



#10137

BASIC MATH: DIVIDING INTEGERS

CEREBELLUM CORPORATION, 2001

Grade Level: 7-12

9 mins.

2 Instructional Graphics Enclosed

DESCRIPTION

Division is simply multiplication in reverse. Covers dividend, divisor, quotient, and remainder. Describes division, and demonstrates a long division problem. Samples given clarify each step. Standard Deviants School.

ACADEMIC STANDARDS

Subject Area: Mathematics

- Standard: Uses basic and advanced procedures while performing the processes of computation
 - ♦ Benchmark: Adds, subtracts, multiplies, and divides whole numbers, fractions, decimals, integers, and rational numbers (See INSTRUCTIONAL GOALS 3, 4, and 5.)
- Standard: Understands and applies basic and advanced properties of the concepts of numbers
 - ♦ Benchmark: Understands basic number theory concepts (e.g., prime and composite numbers, factors, multiples, odd and even numbers, divisibility) (See INSTRUCTIONAL GOALS 1 and 2.)
- Standard: Uses a variety of strategies in the problem-solving process
 - ♦ Benchmark: Uses trial and error and the process of elimination to solve problems (See INSTRUCTIONAL GOALS 4.)

INSTRUCTIONAL GOALS

1. To define *division*.
2. To identify the names of the parts of a division problem, including the divisor, the dividend, and the quotient.
3. To demonstrate and explain the steps involved in long division, including remainders.
4. To explain, using the trial-and-error method, how to find the number of times a large divisor will go into a large dividend.
5. To show the process for checking a division problem using multiplication.

VOCABULARY

- | | | |
|------------------|--------------------|---------------------|
| 1. breaking down | 7. divisor | 13. quotient |
| 2. bring down | 8. exactly | 14. remainder |
| 3. digit place | 9. integers | 15. reverse |
| 4. dividend | 10. larger/largest | 16. subtract |
| 5. dividing | 11. long division | 17. trial and error |
| 6. division | 12. multiply | |

BEFORE SHOWING

1. Discuss the concept of reverse operations.
 - a. Review how subtraction is the reverse operation of addition. Do several examples showing this.
 - b. Discuss and review basic multiplication problems and processes. Define *division* as the reverse of multiplication. Do several basic examples of this.
2. Present a basic division word problem. Discuss and figure out ways to solve the problem. Use objects to model the division.
3. Copy and distribute the "Dividing Integers: Viewing Guide." (See INSTRUCTIONAL GRAPHICS.)
 - a. Encourage students to follow along on the guide with the video.
 - b. Explain that they will have time to complete the division problem either during or after the video.

DURING SHOWING

1. View the video more than once, with one showing uninterrupted.
2. Pause after the first division example is completed (i.e., $27 \div 3 = 9$).
 - a. Review how to divide 27 by 3. Model taking 27 things and dealing them into 3 piles of 9 or taking 27 things and dividing them into 9 piles of 3.
 - b. Review reversing the division process with multiplication to check the answer. Clarify with further examples as needed.
3. During the long division example, pause occasionally to allow time for the students to complete the problem on the viewing guide.
 - a. Pause at the start of the trial-and-error method for figuring out how many times 34 goes into 241. Discuss how to pick a good guess for the trial-and-error process.
 - b. Pause to clarify why "6" is not the right answer and why we now know the answer must be "7." Show other examples.
 - c. Pause to clarify why there is a remainder in the problem and that the remainder must be less than the divisor. Show how to record the remainder properly.
4. Pause to discuss checking a division problem by multiplication. Use the extra space on the viewing guide to check the problem with multiplication. Clarify with more examples.

AFTER SHOWING

Discussion Items and Questions

1. Explain how division is the reverse of multiplication.

2. Define *division*. Give an example.
3. What are the dividend, the divisor, the quotient, and the remainder?
4. Explain the steps in a long division problem.
5. When does a long division problem have a remainder? Why must the remainder be less than the divisor?
6. Explain how to check a long division problem using multiplication.

Applications and Activities

1. Review the information from the video using the viewing guide.
2. Complete the "Dividing Integers: Check Your Knowledge" worksheet. (See INSTRUCTIONAL GRAPHICS.)
3. Note that the Viewing Guide has "Word Problem Strategies" at the bottom of the page that were not explained in the video.
 - a. Read and explain these steps.
 - b. Practice each step while doing a division word problem together.
 - c. Do additional division word problems to practice these steps.
4. In small groups or pairs, write original word problems for division. Exchange problems with another group and solve.
5. Copy a blank multiplication grid on card stock.
 - a. Make individual multiplication tables.
 - b. Demonstrate how to use the multiplication table to solve simple division problems.
 - c. Keep the multiplication tables in student notebooks as a reference.
6. Practice division problems under 100 with objects.
7. Using classified ads from a local newspaper, find jobs of interest with salaries given. If the monthly salary is provided, calculate the annual salary or vice versa.

CMP RELATED RESOURCES

- [Ace Math for Kids: Volume II, Part 2 #3557](#)
- [Basic Math: Integers and Addition #10139](#)
- [Basic Math: Multiplying Integers #10141](#)
- [Basic Math: Subtracting Integers #10143](#)
- [Integer Operations–Into the Negative Zone!: Part 2–Multiplying and Dividing #9934](#)

World Wide Web



The following Web sites complement the contents of this guide; they were selected by professionals who have experience in teaching deaf and hard of hearing students. Every effort was made to select accurate, educationally relevant, and "kid safe" sites. However, teachers should preview them before use. The U.S. Department of Education, the National Association of the Deaf, and the Captioned Media Program do not endorse the sites and are not responsible for their content.

- **MULTIPLYING AND DIVIDING INTEGERS**

<http://www.math.com/school/subject1/lessons/S1U1L12GL.html>

Multiple-page Web site with explanations of multiplying and dividing positive and negative integers. Also has an interactive “workout” of online multiplication and division problems.

- **GRADE 4 E-LAB**

http://www.harcourtschool.com/activity/elab2002/grade_4/

Choose either “Division With Remainders” or “Modeling Division” to see an interactive visual model of division.

- **AAA MATH: DIVISION**

<http://www.aaamath.com/B/div.htm>

Find a whole range of division activities, each with an explanation, interactive practice, and games.

- **MATH FORUM: ASK DR. MATH**

<http://forum.swarthmore.edu/dr.math/>

“Ask Dr. Math” allows users to e-mail questions to Dr. Math and access archived material. For other materials that relate to this media, choose either “Elementary” or “Middle School” and then click on “Division.”

INSTRUCTIONAL GRAPHICS

- DIVIDING INTEGERS: VIEWING GUIDE
- DIVIDING INTEGERS: CHECK YOUR KNOWLEDGE

Dividing Integers: Basic Math Viewing Guide

Show your work and solve the problems with the program!
Your teacher will be asking you for the answers!

Sample Problem #1

$$27 \div 3 =$$

The number being divided (27) is the **dividend**.
The number you're dividing by (3) is the **divisor**.
The answer to the division problem (9) is the **quotient**.

Sample Problem #2

$$34 \overline{)581}$$

Word Problem Strategies

Remember R.I.O.T.S.

Read	the problem.
Identify	what you must solve.
<i>Out of here!</i>	Remove all unnecessary information.
Translate	the word problem into a math problem; break it down into logical steps.
Solve	the problem.

Dividing Integers: Check Your Knowledge

Total Score / 50

A. Simple Division*Solve each problem (3 points each).*

1. $81 \div 9 =$

2. $96 \div 12 =$

3. $54 \div 6 =$

4. $90 \div 3 =$

5. $24 \div 4 =$

B. Long Division*Solve each problem. Show your work (4 points each).*

1. $7 \overline{)356}$

2. $8 \overline{)216}$

3. $14 \overline{)322}$

4. $32 \overline{)574}$

5. $65 \overline{)6078}$

6. $13 \overline{)605}$

C. Word Problems*Solve each problem. Show your work (4 points each).*

1. Jimmie Gillispie is traveling to Kalamazoo, 350 miles away. If his car gets 20 miles to the gallon, how many gallons of gas does he need to get to Kalamazoo?
2. Once in Kalamazoo, Jimmie looks in the phone book and finds 315 hotels. He decides to call every hotel to check for prices. If he calls one hotel every 20 seconds, how long will it take him to call all the hotels? Give your answer in hours and minutes.
3. Jimmie makes a living selling used newspapers door to door. He plans to knock on every door in Kalamazoo. There are 96 houses. If he visits 4 houses each hour, and works an eight-hour day, how many days will it take him to visit every house?
4. Jimmie orders 357 used newspapers to be sent around the country. The newspapers usually go out in shipments of 24, but 24 does not divide evenly into 357. How many used newspapers will be in the last shipment?

Dividing Integers:

Basic Math 

Check Your Knowledge

Answer Key

Total Score
/ 50

A. Simple Division

Solve each problem (3 points each).

1. $81 \div 9 = 9$

2. $96 \div 12 = 8$

3. $54 \div 6 = 9$

4. $90 \div 3 = 30$

5. $24 \div 4 = 6$

B. Long Division

Solve each problem. Show your work (4 points each).

$$\begin{array}{r} 50 \text{ R } 6 \\ 7 \overline{)356} \\ \underline{35} \\ 06 \end{array}$$

$$\begin{array}{r} 27 \\ 8 \overline{)216} \\ \underline{16} \\ 56 \end{array}$$

$$\begin{array}{r} 23 \\ 14 \overline{)322} \\ \underline{28} \\ 42 \end{array}$$

$$\begin{array}{r} 17 \text{ R } 30 \\ 32 \overline{)574} \\ \underline{32} \\ 254 \\ \underline{224} \\ 30 \end{array}$$

$$\begin{array}{r} 93 \text{ R } 33 \\ 65 \overline{)6078} \\ \underline{585} \\ 228 \\ \underline{195} \\ 33 \end{array}$$

$$\begin{array}{r} 46 \text{ R } 7 \\ 13 \overline{)605} \\ \underline{52} \\ 85 \\ \underline{78} \\ 7 \end{array}$$

C. Word Problems

Solve each problem. Show your work (4 points each).

1. Jimmie Gillispie is traveling to Kalamazoo, 350 miles away. If his car gets 20 miles to the gallon, how many gallons of gas does he need to get to Kalamazoo?

$$350 \div 20 = 17 \text{ R } 10$$

so he'll need 17 1/2 gallons of gas

2. Once in Kalamazoo, Jimmie looks in the phone book and finds 315 hotels. He decides to call every hotel to check for prices. If he calls one hotel every 20 seconds, how long will it take him to call all the hotels? Give your answer in hours and minutes.

$$\text{one call every 20 seconds} = 3 \text{ calls per minute}$$

$$315 \text{ hotels} \div 3 \text{ calls per minute} = 105 \text{ minutes} = 1 \text{ hour and 45 minutes}$$

3. Jimmie makes a living selling used newspapers door to door. He plans to knock on every door in Kalamazoo. There are 96 houses. If he visits 4 houses each hour, and works an eight-hour day, how many days will it take him to visit every house?

$$96 \text{ houses} \div 4 \text{ houses per hour} = 24 \text{ hours}$$

$$24 \text{ hours} \div 8 \text{ hours per day} = 3 \text{ days}$$

4. Jimmie orders 357 used newspapers to be sent around the country. The newspapers usually go out in shipments of 24, but 24 does not divide evenly into 357. How many used newspapers will be in the last shipment?

$$357 \div 24 = 14 \text{ R } 21$$

21 newspapers go out in the last shipment