

Lesson 16:

Divide four-digit numbers by two-digit numbers.

CCSS Standard – 5.NBT / 5.NBT.B.6

FLUENCY (10-min)

Whiteboard Exchange: Write and Evaluate Expressions



Write an expression to represent the statement.

Write the value of the expression.

2 times 4

2 times as much as 4

2 times as much as 4 ninths

The product of 30 and 2

5 groups of 20

NOTICE how all of these expressions represent a **MULTIPLICATION** statement. (“times”, “product”, “of”).

FLUENCY (10-min)

Whiteboard Exchange: Write and Evaluate Expressions



Write an expression to represent the statement.

Write the value of the expression.

35 divided by 7

The quotient of 42 divided by 6

The quotient of 54 divided by 9

NOTICE how all of these expressions represent a **DIVISION** statement. (“quotient”, “groups”, “divided”).

FLUENCY (10-min)

Counting by Multiples of 5 and 50

Say the first ten multiples of 5. Ready?

Multiples of 5: , , , , , , , , ,

Say the first ten multiples of 50. Ready?

Multiples of 50: , , , , , , , , ,

Notice: the numbers in the multiples of 50 are **10 times** as much as the multiples of 5.

FLUENCY (10-min)

Choral Response: Divide in Standard Form

Raise your hand when you know the answer to each question.

Wait for my signal to say the answer.

How many groups of 20 are in 120?

$$120 \div 20 = \underline{\quad}$$

$$160 \div 20 = \underline{\quad}$$

$$210 \div 30 = \underline{\quad}$$

$$270 \div 30 = \underline{\quad}$$

$$200 \div 40 = \underline{\quad}$$

$$450 \div 50 = \underline{\quad}$$

$$300 \div 60 = \underline{\quad}$$

$$490 \div 70 = \underline{\quad}$$

$$720 \div 80 = \underline{\quad}$$

$$630 \div 90 = \underline{\quad}$$

LAUNCH (5-min)

Students identify errors in work that shows division of a four-digit number by a two-digit number.

$$3,618 \div 27$$

Will the quotient be greater than 10 or less than 10?
Why?

Greater, $10 \times 27 = 270$

Will the quotient be greater than 100 or less than 100?
Why?

Greater, $100 \times 27 = 2,700$

Will the quotient be greater than 1,000 or less than 1,000?
Why?

Less, $1,000 \times 27 = 27,000$

$$\begin{array}{r} X \\ 27 \overline{) 3,618} \end{array}$$

LAUNCH (5-min)

Students identify errors in work that shows division of a four-digit number by a two-digit number.

$$3,618 \div 27$$

This picture shows a student's work.
What quotient did he find for the problem?
Is he correct? How do you know?

$$\begin{array}{r} 4 \\ 300 \\ \hline 1000 \quad \text{!} \\ \hline 27 \overline{) 3618} \\ \underline{-2700} \\ 918 \\ \underline{-810} \\ 108 \\ \underline{-108} \\ 0 \end{array}$$

$$2,792 \div 76$$

Estimate A

$$2,400 \div 80 = 30$$

Estimate B

$$3,200 \div 80 = 40$$

Estimate C

$$2,800 \div 70 = 40$$

Would these estimates be useful to us before we actually divide?

YES! The numbers we use to estimate need to be **REASONABLE**.
These all are reasonable and the real quotient will be about 30 to 40.
Let's solve this for real now!

LEARN (35-min)

Write these problems side-by-side in your notebook.
Which way is best for YOU?

$$\begin{array}{r} \text{6} \\ \text{30} \\ 76 \overline{) 2,792} \\ - \underline{2,280} \\ 512 \\ - \underline{456} \\ 56 \end{array} \quad 36 \text{ R}56$$

$$\begin{array}{r} \text{X X 36} \\ 76 \overline{) 2,792} \\ - \underline{228} \downarrow \\ 512 \\ - \underline{456} \\ 56 \end{array} \quad 36 \text{ R}56$$

LEARN (35-min)

Division Word Problem without a Remainder

A tree farm has **15 rows of trees**. Each row has the same number of trees. If there is a **total of 1,635 trees**, how many trees are in each row?

$$1,635 \div 15 = ?$$

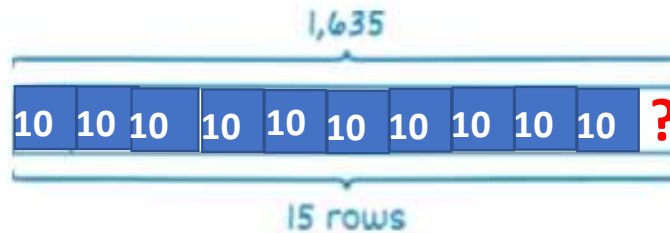
Estimate

$$1,500 \div 15 = 100$$

$$2,000 \div 20 = 100$$

$$1,600 \div 16 = 100$$

Tape Diagram



Divide

$$15 \overline{) 1,635}$$



LEARN (35-min)

Division Word Problem without a Remainder

Lacy plans to ride her bike **2,900 miles**, which is about the distance from San Francisco to New York!

If she rides **68 miles each week**, how many weeks will it take?

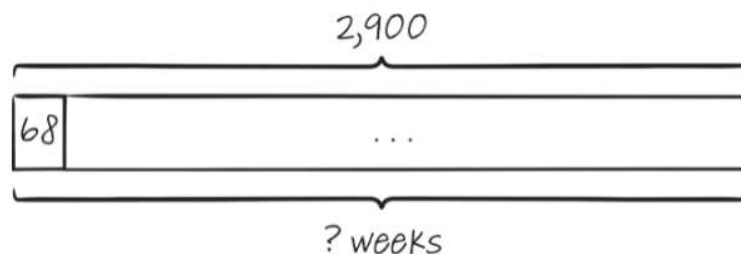
$$2,900 \div 68 = ?$$

Estimate

$$2,800 \div 70 = 40$$

$$3,000 \div 60 = 50$$

Tape Diagram



Divide

$$68 \overline{) 2,900}$$



LEARN (35-min)

Write these problems side-by-side in your notebook.
Which way is best for YOU?

$$\begin{array}{r} \text{2} \\ \text{40} \\ 68 \overline{) 2,900} \\ - \underline{2,720} \\ 180 \\ - \underline{136} \\ 44 \end{array} \quad 42 \text{ R}44$$

$$\begin{array}{r} \text{X X} 42 \\ 68 \overline{) 2,900} \\ - \underline{2,720} \downarrow \\ 180 \\ - \underline{136} \\ 44 \end{array} \quad 42 \text{ R}44$$

