- Optional: Foam sheets or shelf liner cut into rectangles approximately 12" x 18" (one sheet per student)

Before the students' arrival for the first day:

1. Read the Introduction and How to Teach with Brick Math on pages 5-8 in the Multiplication Teacher Edition.
2. Label all the student Brick Math brick sets. Choose a system such as Set 1, Set 2, Set 3, etc., or Zebra, Elephant, Tiger, etc.
3. Assign each student or pair of students one brick set. They will use this same set every day. This materials management step allows the student or the pair to be responsible for their pieces.
4. Each student needs one Brick Math Multiplication Student Edition. If you are using PDFs, you will need to make copies of all the specific pages in each day's lesson so students can correctly show and explain their work and make the knowledge transfer from manipulatives to drawings and verbal explanations.
5. Students will need the following supplies:
 - One Brick Math Multiplication Student Edition per student
 - Crayons (one set per pair of students)
 - Markers (one set per pair of students)
 - Sticky notes
 - Cardstock
 - Yarn
 - Paper plate (or large circles cut from tagboard or cardstock)
 - NERF ball
 - Brick Math Journal (one per student)
6. Optional: Foam sheets or shelf liner cut into rectangles. (one sheet per student) This helps keep the bricks from sliding off desks and tables.

Note: These are blank baseplate paper templates on pages 77-78 in the Multiplication Teacher Edition. They may be helpful for the daily (optional) story problem activities. Make additional copies of blank baseplates as needed.



Day 1 – Finding Factors

Before the students arrive, please read page 9 to prepare for the day.

Welcome

Tell the students something similar to the following:

Welcome to Math is Fun. We are going to do a lot of interesting activities this week. We are going to build with LEGO® Bricks, work with a partner, create a team name, exercise with numbers, and more. Are you ready to get started?

First, I want to show you the brick set. What colors do you see? Each color has a name. Each of you has a name. We need to learn all the names of the people in our class. I would like you to sit in a large circle. Each person will say his or her name. Then, please choose one piece for the set. Tell us which color piece you chose and something about the piece.

I will start.

My name is Mrs. Smith. I chose a purple piece because purple is my favorite color.

Go around the room with the brick set for each student to select a brick. After each person has said his or her name and chosen a brick, have the class repeat the names. For example, "Mrs. Smith, Paula, Alan, Rebecca." Then, if the next child is Ben, you would all say together: "Mrs. Smith, Paula, Alan, Rebecca, Ben." When all the students have said their names, have the students who chose a particular color stand with their bricks in their hands.

Tell the students something like:

Everyone who chose a purple brick, please stand. Let's see if we can remember their names. Say the names of the children who are standing.

Say all the students' names, then have them sit down. Continue with different colors until all the children have stood and been called by name.

Look at the particular shapes of the bricks chosen. Explain to the students how the shapes also have names.

Explain to students how to name the bricks. Start with your brick. Perhaps you chose a 2x2 brick. Show students your brick. If you want you can pass it around.

Tell the students:

It is called 2x2 because it is a square with 2 studs or bumps on one side (width) and 2 studs or bumps on another side (length).

Show students a small 1x1 brick.

Ask the students:

Can you guess what this brick is called? It has 1 stud in width and 1 stud in length – but it has a total of only 1 stud.

Then, show students a 1x6 brick. Continue to go through the bricks until students can do a good job of naming the bricks.

Ask the students to go around the circle and tell the name of the brick they chose. If a student is not sure or names it incorrectly, ask the student to count the width and length in studs, then help with the correct name.

When all the bricks have been named, ask the students to put the bricks into the proper location in the set. Their pieces should match the compartment or area in the container so all the brick “family” will be together.

Factor Fun

We are going to start today by finding the factors of a number. Factors are numbers you can multiply together to get another number. Let's start with 6.

Ask students to tell a way to use multiplication to get six. Let's start with one.

Example: $1 \times 6 = 6$ The factors are 1 and 6.

Ask students to tell a second way to use multiplication to get six. Can you use 2?

Example: $2 \times 3 = 6$. The factors are 2 and 3.

Ask students to tell a third way to use multiplication to get six. Can you use 3?

Example $3 \times 2 = 6$ The factors are 3 and 2.

Ask students if they can multiply 4 by a whole number and get 6. No

Ask students if they can multiply 5 by a whole number and get 6. No

Ask students to tell a way to use multiplication to get six. Can you use 6?

Example: $6 \times 1 = 6$ The factors are 6 and 1.

Tell students they have now completed the fact families for the number 6. The fact families contain all the factors for the number 6.

Have students start their Brick Math journals with an entry that shows the fact families for 6.

Ask students if they are ready to work with a partner and do some fun building and multiplication. Yes!

Working with a Partner

Ask students their favorite thing about working with a partner. Then, ask them what is the *best* way to work with a partner. Help students create answers like the following:

- Partners share the work; however, neither person does the other one's work.

- Partners learn together and can help each other learn.
- Partners communicate (talk) kindly with each other.
- Partners care about each other.
- Partners do not give each other the answers but help the other person understand how to get an answer.

Create a set of Partner Rules and put them on chart paper and display them in the classroom. That way you can refer to them as needed.

Choose two students to be partners and assign them a place to sit at desks or tables. Have each set of partners move to that location as you assign them. Give the two students their container of Brick Math materials (either one set for two people or one set per person.) Tell each group that they always get set #X when it is time to gather materials. Tell the class that each team is responsible for all the bricks being returned to the set every time the set is used. When all the students have their sets, give every student a 20 x 20 dark gray base plate.

Tell students they will work together every day and that being a partner is an important responsibility. They need to help one another and be kind to their partner.

Materials

Students take bricks from the divided box as needed. At the end of the day, students inventory one compartment. At the end of each day, tell students which compartment to inventory and how many bricks of a certain size should be in that area.

Part 1: Show Them How

Follow the instructions on page 10 in the Brick Math Multiplication Teacher Edition. Complete #1.

Students will complete page 5, #1 in the Brick Math Multiplication Student Edition.

Follow the instructions on page 10 in the Brick Math Multiplication Teacher Edition. Complete #2.

Students will complete page 5, #2 in the Brick Math Multiplication Student Edition.

Follow the instructions on page 10 in the Brick Math Multiplication Teacher Edition. Complete #3.

Students will complete page 5, #3 in the Brick Math Multiplication Student Edition.

Follow the instructions on page 10 in the Brick Math Multiplication Teacher Edition. Complete #4.

Students will complete page 5, #4 in the Brick Math Multiplication Student Edition.

Follow the instructions on page 10 in the Brick Math Multiplication Teacher Edition.

Complete #5.

Students will complete page 5, #5 in the Brick Math Multiplication Student Edition.

Follow the instructions on page 11 in the Brick Math Multiplication Teacher Edition.

Complete #6.

Students will complete page 6, #6 in the Brick Math Multiplication Student Edition.

Follow the instructions on page 11 in the Brick Math Multiplication Teacher Edition.

Complete #7.

Students will complete page 6, #7 in the Brick Math Multiplication Student Edition.

More Problems to Practice

Students will complete page 6, #8 in the Brick Math Multiplication Student Edition.

Students will complete page 7, #9 in the Brick Math Multiplication Student Edition.

Move with Music

Have students stand and move from their places at the tables/desks because it is time for some movement and song.

You can use any multiplication song to have the students sing and move with the music.

Give each student a number between 0 and 9. These will be factors. Hand one student the NERF ball. Have that student call out his/her number, which is the first factor. Have them toss the ball to another student who names his/her number, which is the second factor. The two students whose numbers are called should multiply them together and get the product.

Repeat the activity until all students have had two turns. Remind the class that they can raise their hands to help if a group has trouble multiplying the two numbers.

Have students find their partners and return to the desks/tables.

Have students write in their journals one multiplication fact that they have a hard time remembering.

Have students write in their journals what they are looking forward to learning.

Part 2: Show What You Know

Follow the instructions on page 11 in the Brick Math Multiplication Teacher Edition.

Complete #1.

Students use their journals to draw their models and write the information about factors.

Follow the instructions on page 12 in the Brick Math Multiplication Teacher Edition.
Complete #2.
Students use their journals to draw their models and write the information about factors.

Content Assessment

Students complete Assessment #1 on page 7 in the Brick Math Multiplication Student Edition.
Discuss the answers with the class. Help students to improve their answers as needed.

Students complete Assessment #2 on page 7 in the Brick Math Multiplication Student Edition.
Ask partners to check the work but they cannot touch the model nor can they write anything on another person's paper. They can only discuss. Check students' work around the room.

Students complete Assessment #3 on page 7 in the Brick Math Multiplication Student Edition.
Ask partners to check the work but they cannot touch the model nor can they write anything on another person's paper. They can only discuss. Check students' work around the room.

Have students place the bricks into the correct compartments of the Brick Math bin.

Inventory Check

Inventory check: Have students remove all the 1x2 bricks from the box and count them. They should have 30 – 1x2 bricks. After the students have verified the bricks, they replace the 1x2 bricks into the compartment and give you a thumbs-up. The brick set is ready for collection and storage.

Have both partners check the bin(s) and give you a thumbs-up that they are perfect.

Optional: Story Problems

Tell students a story problem like the following:

Juan had five red balloons for the birthday party. Tavon wanted to give Juan twice as many blue balloons as red balloons. How many blue balloons does Tavon need?

Help students to complete the story problem and create models to show the balloons.
Have each pair work together to create a new story problem that uses simple multiplication.

As time allows, have students share their stories and baseplates with at least one other team.

Working with a Partner

Remind students about the partner rules they created earlier today. Refer to the Partner's Rules Chart to refresh their memories.

Self-Assessment

Ask students to use their Brick Math journals for the self-assessment.

All students write the word "partner" in their journals. Read aloud the statements to the students and have them draw the correct color brick.

Students should draw a specific color brick after the word "Partner" based on the following:

I need to work on being a better partner. I did not listen to and help my partner as I should have. If this describes you today, draw an orange brick after the word "partner."

I was a good partner today. I helped my partner but sometimes I did their work for them or I let them do my work. If this describes you today, draw a green brick after the word "partner."

I was a good partner today. I helped my partner by checking their work and not by doing their work. If this describes you today, draw a blue brick after the word "partner."

All students should write "I can create factors for numbers" in their Brick Math journals. Students should draw a specific color brick after the words "I can create factors for numbers" based on the following:

I need help creating factors for numbers. If this describes you today, draw an orange brick after the words "I can create factors for numbers."

I can create factors for numbers. If this describes you today, draw a green brick after the words "I can create factors for numbers."

I can help others create factors for numbers. If this describes you today, draw a blue brick after the words "I can create factors for numbers."

Day 2 – Multiplication Using Set Models

Before the students arrive, please read page 13 to prepare for the day.

Welcome Back

Welcome students back to Brick Math summer camp. Start in the circle.

Ask students if they can remember who their partner is. Ask students to write a compliment about their partners in their journals.

Tell students that today we are going to create a team name and a multiplication problem. Have students find their partner and get crayons/markers and each person needs a paper plate.

Show students an example of a team name and a multiplication problem. For example,

$$\begin{array}{c} \text{All Stars} \\ 10 \times 2 = 20 \end{array}$$

Students work together to determine a team name and then write the name in the middle of the paper plates. Students should determine a multiplication problem and write the problem under the team's name.

Students color the edge of the paper plate with the numbers in the Multiplication problem. In our example, they could create four ten stars on the left side of the plate and two stars on the right side of the plate. In the middle, they could create 20 stars.

Have students move to their desks or tables with their partners.

Working with a Partner

Remind students of the partner rules created on Day 1. Have each student tell his or her partner one of the good things the partner did yesterday.

Materials

Students take bricks from the divided box as needed. At the end of the day, students inventory one compartment. At the end of each day, tell students which compartment to inventory and how many bricks of a certain size should be in that area.

Part 1: Show Them How #1

Follow the instructions on page 14 in the Brick Math Multiplication Teacher Edition.

Complete #1-4.

Students complete page 8, #1 in the Brick Math Multiplication Student Edition.

Note: Students will now be allowed to choose bricks as needed from the set.

Part 1: Show Them How #2

Follow the instructions on page 15 in the Brick Math Multiplication Teacher Edition.

Complete #1-5.

Students complete page 9, #2 in the Brick Math Multiplication Student Edition.

Move with Math

Give every student a blank sticky note.

Place a multiplication equation on a wall or table. Example $3 \times 5 = ?$

Call on students one at a time to put their sticky notes on the wall or table to show sets that represent the equation. 3 groups of 5

Ask students which value is the multiplier. Three – because there are three sets

Ask students which value is the multiplicand. Five – because there are five in each set

Have students answer the equation, which is called the product. Fifteen

Have students retrieve their sticky notes.

Place a multiplication equation on the wall or table. Example $6 \times 4 = ?$

Call on students one at a time to put their sticky notes on the wall or table to show sets that represent the equation. Ensure students who did not use their sticky notes last time are called on first this time. 6 groups of 4

Ask students which value is the multiplier. Six – because there are six sets

Ask students which value is the multiplicand. Four – because there are four in each set

Have students tell the value of the product. Twenty-four

Use a short multiplication song to get students moving and singing for a brief period.

Have students return to their tables or desks with their partners.

Part 2: Show What You Know #1

Follow the instructions on page 16 in the Brick Math Multiplication Teacher Edition.

Complete #1-2.

Students complete page 9, #3 in the Brick Math Multiplication Student Edition.

Show What You Know #2

Follow the instructions on page 17 in the Brick Math Multiplication Teacher Edition.

Complete #1-2.

Students complete page 10, #4 in the Brick Math Multiplication Student Edition.

More Problems for Practice

Students complete page 10, #5 in the Brick Math Multiplication Student Edition.

Students complete page 11, #6 in the Brick Math Multiplication Student Edition.

Content Assessment

Students complete Assessment #1 on page 11 in the Brick Math Multiplication Student Edition. Discuss the answers with the class. Help students to improve their answers as needed.

Students complete Assessment #2 on page 11 in the Brick Math Multiplication Student Edition. Ask partners to check the work but they cannot touch the model nor can they write anything on another person's paper. They can only discuss. Check students' work around the room.

Students complete Assessment #3 on page 11 in the Brick Math Multiplication Student Edition. Ask partners to check the work but they cannot touch the model nor can they write anything on another person's paper. They can only discuss. Check students' work around the room.

Students complete Assessment #4 on page 12 in the Brick Math Multiplication Student Edition. Ask partners to check the work but they cannot touch the model nor can they write anything on another person's paper. They can only discuss. Check students' work around the room.

Inventory Check

Inventory check: Have students remove all the 2x2 bricks from the box and count them. They should have twenty (20) 2x2 bricks. After the students have verified the bricks, they replace the 2x2 bricks into the compartment and give you a thumbs-up. The brick set is ready for collection and storage.

Have students put away the bricks into the correct compartments of the Brick Math containers. Have both partners check the container(s) and give you a thumbs-up that they are perfect.

Optional: Story Problems

Tell students a story problem like the following:

Julia and Donata set the chairs in five groups of six chairs. How many chairs did they set?

Help students to complete the story problem. Have them draw their models and write the equation in their journals. Identify the multiplier, the multiplicand, and the product.

Have each pair work together to create a new multiplication story problem that they can show on their baseplate.

As time allows, have students share their stories and baseplate with at least one other team.

Working with a Partner

Remind students about the partner rules they created earlier today. Refer to the Partner's Rules Chart to refresh their memories.

Self-Assessment

Ask students to use the blank space at the bottom of page 18 in the Brick Math Multiplication Student Edition.

All students write the word "Partner" in the blank space at the bottom of page 18. Read aloud the statements to the students and have them draw the correct color brick.

Students should draw a specific color brick after the word "partner" based on the following:

I need to work on being a better partner. I did not listen to and help my partner as I should have. Draw an orange brick after the word "partner."

I was a good partner today. I helped my partner but sometimes I did their work for them or I let them do my work. Draw a green brick after the word "partner."

I was a good partner today. I helped my partner by checking their work and not by doing their work. Draw a blue brick after the word "partner."

All students should write "I can model multiplication using sets" in the blank space at the bottom of page 12.

Students should draw a specific color brick after the words "I can model multiplication using sets" based on the following:

I need help modeling multiplication using sets. If this describes you today, draw an orange brick after the words "I can model multiplication using sets."

I can model multiplication using sets. If this describes you today, draw a green brick after the words "I can model multiplication using sets."

I can help others to model multiplication using sets. If this describes you today, draw a blue brick after the words "I can model multiplication using sets."

Day 3 – Fact Families

Before the students arrive, please read page 18 to prepare for the day.

Welcome to Day 3

Welcome students back to Brick Math summer camp. Start in the circle.

Ask students if they remember what the parts of a multiplication problem are – multiplier, multiplicand, and product.

Ask students if they remember what fact families were in addition. If they do, have them give some examples. Example

$$0 + 6 = 6$$

$$1 + 5 = 6$$

$$2 + 4 = 6$$

$$3 + 3 = 6 \text{ and so on.}$$

Now ask students to create the fact family using multiplication for 6.

$$1 \times 6 = 6$$

$$2 \times 3 = 6$$

$$3 \times 2 = 6$$

$$6 \times 1 = 6$$

Ask students some ways that they can use to be sure they get all the facts in the family.

(Students start with 1 and work their way through the numbers until reach the product, knowing that all numbers are not evenly divisible into the product.)

Have each student write a compliment in their journal for his or her partner on something the partner did well yesterday.

Working with a Partner

Remind students of the partner rules created on Day 1. Have students share the compliment with their partners that they wrote in the journal. Be sure to have each student respond with "Thank you."

Materials

Students take bricks from the divided box as needed. At the end of the day, students inventory one compartment. At the end of each day, tell students which compartment to inventory and how many bricks of a certain size should be in that area.

Part 1: Show Them How #1

Follow the instructions on page 19 in the Brick Math Multiplication Teacher Edition.

Complete #1-2.

Students complete page 13, #1 in the Brick Math Multiplication Student Edition.

Show Them How #2

Follow the instructions on page 20 in the Brick Math Multiplication Teacher Edition.

Complete #1-2.

Students complete page 14, #2 in the Brick Math Multiplication Student Edition.

Move and Call a Product

Have the students make two lines across from each other.

Have students count off from left to right.

So, if you have 6 students in each line. Students facing each other start with the same number.

1 faces 1, 2 faces 2, and so forth. If the students are more adept, you can have students use larger numbers – starting with 4 instead of 1.

Hand one of the students with the number 3 the NERF ball; and have him or her say the number assigned - 3. That child throws the ball to a person across from them – either 2, 3, or 4. That student says his or her number – 4 and then has to give the product. $3 \times 4 = 12$. The student that started moves to the far right of his/her line. The student with the ball hands it right or left and then moves to the far right of his/her line.

The students repeat the activity with their number until all players have had at least two turns.

The numbers will become jumbled as the game progresses, which allows a lot of new multiplication problems to be solved.

After the activity is over, students should be ready to return to their desks/tables and complete part 2.

Part 2: Show What You Know #1

Follow the instructions on page 21 in the Brick Math Multiplication Teacher Edition.

Complete Part 2, #1-2

Students complete page 15, #3 in the Brick Math Multiplication Student Edition.

Show What You Know #2

Follow the instructions on page 22 in the Brick Math Multiplication Teacher Edition.

Complete #1-2.

Students complete page 15, #4 in the Brick Math Multiplication Student Edition.

Show What You Know #3

Follow the instructions on pages 23-24 in the Brick Math Multiplication Teacher Edition.

Complete #1-2.

Students complete page 16, #5 in the Brick Math Multiplication Student Edition.

More Problems to Practice

Students complete page 17, #6 in the Brick Math Multiplication Student Edition.

Students complete page 18, #7 in the Brick Math Multiplication Student Edition.

Content Assessment

Students complete Assessment #1 on page 19 in the Brick Math Multiplication Student Edition. Discuss the answers with the class. Help students to improve their answers as needed.

Students complete Assessment #2 on page 19 in the Brick Math Multiplication Student Edition. Ask partners to check the work but they cannot touch the model nor can they write anything on another person's paper. They can only discuss. Check students' work around the room.

Students complete Assessment #3 on page 19 in the Brick Math Multiplication Student Edition. Ask partners to check the work but they cannot touch the model nor can they write anything on another person's paper. They can only discuss. Check students' work around the room.

Inventory Check

Inventory check: Have students remove all the 2x3 bricks from the box and count them. They should have ten (10) 2x3 bricks. After the students have verified the bricks, they replace the 2x3 bricks into the compartment and give you a thumbs-up. The brick set is ready for collection and storage.

Have students place the bricks into the correct compartments of the Brick Math bin. Have both partners check the bin(s) and give you a thumbs-up that they are perfect.

Optional: Story Problems

Tell students a story problem like the following:

Cecilia and Erin are meeting friends for a picnic. Cecilia brought 12 pieces of candy. Erin said they could use the candy to show the fact families for 12. Use your bricks to represent the candy and show the fact families for 12. Write them in your journal.

Help students to complete the story problem about fact families. They should write their work in their journals. You can assign numbers to groups so a variety of fact families are used.

As time allows, have students share their stories and baseplate with at least one other team.

Working with a Partner

Remind students about the partner rules they created earlier today. Refer to the Partner's Rules Chart to refresh their memories.

Self-Assessment

Ask students to use their journals for the self-assessment.

All students write the word "Partner" in their journals.

Students should draw a specific color brick after the word "Partner" based on the following:

I need to work on being a better partner. I did not listen to and help my partner as I should have. Draw an orange brick after the word "partner."

I was a good partner today. I helped my partner but sometimes I did their work for them or I let them do my work. Draw a green brick after the word "partner."

I was a good partner today. I helped my partner by checking their work and not by doing their work. Draw a blue brick after the word "partner."

All students should write "I can find the fact family for a number" in their journals. Students should draw a specific color brick after the words "I can find the solution for a missing term using subtraction" based on the following:

I need help with finding the fact family for a number. If this describes you today, draw an orange brick after the words "I can find the fact family for a number."

I can find the fact family for a number. If this describes you today, draw a green brick after the words "I can find the fact family for a number."

I can help others find the fact family for a number. If this describes you today, draw a blue brick after the words "I can find the fact family for a number."

Day 4 – Blocks and Bricks Game

Before the students arrive, please read page 25 to prepare for the day.

Welcome

Students start in their circle area.
Give all students a sticky note.

Ask students to get in groups of 6 (some groups can have more students).
Tell students their sticky notes represent a stud. One sticky note by itself is a 1x1. If two people put their sticky notes together (side-by-side) they become a 1x2, and so forth.

The group's job is to create unique models to make a number. For example, if they start with the number 4, they could have 4 – 1x1 bricks or 2 – 1x2 bricks or 1 – 1x2 brick and 2 – 1x1 bricks, etc.

Start with the number 5. Have students draw in their journals the answers they create with their sticky notes. How many different ways did they build? Compare the answers with other groups of the entire class.

Move to the number 6. Have students draw in their journals the answers they create with their sticky notes. How many different ways did they build? Compare the answers with other groups of the entire class.

Have students find their partners and go to their places at the desks or tables.

Working with a Partner

Remind students of the partner rules created on Day 1. Have students share something with their partners that they appreciate about working with that person.

Materials

Students take bricks from the divided box as needed. At the end of the day, students inventory one compartment. At the end of each day, tell students which compartment to inventory and how many bricks of a certain size should be in that area.

Part 1: Show Them How

Follow the instructions on page 26 in the Brick Math Multiplication Teacher Edition.
Complete #1. Both students need to follow the procedures, even though the directions are written for Player 1, until #7. Player 2 rolls the dice, creates his/her model and enters information into the chart.

Students complete page 20, #1 in the Brick Math Multiplication Student Edition.

Follow the instructions on page 26 in the Brick Math Multiplication Teacher Edition.

Complete #2-3.

Students complete page 21, #2-3 in the Brick Math Multiplication Student Edition.

Follow the instructions on pages 26-27-28 in the Brick Math Multiplication Teacher Edition.

Complete #4-5-6-7-8.

Students complete page 21, #4-5-6-7-8 in the Brick Math Multiplication Student Edition.

Follow the instructions on page 28 in the Brick Math Multiplication Teacher Edition.

Complete #9.

Students complete page 22, #9 in the Brick Math Multiplication Student Edition.

Students continue to play 4 rounds.

Note: A second example is given in the Teacher Edition if you need to demonstrate another round.

Follow the instructions on page 28 in the Brick Math Multiplication Teacher Edition.

Complete #10.

Students complete page 22, #10 in the Brick Math Multiplication Student Edition.

Move with Sets

Before students begin, determine where you want students to create the blocks, as they did in the game. You can have students use a whiteboard, chart paper, etc. Sticky notes, crayons, or markers should be available for student use, depending on what medium you are using for the blocks. You will need a dice for this activity.

Have students sit in a circle.

Hand one student a die and have them roll. The number that is rolled becomes the multiplier. That student must draw that number of blocks for the sets.

The die moves to the student to the right. That student rolls the dice and the number becomes the multiplicand. The child to their right draws one set by filling in the appropriate number using "X" (or adding sticky notes) in one block. The student asks the class if the block is filled correctly and gets thumbs up or down. The student asks if the problem is complete. If not, move to the next student.

The next student to the right draws one set by filling in the appropriate number using "X" (or adding sticky notes) in another block. The class gives a thumbs up or thumbs down that the block is filled correctly. The student asks if the problem is complete. If not, move to the next student. If it is complete, that student writes the problem and identifies the multiplier, the multiplicand, and the product.

Take time to do several rounds, making certain that every child has participated at least twice.

Have students return to their tables or desks with their partners.

Part 2: Show What You Know

Follow the instructions on page 30 in the Brick Math Multiplication Teacher Edition.

Complete Part 2, #1-6.

Students make and complete a game table in their journals.

Challenge

Play the game one more time, but make one change. One die is used for the multiplier. The die is thrown twice and the numbers are added together for the multiplicand. If a player rolls a 2 and a 6, then the multiplicand is 8.

Students make and complete a game table in their journals.

Content Assessment

Have students create one additional table in their journals.

Give them the following:

- | | | |
|----|--------------|----------------|
| #1 | Multiplier 3 | Multiplicand 6 |
| #2 | Multiplier 5 | Multiplicand 8 |
| #3 | Multiplier 4 | Multiplicand 9 |
| #4 | Multiplier 6 | Multiplicand 7 |

Students should complete the table, build models, and determine the product.

Ask partners to check the work but they cannot touch the model nor can they write anything on another person's paper. They can only discuss. Check students' work around the room.

Inventory Check

Inventory check: Have students remove all the 1x3 bricks from the box and count them. They should have twenty (20) 1x3 bricks. After the students have verified the bricks, they replace the 1x3 bricks into the compartment and give you a thumbs-up. The brick set is ready for collection and storage.

Have students place the bricks into the correct compartments of the Brick Math bin.

Have both partners check the bin(s) and give you a thumbs-up that they are perfect.

Optional: Story Problems

Tell students a story problem like the following:

Davie and Howie were playing a game. They roll a die that had 9 sides.

Each person rolled twice and multiplied the two numbers together. The person with the largest product won the round.

Davie rolled an 8 and a 5.

Howie rolled a 4 and a 9.

Who won the round?

Help students to complete the story problem and show their work using models.

Now, have each pair work together to create a new story problem that they can show on their baseplate and explain.

As time allows, have students share their stories and baseplate with at least one other team.

Working with a Partner

Remind students about the partner rules they created earlier today. Refer to the Partner's Rules Chart to refresh their memories.

Self-Assessment

Ask students to use the blank space at the bottom of page 22 in the Brick Math Multiplication Student Edition.

All students write the word "Partner" in the blank space at the bottom of page 22. Read aloud the statements to the students and have them draw the correct color brick.

Students should draw a specific color brick after the word "Partner" based on the following:

I need to work on being a better partner. I did not listen to and help my partner as I should have. Draw an orange brick after the word "partner."

I was a good partner today. I helped my partner but sometimes I did their work for them or I let them do my work. Draw a green brick after the word "partner."

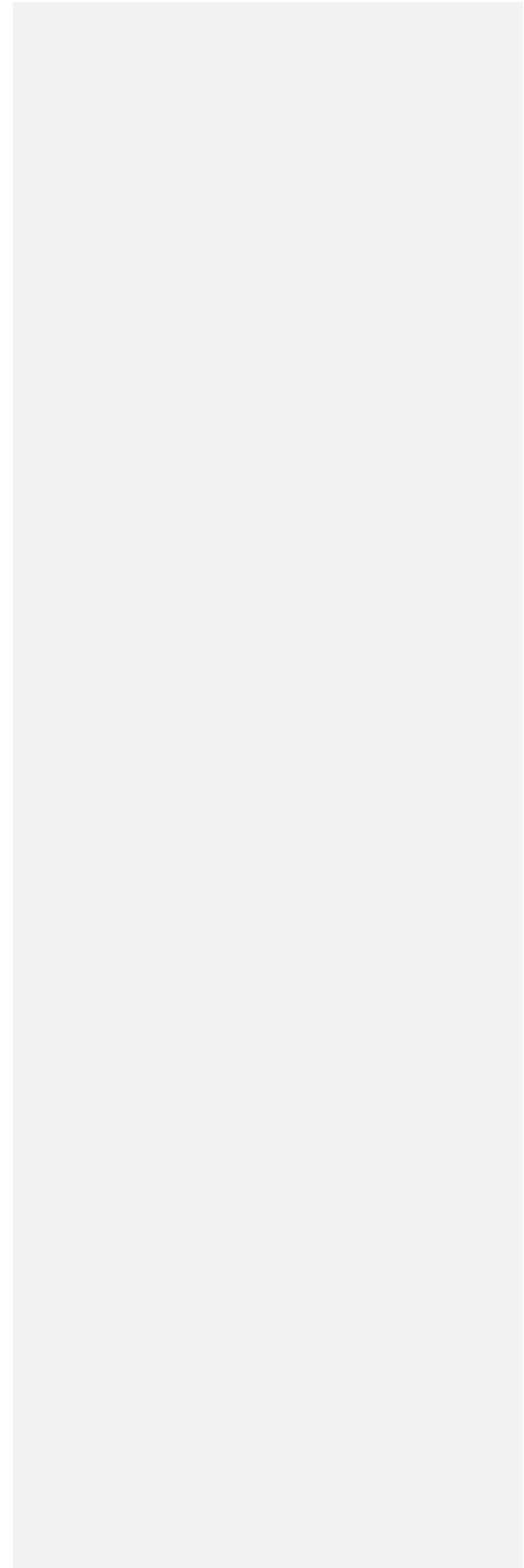
I was a good partner today. I helped my partner by checking their work and not by doing their work. Draw a blue brick after the word "partner."

All students should write "Multiplication" in the blank space at the bottom of page 22. Students should draw a specific color brick after the word "Multiplication" based on the following:

I need help knowing which number is a multiplier and a multiplicand. If this describes you today, draw an orange brick after the word "Multiplication."

I know which number is a multiplier and a multiplicand. If this describes you today, draw a green brick after the word "Multiplication."

I can help others to know which number is a multiplier and a multiplicand. If this describes you today, draw a blue brick after the words "Multiplication."



Day 5 – Multiplication Using Place Value/Bundling Models

Before the students arrive, please read page 31 to prepare for the day.

Welcome

Welcome to Day 5. Tell the students that they have done a fabulous job of learning so far. Students start in their circle area.

Ask students how 2×5 is different from 5×2 .

Students should respond that 2×5 is two sets of 5.

5×2 is five sets of two. They both have the same number of total objects in the sets, but they are made of different groups. What makes sense in one situation may not make sense in another. For example, which of the two math sentences, 2×5 or 5×2 makes sense with 5 students who each have 2 hands?

Ask students to think of an example of 2×5 and another example of 5×2 . Share several ideas with the class. Having students think about these examples now, helps clarify their thought processes when they are doing word problems.

Have students find their partners and go to their places at the desks or tables.

Working with a Partner

Remind students of the partner rules created on Day 1. Have students share which rule they think is most important.

Materials

Students take bricks from the divided box as needed. At the end of the day, students inventory one compartment. At the end of each day, tell students which compartment to inventory and how many bricks of a certain size should be in that area.

Part 1: Show Them How #1

Follow the instructions on page 32 in the Brick Math Multiplication Teacher Edition.

Complete #1, 2, 3.

Students complete pages 23-24, #1 & 2 in the Brick Math Multiplication Student Edition.

Moving to Multiply with Bundling

Have students return to their circle area and take a seat.

Tell students they are all part of a multiplication problem. One student will direct them to move into the correct location. Once the students have moved, the class will give thumbs up or thumbs down that they have been correctly positioned to reflect the problem.

For example, 1×2 is the multiplication problem. Student A has two students stand together in one group. One times a set of 2. Thumbs up.

Suggested problems for use:

$$2 \times 3$$

$$4 \times 1$$

$$0 \times 5$$

$$3 \times 2$$

$$6 \times 2$$

$$2 \times 6$$

$$1 \times 4$$

$$2 \times 0$$

$$5 \times 3$$

$$1 \times 7$$

$$2 \times 4$$

$$4 \times 2$$

If all students understand the concept, then the class is ready to show what they know.

Have students find their partners and go to their places at the desks or tables.

Part 2: Show What You Know #1

Follow the instructions on pages 33-34 in the Brick Math Multiplication Teacher Edition.

Complete #1, 2, 3.

Students complete pages 25-26, #2 in the Brick Math Multiplication Student Edition.

Show What You Know #2

Follow the instructions on pages 35-36 in the Brick Math Multiplication Teacher Edition.

Complete #1, 2, 3, and 4.

Students complete pages 26-27, #3 in the Brick Math Multiplication Student Edition.

Show What You Know #3

Follow the instructions on pages 36-37 in the Brick Math Multiplication Teacher Edition.

Complete #1, 2, 3.

Students complete pages 27-28, #4 in the Brick Math Multiplication Student Edition.

Follow the instructions on page 37 in the Brick Math Multiplication Teacher Edition.

Complete #4.

Students complete pages 28-29, #5 & 6 in the Brick Math Multiplication Student Edition.

More Problems for Practice

Students complete page 30, #7 in the Brick Math Multiplication Student Edition.

Students complete page 31, #8 in the Brick Math Multiplication Student Edition.

Content Assessment

Students complete Assessment #1 on page 31 in the Brick Math Multiplication Student Edition. Discuss the answers with the class. Help students to improve their answers as needed.

Students complete Assessment #2 on page 31 in the Brick Math Multiplication Student Edition. Ask partners to check the work but they cannot touch the model nor can they write anything on another person's paper. They can only discuss. Check students' work around the room.

Students complete Assessment #3 on page 32 in the Brick Math Multiplication Student Edition. Ask partners to check the work but they cannot touch the model nor can they write anything on another person's paper. They can only discuss. Check students' work around the room.

Inventory Check

Inventory check: Have students remove all the 1x1 bricks from the box and count them. They should have twenty-five (25) of each color (red, blue, white, green) 1x1 bricks. After the students have verified the bricks, they replace the 1x1 bricks into the compartment and give you a thumbs-up. The brick set is ready for collection and storage.

Have students place the bricks into the correct compartments of the Brick Math bin. Have both partners check the bin(s) and give you a thumbs-up that they are perfect.

Optional: Story Problems

Tell students a story problem like the following:

Tonica and Gerri were playing mancala. They noticed that 3 of the indentions each contained 5 stones. How many stones were in the three spaces?

Students need to use their bricks to show the math sentence and the answer to the problem. They should write the correct math equation in their journals.

Have each pair work together to create a new story problem that they can show on their baseplate and write in their journal.

As time allows, have students share their stories and baseplate with at least one other team.

Working with a Partner

Remind students about the partner rules they created earlier today. Refer to the Partner's Rules Chart to refresh their memories.

Self-Assessment

Ask students to use the blank space at the bottom of page 32 in the Brick Math Multiplication Student Edition.

All students write the word "Partner" in the blank space at the bottom of page 32. Read aloud the statements to the students and have them draw the correct color brick.

Students draw a specific color brick after the word "Partner" based on the following:

I need to work on being a better partner. I did not listen to and help my partner as I should have. Draw an orange brick after the word "partner."

I was a good partner today. I helped my partner but sometimes I did their work for them or I let them do my work. Draw a green brick after the word "partner."

I was a good partner today. I helped my partner by checking their work and not by doing their work. Draw a blue brick after the word "partner."

All students write "I can model multiplication based on bundling" in the blank space at the bottom of page 46.

Students should draw a specific color brick after the words "I can model multiplication based on bundling" based on the following:

I need help modeling multiplication based on bundling. If this describes you today, draw an orange brick after the words "I can model multiplication based on bundling."

I can model multiplication based on bundling. If this describes you today, draw a green brick after the words "I can model multiplication based on bundling."

I can help others model multiplication based on bundling. If this describes you today, draw a blue brick after the words "I can model multiplication based on bundling."

Day 6 – Multiplication Using Array/Area Models

Before the students arrive, please read page 38 to prepare for the day. You should have a large version of a 2x4 brick drawn on a piece of paper.

Welcome

Welcome students to Day 6.

Students start in their circle area. Tell students you want to review what they did yesterday and add a bit of a twist.

Ask students how 2×4 is different from 4×2 .

Students should respond that 2×4 is two sets of 4.

4×2 is four sets of two. They both have the same number of total objects in the sets, but they are made of different groups.

An array can be used to help think about multiplication. Let's take the examples of 2×4 and 4×2 .

Look at a 2x4 brick. It could represent either problem, but it is important how you view the brick. If I show you the brick with 2 studs at the top, holding it so the brick appears tall, that could be viewed as two groups of 4 – 2 studs across and 4 studs down.

If I turn the brick so that there are 4 studs across and 2 studs down, then the problem 4×2 is illustrated.

Allow students to choose bricks from one Brick Math Set. Have them share with two people the chosen brick and the two multiplication sentences that could be created. Have all students check the work of others. Spot-check as needed. Have a few students share with the class.

Return the bricks to their correct locations.

Have students find their partners and go to their places at the desks or tables.

Working with a Partner

Remind students of the partner rules created on Day 1. Have students draw a picture of their team and how the two of them work well together.

Materials

Students take bricks from the divided box as needed. At the end of the day, students inventory one compartment. At the end of each day, tell students which compartment to inventory and how many bricks of a certain size should be in that area.

Part 1: Show Them How #1

Follow the instructions on page 39 in the Brick Math Multiplication Teacher Edition.
Complete Problems #1-5.
Students complete page 33, #1 in the Brick Math Multiplication Student Edition.

Show Them How #2

Follow the instructions on page 40 in the Brick Math Multiplication Teacher Edition.
Complete Problems #1, 2, 3.
Students complete pages 34-35, #3 in the Brick Math Multiplication Student Edition.

Move with a Change Unknown

Have students return to their circle area and take a seat. Students will need blank sheets of the baseplate templates and crayons or markers.

Tell students they are going to create a challenge for the rest of the class. Have students draw an array on their baseplate using crayons or markers. When they are complete, ask the students to bring their baseplates to the circle area.

Two students will stand and the person on the right will show his or her drawing. The person to the left gives the multiplication problem it represents. The class agrees or disagrees with the answer. If there is debate, ask probing questions to help the students determine an answer. The person on the right sits down and the person to the left of the person standing also stands. Continue around the room until all of the multiplication arrays have been identified.

Have everyone stand up. They will need some movement. Students will clap the number across and jump the number down.

Demonstrate an example with the students: 2×3 (two claps (say one, two sets), then three jumps (say one, two, three items or objects))

$$3 \times 5$$

$$6 \times 2$$

$$1 \times 4$$

$$7 \times 8$$

Have students return to their tables or desks with their partners.

Part 2: Show What You Know #1

Follow the instructions on page 41 in the Brick Math Multiplication Teacher Edition.
Complete 1, 2.
Students complete page 35, #4 in the Brick Math Multiplication Student Edition.

Show What You Know #2

Follow the instructions on page 41 in the Brick Math Multiplication Teacher Edition.

Complete 1, 2.

Students complete page 36, #5 in the Brick Math Multiplication Student Edition.

Content Assessment

Students complete Assessment #1 on page 36 in the Brick Math Multiplication Student Edition.

Discuss the answers with the class. Help students to improve their answers as needed.

Students complete Assessment #2 on page 36 in the Brick Math Multiplication Student Edition.

Ask partners to check the work but they cannot touch the model nor can they write anything on another person's paper. They can only discuss. Check students' work around the room.

Students complete Assessment #3 on page 37 in the Brick Math Multiplication Student Edition.

Ask partners to check the work but they cannot touch the model nor can they write anything on another person's paper. They can only discuss. Check students' work around the room.

Inventory Check

Inventory check: Have students remove all the 1x6 bricks from the box and count them. They should have ten (10) 1x6 bricks. After the students have verified the bricks, they replace the 1x6 bricks into the compartment and give you a thumbs-up. The brick set is ready for collection and storage.

Have students place the bricks into the correct compartments of the Brick Math bin.

Have both partners check the bin(s) and give you a thumbs-up that they are perfect.

Optional: Story Problems

Tell students a story problem like the following:

Samantha has a small garden. She raised 16 bean plants. Last night a deer got into the garden and ate a lot of her plants. Today she only has 7 plants left. How many plants did the deer eat?

Help students to complete the story problem.

Now, have each pair work together to create a new story problem that they can show on their baseplate that shows simple multiplication with the change unknown.

As time allows, have students share their stories and baseplate with at least one other team.

Working with a Partner

Remind students about the partner rules they created earlier today. Refer to the Partner's Rules Chart to refresh their memories.

Self-Assessment

Ask students to use the blank space at the bottom of page 37 in the Brick Math Multiplication Student Edition.

All students write the word "Partner" in the blank space at the bottom of page 37. Read aloud the statements to the students and have them draw the correct color brick.

Students should draw a specific color brick after the word "Partner" based on the following:

I need to work on being a better partner. I did not listen to and help my partner as I should have. Draw an orange brick after the word "partner."

I was a good partner today. I helped my partner but sometimes I did their work for them or I let them do my work. Draw a green brick after the word "partner."

I was a good partner today. I helped my partner by checking their work and not by doing their work. Draw a blue brick after the word "partner."

All students should write "I can create arrays" in the blank space at the bottom of page 56. Students should draw a specific color brick after the words "I can create arrays" based on the following:

I need help creating arrays. If this describes you today, draw an orange brick after the words "I can create arrays."

I can create arrays. If this describes you today, draw a green brick after the words "I can create arrays."

I can help others create arrays. If this describes you today, draw a blue brick after the words "I can create arrays."

Day 7 – Multiplication Model Challenge

Before the students arrive, please read page 42 to prepare for the day.

Welcome

Welcome students to Day 7 – their lucky day!
Students start in their circle area.

Tell students that they are going to build challenges, write challenges, and solve challenges in multiplication.

Give every student a number card from 0 to 9 and have a multiplication sign. Call on two students to come forward and have them stand with their number card on either side of the multiplication sign. Have students name the problem. Example: 6×4 . Then ask the students how many groups or sets and how many items or objects are in the set.

Six groups of 4 objects. Ask students how many total objects. 24

Go around the room until everyone has used their number. Collect the number cards.

Have students find their partners and go to their places at the desks or tables.

Working with a Partner

Remind students of the partner rules created on Day 1.
Have students share something they enjoyed with their partners yesterday.

Materials

Students take bricks from the divided box as needed. At the end of the day, students inventory one compartment. At the end of each day, tell students which compartment to inventory and how many bricks of a certain size should be in that area.

Challenge

Follow the instructions on page 43 in the Brick Math Multiplication Teacher Edition.
Complete #1.

Students complete pages 38-39, #1, 2, 3, 4, and 5 in the Brick Math Multiplication Student Edition.

Follow the instructions on page 44 in the Brick Math Multiplication Teacher Edition.
Complete #2.
Students complete page 39, #6 in the Brick Math Multiplication Student Edition.

Follow the instructions on page 45 in the Brick Math Multiplication Teacher Edition.
Complete #3.

Students complete page 40, #7 in the Brick Math Multiplication Student Edition.

Follow the instructions on page 45 in the Brick Math Multiplication Teacher Edition.
Complete #4.

Students complete page 40, #8 in the Brick Math Multiplication Student Edition.

Move to Multiply

Have students return to their circle area and stand in a circle.

Hand the ball of yarn to one student. They say a multiplication problem and, keeping the end of the yarn, toss the ball of yarn to another person, who answers the problem. For example, student one says "4 x 8" and student two says " 32."

Continue until everyone is holding yarn. Then, reverse and have the student with the ball of yarn give a product and then toss the ball of yarn to the person who sent it to them. The second student creates a multiplication problem that would be correct for the product. For example, student 1 says "24" and student 2 says " 4 x 6" The yarn is rolled back onto the ball. Continue until the student who started the activity is holding the rolled-up ball of yarn.

Have students return to their tables or desks with their partners.

More Problems for Practice

Students complete page 41, #9 in the Brick Math Multiplication Student Edition.

Students complete page 41, #10 in the Brick Math Multiplication Student Edition.

Students complete page 42, #11 in the Brick Math Multiplication Student Edition.

Word Problem Challenge

Students use their journals for this challenge. Allow students to have access to copies of the baseplate template as needed.

Each student creates two word problems. Students use the array model to show the answer. Students share the problems with their partners – do not show the answers. The partner completes the problem and has his/her work checked. Discuss any disagreements and come to a consensus.

Each student creates two word problems. Students use the place value model to show the answer.

Students share their problems with another group – do not show the answers. The teams complete the problems and have their work checked. Discuss any disagreements and come to a consensus.

Content Assessment

Students complete Assessment #1 on page 42 in the Brick Math Multiplication Student Edition. Discuss the answers with the class. Help students to improve their answers as needed.

Students complete Assessment #2 on page 42 in the Brick Math Multiplication Student Edition. Ask partners to check the work but they cannot touch the model nor can they write anything on another person's paper. They can only discuss. Check students' work around the room.

Students complete Assessment #3 on page 43 in the Brick Math Multiplication Student Edition. Ask partners to check the work but they cannot touch the model nor can they write anything on another person's paper. They can only discuss. Check students' work around the room.

Students complete Assessment #4 on page 43 in the Brick Math Multiplication Student Edition. Ask partners to check the work but they cannot touch the model nor can they write anything on another person's paper. They can only discuss. Check students' work around the room.

Inventory Check

Inventory check: Have students remove all the 2x6, 1x12, and 1x16 bricks from the box and count them. They should have four (4) 2x6 bricks, six (6) 1x12 bricks, and two (2) 1x16 bricks. After the students have verified the bricks, they replace the 2x6, 1x12, and 1x16 bricks into the compartment and give you a thumbs-up. The brick set is ready for collection and storage.

Have students place the bricks into the correct compartments of the Brick Math bin. Have both partners check the bin(s) and give you a thumbs-up that they are perfect.

Optional: Story Problems

Tell students a story problem like the following:

Jasmine and Jason each had 7 friends coming for lunch. Create an array to show how to solve the problem and answer the question of how many people are coming for lunch.

Help students to complete the story problem using an array.

Now, have each pair work together to create a new story problem that they can show on their baseplate. Have students write the math sentence in their journals. Then, have students solve

the problem. Have students label the parts of the equation – multiplier, multiplicand, and product.

As time allows, have students share their stories and baseplate with at least one other team.

Working with a Partner

Remind students about the partner rules they created earlier today. Refer to the Partner's Rules Chart to refresh their memories.

Self-Assessment

Ask students to use the blank space at the bottom of page 41 in the Brick Math Multiplication Student Edition.

All students write the word "Partner" in the blank space at the bottom of page 41. Read aloud the statements to the students and have them draw the correct color brick.

Students should draw a specific color brick after the word "Partner" based on the following:

I need to work on being a better partner. I did not listen to and help my partner as I should have. Draw an orange brick after the word "partner."

I was a good partner today. I helped my partner but sometimes I did their work for them or I let them do my work. Draw a green brick after the word "partner."

I was a good partner today. I helped my partner by checking their work and not by doing their work. Draw a blue brick after the word "partner."

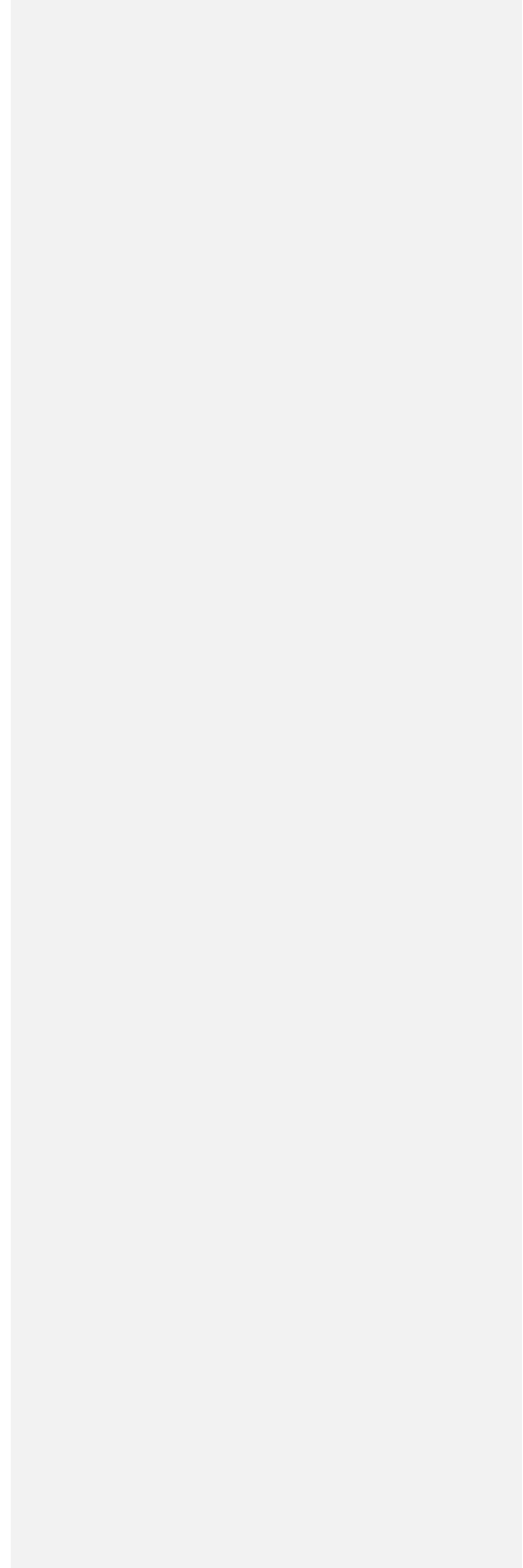
All students should write "I can solve multiplication problems" in the blank space at the bottom of page 74.

Students should draw a specific color brick after the words "I can solve multiplication problems" based on the following:

I need help solving multiplication problems. If this describes you today, draw an orange brick after the words "I can solve multiplication problems."

I can solve multiplication problems. If this describes you today, draw a green brick after the words "I can solve multiplication problems."

I can show others how to solve multiplication problems. If this describes you today, draw a blue brick after the words "I can solve multiplication problems."



Day 8 – Multiplying Two-Digit Numbers by One-Digit Numbers

Before the students arrive, please read page 46 to prepare for the day.

Welcome

Welcome students to day eight of camp. Tell students they did a great job so far and you know they are ready to move to more difficult problems.

Today you will model ones, tens, hundreds, and thousands. Show students pictures of the following:

A 1x1 brick represents "ones". If you have 2 1x1 bricks, what do they represent? 2 ones equal 2.

A 1x2 brick represents tens. If you have 4 1x2 bricks, what do they represent? 4 tens are 40.

A 1x3 brick represents hundreds. If you have 5 1x3 bricks, what do they represent? 5 hundreds equal 500.

A 1x4 brick represents thousands. If you have 3 1x4 bricks, what do they represent? 3 thousands equal 3,000.

Have students find their partners and their materials and take a seat at the tables or desks. Everyone needs a baseplate.

Working with a Partner

Remind students of the partner rules created on Day 1. Ask students which rule is the hardest to follow.

Materials

Students take bricks from the divided box as needed. At the end of the day, students inventory one compartment. At the end of each day, tell students which compartment to inventory and how many bricks of a certain size should be in that area.

Part 1: Show Them How #1

Follow the instructions on pages 47-48 in the Brick Math Multiplication Teacher Edition.

Complete Problem #1.

Students complete pages 44-45, #1 and #2 in the Brick Math Multiplication Student Edition.

Follow the instructions on pages 47-48 in the Brick Math Multiplication Teacher Edition.

Complete Problem #2-7.

Students complete pages 45-46, #3 in the Brick Math Multiplication Student Edition.

Show Them How #2

Follow the instructions on pages 49-50 in the Brick Math Multiplication Teacher Edition.
Complete Problems #1- 8.
Students complete pages 46, #4 in the Brick Math Multiplication Student Edition.

Show Them How #3

Follow the instructions on pages 50-51-52 in the Brick Math Multiplication Teacher Edition.
Complete Problems #1- 8.
Students complete pages 47, #5 in the Brick Math Multiplication Student Edition.

Move to Multiplication

Have students return to their circle area and take a seat.

Show students a large number – 2,358 written on chart paper or other location.
Ask students to say the expanded form for the number. $2,000 + 300 + 50 + 8$.

Ask students to give a large number. Write the number so it is visible to all students.
Ask students to say the expanded form for the number.

Have students say the expanded form for 4 to 6 numbers. You may wish to underline the numbers as they say the place value.

Sing a short song about multiplication and allow students to move to the music.

Part 2: Show What You Know #1

Follow the instructions on page 53 in the Brick Math Multiplication Teacher Edition.
Complete 1, 2, 3, 4.
Students complete page 48, #6 in the Brick Math Multiplication Student Edition.

Show What You Know #2

Follow the instructions on pages 54-55 in the Brick Math Multiplication Teacher Edition.
Complete 1, 2, 3, 4, 5.
Students complete page 49, #7 in the Brick Math Multiplication Student Edition.

Show What You Know #3

Follow the instructions on pages 56-57 in the Brick Math Multiplication Teacher Edition.
Complete 1, 2, 3, 4, 5.
Students complete page 50, #8 in the Brick Math Multiplication Student Edition.

Challenge

Students complete page 50, Challenge in the Brick Math Multiplication Student Edition.

More Problems for Practice

Students complete page 51, #9 in the Brick Math Multiplication Student Edition.

Students complete page 52, #10 in the Brick Math Multiplication Student Edition.

Content Assessment

Students complete Assessment #1 on page 52 in the Brick Math Multiplication Student Edition.

Discuss the answers with the class. Help students to improve their answers as needed.

Students complete Assessment #2 on page 52 in the Brick Math Multiplication Student Edition.

Ask partners to check the work but they cannot touch the model nor can they write anything on another person's paper. They can only discuss. Check students' work around the room.

Students complete Assessment #3 on page 53 in the Brick Math Multiplication Student Edition.

Ask partners to check the work but they cannot touch the model nor can they write anything on another person's paper. They can only discuss. Check students' work around the room.

Inventory Check

Inventory check: Have students remove all the 1x10 bricks from the box and count them. They should have eight (8) 1x10 bricks. After the students have verified the bricks, they replace the 1x10 bricks into the compartment and give you a thumbs-up. The brick set is ready for collection and storage.

Have students place the bricks into the correct compartments of the Brick Math bin.

Have both partners check the bin(s) and give you a thumbs-up that they are perfect.

Optional: Story Problems

Tell students a story problem like the following:

Samantha has a small garden. She raised 12 bean plants. Each bean plant has 9 beans on it. How many beans does Samantha have?

Help students to complete the story problem.

Now, have each pair work together to create a new story problem that they can show on their baseplate that uses a two-digit number multiplied by a one-digit number.

As time allows, have students share their stories and baseplate with at least one other team.

Working with a Partner

Remind students about the partner rules they created earlier today. Refer to the Partner's Rules Chart to refresh their memories.

Self-Assessment

Ask students to use the blank space at the bottom of page 53 in the Brick Math Multiplication Student Edition.

All students write the word "Partner" in the blank space at the bottom of page 53. Read aloud the statements to the students and have them draw the correct color brick.

Students should draw a specific color brick after the word "Partner" based on the following:

I need to work on being a better partner. I did not listen to and help my partner as I should have. Draw an orange brick after the word "partner."

I was a good partner today. I helped my partner but sometimes I did their work for them or I let them do my work. Draw a green brick after the word "partner."

I was a good partner today. I helped my partner by checking their work and not by doing their work. Draw a blue brick after the word "partner."

All students should write "I can multiply a two-digit number by a one-digit number" in the blank space at the bottom of page 56.

Students should draw a specific color brick after the words "I can multiply a two-digit number by a one-digit number" based on the following:

I need help multiplying a two-digit number by a one-digit number. If this describes you today, draw an orange brick after the words "I can multiply a two-digit number by a one-digit number."

I can create arrays. If this describes you today, draw a green brick after the words "I can multiply a two-digit number by a one-digit number."

I can help others create arrays. If this describes you today, draw a blue brick after the words "I can multiply a two-digit number by a one-digit number."

Day 9 – Multiplying Larger Numbers

Before the students arrive, please read page 58 to prepare for the day.

Welcome

Welcome students to day nine of camp. Tell students they did a great job so far and you know they are ready to multiply with larger numbers.

Ask students if they remember what a 1x1 brick represented. Ones
Ask students if they remember what a 1x2 brick represented. Tens
Ask students if they remember what a brick represented one hundred. 1x3 brick
Ask students if they remember what brick represented one thousand. 1x4 brick

Give students the problem 2×167 . Ask students which number is the multiplier (2) and which number is the multiplicand (167).

Have students find their partners and their materials and take a seat at the tables or desks. Everyone needs a baseplate.

Working with a Partner

Remind students of the partner rules created on Day 1.
Have students tell their partners what skill they are going to work on today.

Materials

Students take bricks from the divided box as needed. At the end of the day, students inventory one compartment. At the end of each day, tell students which compartment to inventory and how many bricks of a certain size should be in that area.

Part 1: Show Them How #1

Follow the instructions on pages 59-60 in the Brick Math Multiplication Teacher Edition. Complete Problems #1-8.
Students complete pages 54-55, #1 in the Brick Math Multiplication Student Edition.

Show Them How #2

Follow the instructions on pages 61-62 in the Brick Math Multiplication Teacher Edition. Complete Problems #1-3.
Students complete pages 56, #2 in the Brick Math Multiplication Student Edition.

Move to Multiplication

Have students return to their circle area and take a seat.

Show students a large number – 7,893 written on chart paper or other location. Choose one person to be the leader for this number. They will choose the correct number of people for the place value starting with the person to their left. They continue around the circle until the numbers in each place value have been correctly identified.

Have the correct number of students stand when you give a place value. For example, when you say 10s, the student leader should ask 9 people to stand.

Ask students to say the expanded form for the number. $7,000 + 800 + 90 + 3$.

Ask students to give a large number. Write the number so it is visible to all students.

Repeat the activity 2-3 times with a new leader for each number. Ask students to say the expanded form for the number.

Part 2: Show What You Know #1

Follow the instructions on pages 62-63 in the Brick Math Multiplication Teacher Edition.

Complete 1, 2, 3.

Students complete pages 57-58, #3 in the Brick Math Multiplication Student Edition.

Show What You Know #2

Follow the instructions on pages 64-65 in the Brick Math Multiplication Teacher Edition.

Complete 1, 2, 3.

Students complete pages 59-60, #4 in the Brick Math Multiplication Student Edition.

Show What You Know #3

Follow the instructions on pages 66-67 in the Brick Math Multiplication Teacher Edition.

Complete 1, 2, 3.

Students complete pages 60-61, #5 in the Brick Math Multiplication Student Edition.

More Problems for Practice

Students complete page 62, #6 in the Brick Math Multiplication Student Edition.

Students complete page 63, #7 in the Brick Math Multiplication Student Edition.

Content Assessment

Students complete Assessment #1 on page 64 in the Brick Math Multiplication Student Edition.

Discuss the answers with the class. Help students to improve their answers as needed.

Students complete Assessment #2 on page 64 in the Brick Math Multiplication Student Edition.

Ask partners to check the work but they cannot touch the model nor can they write anything on another person's paper. They can only discuss. Check students' work around the room.

Students complete Assessment #3 on page 64 in the Brick Math Multiplication Student Edition.

Ask partners to check the work but they cannot touch the model nor can they write anything on another person's paper. They can only discuss. Check students' work around the room.

Inventory Check

Inventory check: Have students remove all the 2x4 bricks from the box and count them. They should have nine (9) 2x4 bricks. After the students have verified the bricks, they replace the 2x4 bricks into the compartment and give you a thumbs-up. The brick set is ready for collection and storage.

Have students place the bricks into the correct compartments of the Brick Math bin. Have both partners check the bin(s) and give you a thumbs-up that they are perfect.

Optional: Story Problems

Tell students a story problem like the following:

Rebecca has divided her pennies into 3 groups. Each group contains 193 pennies. How many pennies does Rebecca have?

Help students to complete the story problem.

Now, have each pair work together to create a new story problem that they can show on their baseplate that uses a three- or four-digit number multiplied by a one-digit number.

As time allows, have students share their stories and baseplate with at least one other team.

Working with a Partner

Remind students about the partner rules they created earlier today. Refer to the Partner's Rules Chart to refresh their memories.

Self-Assessment

Ask students to use the blank space at the bottom of page 65 in the Brick Math Multiplication Student Edition.

All students write the word "Partner" in the blank space at the bottom of page 65. Read aloud the statements to the students and have them draw the correct color brick.

Students should draw a specific color brick after the word "Partner" based on the following:

I need to work on being a better partner. I did not listen to and help my partner as I should have. Draw an orange brick after the word "partner."

I was a good partner today. I helped my partner but sometimes I did their work for them or I let them do my work. Draw a green brick after the word “partner.”

I was a good partner today. I helped my partner by checking their work and not by doing their work. Draw a blue brick after the word “partner.”

All students should write “I can multiply a three-digit number by a one-digit number” in the blank space at the bottom of page 65.

Students should draw a specific color brick after the words “I can multiply a three-digit number by a one-digit number” based on the following:

I need help multiplying a three-digit number by a one-digit number. If this describes you today, draw an orange brick after the words “I can multiply a three-digit number by a one-digit number.”

I can multiply a three-digit number by a one-digit number. If this describes you today, draw a green brick after the words “I can multiply a three-digit number by a one-digit number.”

I can help others multiply a three-digit number by a one-digit number. If this describes you today, draw a blue brick after the words “I can multiply a three-digit number by a one-digit number.”

Day 10 – Multiplying Two-Digit Numbers by Two-Digit Numbers

Before the students arrive, please read page 68 to prepare for the day.

Welcome

Welcome students to day ten of camp. Tell students they did a great job so far and you know they are ready to multiply two-digit numbers by two-digit numbers.

Let's review how to multiply a two-digit number by a one-digit number.

Example: 36×4

$30 \times 4 = 120$ (tens \times ones)

$6 \times 4 = 24$ (ones \times ones)

Product is $120 + 24 = 144$.

Ask students to show you how to do the problem 21×2

$20 \times 2 = 40$

$1 \times 2 = 2$

Product is $40 + 2 = 42$

Great job, class. Now I want to show you something new.

Show students a baseplate with a 2×8 brick.

This is the array for 8×2 if it is positioned with the 8 studs across the top.

There is another way we could show this array, without using all the studs.

We could use a 1×8 across the top and a 1×2 on the side. But there is a special secret that we have to know. We must overlap the 1×2 brick with the 1×8 brick in the corner where they meet. If we forget and put it below, then we have created the problem 8×3 .

Let's show another problem and you tell me what it represents.

15×4 . 15 studs across the top and 4 studs on the left side using a 1×4 that overlaps in the upper left corner.

Have students find their partners and their materials and take a seat at the tables or desks. Everyone needs a baseplate.

Working with a Partner

Remind students of the partner rules created on Day 1. Have students tell their partners what they enjoyed most about working together.

Materials

Students take bricks from the divided box as needed. At the end of the day, students inventory one compartment. At the end of each day, tell students which compartment to inventory and how many bricks of a certain size should be in that area.

Part 1: Show Them How #1

Follow the instructions on page 69 in the Brick Math Multiplication Teacher Edition.
Complete Review.

Follow the instructions on pages 69-71 in the Brick Math Multiplication Teacher Edition.
Complete Problem #1-6.
Students complete pages 66-67, #1 in the Brick Math Multiplication Student Edition.

Show Them How #2

Follow the instructions on pages 72-73 in the Brick Math Multiplication Teacher Edition.
Complete Problems #1- 6.
Students complete pages 67-68, #2 in the Brick Math Multiplication Student Edition.

Move to Multiplication

Prepare sticky notes with the following:

- 1
- 5
- 2
- 3
- 10
- 20
- 3
- 5
- 20
- 20
- 10
- 5
- 3
- 3
- 10
- 5
- 200
- 100
- 30
- 15
- 345

Have = and + signs available as well.

Have students return to their circle area and take a seat.

Give each child a sticky note.

Write the problem $15 \times 23 = ?$ on chart paper or the board.

Have students show the addends for 15 ($10 + 5$) and 23 ($20 + 3$) by placing the correct sticky notes in order.

Have students use the place value format to get the final product.

$$\text{Tens x tens } 20 \times 10 = 200$$

$$\text{Tens x ones } 20 \times 5 = 100$$

$$\text{Ones x tens } 3 \times 10 = 30$$

$$\text{Ones x ones } 3 \times 5 = 15$$

$$\underline{\quad\quad\quad}$$
$$345$$

$$200 + 100 + 30 + 15 = 345$$

Sing a short song about multiplication and allow students to move to the music.

Part 2: Show What You Know

Follow the instructions on page 74 in the Brick Math Multiplication Teacher Edition.

Complete 1.

Students complete page 69, #3 in the Brick Math Multiplication Student Edition.

Follow the instructions on page 75 in the Brick Math Multiplication Teacher Edition.

Complete 2.

Students complete page 69, #4 in the Brick Math Multiplication Student Edition.

More Problems for Practice

Students complete page 70, #5 in the Brick Math Multiplication Student Edition.

Content Assessment

Students complete Assessment #1 on page 71 in the Brick Math Multiplication Student Edition.

Discuss the answers with the class. Help students to improve their answers as needed.

Students complete Assessment #2 on page 71 in the Brick Math Multiplication Student Edition.

Ask partners to check the work but they cannot touch the model nor can they write anything on another person's paper. They can only discuss. Check students' work around the room.

Inventory Check

Inventory check: Have students remove all the 1×4 bricks from the box and count them. They should have twenty-one (21) 1×4 bricks. After the students have verified the bricks, they replace

the 1x4 bricks into the compartment and give you a thumbs-up. The brick set is ready for collection and storage.

Have students place the bricks into the correct compartments of the Brick Math bin. Have both partners check the bin(s) and give you a thumbs-up that they are perfect.

Optional: Story Problems

Tell students a story problem like the following:

Rei has 25 friends that like chocolate. She wants to give each person 12 pieces of chocolate. How many pieces of chocolate does she need?

Help students to complete the story problem.

Now, have each pair work together to create a new story problem that they can show on their baseplate that uses a two-digit number multiplied by a two-digit number.

As time allows, have students share their stories and baseplate with at least one other team.

Working with a Partner

Remind students about the partner rules they created earlier today. Refer to the Partner's Rules Chart to refresh their memories.

Self-Assessment

Ask students to use the blank space at the bottom of page 70 in the Brick Math Multiplication Student Edition.

All students write the word "Partner" in the blank space at the bottom of page 70. Read aloud the statements to the students and have them draw the correct color brick.

Students should draw a specific color brick after the word "Partner" based on the following:

I need to work on being a better partner. I did not listen to and help my partner as I should have. Draw an orange brick after the word "partner."

I was a good partner today. I helped my partner but sometimes I did their work for them or I let them do my work. Draw a green brick after the word "partner."

I was a good partner today. I helped my partner by checking their work and not by doing their work. Draw a blue brick after the word “partner.”

All students should write “I can multiply a two-digit number by a two-digit number” in the blank space at the bottom of page 70.

Students should draw a specific color brick after the words “I can multiply a two-digit number by a two-digit number” based on the following:

I need help multiplying a two-digit number by a two-digit number. If this describes you today, draw an orange brick after the words “I can multiply a two-digit number by a two-digit number.”

I can multiply a two-digit number by a two-digit number. If this describes you today, draw a green brick after the words “I can multiply a two-digit number by a two-digit number.”

I can help others multiply a two-digit number by a two-digit number. If this describes you today, draw a blue brick after the words “I can multiply a two-digit number by a two-digit number.”

Teacher Assessment of Student Performance

The Student Assessment Chart on page 72 of the Brick Math Multiplication Student Edition should be completed before class begins. You will need to make your assessments and make appropriate comments so parents can see the progress made. If you wish, students can complete this as a self-assessment by making a checkmark in the correct boxes, and then you can add your assessments and comments. The template is found on page 76 of the Multiplication Teacher Edition.

Commented [KR1]: No teacher assessment located in Teacher Edition

Optional Parent Activity and Materials Check In

Allow parents to come to the classroom for the last 30 minutes of the camp day. Each parent will work with their child. The child will be the teacher for these activities and will help their parents learn how to use the bricks.

If a parent is unable to attend, the student can do the activity on their own or with a partner.

Use the Optional Story Problem Activity or use the following:

Rei and her friends are decorating the 38 tables in the cafeteria. They want to place 14 balloons at each table. How many balloons do they need?

Ask the students and parents to spot-check the compartments and make sure all the bricks are in the correct locations. Have students look on the floor to find any stray bricks.

Have each team bring their materials to you in numerical order, so you can keep track of your sets. Give each child their assessment sheet to be given to their parents.

Tell everyone thanks for coming!

You should have your sets in order and organized for the next use.