



On Core Lessons for Common Core Math



**Using the Whiteboard**

Use the table of contents to go to specific sections of the lesson, or, tap **Next** to go to the first section of the lesson.

Teaching the Math

Preview the *Essential Question*: How can you use the Distributive Property to find quotients?

Common Core Standards for Mathematical Content

CC.4.NBT.6 Find whole-number quotients and remainders with up to four-digit dividends and one-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.

Common Core Standards for Mathematical Practice

CC.K–12.MP.3 Construct viable arguments and critique the reasoning of others.

CC.K–12.MP.4 Model with mathematics.

Navigating the *SMART Notebook* file

	Home	Return to the Main Menu.		Example	View a sample problem.
	Teacher Notes	Open the Teacher Notes PDF.		Answer	Show the correct answer to a problem.
	Previous	Go to the previous page.		Try Another	Generate another problem for extra practice.
	Next	Go to the next page.		SMART Response Question	Indicates the question is compatible with a <i>SMART Response</i> interactive Response system.
	Action Arrow	Reveal hidden content.			
	Try This	Reveal additional problems. Tap again to return to the previous page.		Workspace	Reveal additional content for the activity. Tap again to return to the previous page.

Tips**Clear or reset the screen**

To reset the screen, tap **Edit > Reset Page** or tap the **Reset Page** button if it is on the toolbar.

Add tools and functions to your *SMART Notebook* toolbar or floating palette

Tap the **Customize** button in the toolbar or floating palette, and then drag the tool to the toolbar or floating palette.

View a submenu in iTools

If you are using a PC, to view an iTools submenu, you may need to tap again to the right of the icon or near it.

**Using the Whiteboard**

- Discuss the problem with students.
- Pull out the Math Idea tab and discuss the Distributive Property with students.
- Ask a volunteer to use the **Shapes Tool** to outline a rectangle to model $69 \div 3$ on the grid.
- Ask another volunteer to use the **Highlighter Tool** to shade columns of 3 until 69 squares have been shaded.
- Tap the first **Action Arrow**.
- Ask a student to answer the question; tap **Answer** to check the student's answer.
- Tap the second **Action Arrow**.
- Ask a volunteer to use the **Highlighter Tool** to show how the larger rectangle can be broken into two smaller rectangles, each distinguished by a different color.
- Tap the third **Action Arrow**.
- Ask students to complete the mathematical sentences.
- Tap **Answer** to check student answers.

Teaching the Math

Discuss the Distributive Property for division and how to use it to find a quotient.

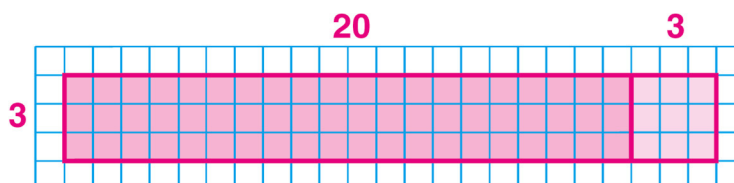
Ask: How do you know what size rectangle to make? **Possible answer:** I need to have 69 squares in groups of 3, so I shade columns of 3 squares each until 69 squares are shaded.

Ask: How do you know how to break apart the model? **Possible answer:** I look for two numbers with the sum of 69 that divide evenly by 3, so I break it into 60 squares and 9 squares.

Ask: What represents the dividend in each division problem? **the number of squares in the rectangle**

Ask: What represents the divisor? **the number of rows**

Ask: What represents the quotient? **the number of columns**

Answer Key

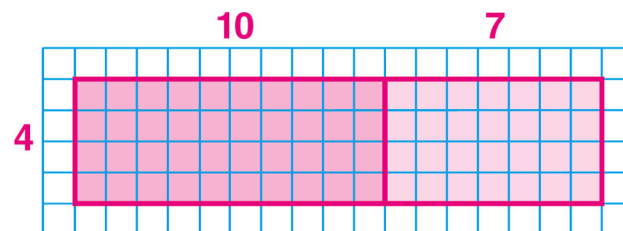
**Using the Whiteboard**

- Discuss the problem with students.
- Ask a volunteer to use the **Shapes Tool** to outline a rectangle to model $68 \div 4$ on the grid.
- Ask another volunteer to use the **Highlighter Tool** to shade columns of 4 until 68 squares have been shaded.
- Tap the first **Action Arrow**.
- Ask a student to answer the question; tap **Answer** to check the student's answer.
- Tap the second **Action Arrow**.
- Ask a volunteer to use the **Highlighter Tool** to show how the larger rectangle can be broken into two smaller rectangles, each distinguished by a different color.
- Tap the third **Action Arrow**.
- Ask students to complete the mathematical sentences.
- Tap **Answer** to check student answers.

Teaching the Math

Ask: Why do you break up the dividend, 68, as $40 + 28$? **Possible answer:** because each addend is easily divisible by 4.

Ask: Why can this area model illustrate both multiplication and division? **Possible answer:** because multiplication and division are inverse operations.

Answer Key



Using the Whiteboard

- Discuss the problem with students.
- Ask a volunteer to use the **Pen** to complete the mathematical sentence.
- Tap the first **Action Arrow**.
- Ask a volunteer to use the **Pen** to complete the mathematical sentence.
- Tap the second **Action Arrow**.
- Ask a volunteer to use the **Pen** to complete the mathematical sentence.
- Tap the third **Action Arrow**.
- Have a volunteer use the **Pen** to complete the mathematical sentences.
- Tap **Math Talk** to reveal a discussion question.

Teaching the Math

Discuss how to model $68 \div 4$ using base-ten blocks.

Ask: How can you break up 68 using base-ten blocks? Possible answer: 6 tens and 8 ones, or $60 + 8$

Ask: Why are you sharing equally among 4 groups? Possible answer: I am modeling $60 \div 4$, so I'm sharing 6 tens equally among 4 groups. There is 1 ten in each group with 2 tens left over.

Ask: Why do you regroup the 2 tens left over? Possible answer: so I can share the 20 ones equally among 4 groups.

Ask: How can you find the quotient to the original division problem, $68 \div 4$?

Possible answer: I add the quotients of the two smaller division problems; their sum is the quotient of $68 \div 4$.

Math Talk

Use **Math Talk** to focus on students' understanding that there is more than one way to break up a dividend when using the Distributive Property.

Common Errors

Error Students may forget to add both quotients when using models and the Distributive Property to divide.

Example $36 \div 3 = 10$

Springboard to Learning Encourage students to write out the division problem using the Distributive Property so they remember to add both quotients: $36 \div 3 = (30 \div 3) + (6 \div 3)$.

Answer Key

60, 8

15

2

15, 2, 17

Math Talk

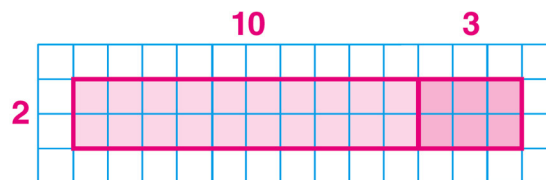
Possible explanation: Think of 68 as $48 + 20$, divide each number by 4, and add the quotients.

**Using the Whiteboard**

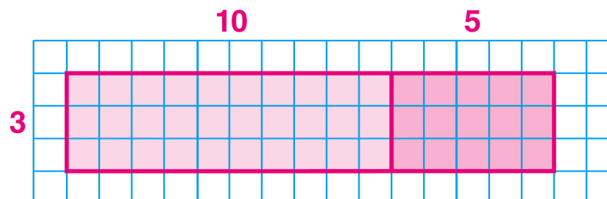
- Discuss the problem with students.
- Ask a volunteer to use the **Pen** to complete the mathematical sentences.
- Guide another volunteer to model the problem by drawing rectangles on the grid using the **Shapes Tool**.
- Then use the **Highlighter Tool** to shade the grid.
- Tap **Try Another!** to reveal another problem.
- Discuss the problem with students.
- Ask a volunteer to use the **Pen** to complete the mathematical sentences.
- Guide another volunteer to model the problem on the grid using the **Shapes Tool**.
- Then use the **Highlighter Tool** to shade the grid.

Answer Key

$$\begin{aligned} 26 \div 2 &= (20 \div 2) + (6 \div 2) \\ &= 10 + 3 \\ &= 13 \end{aligned}$$



$$\begin{aligned} 45 \div 3 &= (30 \div 3) + (15 \div 3) \\ &= 10 + 5 \\ &= 15 \end{aligned}$$



**Using the Whiteboard**

- Discuss the problem with students.
- Ask a volunteer to use the **Pen** to complete the mathematical sentences.
- Tap **Try Another!** to reveal another problem.
- Discuss the problem with students.
- Ask a volunteer to use the **Pen** to complete the mathematical sentences.

Answer Key

$$\begin{aligned}86 \div 2 \\&= (80 \div 2) + (6 \div 2) \\&= 40 + 3 \\&= 43 \\[10pt]208 \div 4 \\&= (200 \div 4) + (8 \div 4) \\&= 50 + 2 \\&= 52\end{aligned}$$

**Using the Whiteboard**

- Read the first problem.
- Ask a volunteer to tap and stamp 8 tens rods in the top section of the workspace.
- Ask a volunteer to tap and stamp 8 ones cubes in the top section of the workspace.
- Now have a student tap **Divide**. On the resulting screen tap the **up arrow** to 4 for the **Number of Groups**, and tap **OK**.
- Ask a student to distribute the 8 tens rods equally among the 4 sections of the workspace.
- Ask a student to distribute the 8 ones cubes equally among the 4 sections of the workspace.
- Finally, encourage a student to tap the **Keyboard Tool** in the *SMART Notebook* floating palette or toolbar and type the answer in the box in the lower part of the screen.
- Tap **Check**.
- Tap the **Broom** to reset the iTools workmat.
- Repeat the activity with the following problems: $36 \div 3$; $96 \div 8$; $189 \div 9$; $255 \div 5$; $612 \div 6$.

Answer Key

22
12
12
21
51
102

**Using the Whiteboard**

- Discuss the problem with students.
- Guide a volunteer to use the **Pen** to write a problem.
- Guide a different volunteer to use the **Pen** to write a solution.

Teaching the Math

This problem requires students to use higher order thinking skills to analyze a picture, then write and solve a problem based on the picture.

Say: Describe how you could change the problem by changing the number of rows of candles. Then solve the problem. **Possible answers:** If there were 7 rows of candles, the total would be 84 candles. If 8 are sold, $84 - 8 = 76$. You could arrange 76 candles into 2 equal rows of 38 candles or 4 equal rows of 19 candles.

Answer Key

Possible problem: The shop sells 8 of the candles in the display. How can the remaining candles be arranged so there are an equal number in each row?

Possible solution: There are 6 rows of 12 candles, 6×12 , or 72 candles in all. If 8 candles are sold, there will be 64 candles left. $72 - 8 = 64$. To make even rows, the candles could be arranged in 8 rows of 8 candles or 4 rows of 16 candles, or 2 rows of 32 candles.

**Using the Whiteboard**

- Read the question to the students.
- Ask students to solve the problem.
- If available, have students use their *SMART Response* remotes to answer.
- If installed, click the *SMART Response* tab, and then start the question to begin voting.
- Students may also use the **Pen** to circle the answer.
- Tap **Answer** to reveal the correct answer.

Answer Key

C) 16 puppets

**Using the Whiteboard**

- Read aloud the *Essential Question*: How can you use the Distributive Property to find quotients?
- Have a volunteer use the **Pen** write his or her answer.
- Pull out the Answer tab to reveal a possible answer.

Answer Key

Essential Question: Possible answer: I can outline a rectangle on a grid to model the division problem. Then I can break apart the model into two smaller rectangles to show how the dividend can be broken apart into two addends; the sum of the two parts equals the dividend and each part can be divided by the divisor. I can then solve the two smaller division problems and add the quotients.

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