

Multiplying and Dividing Signed Numbers

Grade 7 math · Worksheet · Standards: 7.NS.A.2a, 7.NS.A.2b, 7.NS.A.2c

Name: _____ Date: _____ Class: _____

These 20 problems cover standards 7.NS.A.2a, 7.NS.A.2b and 7.NS.A.2c: sign rules for products and quotients, why $(-1)(-1) = 1$, division by zero, and the signs in fractions.

You will use integers, decimals and fractions, then finish with real-world rates and short proofs. Count the negative signs before you multiply.

Standards: 7.NS.A.2a, 7.NS.A.2b, 7.NS.A.2c · **Level:** Grade 7

Problem 1 Five Products (easy)

Find each product.

- a. $6 \times (-7)$
- b. $(-8) \times 5$
- c. $(-9)(-4)$
- d. $(-12)(-1)$
- e. $0 \times (-15)$

Problem 2 Four Quotients (easy)

Find each quotient.

- a. $-56 \div 8$
- b. $72 \div (-9)$
- c. $-45 \div (-5)$
- d. $0 \div (-6)$

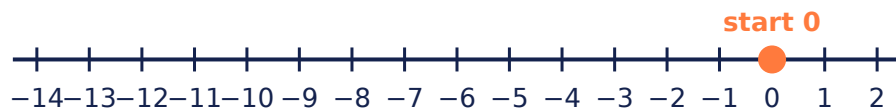
Problem 3 Sign of a Long Product (easy)

Decide whether each product is positive or negative, and then find it.

- a. $(-3)(-2)(-5)(4)$
- b. $(-2)(-6)(-1)(-3)$

Problem 4 Jumps on a Number Line (easy)

Use the number line to model $4 \times (-3)$ as four jumps from 0, each of size -3 .



Four jumps of -3 for Problem 4.

Problem 5 Falling Temperature (easy)

The temperature falls 3°F every hour for 5 hours, starting at 8°F . What is the temperature after 5 hours?

Problem 6 Pattern for Two Negatives (easy)

Complete the pattern, and explain what it shows about the product of two negative numbers.

Product	Result
$4 \times (-2)$	-8
$3 \times (-2)$	-6
$2 \times (-2)$	-4
$1 \times (-2)$	-2
$0 \times (-2)$	$?$
$(-1) \times (-2)$	$?$
$(-2) \times (-2)$	$?$

Pattern for Problem 6.

Problem 7 Decimal Products (medium)

Find each product.

- a. $(-2.5)(4.2)$
- b. $(-0.6)(-0.35)$

Problem 8 Fraction Products (medium)

Find each product in simplest form.

- a. $(-\frac{2}{3})(\frac{9}{10})$
 b. $(-\frac{5}{8})(-\frac{4}{15})$

Problem 9 Fraction Quotients (medium)

Find each quotient in simplest form.

- a. $(-\frac{3}{4}) \div \frac{9}{16}$
 b. $(-\frac{5}{6}) \div (-\frac{5}{12})$

Problem 10 Division and Zero (medium)

Evaluate each expression, or write undefined.

- a. $0 \div (-8)$
 b. $-7 \div 0$
 c. Explain, using multiplication, why $-7 \div 0$ has no answer.

Problem 11 Equivalent Forms of a Fraction (medium)

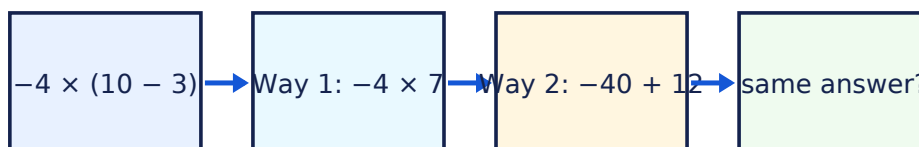
Which expressions equal $-\frac{8}{11}$? Check each one.

Expression	Equals $-\frac{7}{9}$?
$8/(-11)$	
$(-8)/(-11)$	
$-(8/11)$	
$-(-8/11)$	

Which expressions equal $-8/11$?

Problem 12 Distributive Property with a Negative (medium)

Evaluate $-4 \times (10 - 3)$ in two ways and compare the results.



Two ways to evaluate with the distributive property.

Problem 13 Descending Drone (medium)

A drone descends 7.5 feet every second for 6 seconds, starting at a height of 120 feet. What is its change in height and its final height?

Problem 14 Average Change (medium)

Four daily temperature changes are -3°F , -7°F , 2°F and -4°F . Find the mean daily change.

Problem 15 Monthly Fees (hard)

A bank charges a fee of \$4.25 per month. An account starts at \$50.00 and gets no deposits for 7 months. Write the total change as a product, find the balance, and find how many fees add up to a total change of $-\$29.75$ using division.

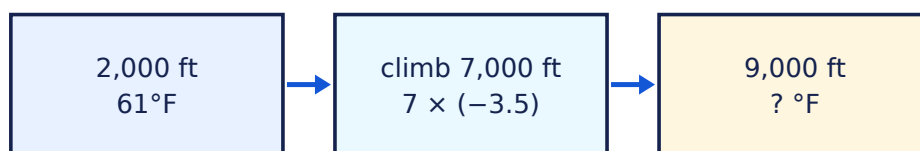
Problem 16 Evaluating with Variables (hard)

Evaluate each expression for $a = -6$, $b = 4$ and $c = -2$.

- a. $ab \div c$
- b. $a \div (bc)$
- c. abc

Problem 17 Mountain Temperatures (hard)

The air temperature falls 3.5°F for every 1,000 feet of climb. A hiker starts at 2,000 feet where it is 61°F and climbs to 9,000 feet. What is the temperature at 9,000 feet?



Temperature falls 3.5°F per 1,000 ft climbed.

Problem 18 Stock Price Changes (hard)

A stock loses \$1.35 per share each day for 6 days and then gains \$0.90 per share each day for 4 days. It started at \$42.00 per share. Find the net change per share, the final price, and the total change for 200 shares.

Problem 19 Why $(-1)(-1) = 1$ (hard)

Complete the reasoning that proves $(-1)(-1) = 1$. Start from $0 = (-1) \times 0 = (-1) \times (1 + (-1))$. Use the distributive property and explain each step.

Problem 20 Submarine Rates (hard)

A submarine at -40 meters descends 12.5 meters per minute for 8 minutes, then rises 20 meters per minute for 3.5 minutes. Find its final position and its net change in position.