2.4 Developing Rules to Divide Integers

Quick Review

At Home At School

- For any multiplication of 2 different factors, there are 2 related division facts:
  For $4 \times 3 = 12$, the related division facts are: $12 \div 3 = 4$ and $12 \div 4 = 3$

  The same rules apply to the product of 2 integers.
  For $(-2)(+5) = -10$, the related division facts are:

  $(-10) \div (-2) = +5$ and $(-10) \div (+5) = -2$

  dividend divisor quotient

- The quotient of 2 integers with the same sign is positive.
  $(+10) \div (+2) = +5$ $(-10) \div (-2) = +5$
- The quotient of 2 integers with different signs is negative.
  $(+10) \div (-2) = -5$ $(-10) \div (+2) = -5$
- A division expression can be written using a division sign, $(-24) \div (-6)$, or it can be written as a fraction, $\frac{(-24)}{(-6)}$.

Practice

1. For each product, complete the 2 related division facts and name the sign of the quotient.

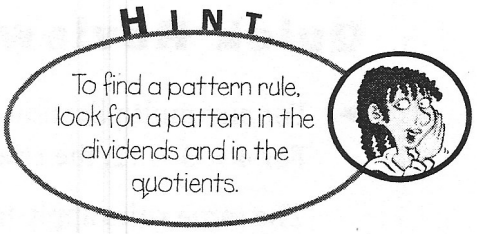
Multiplication Fact	Related Division Facts	Sign of Quotient
$(+2)(+3) = +6$	$(+6) \div (+2) =$ _____	_____
	$(+6) \div (+3) =$ _____	_____
$(-2)(-3) = +6$	$(+6) \div (-2) =$ _____	_____
	$(+6) \div (-3) =$ _____	_____
$(+2)(-3) = -6$	$(-6) \div (+2) =$ _____	_____
	$(-6) \div (-3) =$ _____	_____
$(-2)(+3) = -6$	$(-6) \div (-2) =$ _____	_____
	$(-6) \div (+3) =$ _____	_____

2. Use your results in question 1. Complete these 2 statements.

When 2 integers have the same sign, their quotient is _____.

When 2 integers have different signs, their quotient is _____.

3. Find a pattern rule for each division pattern.
Extend the pattern 3 more rows.



a) $(+6) \div (-2) = -3$

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

$(+2) \div (-2) = -1$

$(0) \div (-2) =$ _____

_____

_____

_____

b) $(-12) \div (-4) = +3$

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

$(-4) \div (-4) = +1$

$(0) \div (-4) =$ _____

_____

_____

_____

Use the last 3 rows of each pattern. Complete these statements.

When both the dividend and divisor are negative, the quotient is _____.

When the dividend is positive and the divisor is negative, the quotient is _____.

4. Find each quotient.

a) $(+15) \div (-3) =$ _____ **b)** $(-32) \div (+4) =$ _____ **c)** $(+72) \div (-8) =$ _____

d) $(-54) \div (-9) =$ _____ **e)** $(-72) \div (+6) =$ _____ **f)** $(+88) \div (+11) =$ _____

g) $(-42) \div (-6) =$ _____ **h)** $(+108) \div (+9) =$ _____ **i)** $(-56) \div (+7) =$ _____

5. Use 2 of these 5 integers. Write a division fact with each quotient.

-2 $+3$ $+12$ -1 $+4$

a) a quotient of -2 _____

b) the greatest quotient _____

c) the least quotient _____

d) a quotient between -5 and -10 _____

6. Use a calculator to divide.

a) $(+247) \div (-13) =$ _____ **b)** $(-851) \div (-37) =$ _____

c) $\frac{(-748)}{(-68)} =$ _____ **d)** $\frac{(-1485)}{(+33)} =$ _____

Tip

Look for the [(−)] or [+/−] key on your calculator to key in negative numbers.