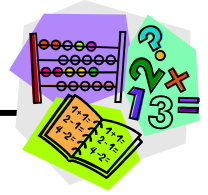


Dividing Integers



Division of integers can be demonstrated in a variety of ways such as using pencil and paper and sign rules, or a calculator.

Dividing Integers Using Pencil and Paper, and Sign Rules

The following sign rules can be used to find solutions when dividing integers.

Step 1: Ignore the signs of the integers and divide the numbers to find the quotient.

Step 2: Apply the sign rules below to determine the sign of the quotient.

- If the signs are both the same, the quotient will be positive.

$$\begin{aligned} (+) \div (+) &= + \\ (-) \div (-) &= + \end{aligned}$$

- If the signs are different, the quotient will be negative.

$$\begin{aligned} (+) \div (-) &= - \\ (-) \div (+) &= - \end{aligned}$$

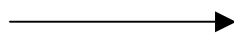
Examples

Check out these examples of division of integers using sign rules.

A) $(-22) \div (-2)$

$$(-) \div (-) = (+)$$

Signs are the same



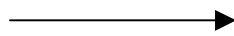
$= +11$

$(-22) \div (-2) = +11$

B) $(+40) \div (-5)$

$$(+) \div (-) = (-)$$

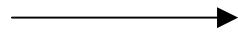
Signs are different



$= -8$

$(+40) \div (-5) = -8$

C) $(-27) \div (+9)$



$= -3$

$(-27) \div (+9) = -3$

$(-) \div (+) = (-)$

Signs are different

D) $(-49) \div (-7)$



$= +7$

$(-49) \div (-7) = +7$

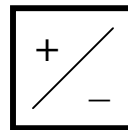
$(-) \div (-) = (+)$

Signs are the same

Dividing Integers Using a Calculator



Calculators can be used to divide integers if the calculator has an integer button. On many models, the integer button looks like this:



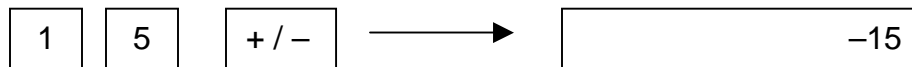
Depending on the model of calculator, the division of integers can be done using one of two methods.

Calculator Method #1

Example

$(-15) \div (+3)$

1. Enter the value of the first integer, followed by the $+/-$ key only if the integer is negative.

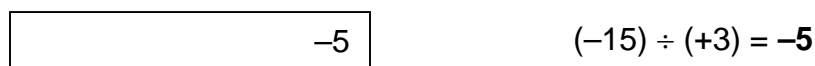


2. Press the \div key.

3. Enter the value of the second integer, followed by the $+/-$ key only if the integer is negative. In this example, the second integer is positive so the $+/-$ key is not pushed.



4. Press the $=$ key to display the answer.

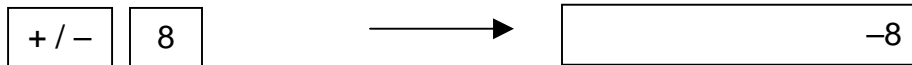


Calculator Method #2

Example

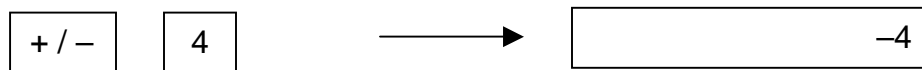
$$(-8) \div (-4)$$

1. If the first integer is negative, press the $+/-$ key on the calculator, then enter the value of the first integer.

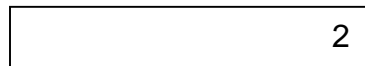


2. Press the \div key.

3. If the second integer is negative, press the $+/-$ key on the calculator, then enter the value of the second integer.



4. Press the $=$ key to display the answer.



$$(-8) \div (-4) = +2$$

Example

$$(+44) \div (-4)$$



Method #1

4	4	\div	4	$+/-$	=	-11
---	---	--------	---	-------	---	-----

Method #2

4	4	\div	$+/-$	4	=	-11
---	---	--------	-------	---	---	-----

$$(+44) \div (-4) = -11$$

Solving Word Problems

Examples

Check out the examples of writing mathematical statements from word problems.

A) The value of a stock changes from $+1.75$ to -2.50 over a five-day period.

What is the average change in the value of the stock?

To calculate an average, the change between the values is calculated and divided by the number of days that the stock value changes over.

$$(-2.50) - (+1.75) = -4.25$$

$$(-4.25) \div 5 = \mathbf{-0.85}$$

The average change in the value of the stock each day is $\mathbf{-0.85}$.

B) The temperatures over the past four days were -3°C , -5°C , $+4^{\circ}\text{C}$ and $+2^{\circ}\text{C}$. What was the average temperature for the past four days?

Find the sum of the temperatures and divide by the number of days.

$$(-3) + (-5) + (+3) + (+1) = -4$$

$$(-4) \div 4 = \mathbf{-1}$$

The average temperature over the past four days was $\mathbf{-1^{\circ}\text{C}}$.



Practice: Dividing Integers

1. Choose a strategy and solve the following.

a) $(-24) \div (-8) =$

b) $(+45) \div (-9) =$

c) $(+40) \div (+4) =$

d) $(-55) \div (+5) =$

e) $(-10) \div (+2) =$

f) $(-32) \div (+8) =$

g) $(-72) \div (+9) =$

h) $(+60) \div (-10) =$

i) $(-40) \div (+5) =$

j) $(-100) \div (+20) =$

2. Choose a strategy and solve the following.

a) $(+120) \div (-20) =$

b) $(-200) \div (-40) =$

c) $(-350) \div (-5) =$

d) $(+120) \div (-30) =$

e) $(-450) \div (+25) =$

f) $(+125) \div (+25) =$

g) $(-1000) \div (-20) =$

h) $(-3000) \div (+30) =$

i) $(-2500) \div (+10) =$

j) $(+1050) \div (-25) =$



Practice: Solving Word Problems

Write each problem as a mathematical statement. Solve using a variety of strategies, such as manipulatives, pencil and paper or a calculator. The first one is done for you.

1. The temperature is 0°C and falls 4°C each day. In how many days will the temperature be -20°C ?

$$(-20^{\circ}\text{C}) \div (-4) = 5 \text{ days}$$

The temperature will be -20°C in five days.

2. A deep sea diver sinks 2 m per second. How many seconds will it take the diver to reach a depth of 32 m?
3. Joey will pay \$24.00 each month for his entertainment system. How many months will it take to pay for his system if it cost \$432.00?
4. Janice bought a new mountain bike for \$990.00. If she pays \$45.00 a month, how many months will it take to pay for it?