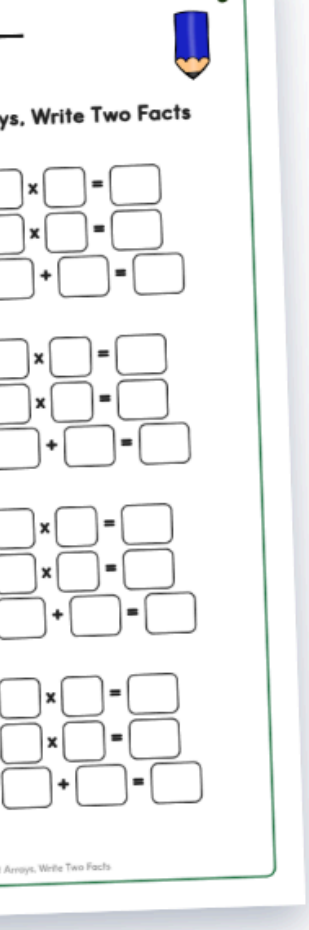
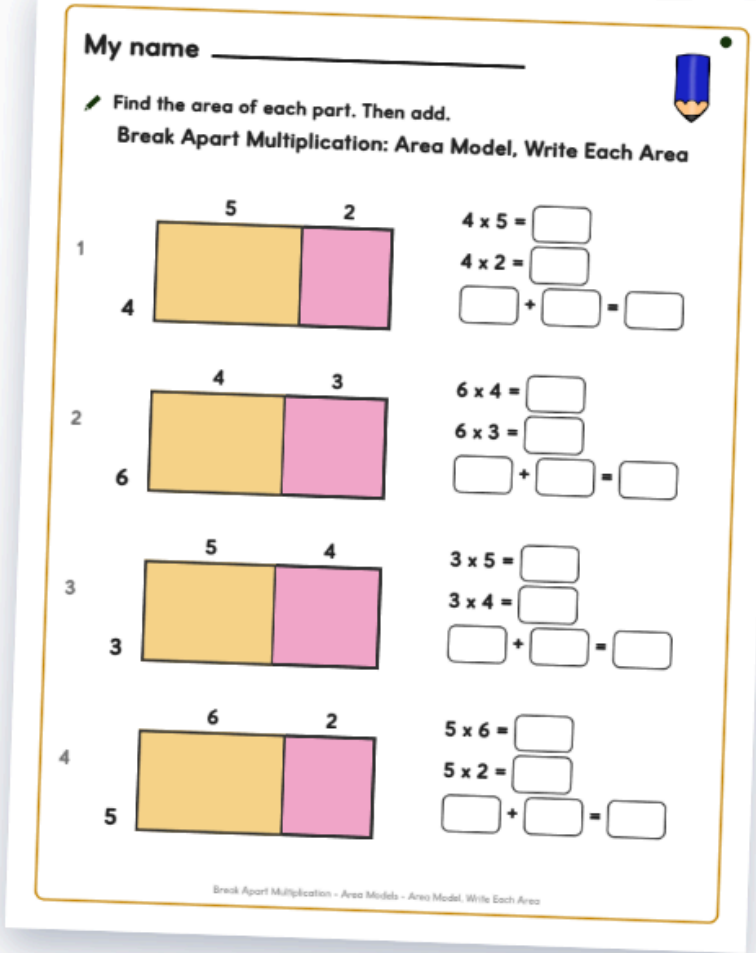
BREAK APART MULTIPLICATION

Arrays and Area Models

20 SHEETS

GRADES 3-4





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This is a fillable PDF

- Open it in a PDF reader (Adobe Acrobat Reader, Preview, or your browser), click into a box, type, and Save As.
- The name line and every number box are type-in fields. The arrays and area models are printed pictures: print the page and let students draw the line and color with a pencil or crayon.
- It works offline once downloaded.

Print at 100 percent

Turn off fit to page and shrink to fit so the squares stay big enough to count and to draw on. Pages print in color or in black and white. The two parts of an array are light tints, and in black and white they print as two shades of gray with a dark line between them. The cutting pages need scissors and a glue stick.

Student work

A filled-in tracker carries a student's name. Keep it in the data folder, and use a first name only on any page that leaves your hands.

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PREVIEW

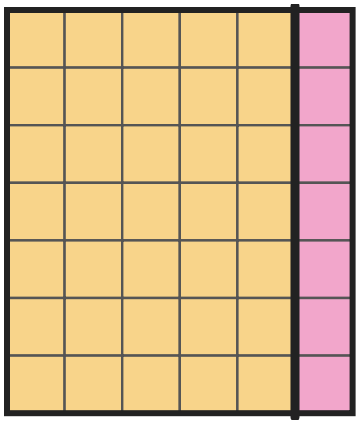
My name _____



Read the example. Then try one.

Break Apart Multiplication: How to Break Apart

7 x 6 means 7 rows of 6.

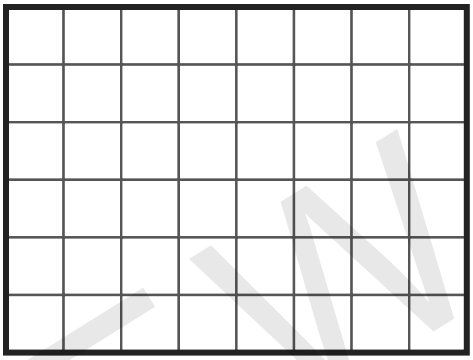


Break the 6 into **5** and **1**.

7 x 6 = (7 x 5) + (7 x 1)

= **35** + **7** = **42**

Your turn: 6 x 8.



Draw a line after column 5.

6 x 5 = ☐

6 x 3 = ☐

☐ + ☐ = ☐

Three steps

1. Look at the array. Rows go across.

2. Draw a line to split the columns into two easy parts.

3. Multiply each part. Then add the two answers.

Why it works

The two colored parts still make the whole array. Same squares, same answer. Break apart multiplication is the distributive property: a x b = (a x part) + (a x other part).

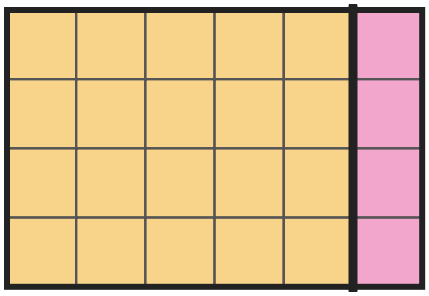
PREVIEW

My name _____

Read the split array. Write two facts.

Break Apart Multiplication: Split Arrays, Write Two Facts

1

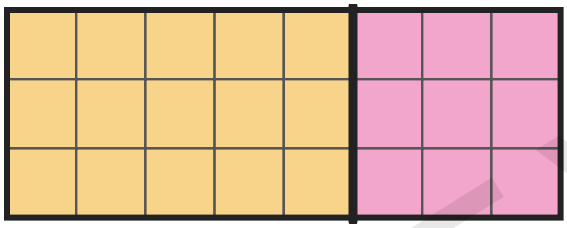


Part 1 ☐ × ☐ = ☐

Part 2 ☐ × ☐ = ☐

Total ☐ + ☐ = ☐

2

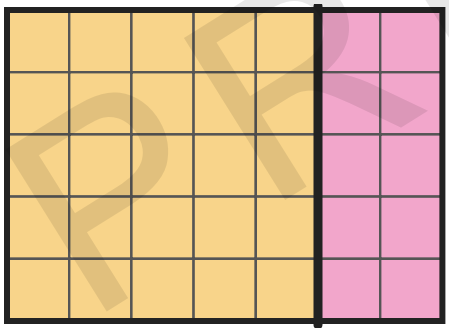


Part 1 ☐ × ☐ = ☐

Part 2 ☐ × ☐ = ☐

Total ☐ + ☐ = ☐

3

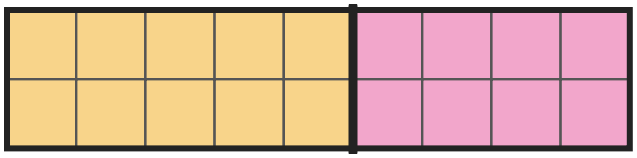


Part 1 ☐ × ☐ = ☐

Part 2 ☐ × ☐ = ☐

Total ☐ + ☐ = ☐

4



Part 1 ☐ × ☐ = ☐

Part 2 ☐ × ☐ = ☐

Total ☐ + ☐ = ☐

PREVIEW

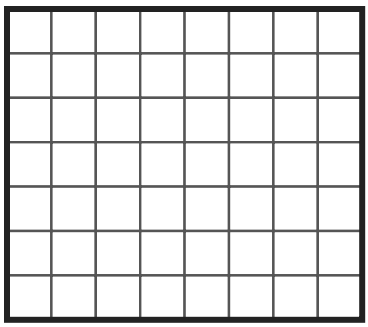
My name _____



Draw your own line. Write two facts.

Break Apart Multiplication: Draw Your Own Line

1



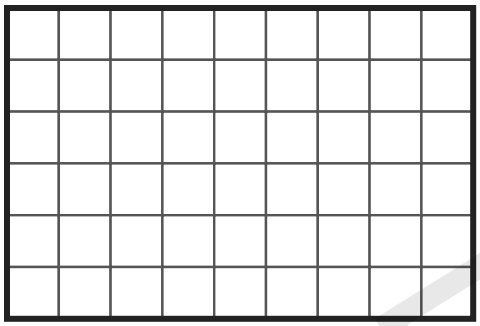
Draw a line anywhere you like.

Part 1 ☐ × ☐ = ☐

Part 2 ☐ × ☐ = ☐

Total ☐ + ☐ = ☐

2



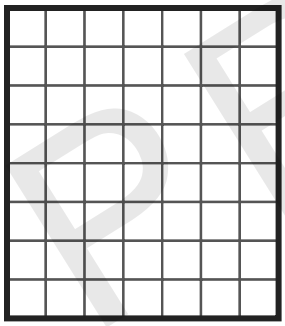
Draw a line anywhere you like.

Part 1 ☐ × ☐ = ☐

Part 2 ☐ × ☐ = ☐

Total ☐ + ☐ = ☐

3



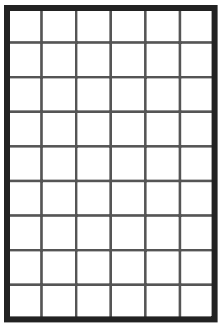
Draw a line anywhere you like.

Part 1 ☐ × ☐ = ☐

Part 2 ☐ × ☐ = ☐

Total ☐ + ☐ = ☐

4



Draw a line anywhere you like.

Part 1 ☐ × ☐ = ☐

Part 2 ☐ × ☐ = ☐

Total ☐ + ☐ = ☐

PREVIEW

My name _____



Fill in the second part. Then add.

Break Apart Multiplication: Fill In the Second Part

1 $7 \times 8 = (7 \times 5) + (7 \times \square)$

$= \square + \square = \square$

2 $6 \times 9 = (6 \times 5) + (6 \times \square)$

$= \square + \square = \square$

3 $8 \times 7 = (8 \times 5) + (8 \times \square)$

$= \square + \square = \square$

4 $9 \times 6 = (9 \times 4) + (9 \times \square)$

$= \square + \square = \square$

5 $7 \times 9 = (7 \times 5) + (7 \times \square)$

$= \square + \square = \square$

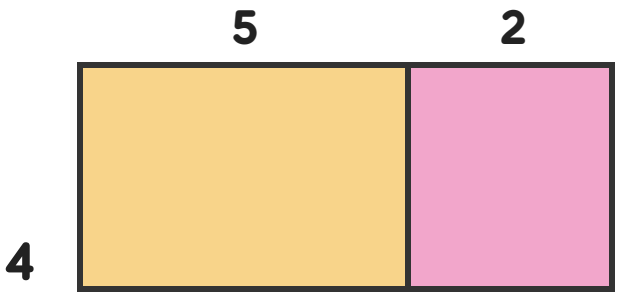
PREVIEW

My name _____

Find the area of each part. Then add.

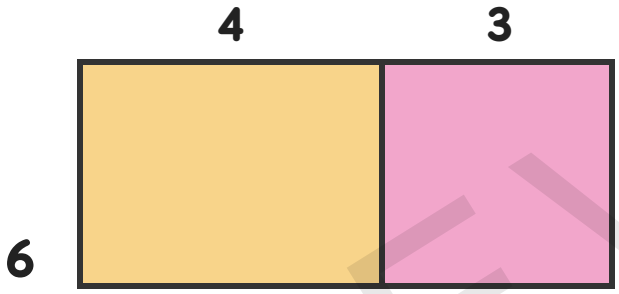
Break Apart Multiplication: Area Model, Write Each Area

1



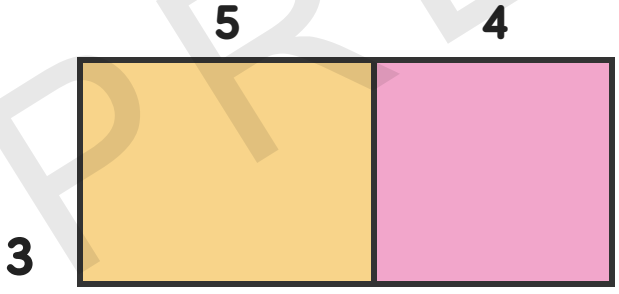
4 x 5 = ☐
4 x 2 = ☐
☐ + ☐ = ☐

2



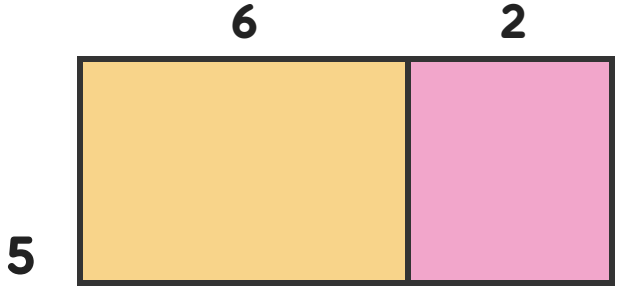
6 x 4 = ☐
6 x 3 = ☐
☐ + ☐ = ☐

3



3 x 5 = ☐
3 x 4 = ☐
☐ + ☐ = ☐

4



5 x 6 = ☐
5 x 2 = ☐
☐ + ☐ = ☐

PREVIEW

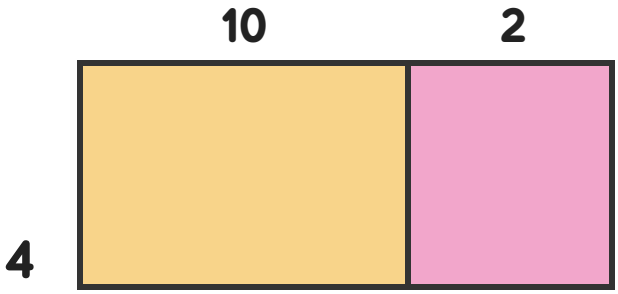
My name _____



Tens and ones. Find each area. Then add.

Break Apart Multiplication: Area Model, Tens and Ones

1

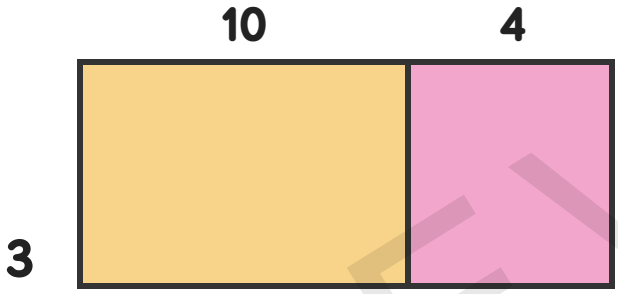


4 x 10 = ☐

4 x 2 = ☐

☐ + ☐ = ☐

2

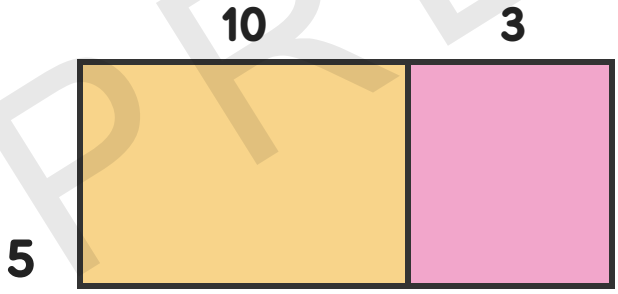


3 x 10 = ☐

3 x 4 = ☐

☐ + ☐ = ☐

3

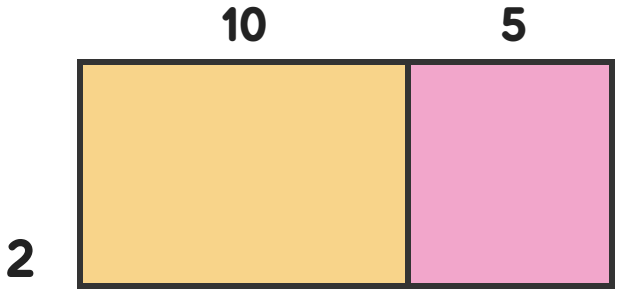


5 x 10 = ☐

5 x 3 = ☐

☐ + ☐ = ☐

4



2 x 10 = ☐

2 x 5 = ☐

☐ + ☐ = ☐

PREVIEW

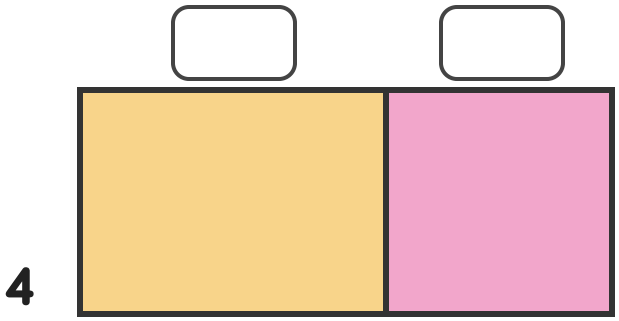
My name _____



Break the big number into tens and ones.

Break Apart Multiplication: Choose Your Break Apart, Bigger

1



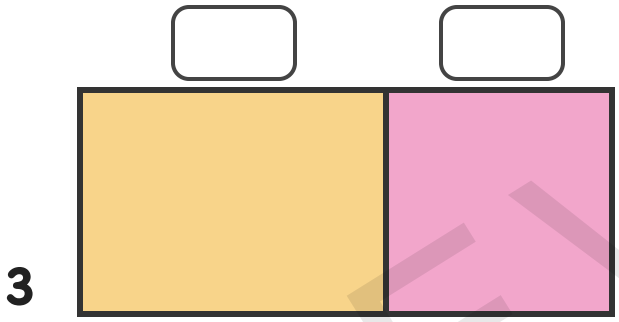
4 x 23

4 x ☐ = ☐

4 x ☐ = ☐

☐ + ☐ = ☐

2



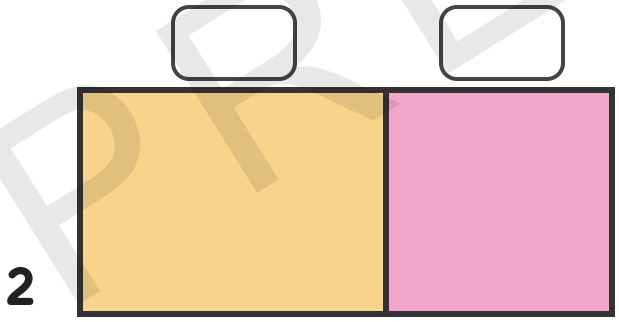
3 x 25

3 x ☐ = ☐

3 x ☐ = ☐

☐ + ☐ = ☐

3



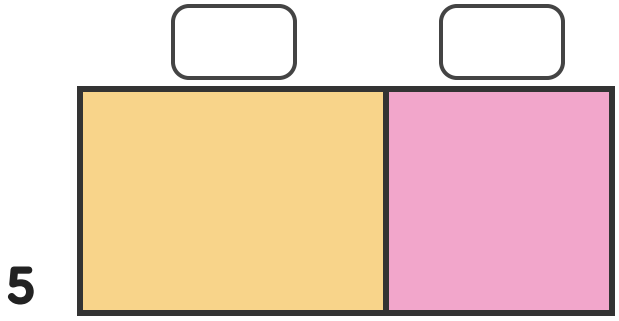
2 x 34

2 x ☐ = ☐

2 x ☐ = ☐

☐ + ☐ = ☐

4



5 x 31

5 x ☐ = ☐

5 x ☐ = ☐

☐ + ☐ = ☐

PREVIEW

My name _____

Cut out the area models. Glue each one by its equation.

Break Apart Multiplication: Cut and Glue Area Models

1
3 x 8 =
(3 x 5) + (3 x 3)

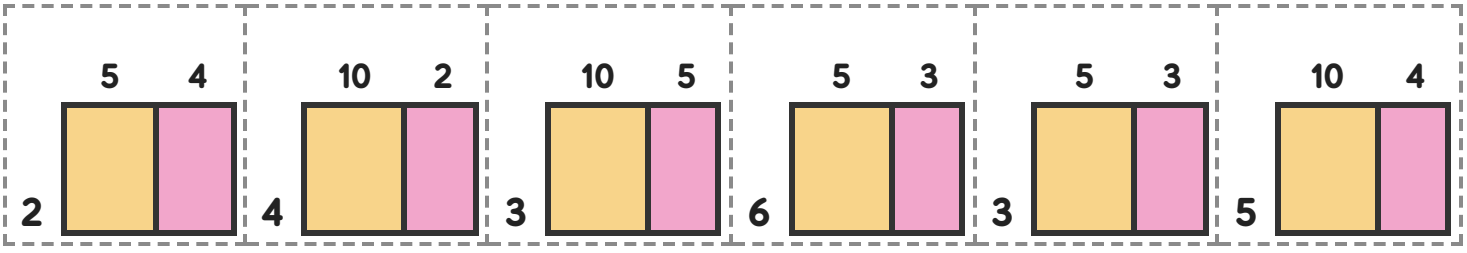
2
4 x 12 =
(4 x 10) + (4 x 2)

3
5 x 14 =
(5 x 10) + (5 x 4)

4
2 x 9 =
(2 x 5) + (2 x 4)

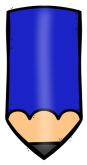
5
6 x 8 =
(6 x 5) + (6 x 3)

6
3 x 15 =
(3 x 10) + (3 x 5)



PREVIEW

My name _____



Read. Choose how to break apart. Write the facts.

Break Apart Multiplication: Word Problems, Choose a Break

1 Sam lines up 6 rows of 7 toy cars on the rug.

□ x □ = (□ x □) + (□ x □)

□ + □ = □ cars

2 A bike rack has 8 rows of 6 bikes.

□ x □ = (□ x □) + (□ x □)

□ + □ = □ bikes

3 Nia sorts 7 rows of 9 stickers onto a page.

□ x □ = (□ x □) + (□ x □)

□ + □ = □ stickers

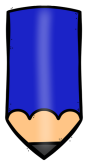
4 A box holds 5 rows of 8 crayons.

□ x □ = (□ x □) + (□ x □)

□ + □ = □ crayons

PREVIEW

My name _____



Is the break apart right? Check it.

Break Apart Multiplication: Check It

Add the two parts. Is it the same as the whole? Write yes or no.

1 **7 x 8 = (7 x 5) + (7 x 3)**

Parts add to ☐ Whole is ☐ Same? ☐

2 **6 x 9 = (6 x 5) + (6 x 3)**

Parts add to ☐ Whole is ☐ Same? ☐

3 **4 x 7 = (4 x 4) + (4 x 3)**

Parts add to ☐ Whole is ☐ Same? ☐

4 **8 x 6 = (8 x 5) + (8 x 2)**

Parts add to ☐ Whole is ☐ Same? ☐

5 **5 x 9 = (5 x 5) + (5 x 4)**

Parts add to ☐ Whole is ☐ Same? ☐

6 **3 x 8 = (3 x 4) + (3 x 3)**

Parts add to ☐ Whole is ☐ Same? ☐

PREVIEW

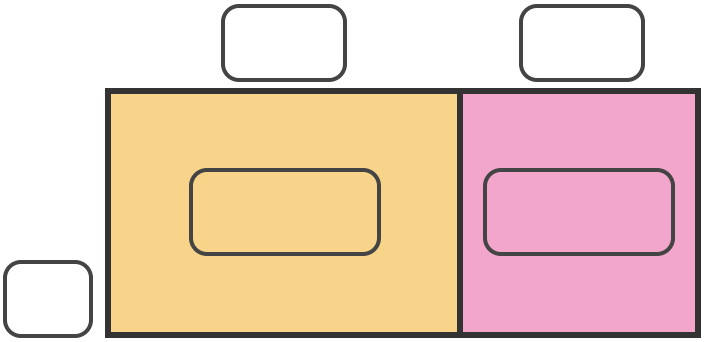
My name _____



Pick a problem. Break it apart. Fill in the model.

Break Apart Multiplication: Make Your Own Area Model

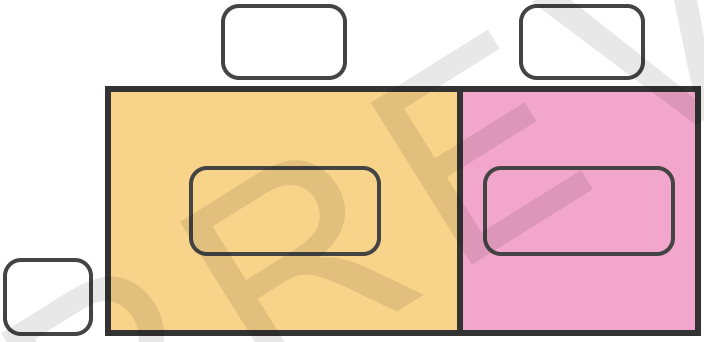
1



Area 1 + Area 2

☐ + ☐ = ☐

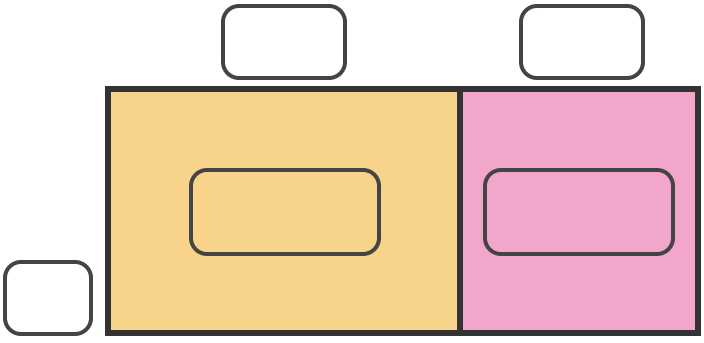
2



Area 1 + Area 2

☐ + ☐ = ☐

3



Area 1 + Area 2

☐ + ☐ = ☐

PREVIEW

Answer Key 2

Each answer is for the problem number on its page. Where students choose the parts, one way is shown.

Page 11: Area Model, Write Each Area

1) 4 x 5 = **20**, 4 x 2 = **8**; 20 + 8 = **28**
2) 6 x 4 = **24**, 6 x 3 = **18**; 24 + 18 = **42**
3) 3 x 5 = **15**, 3 x 4 = **12**; 15 + 12 = **27**
4) 5 x 6 = **30**, 5 x 2 = **10**; 30 + 10 = **40**

Page 12: Area Model, Find the Missing Part

1) Missing part **4**; 30 + 24 = **54**
2) Missing part **3**; 20 + 12 = **32**
3) Missing part **3**; 28 + 21 = **49**
4) Missing part **1**; 40 + 8 = **48**

Page 13: Area Model, Tens and Ones

1) 4 x 10 = **40**, 4 x 2 = **8**; 40 + 8 = **48**
2) 3 x 10 = **30**, 3 x 4 = **12**; 30 + 12 = **42**
3) 5 x 10 = **50**, 5 x 3 = **15**; 50 + 15 = **65**
4) 2 x 10 = **20**, 2 x 5 = **10**; 20 + 10 = **30**

Page 14: Choose Your Break Apart

1) 3 x 14 = **42**. One way: 10 + 4, 30 + 12
2) 5 x 13 = **65**. One way: 10 + 3, 50 + 15
3) 4 x 15 = **60**. One way: 10 + 5, 40 + 20
4) 2 x 17 = **34**. One way: 10 + 7, 20 + 14

Page 15: Choose Your Break Apart, Bigger

1) 4 x 23 = **92**. One way: 20 + 3, 80 + 12
2) 3 x 25 = **75**. One way: 20 + 5, 60 + 15
3) 2 x 34 = **68**. One way: 30 + 4, 60 + 8
4) 5 x 31 = **155**. One way: 30 + 1, 150 + 5

Page 16: Cut and Glue Arrays

1) 3 x 5 = (3 x 3) + (3 x 2): the array with 3 rows, 5 columns, line after column 3
2) 4 x 6 = (4 x 4) + (4 x 2): the array with 4 rows, 6 columns, line after column 4
3) 5 x 4 = (5 x 2) + (5 x 2): the array with 5 rows, 4 columns, line after column 2
4) 2 x 6 = (2 x 5) + (2 x 1): the array with 2 rows, 6 columns, line after column 5
5) 4 x 5 = (4 x 3) + (4 x 2): the array with 4 rows, 5 columns, line after column 3
6) 5 x 6 = (5 x 5) + (5 x 1): the array with 5 rows, 6 columns, line after column 5

PREVIEW

Preview · Bright Path Sped

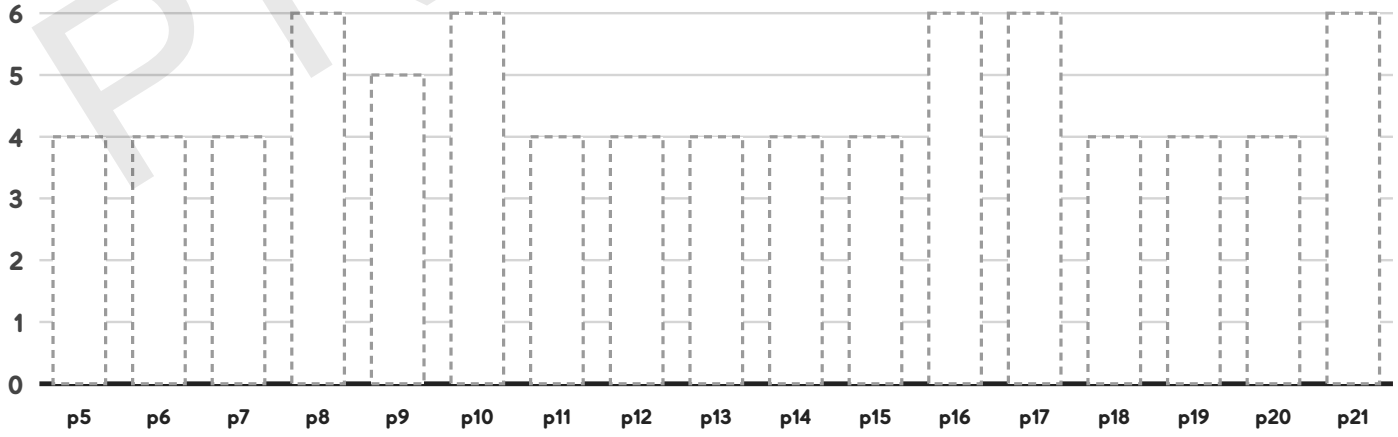
Tracker and Roll-Up

Write the date and how many were right. Then color the column for that sheet. A blank row means not done yet, never wrong.

Student _____ Teacher _____ School year _____

Page	Sheet	Date	Right	Out of	Notes
5	Split Arrays, Write Two Facts			4	
6	Draw the Line			4	
7	Draw Your Own Line			4	
8	Fill In the First Part			6	
9	Fill In the Second Part			5	
10	Break Apart the First Number			6	
11	Area Model, Write Each Area			4	
12	Area Model, Find the Missing Part			4	
13	Area Model, Tens and Ones			4	
14	Choose Your Break Apart			4	
15	Choose Your Break Apart, Bigger			4	
16	Cut and Glue Arrays			6	
17	Cut and Glue Area Models			6	
18	Word Problems, Break It for Me			4	
19	Word Problems, Choose a Break			4	
20	Word Problems, Tens and Ones			4	
21	Check It			6	

Roll-up: color one column for each sheet, up to the number right. The dashed box is the most it can be.



Notes for the team

PREVIEW

Break Apart at Home

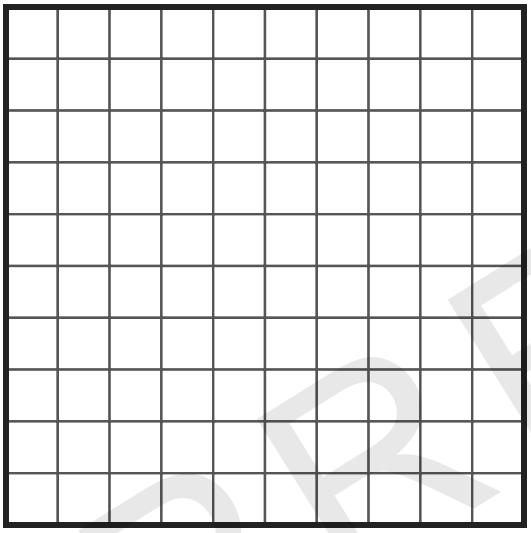
Send this page home with a child, or hand it to a family at a conference.

Student _____ Week of _____

How to help at home, in three steps

- Pick a multiplication fact that feels hard, such as 6 x 8. Say it out loud with your child: 6 rows of 8.
- Color that many squares on the grid. Draw a line to split the 8 into two easy parts, such as 5 and 3.
- Multiply each part, then add. Check that the answer is the same as the whole fact.

Our family array



Our fact ☐ x ☐

Part 1 ☐ x ☐ = ☐

Part 2 ☐ x ☐ = ☐

Total ☐ + ☐ = ☐

Try saying

- "Which part is easy? How can you split the other number?"
- "Do the two parts add up to the whole?"

Note from the teacher

Note from home

PREVIEW