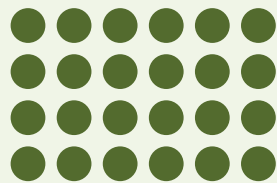
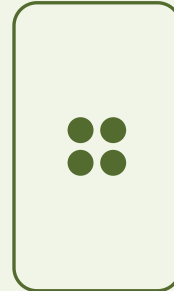
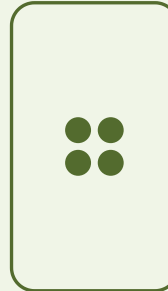
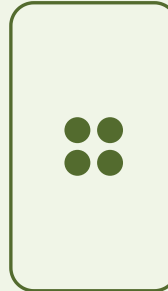


Build It, Break It, Connect It: Multiplication & Division Intervention Pack

6 complete activities from Multiplication & Division Intervention, each with a worked answer.



4 rows of 6



3 groups of 4

FOR THE TEACHER

1. Choose the page that matches the skill you are working on.
2. Let students work, then listen to how they explain it.
3. Use the answer key's "Watch for" note to plan your next question.
4. Use the Try It task to check that the idea transfers.

6 activities • 3 answer pages • From the 48-activity collection

10 US Letter pages • Print at 100% / Actual Size

Original Bobotemp educational printable • Fictional names, places and prices

Name _____ Date _____

LEVEL 1



Read both stories. Draw a model for each one before you write any numbers.

Story A: Ms. Rivera puts 3 erasers in each of 4 bags. Story B: Mr. Chen puts 4 erasers in each of 3 bags. Draw circles for bags and dots for erasers. Write an expression for each story in the order: number of groups $\times$ number in each group. Find how many erasers Ms. Rivera uses. Then decide: are the two stories the same situation?

EVIDENCE TO USE

- We write: groups $\times$ number in each group
- Story A: 4 bags, 3 erasers in each
- Story B: 3 bags, 4 erasers in each

1. Draw a circles-and-dots model for each story.

2. Write the expression for each story and find each total.

A blank sheet of graph paper with a light gray background and a grid of thin gray lines. The grid consists of 10 columns and 10 rows, forming a square area for drawing or writing.

3. Tell one way the stories are alike and one way they are different.

TRY IT • A teacher fills 2 baskets with 6 crayons in each basket. Write the expression and find the total.

Name _____ Date _____

Array Builder Grids

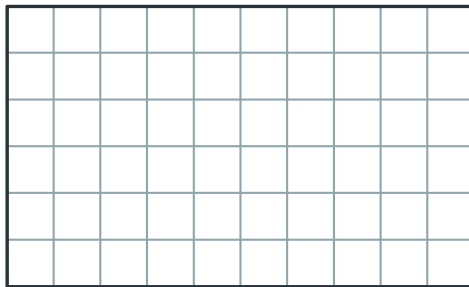
LEVEL 1



Use the printed grid or counters. Build the array first, then label it.

The music room has 4 rows of chairs. There are 7 chairs in each row. Shade this array on the printed grid, with one square for each chair. Label the number of rows on the side and the number of chairs in each row on the top. Skip-count by rows to find how many chairs there are in all. Then write the multiplication equation.

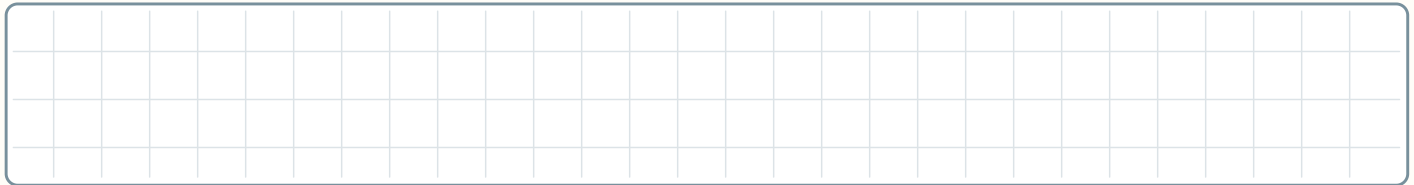
GRID PAPER



EVIDENCE TO USE

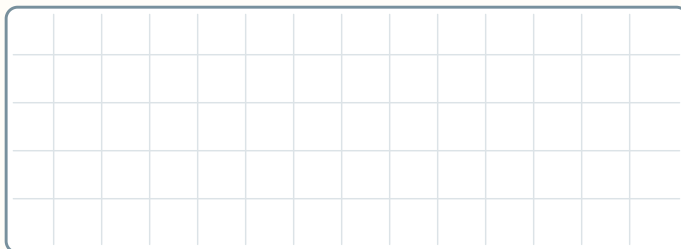
- Rows go across.
- Columns go up and down.
- Array: rows $\times$ number in each row
- 4 rows, 7 chairs in each row

1. Shade a 4-by-7 rectangle and label the rows and the columns.



2. Skip-count row by row and write each number you say.

3. Write the equation and an answer sentence.



TRY IT • A rectangle on grid paper is 3 squares tall and 5 squares wide. How many squares does it cover?

Name _____ Date _____

Split-the-Array

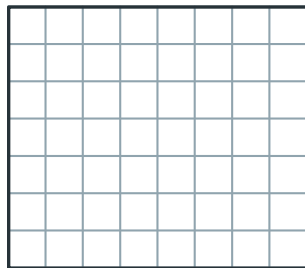
LEVEL 2



Shade with two colors. For the $5 + 3$ split, every row must show both colors.

A tile wall has 7 rows with 8 tiles in each row. You may not know 7×8 yet, but you do know your fives. Draw a line down the array so that each row of 8 splits into 5 and 3. Find each part. Then add the parts. Finally, try a different split of your own choice to check your answer.

TILE WALL: 7 ROWS OF 8



EVIDENCE TO USE

- 7 rows of 8 tiles
- Split each 8 into $5 + 3$
- $7 \times 8 = 7 \times 5 + 7 \times 3$

1. Shade 7×5 in one color and 7×3 in another.

2. Write the product for each part and add them.

3. Show a second split that gives the same total.

TRY IT • Find 8×6 by splitting the array into two facts you know.

Name _____ Date _____

LEVEL 2



Climb the ladder. Each step doubles the number of tables.

Each art table seats 6 students. Start on the bottom step with 2 tables. On each step, double the number of tables. Then double the number of students. Climb from 2 tables to 4 tables to 8 tables. How many students can sit at 8 tables? Explain why you double only one number in each step.

DOUBLES LADDER

Step	Tables	Seats
1	2	?
2	4	?
3	8	?

EVIDENCE TO USE

- 1 table = 6 seats
- Step 1: 2 tables
- Step 2: 4 tables
- Step 3: 8 tables

1. Write the equation for each step of the ladder.

2. Find the number of seats at 8 tables.

A blank sheet of graph paper with a light gray grid pattern on a white background. The grid consists of 20 columns and 15 rows of squares. The entire sheet is framed by a thin black border.

3. Explain why doubling the tables doubles the seats.

[illegible]

TRY IT • Build a doubles ladder for 7s: 2×7 , then 4×7 , then 8×7 . What is 8×7 ?

Name _____ Date _____

LEVEL 3



Write one equation with a letter for the unknown. Then solve it and use rounding to check whether your answer makes sense.

Ms. Okafor's class has 7 packs of markers with 8 markers in each pack. During a poster project, 18 markers dry out and go in the recycling bin. How many markers are left? Let m stand for the markers left. Write one equation using m . Solve it. Then round the total number of markers and the number of dried-out markers to the nearest ten. Use that estimate to check whether your answer is reasonable.

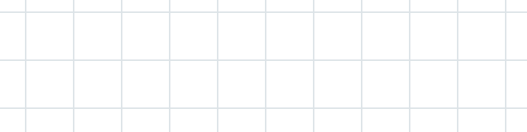
EVIDENCE TO USE

- 7 packs
- 8 markers in each pack
- 18 markers dry out
- m = markers left

1. Write one equation that uses the letter m.

[illegible]

2. Solve step by step.

A large rectangular area filled with a light gray grid, intended for drawing a picture. The grid consists of 10 columns and 10 rows of squares.

3. Round the total and the dried-out markers to the nearest ten, compare the estimate with your answer, and write a sentence with the unit.

TRY IT • The gym has 5 bins with 8 balls in each bin. Then 7 balls are taken outside. Write an equation with b and solve. Round the total and the balls taken outside to the nearest ten to check your answer.

Name _____ Date _____

Area-Model Bridge

LEVEL 3



Break the two-digit number into tens and ones. Then label each part of a rectangle.

The school office orders 6 boxes of index cards. Each box holds 34 cards. Draw a rectangle that is 6 units tall and 34 units wide. Split the width into 30 and 4. Find the area of each part. Then add the parts to find the total number of cards. Explain why this is the same break-apart idea you used with facts like 7×8 .

EVIDENCE TO USE

- 6 boxes
- 34 cards in each box
- $34 = 30 + 4$
- $6 \times 34 = 6 \times 30 + 6 \times 4$

1. Draw and label the area model with two parts.

2. Find each partial product and add them.

3. Write an answer sentence with the unit.

TRY IT • Use an area model to find 4×27 .

1. Equal-Groups Story Sort

LEVEL 1

Story A: $4 \times 3 = 12$ erasers. **Story B:** $3 \times 4 = 12$ erasers. The totals match, but the groupings are different.

WORKED REASONING • Story A: draw 4 circles with 3 dots in each. Skip-count by 3s: 3, 6, 9, 12. So $4 \times 3 = 12$. Story B: draw 3 circles with 4 dots in each. Skip-count by 4s: 4, 8, 12. So $3 \times 4 = 12$. Alike: both stories have 12 erasers. Different: Story A has more bags with fewer erasers in each bag. Answer sentence: Ms. Rivera uses 12 erasers in all.

WATCH FOR • Some students write $3 + 4 = 7$ because they add the two numbers in the story. Others say the stories are the same because the totals match. Have the student point to one bag and say how many erasers are in it. Then have them count the bags.

TRANSFER • $2 \times 6 = 12$ crayons (2 groups of 6).

2. Array Builder Grids

LEVEL 1

$4 \times 7 = 28$ chairs.

WORKED REASONING • Shade 4 rows with 7 squares in each row. Skip-count by rows: 7, 14, 21, 28. Equation: $4 \times 7 = 28$. Another way: count down the columns. There are 7 columns of 4, so 4, 8, 12, 16, 20, 24, 28. The rectangle covers 28 square units. Answer sentence: The music room has 28 chairs.

WATCH FOR • Some students add the side labels ($4 + 7 = 11$). Others count only the squares around the outside edge. Ask the student to touch and count one full row. Then have them skip-count every row.

TRANSFER • $3 \times 5 = 15$ squares.

17. Split-the-Array

LEVEL 2

$$7 \times 8 = 35 + 21 = 56 \text{ tiles.}$$

WORKED REASONING • The left part is 7 rows of 5, so $7 \times 5 = 35$. The right part is 7 rows of 3, so $7 \times 3 = 21$. Add the parts: $35 + 21 = 56$, so $7 \times 8 = 56$. Another split: break the 7 rows into 5 rows and 2 rows. Then $5 \times 8 = 40$ and $2 \times 8 = 16$, and $40 + 16 = 56$. Answer sentence: The wall has 56 tiles.

WATCH FOR • A student may write $7 \times 5 + 3 = 38$. This adds only 3 tiles, not 3 tiles in every row. Do the shading check: Does every row have both colors? Count the squares in the second color. There are 21.

TRANSFER • $8 \times 6 = 48$. For example, $5 \times 6 + 3 \times 6 = 30 + 18 = 48$, or $8 \times 5 + 8 \times 1 = 40 + 8 = 48$.

18. Doubles Ladder

LEVEL 2

$$8 \times 6 = 48 \text{ seats.}$$

WORKED REASONING • Step 1: $2 \times 6 = 12$. Step 2: double 2 tables to get 4 tables, and double 12 to get 24, so $4 \times 6 = 24$. Step 3: double 4 tables to get 8 tables, and double 24 to get 48, so $8 \times 6 = 48$. Doubling the tables makes two copies of the same seats, so the seats double too. Check: $5 \times 6 + 3 \times 6 = 30 + 18 = 48$. Answer sentence: 8 tables seat 48 students.

WATCH FOR • Some students double both factors and write 4×12 for the next step. That gives 4 times as many, not 2 times as many. Draw the tables: you added more tables, but each table still has 6 seats.

TRANSFER • $2 \times 7 = 14$, $4 \times 7 = 28$, and $8 \times 7 = 56$.

33. Two-Step Story With a Letter

LEVEL 3

$7 \times 8 - 18 = m$, so $m = 38$ markers. Equivalent equations, such as $m + 18 = 7 \times 8$, are also correct.

WORKED REASONING • Step 1: find the total markers. $7 \times 8 = 56$. Step 2: take away the dried-out markers. $56 - 18 = 38$. Equation: $7 \times 8 - 18 = m$, so $m = 38$. Estimate by rounding to the nearest ten: 56 rounds to 60, and 18 rounds to 20. $60 - 20 = 40$. Since 38 is close to 40, the answer is reasonable. Another way: 18 markers is 2 packs of 8 plus 2 more markers. 7 packs - 2 packs = 5 packs, and $5 \times 8 = 40$. Then $40 - 2 = 38$. Answer sentence: The class has 38 markers left.

WATCH FOR • Some students stop after one step and answer 56, forgetting the dried-out markers. Others add instead of multiplying in the first step ($7 + 8 = 15$) and then get stuck because they cannot take 18 away from 15. Ask: What do you need to know first, the total markers or the markers lost? Then compare with the estimate of about 40: an answer of 56 is too many, and an answer far from 40 needs a second look.

TRANSFER • $5 \times 8 - 7 = b$, so $b = 33$ balls. Estimate: $40 - 10 = 30$, and 33 is close to 30, so the answer is reasonable.

34. Area-Model Bridge

LEVEL 3

$6 \times 34 = 180 + 24 = 204$ cards.

WORKED REASONING • Left part: 6×30 . Since $6 \times 3 = 18$, 6×3 tens = 18 tens, so $6 \times 30 = 180$. Right part: $6 \times 4 = 24$. Add the parts: $180 + 24 = 204$. This is the distributive property, just as $7 \times 8 = 7 \times 5 + 7 \times 3$. Estimate: 6×35 is close, and $6 \times 35 = 210$, so 204 is reasonable. Answer sentence: The office has 204 index cards.

WATCH FOR • Some students compute $6 \times 3 = 18$ for the tens part, as if 30 were 3. That gives $18 + 24 = 42$. Others multiply only the tens and then add 4, getting 184. Check the area model: Is the left part 30 wide? Was the 6 multiplied by both parts?

TRANSFER • $4 \times 27 = 4 \times 20 + 4 \times 7 = 80 + 28 = 108$.