

Learning Skills, Room 120

Working with Signed Numbers

Terms to Know

- *Operation* means add, subtract, multiply, or divide.
- Before you do any computation, *determine the operation* and then follow instructions for that operation.

Addition

Ask: *Do the numbers have the same sign?*

Answer: Yes → Find the sum
 $(-6) + (-3) = (-9)$
 $6 + 3 = 9$

Answer: No → Find the *difference* and use the sign of the larger number.
 $(-6) + (3) = (-3)$
 $(-3) + (6) = 3$

Practice:

$(7) + (-4) =$	$(-9) + (-6) =$
$(-7) + (4) =$	$(9) + (-6) =$
$(11) + (-16) =$	$(-9) + (6) =$
$(-11) + (16) =$	$(15) + (-12) =$
$(-11) + (-16) =$	$(-15) + (12) =$

Subtraction

Subtraction means *add the opposite* of the second number.

Examples:

$$6 - 3 \rightarrow 6 + (-3) = 3$$

$$6 - (-3) \rightarrow 6 + 3 = 9$$

$$(-6) - 3 \rightarrow (-6) + (-3) = -9$$

$$(-6) - (-3) \rightarrow (-6) + 3 = -3$$

Practice:

$$(2) - (-4) =$$

$$(10) - (-10) =$$

$$(-6) - (-5) =$$

$$(-10) - (10) =$$

$$(15) - (-10) =$$

$$(-10) - (-10) =$$

$$(-15) - (10) =$$

$$(-12) - (4) =$$

$$(-15) - (-10) =$$

$$(12) - (-4) =$$

Multiplication and Division

First, *do* the computation (ignore the signs)

Next, *determine* the sign by counting the number of *negative* signs:

Even number of signs \rightarrow answer is positive

Odd number of signs \rightarrow answer is negative

Multiplication Examples:

$$(-6) \times 4 \rightarrow 6 \times 4 = 24$$

do computation

1 negative sign (odd = negative)

count negative signs

$$(-6) \times 4 = (-24)$$

answer is negative

$$(-6) \times (4) \times (-2) \rightarrow 6 \times 4 \times 2 = 48$$

compute

2 negative signs (even = positive)

count

$$(-6) \times (4) \times (-2) = 48$$

answer

$$(-6) \times (-4) \times (-2) \rightarrow 6 \times 4 \times 2 = 48$$

compute

3 negative signs (odd = negative)

count

$$(-6) \times (-4) \times (-2) = (-48)$$

answer

Practice:

$(9) \times (-3) =$

$(-9) \times (-3) =$

$(-2) \times (-3) \times (4) =$

$(2) \times (-3) \times (4) =$

$(2) \times (-3) \times (-4) =$

$(-2) \times (-3) \times (-4) =$

$(2) \times (-2) \times (3) =$

$(-2) \times (-2) \times (-3) =$

$(-2) \times (2) \times (-3) =$

$(9) \times (-2) \times (2) =$

$(-9) \times (2) \times (2) =$

$(9) \times (-2) \times (-2) =$

Division Examples:

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

compute

1 negative sign (odd = negative)

count

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

answer

$(-16) \div (-4) \rightarrow 16 \div 4 = 4$

compute

2 negative signs (even = positive)

count

$(-16) \div (-4) = 4$

answer

Division Practice:

$(-18) \div (9) =$

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

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

$(-36) \div (-3) =$

$(-18) \div (-9) =$

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

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

$(-45) \div (-5) =$

$(24) \div (-2) =$

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

$(-24) \div (-2) =$

$(-25) \div (5) =$

Make up your own questions based on areas of difficulty.

Answers to Practice Questions

Addition

$$(7) + (-4) = (3)$$

$$(-7) + (4) = (-3)$$

$$(11) + (-16) = (-5)$$

$$(-11) + (16) = (5)$$

$$(-11) + (-16) = (-27)$$

$$(-9) + (-6) = (-15)$$

$$(9) + (-6) = (3)$$

$$(-9) + (6) = (-3)$$

$$(15) + (-12) = (3)$$

$$(-15) + (12) = (-3)$$

Subtraction

$$(2) - (-4) = (6)$$

$$(-6) - (-5) = (-1)$$

$$(15) - (-10) = (25)$$

$$(-15) - (10) = (-25)$$

$$(-15) - (-10) = (-5)$$

$$(10) - (-10) = (20)$$

$$(-10) - (10) = (-20)$$

$$(-10) - (-10) = (0)$$

$$(-12) - (4) = (-16)$$

$$(12) - (-4) = (16)$$

Multiplication

$$(9) \times (-3) = (-27)$$

$$(-9) \times (-3) = (27)$$

$$(-2) \times (-3) \times (4) = (24)$$

$$(2) \times (-3) \times (4) = (-24)$$

$$(2) \times (-3) \times (-4) = (24)$$

$$(-2) \times (-3) \times (-4) = (-24)$$

$$(2) \times (-2) \times (3) = (-12)$$

$$(-2) \times (-2) \times (-3) = (-12)$$

$$(-2) \times (2) \times (-3) = (12)$$

$$(9) \times (-2) \times (2) = (-36)$$

$$(-9) \times (2) \times (2) = (-36)$$

$$(9) \times (-2) \times (-2) = (36)$$

Division

$$(-18) \div (9) = (-2)$$

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

$$(-18) \div (-9) = (2)$$

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

$$(24) \div (-2) = (-12)$$

$$(-24) \div (-2) = (12)$$

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

$$(-36) \div (-3) = (9)$$

$$(-45) \div (9) = (-5)$$

$$(-45) \div (-5) = (9)$$

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

$$(-25) \div (5) = (-5)$$