Lesson 13:

Divide two-digit numbers by two-digit numbers in problems that result in one-digit quotients.

CCSS Standard – 5.NBT.B.6

FLUENCY (10-min) **Whiteboard Exchange: Powers of 10**

When I give the signal, read the number shown. Ready?

Ten to the second power

$\square = \square = \square$

Write the number is EXPONENTIAL FORM.

Ten to the second power. Or
Ten to the power of 2. Or
Ten squared.

Now write 10^2 as a multiplication expression by using only 10 as a factor.

Finally, write the number in STANDARD FORM.

FLUENCY (10-min) **Whiteboard Exchange: Powers of 10**

When I give the signal, read the number shown. Ready?

Ten to the third power

□ = □ = □

Ten to the fifth power

□ = □ = □

Ten thousand

□ = □ = □

Ten

□ = □ = □

One million

□ = □ = □

FLUENCY (10-min) **Counting by Multiples of 3 and 30**

When I give the signal, say the first ten multiples of 3 and 30.
This will help us prepare to estimate for quotients. Ready?

Multiples of 3: ☐, ☐, ☐, ☐, ☐, ☐, ☐, ☐, ☐, ☐

Multiples of 30: ☐, ☐, ☐, ☐, ☐, ☐, ☐, ☐, ☐, ☐

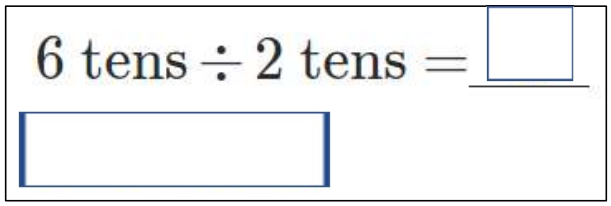
FLUENCY (10-min) **Choral Response: Divide in Unit and Standard Form**

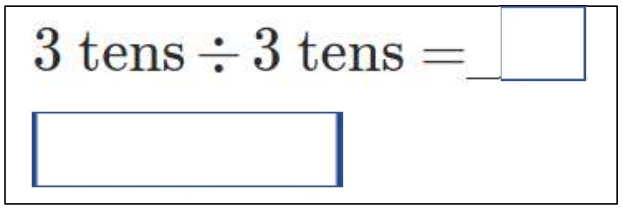
Raise your hand when you know the answer to each question. Wait for my signal to say the answer.

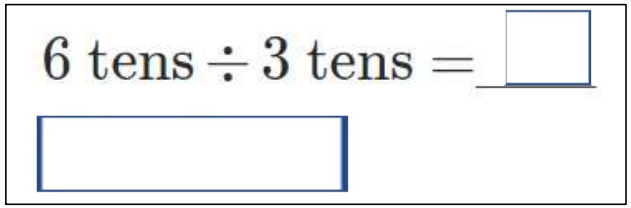
$4 \text{ tens} \div 2 \text{ tens} = \square$ *How many groups of 2 tens is in 4 tens?*

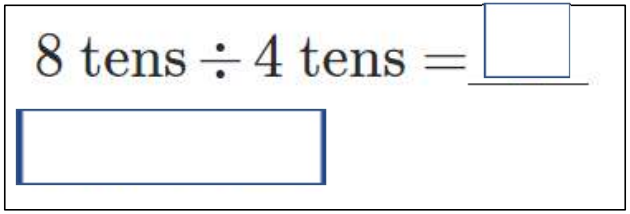
$\square$ *On my signal, say the EQUATION with numbers in standard form.*

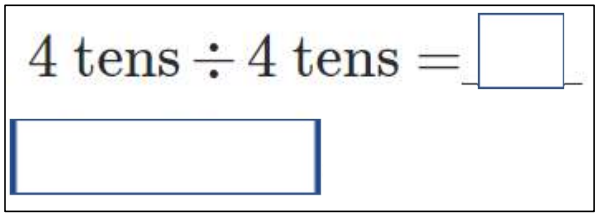
FLUENCY (10-min) **Choral Response: Divide in Unit and Standard Form**

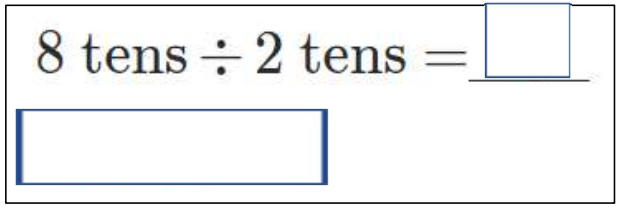


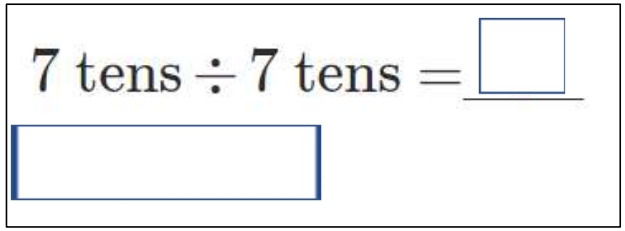


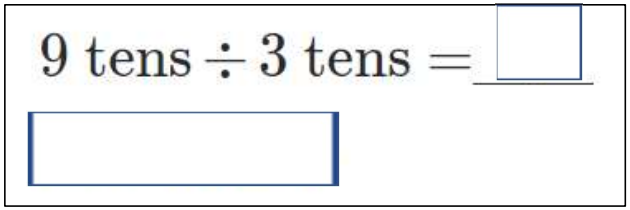


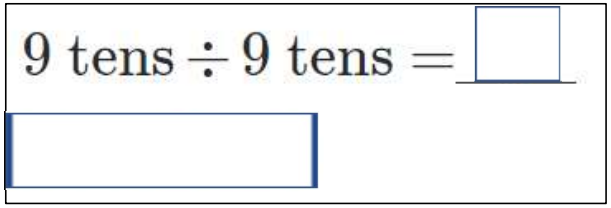












LAUNCH (5-min) **Co-construction routine to contextualize a division statement**

87 ÷ 13

Quotient: 6

Remainder: 9

Can you and a partner create a real-world situation that could be represented by this math statement?

A person sorts 87 apples into 13 baskets and each basket has 6 apples. There are 9 apples left over.

A florist uses 87 flowers to make bouquets that each have 13 flowers. She makes 6 bouquets and has 9 flowers left over.

Someone pours 87 ounces of water into cups that each hold 13 ounces of water. They fill 6 cups and have 9 ounces of water remaining.

LEARN (35-min) **Divide Two-Digit Numbers by Two-Digit Numbers**

95 is 19 times as much as what number?

What unknown factor equation can we write to represent this question?
Consider the word "is" the same as an equal sign "=".

$$95 = 19 \times \_\_\_$$

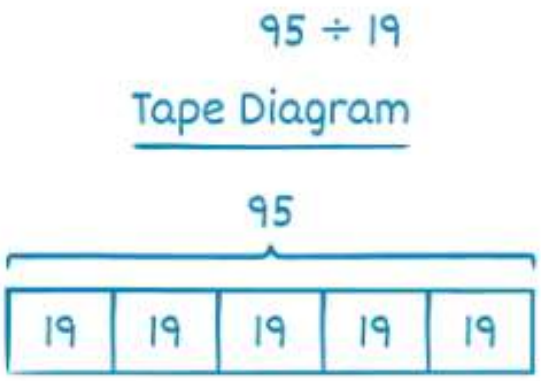
What division expression can we write to determine the value of the unknown factor?

$$95 \div 19 = \_\_\_$$

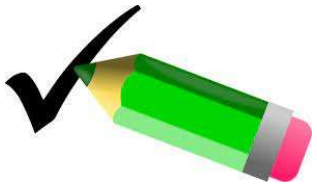
LEARN (35-min) **Divide Two-Digit Numbers by Two-Digit Numbers**

95 is 19 times as much as what number?

95 ÷ 19 = ____

Estimate	Tape Diagram	Long Division
100 ÷ 20 = ____ 100 ÷ 20 = **5**	95 ÷ 19 Tape Diagram 	X 5 19 ⟌ 95 - 95 0

LEARN (35-min) **Divide Two-Digit Numbers by Two-Digit Numbers**



95 is 19 times as much as what number?

$95 \div 19 = 5$

Now that we know the quotient is 5, how can we check our work?

$5 \times 19 = 95$

LEARN (35-min) **Divide Two-Digit Numbers by Two-Digit Numbers**

$84 \div 16$

This work shows an estimate and the calculations that a student made when they divided 84 by 16.

What do you notice about the estimate?

Estimate

$84 \div 16 \approx 80 \div 20$

$= 8 \div 2$

$= 4$

This is an underestimate

Divide

$$\begin{array}{r} 4 \\ 16\overline{)84} \\ -\,64 \\ \hline 20 \end{array}$$

Is this student's estimate reasonable?

***CAUTION:** If the remainder is greater than the divisor, that means the quotient is not high enough. We can add another group of 16 to the quotient.*

LEARN (35-min) **Divide Two-Digit Numbers by Two-Digit Numbers**

$$92 \div 13$$

Estimate

$\approx 90 \div 10$

$= 9$

Divide

$$\begin{array}{r} 9 \\ 13\overline{)\,92} \\ -117 \\ \hline \end{array}$$

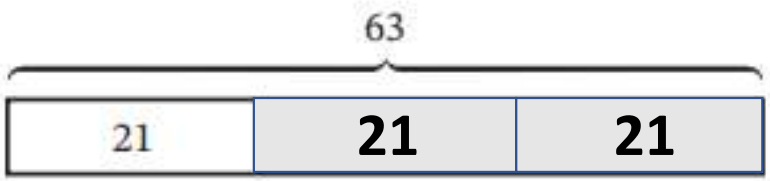
This is an overestimate

***CAUTION:** Too much! Larger than the dividend!*

LEARN (35-min) **Divide Two-Digit Numbers by Two-Digit Numbers**

Estimate the quotient. Complete the tape diagram. Then complete the vertical form and check your work.

1. $63 \div 21 \approx$ 60 $\div$ 20 $=$ 3



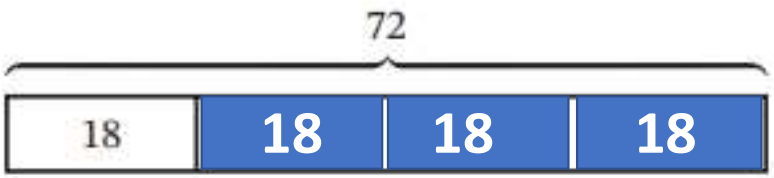
		x	3
2	1)	6	3
	-	6	3
			0

Check:

$63 =$ 3 $\times$ 21

LEARN (35-min) **Divide Two-Digit Numbers by Two-Digit Numbers**

2. $72 \div 18 \approx$ 80 $\div$ 20 $=$ 4



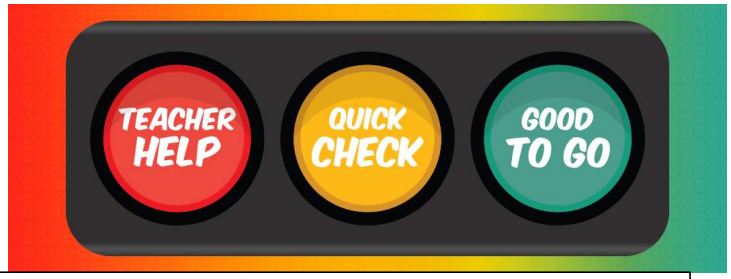
		x	4
1	8	7	2
	-	7	2
			0

Check:

$72 =$ 4 $\times$ 18

LAND (10-min)

Exit Ticket



Name _____ Date _____

13

Divide. Then check your answer.

$81 \div 17$

Exit Ticket – PAGE 113

Small Group Time:
Problem Set Page 109

Homework:
Page 83 APPLY BOOK