Module 4 - Lesson 25:

Divide decimal numbers by decimal numbers, resulting in decimal-number quotients.

CCSS Standard – 5.NBT.B.7

SPRINT: Students write the quotient to build fluency with dividing whole numbers by unit fractions. (PAGE 229)

Write the quotient.

1.	$\frac{1}{2} \div 3$	**1/6**
2.	$\frac{1}{6} \div 4$	**1/24**

I don't expect you to finish. Do as many problems as you can. Go for YOUR personal best. Take your mark. Get set. Think!

Sprint: Divide Unit Fractions by Whole Numbers

Sprint A – Page 230

Sprint A ⏱ 1 min

STOP!!

<u>Underline the last problem that you did</u>.

I am going to read the answers. If you got it right, call out "Yes!" If you made a mistake, circle the answer.

Count the number you got **correct** and write the number at the top of the page.

THIS WILL BE YOUR PERSONAL GOAL FOR SPRINT B

A

Write the quotient.

Number Correct: _____

#	Problem	Answer	#	Problem	Answer
1.	$\frac{1}{2} \div 2$	$\frac{1}{4}$	23.	$\frac{1}{7} \div 4$	$\frac{1}{28}$
2.	$\frac{1}{2} \div 3$	$\frac{1}{6}$	24.	$\frac{1}{7} \div 8$	$\frac{1}{56}$
3.	$\frac{1}{2} \div 5$	$\frac{1}{10}$	25.	$\frac{1}{4} \div 7$	$\frac{1}{28}$
4.	$\frac{1}{2} \div 7$	$\frac{1}{14}$	26.	$\frac{1}{8} \div 7$	$\frac{1}{56}$
5.	$\frac{1}{2} \div 9$	$\frac{1}{18}$	27.	$\frac{1}{9} \div 4$	$\frac{1}{36}$
6.	$\frac{1}{3} \div 2$	$\frac{1}{6}$	28.	$\frac{1}{9} \div 8$	$\frac{1}{72}$
7.	$\frac{1}{3} \div 3$	$\frac{1}{9}$	29.	$\frac{1}{4} \div 9$	$\frac{1}{36}$
8.	$\frac{1}{3} \div 5$	$\frac{1}{15}$	30.	$\frac{1}{8} \div 9$	$\frac{1}{72}$
9.	$\frac{1}{3} \div 7$	$\frac{1}{21}$	31.	$\frac{1}{8} \div 10$	$\frac{1}{80}$
10.	$\frac{1}{3} \div 9$	$\frac{1}{27}$	32.	$\frac{1}{10} \div 8$	$\frac{1}{80}$
11.	$\frac{1}{4} \div 2$	$\frac{1}{8}$	33.	$\frac{1}{4} \div 1$	$\frac{1}{4}$
12.	$\frac{1}{4} \div 4$	$\frac{1}{16}$	34.	$\frac{1}{8} \div 1$	$\frac{1}{8}$
13.	$\frac{1}{4} \div 8$	$\frac{1}{32}$	35.	$\frac{1}{11} \div 3$	$\frac{1}{33}$
14.	$\frac{1}{5} \div 2$	$\frac{1}{10}$	36.	$\frac{1}{12} \div 4$	$\frac{1}{48}$
15.	$\frac{1}{5} \div 4$	$\frac{1}{20}$	37.	$\frac{1}{5} \div 11$	$\frac{1}{55}$
16.	$\frac{1}{5} \div 8$	$\frac{1}{40}$	38.	$\frac{1}{6} \div 12$	$\frac{1}{72}$
17.	$\frac{1}{6} \div 2$	$\frac{1}{12}$	39.	$\frac{1}{11} \div 7$	$\frac{1}{77}$
18.	$\frac{1}{6} \div 4$	$\frac{1}{24}$	40.	$\frac{1}{12} \div 8$	$\frac{1}{96}$
19.	$\frac{1}{6} \div 8$	$\frac{1}{48}$	41.	$\frac{1}{9} \div 11$	$\frac{1}{99}$
20.	$\frac{1}{8} \div 2$	$\frac{1}{16}$	42.	$\frac{1}{10} \div 12$	$\frac{1}{120}$
21.	$\frac{1}{8} \div 4$	$\frac{1}{32}$	43.	$\frac{1}{11} \div 11$	$\frac{1}{121}$
22.	$\frac{1}{8} \div 8$	$\frac{1}{64}$	44.	$\frac{1}{12} \div 12$	$\frac{1}{144}$

Sprint: Divide Unit Fractions by Whole Numbers

Sprint A – Page 232
Take your mark. Get set. Improve!

Sprint B ⏱ 1 min

STOP!!

<u>**Underline the last problem that you did**</u>.

I am going to read the answers. If you got it right, call out "Yes!" If you made a mistake, circle the answer.

Count the number you got **correct** and write the number at the top of the page.

Determine your improved score!

B

Number Correct: _____

Improvement: _____

Write the quotient.

1.	$\frac{1}{2} \div 2$	$\frac{1}{4}$	23.	$\frac{1}{7} \div 3$	$\frac{1}{21}$
2.	$\frac{1}{2} \div 3$	$\frac{1}{6}$	24.	$\frac{1}{7} \div 6$	$\frac{1}{42}$
3.	$\frac{1}{2} \div 4$	$\frac{1}{8}$	25.	$\frac{1}{3} \div 7$	$\frac{1}{21}$
4.	$\frac{1}{2} \div 6$	$\frac{1}{12}$	26.	$\frac{1}{6} \div 7$	$\frac{1}{42}$
5.	$\frac{1}{2} \div 8$	$\frac{1}{16}$	27.	$\frac{1}{9} \div 3$	$\frac{1}{27}$
6.	$\frac{1}{3} \div 2$	$\frac{1}{6}$	28.	$\frac{1}{9} \div 6$	$\frac{1}{54}$
7.	$\frac{1}{3} \div 3$	$\frac{1}{9}$	29.	$\frac{1}{3} \div 9$	$\frac{1}{27}$
8.	$\frac{1}{3} \div 4$	$\frac{1}{12}$	30.	$\frac{1}{6} \div 9$	$\frac{1}{54}$
9.	$\frac{1}{3} \div 6$	$\frac{1}{18}$	31.	$\frac{1}{6} \div 10$	$\frac{1}{60}$
10.	$\frac{1}{3} \div 8$	$\frac{1}{24}$	32.	$\frac{1}{10} \div 6$	$\frac{1}{60}$
11.	$\frac{1}{4} \div 2$	$\frac{1}{8}$	33.	$\frac{1}{3} \div 1$	$\frac{1}{3}$
12.	$\frac{1}{4} \div 3$	$\frac{1}{12}$	34.	$\frac{1}{6} \div 1$	$\frac{1}{6}$
13.	$\frac{1}{4} \div 6$	$\frac{1}{24}$	35.	$\frac{1}{11} \div 2$	$\frac{1}{22}$
14.	$\frac{1}{5} \div 2$	$\frac{1}{10}$	36.	$\frac{1}{12} \div 3$	$\frac{1}{36}$
15.	$\frac{1}{5} \div 3$	$\frac{1}{15}$	37.	$\frac{1}{4} \div 11$	$\frac{1}{44}$
16.	$\frac{1}{5} \div 6$	$\frac{1}{30}$	38.	$\frac{1}{5} \div 12$	$\frac{1}{60}$
17.	$\frac{1}{6} \div 2$	$\frac{1}{12}$	39.	$\frac{1}{11} \div 6$	$\frac{1}{66}$
18.	$\frac{1}{6} \div 3$	$\frac{1}{18}$	40.	$\frac{1}{12} \div 7$	$\frac{1}{84}$
19.	$\frac{1}{6} \div 6$	$\frac{1}{36}$	41.	$\frac{1}{8} \div 11$	$\frac{1}{88}$
20.	$\frac{1}{8} \div 2$	$\frac{1}{16}$	42.	$\frac{1}{9} \div 12$	$\frac{1}{108}$
21.	$\frac{1}{8} \div 3$	$\frac{1}{24}$	43.	$\frac{1}{11} \div 10$	$\frac{1}{110}$
22.	$\frac{1}{8} \div 6$	$\frac{1}{48}$	44.	$\frac{1}{12} \div 11$	$\frac{1}{132}$

Determine whether statements about a division expression are true or false.
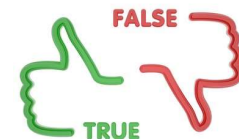
FALSE
TRUE

I'm going to say three statements about the quotient.
For each statement, turn and talk with a partner about whether the statement is true or false and why.
On my signal, give a thumbs-up if you think the statement is true and a thumbs-down if you think the statement is false.

2.6 ÷ 0.5

The quotient is equal to 26 tenths divided by 5 tenths.
26 tenths divided by 5 tenths is just another way of writing the expression (unit form).

TRUE

The quotient is a whole number.
5 does not divide evenly into 26.

FALSE

The quotient is greater than 2.6.
5 groups of 0.5 make 2.5. So, the quotient is at least 5, which is greater than 2.6.

TRUE

Today, we will divide decimal numbers by decimal numbers where the quotient is not a whole number.

Divide Decimal Numbers by Using Place Value Disks

How can we rewrite this expression in unit form?

$$0.7 \div 0.2 \qquad \text{7 tenths} \div \text{2 tenths}$$

What question can we ask ourselves to help us find the quotient?

How many groups of 2 tenths make 7 tenths?

Let's use place value disks to show 7 tenths.
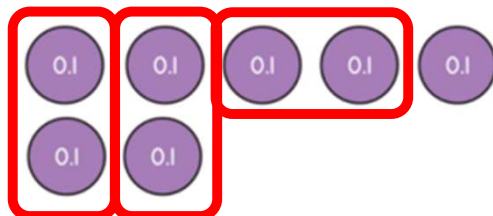
How many groups of 2 tenths can we make? **3**

How much is left over? **1**

How much of a group is 1 tenth? **Half of a group**

IMPORTANT TAKE-AWAY:
The quotient represents the number of groups. For this problem, the 1 remaining tenths disk represents half of a group of 2 tenths. So, 3 ½ groups of 2 tenths make 7 tenths.

The quotient is 3.5.

So, how many groups of 2 tenths make 7 tenths? **3 ½ groups**

Let's solve the same problem using **vertical form?**

$$0.7 \div 0.2$$

$$0.2 \overline{)0.7}$$

X 10   **X 10**

3.5

$$2 \overline{)70}$$
$$- \underline{6}$$
$$10$$
$$- \underline{10}$$
$$0$$

Divide Decimal Numbers by Using Place Value Disks

How can we rewrite this expression in unit form?

$0.11 ÷ 0.04$

11 hundredths ÷ 2 hundredths

What question can we ask ourselves to help us find the quotient?

How many groups of 4 hundredths make 11 hundredths?

Let's use place value disks to show 11 hundredths.
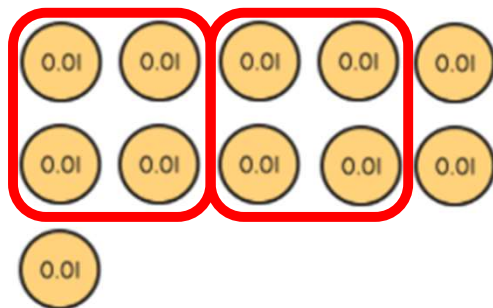
How many groups of 4 hundredths can we make?   2

How much is left over?   3

How much of a group is 3 hundredths?   ¾ of a group

So, how many groups of 4 hundredths make 11 hundredths?   2 ¾ groups

REMEMBER:
The quotient represents the number of groups. For this problem, the 3 remaining hundredths disks represent ¾ of a group of 4 hundredths.
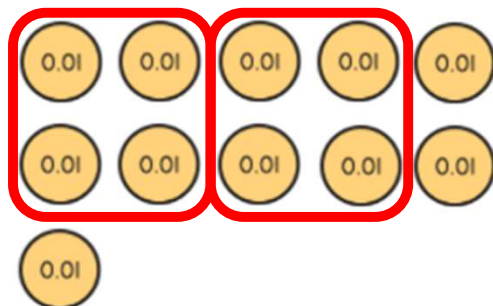So, 2 ¾ groups of 4 hundredths make 11 hundredths.
The quotient is 2.75.

Divide Decimal Numbers by Using Place Value Disks

Let's solve the same problem using vertical form?

$$0.11 \div 0.04$$

$$0.04 \overline{)0.11}$$

X 100   X 100

$$4 \overline{)\begin{array}{l} 0\,2.75 \\ 1\,1\,1\,0\,0 \end{array}}$$

$$-\ \ 8$$
$$\overline{\ \ \ 3\,0}$$
$$-\ \ 2\,8$$
$$\overline{\ \ \ \ 2\,0}$$

Rename to Include a New Unit

$12.33 \div 0.18$

How can we rewrite this expression in unit form?

1,233 hundredths ÷ 18 hundredths

What whole-number division expression can we use here?

$1,233 \div 18$

$$\begin{array}{r} 0\,0\,6\,8.5 \\ 18\overline{)1\,2\,3\,3\,0} \\ -\underline{1\,0\,8} \\ 1\,5\,3 \\ -\underline{1\,4\,4} \\ 9\,0 \\ -\underline{9\,0} \\ 0 \end{array}$$

LEARN book page 233.

What do you notice about the work?

$$4.55 \div 0.7$$

Lisa's Way

$4.55 \div 0.7 = 4.55 \div 0.1 \div 7$
$= 45.5 \div 7$

Leo's Way

$4.55 \div 0.7 = 455 \text{ hundredths} \div 7 \text{ tenths}$
$= 455 \text{ hundredths} \div 70 \text{ hundredths}$
$= 455 \div 70$

Lisa rewrites the expression to divide by 0.1 first and then by 7.
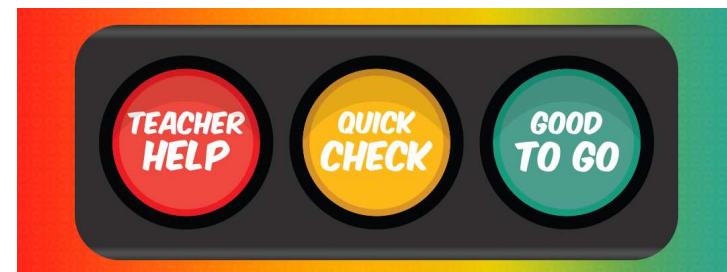*Leo rewrites 4.55 ÷ 0.6 in unit form.*

$45.5 \div 7$

```
        0.5
        6.0
    7 ) 4 5.5
      − 4 2.0
        ───────
          3.5
        − 3.5
        ───────
            0
```

$455 \div 70$

```
          0.5
          6.0
   7 0 ) 4 5 5.0
       − 4 2 0.0
       ──────────
           3 5.0
         − 3 5.0
       ──────────
             0
```

TEACHER HELP   QUICK CHECK   GOOD TO GO

Exit Ticket – PAGE 239

Small Group Time:
Problem Set Pages 235 – 238

Homework:
Page 157   APPLY BOOK

✉ 25

Name _____   Date _____

Divide. Show your work.

1. $5.04 \div 0.8 =$ _____

2. $2.99 \div 0.65 =$ _____