

REVIEW CLASS

Inverse Operations

Review how to use the inverse of division, multiplication, to solve a division problem.

☞ *Why can the given division problem be rewritten as a multiplication problem? (Since multiplication and division are inverse operations, the quotient of the division problem is one of the factors of the corresponding multiplication problem. The dividend is equivalent to the product.) How does starting with 4 and 10 as factors help? (I multiply by 4 because it is the divisor. I can multiply by 10 by just writing a zero at the end of the other factor. The product is pretty close to 64, and then I can get closer to the factor I need.)*

► Use multiplication to rewrite the division problem.

$$64 \div 4 = \underline{\quad}$$

$$\underline{\quad} \times 4 = 64$$

► Find the missing number using multiplication facts.

$$4 \times 10 = \underline{40}$$

$$4 \times 12 = \underline{48}$$

$$4 \times 15 = \underline{60}$$

$$4 \times 16 = \underline{64}$$

$$64 \div 4 = \underline{16} \text{ because } \underline{16} \times 4 = 64$$

SET UP GROUP

Model Card Sort

Use this section with students who may benefit from additional support with categorization.

☞ *Today, we'll complete a sorting activity with different representations of multiplication and division. Let's use the model card sort as practice.*

What do cards A and B have in common? (They both represent the equation $3 \times 7 = 21$.) What do you notice about the equations on cards C and D? (They are inverse operations.) What is the missing number in both equations? (9)

Have students record the categories and cards for the model sort in their *mSpaces*.



Model Card Sort

<p>A</p>	<p>B</p> $\underline{\quad} \times 7 = 21$
<p>C</p> $27 \div 3 = \underline{\quad}$	<p>D</p> $\underline{\quad} \times 3 = 27$

ADMINISTER CLASS

Introduce the Card Sort

Review the steps to complete the sort.

☞ *On page 158A of your mSpace, there are 12 cards. After you cut them out, review the content on each card. Group the cards that have something in common. Then identify the categories you used to group the cards.*

There are many correct ways to group the cards. You do not need the same number of cards in each category.

Use **Think-Pair-Share** to have students complete the card sort with a partner.



What to Know

<p>STEP 1</p> <p>Cut out the cards on mSpace page 158A.</p>	<p>STEP 2</p> <p>Review the representations on each card.</p>
<p>STEP 3</p> <p>Group cards that have something in common.</p>	<p>STEP 4</p> <p>Identify the categories you used to group the cards.</p>

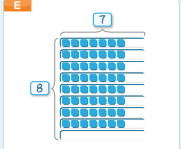
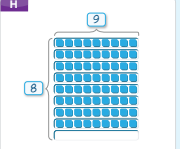
PRACTICE PAIRS



Complete the Card Sort

► Project the *mSpace* and have students complete the activity with a partner.

Division Card Sort

<p style="text-align: center; font-size: small; color: #4a7ebb;">A</p> <p style="text-align: center; font-size: large;">___ × 8 = 56</p>	<p style="text-align: center; font-size: small; color: #4a7ebb;">B</p> <p style="text-align: center; font-size: large;">___ × 4 = 108</p>	<p style="text-align: center; font-size: small; color: #4a7ebb;">C</p> <p style="text-align: center; font-size: large;">64 ÷ 8 = ___</p>	<p style="text-align: center; font-size: small; color: #4a7ebb;">D</p> <p style="text-align: center; font-size: large;">72 ÷ 8 = ___</p>
<p style="text-align: center; font-size: small; color: #4a7ebb;">E</p> 	<p style="text-align: center; font-size: small; color: #4a7ebb;">F</p> <p style="text-align: center; font-size: large;">72 police officers can be split into 8 equal groups of ___.</p>	<p style="text-align: center; font-size: small; color: #4a7ebb;">G</p> <p style="text-align: center; font-size: large;">___ × 8 = 72</p>	<p style="text-align: center; font-size: small; color: #4a7ebb;">H</p> 
<p style="text-align: center; font-size: small; color: #4a7ebb;">I</p> <p style="text-align: center; font-size: large;">___ × 8 = 64</p>	<p style="text-align: center; font-size: small; color: #4a7ebb;">J</p> <p style="text-align: center; font-size: large;">108 ÷ 4 = ___</p>	<p style="text-align: center; font-size: small; color: #4a7ebb;">K</p> <p style="text-align: center; font-size: large;">64 firefighters can be split into 8 equal crews of ___.</p>	<p style="text-align: center; font-size: small; color: #4a7ebb;">L</p> <p style="text-align: center; font-size: large;">56 ÷ 8 = ___</p>

Card Sort 158A ►

HIGH-LEVERAGE PRACTICES

Elicit Student Thinking

- How did you begin working through the card sort?
- Can you explain how you chose the categories for the cards?
- How can a representation with division relate to a representation with multiplication?

Lead a Discussion

- Are there any other possible categories for the cards?
- Could you make a new card that fits into one of your groups?
- Is it always possible to draw an area model to represent a division problem? Why or why not?

Modify Tasks

IF students are struggling to recognize cards that represent inverse operations using the same numbers, **THEN** suggest that they sort cards that have a common divisor or factor together. Then they may notice which cards are inverses of one another.

SUMMARIZE & ASSESS GROUP



Review Division

MATHEMATICAL THINKING Use Repeated Reasoning

Students use many representations of related multiplication and division problems to solidify their understanding of multiplication and division as inverse operations.

🗨️ *How are the representations on cards D, F, G, and H related through multiplication and/or division? (All of them use the same 3 numbers, 9, 8, and 72.)*

Which two cards in this group show division and multiplication as inverse operations? (D and G)

Use **Answers Up** to have students share their responses.

Do you see repeated reasoning that can be used for all division problems? (You can make an area model with the factors as length and width, and the product as the area. This also shows division. The area is the dividend. The divisor is either the length or width, and the quotient is the other measurement.)