• Three Ways to Show Division

facts	Power Up D
count aloud	Count up and down by 5s between 2 and 52.
mental math	**a. Number Sense:** 4×32 equals 4×30 plus 4×2. Find 4×32.
	b. Number Sense: $5 \times 8 \times 3$
	c. Number Sense: $4 \times 5 \times 6$
	d. Number Sense: 4×23
	e. Number Sense: 4×54
	f. Measurement: One meter is 1000 mm. How many millimeters is 1 meter minus 990 mm?
	g. Number Sense: $7 \times 7 + 1 + 25 + 25$
problem solving	Choose an appropriate problem-solving strategy to solve this problem. Copy this addition problem and fill in the missing digits:

$$\begin{array}{r} \_3\_ \\ + \ \_1 \\ \hline \_\_3\_ \end{array}$$

We use different ways to show division. Here are three ways to show "twelve divided by four":

$$4{\overline{\smash{\big)}\,12}} \qquad 12 \div 4 \qquad \frac{12}{4}$$

> **Math Language**
>
> Another name for division written with a division bar is a *fraction*.

In the first form we use a *division box.* In the second form we use a *division sign.* In the third form we use a *division bar.* To solve longer division problems, we usually use the division box. In later math courses we will use the division bar more often. We should be able to read and solve division problems in each form and to change from one form to another.

Three numbers are involved in every division problem:

   1. the number being divided: **15** ÷ 3 = 5

   2. the number by which it is divided: 15 ÷ **3** = 5

   3. the answer to the division: 15 ÷ 3 = **5**

<table>
<tr><td>**Math Language**
The answer to a division problem is called a *quotient.*</td></tr>
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These numbers are called the **dividend, divisor,** and **quotient.** In the example above, the dividend is 15, the divisor is 3, and the quotient is 5. The location of these numbers in each form is shown below.

Positions of Divisor, Dividend, and Quotient

Division box	$\overset{\text{quotient}}{\text{divisor}\,)\overline{\text{dividend}}}$
Division sign	dividend ÷ divisor = quotient
Division bar	$\dfrac{\text{dividend}}{\text{divisor}} = \text{quotient}$

Example 1

Use words to show how each division problem is read:

   a. 12 ÷ 6   **b. $\dfrac{12}{6}$**   **c. $6\overline{)12}$**

For all three division symbols, we say "divided by." The division in **a** is read from left to right: "twelve divided by six."

The division in **b** is read from top to bottom: "twelve divided by six."

The division in **c** is written with a division box. We read the number inside the box first: "twelve divided by six."

We see that all three problems are read the same. Each problem shows the same division **"twelve divided by six."**

Example 2

Write this division problem in two other forms:

$$15 ÷ 3$$

We read this problem as "fifteen divided by three." Fifteen is the dividend.

To show division with a division bar, we write the dividend on top.

$$\frac{15}{3}$$

To show division with a division box, we write the dividend inside the box.

$$3\overline{)15}$$

Example 3

Divide: $\frac{15}{5}$

The division bar is a way to show division. This means "five times what number is 15?" The answer is **3.**

Example 4

In the following equation, which number is the divisor, which number is the dividend, and which number is the quotient?

$$\frac{56}{7} = 8$$

The **dividend, 56,** is divided by the **divisor, 7.** The answer is the **quotient, 8.**

Lesson Practice

a. **Represent** Show "10 divided by 2" in three different forms.

b. **Represent** Use three different division forms to show "24 divided by 6."

Use words to show how each division problem is read.

c. $3\overline{)21}$ **d.** $12 \div 6$ **e.** $\frac{30}{5}$

Rewrite each division problem with a division box.

f. $63 \div 7$ **g.** $\frac{42}{6}$ **h.** 30 divided by 6

i. **Connect** Identify the quotient, dividend, and divisor in this equation:

$$63 \div 9 = 7$$

Find the answer (quotient) to each division problem:

j. $\frac{60}{10}$ **k.** $\frac{42}{7}$ **l.** $28 \div 4$

m. $36 \div 6$ **n.** Compare: $24 \div 4 \bigcirc 24 \div 6$

*1. **Represent** Draw a horizontal number line marked with even integers
(12) from −6 to 6.

2. **Connect** Write two multiplication facts and two division facts for the
(19) fact family 4, 9, and 36.

3. **Represent** Use tally marks to show the number 16.
(12)

4. Ayoka reads 40 pages per day. How many pages does Ayoka read in
(11, 17) 4 days? Find the answer once by adding and again by multiplying.

5. There are 806 students at Gidley School. If there are 397 girls, how
(11) many boys are there? Write an equation and find the answer.

*6. **Connect** What is the sum of five hundred twenty-six and six hundred
(5, 6) eighty-four?

Represent Use words to show how problems **7** and **8** are read.

7. $6\overline{)24}$
(20)

8. $15 \div 3$
(20)

9. Compare: $\dfrac{15}{3} \bigcirc \dfrac{15}{5}$
(4, 20)

10. $8m = 24$
(18)

11. $10\overline{)90}$
(20)

12. $\dfrac{27}{3}$
(20)

13. $\begin{array}{r} \$23.18 \\ \times \quad\quad 6 \\ \hline \end{array}$
(17)

14. $\begin{array}{r} 4726 \\ \times \quad\quad 8 \\ \hline \end{array}$
(17)

15. $\begin{array}{r} \$34.09 \\ \times \quad\quad 7 \\ \hline \end{array}$
(17)

*16. **Explain** Compare. Why can you answer the comparison without
(4, 18) multiplying?

$$5 \times 6 \times 7 \bigcirc 7 \times 6 \times 5$$

17. Eighty minutes of music can be placed on a compact disc. How many
(17) *hours* of music can be placed on three compact discs?

18. $\begin{array}{r} \$40.00 \\ - \ \$24.68 \\ \hline \end{array}$
(13)

19. $\begin{array}{r} 1207 \\ - \quad\quad r \\ \hline 943 \end{array}$
(14)

20. $\begin{array}{r} z \\ - \ 1358 \\ \hline 4444 \end{array}$
(14)

21. 3426
(6)   1547
   + 2684

22. 4318
(10) + m
   _____
    4343

23. $13.06
(13) $ 4.90
   + $60.75

24. (Represent) Use digits and symbols to write this comparison:
(4)

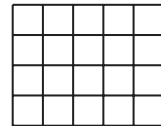*Ten times two is greater than ten plus two.*

* **25.** (Conclude) What are the next three terms in this counting
(1, 12) sequence? Explain how you know.

24, 18, 12, 6, …

26. In this equation, which number is the divisor?
(20)

$27 \div 3 = 9$

27. Write a multiplication equation that shows the number of
(13) squares in this rectangle.

28. Rebeka went to the store with $35 and came home with $9. Use this
(16) information to write a story problem about separating. Then answer
the question in your story problem.

29. Arrange these years in order from earliest to latest:
(4)

1620   The Pilgrims landed at Plymouth Rock.
1789   George Washington became the first U.S. president.
1492   Columbus landed in what we now call the Islands of the Bahamas.
1776   The Declaration of Independence was signed.

30. Snider bought five notebooks for $3.52 each. What was the total cost
(13, 17) of the five notebooks? Change this addition problem to a multiplication
problem and find the total.

$3.52 + $3.52 + $3.52 + $3.52 + $3.52