

Fraction Division Models

Use pictures to make sense of division with unit fractions.

GRADE 5 • TEKS 5.3.J

5.3.J "represent division of a unit fraction by a whole number and the division of a whole number by a unit fraction such as $1/3 \div 7$ and $7 \div 1/3$ using objects and pictorial models, including area models;"

NAME _____

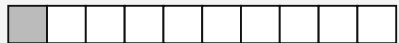
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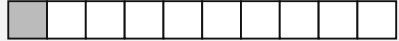
SEE THE FRACTION PIECES

Dividing a unit fraction by a whole number makes smaller equal pieces. Dividing a whole number by a unit fraction tells how many of those fractional pieces fit in the whole number.

WORKED EXAMPLE

The two bars show the equal shares when $1/5$ is split between 2 people. What is $1/5 \div 2$?

Share A 

Share B 

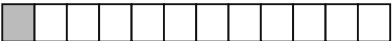
1. Each share has 1 shaded part out of 10 equal parts.
2. One share is $1/10$.
3. So $1/5 \div 2 = 1/10$.

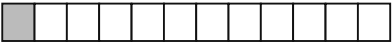
Answer: $1/10$

PRACTICE 6 problems

- 1** Use the model. The shaded pieces are three equal shares of one unit fraction. Write the division sentence and the quotient.

Share 1 

Share 2 

Share 3 

ANSWER _____

- 2** Each full bar is one whole, and each small part is $1/7$. Use the model. Write the division sentence and the quotient.

Whole 1 

Whole 2 

Whole 3 

ANSWER _____

- 3** Find $1/6 \div 8$.

ANSWER _____

- 4** Find $7 \div 1/9$.

ANSWER _____

- 5** Find $1/11 \div 4$.

ANSWER _____

- 6** Find $6 \div 1/12$.

ANSWER _____

APPLY IT Show your work

- 1** Jade has $\frac{1}{3}$ yard of fabric for team badges. The tape diagram shows the fabric cut into 4 equal strips. How many yards of fabric are in each strip?

$\frac{1}{3}$ yard of fabric

Strip 1	Strip 2	Strip 3	Strip 4
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 $\frac{1}{3}$ yard

ANSWER _____

- 2** A game club has 6 meters of LED strip. Each controller needs $\frac{1}{8}$ meter of strip. How many controllers can get LED strip?

WORK SPACE

ANSWER _____

CHALLENGE One step up

Compare $\frac{1}{7} \div 3$ and $3 \div \frac{1}{7}$. Find both quotients. Then explain why one quotient is less than 1 and the other is greater than 1.

WORK SPACE AND ANSWER

PART 1 • PRACTICE

#	PROBLEM	ANSWER
1	Use the model. The shaded pieces are three equal shares of one unit fraction. Write the division sentence and the quotient.	$1/4 \div 3 = 1/12$
2	Each full bar is one whole, and each small part is $1/7$. Use the model. Write the division sentence and the quotient.	$3 \div 1/7 = 21$
3	Find $1/6 \div 8$.	$1/48$
4	Find $7 \div 1/9$.	63
5	Find $1/11 \div 4$.	1/44
6	Find $6 \div 1/12$.	72

PART 2 • APPLY IT

- 1/12 yard** Divide $1/3$ by 4. Each of the 4 equal strips is $1/12$ yard.
- 48 controllers** Find how many eighths are in 6 wholes: $6 \div 1/8 = 48$.

CHALLENGE

$1/7 \div 3 = 1/21$, and $3 \div 1/7 = 21$. Splitting $1/7$ into 3 equal parts makes a smaller fraction, $1/21$. Three wholes contain 21 pieces of size $1/7$.

Accept equivalent fraction forms when they are correct, such as $2/24$ for $1/12$. For model items, accept a correct division equation and quotient even if the student explains the model in different words.