Welcome to Pre-College Math!

Treat every lesson we do as an opportunity to build your math skills and grow in confidence – you can do this!

Here are some websites to know:

- **The Damonte Ranch math department website: www.washoeschools.net/DRHSmath**
  This is where you can find filled-in notes, video links, and other resources.
  Note: This is not an online class. The resources posted on this website are intended to support your learning, but they are not sufficient to replace class experiences.
- **MathXL (enVision Mathematics): Start at washoeschools.net, select Students and Parents**
  This is where some of your classwork & homework assignments can be found. (Others will be worksheets or class activities.)
- **Excel Spreadsheets: Start at the Microsoft menu, open Excel in the same way you open Word.**
  We will use Excel for some concept explorations, and it will be the platform for your budget project.

These also might be useful:

- **Practice Multiplication Facts:** www.mathmammoth.com/practice/multiplication
- **Khan Academy:** www.khanacademy.org
- Polypad Virtual Math Manipulatives: https://polypad.amplify.com/p

Date Assigned	Assignment (Check for due dates & times in mathXL)
Mon. 8/11/2025 C-day	**Syllabus & Starting Activities**
Tues. 8/12/2025 Wed. 8/13/2025	**1.1 Activity & Pretest (calculator portion) HW: multiplication facts WS**
Thur. 8/14/2025 Fri. 8/15/2025	**1.2 Graphing Activities & Pretest (non-calculator) HW: finish graphs**
Mon. 8/18/2025 Tues. 8/19/2025	**1.3 Excel Spreadsheets Activity & Intro to MathXL**
Wed. 8/20/2025 Thur. 8/21/2025	**1.4 MathXL:** **Order of Operations + Variables, Expressions, and Equations**
Fri. 8/22/2025 Mon. 8/25/2025	**1.5 MathXL:** **Add and Subract Integers (Signed Numbers) +** **Multiply and Divide Integers**
Tues. 8/26/2025 Wed. 8/27/2025	**Ch 1 Review**
Thur. 8/28/2025 Fri. 8/29/2025	**Ch 1 Test**

Unit 1 Calendar:

1.1 Algebra Skills Introductory Exploration

x	y
0	6
2	5
4	4
6	3

Below you are given a table with values of x and y.
For each row, substitute the x and y values into the <u>expression</u> $2x + 4y$. Then fill in the rest of the table.

$$\mathbf{2x + 4y}$$

$$2 \cdot 0 + 4 \cdot 6 =$$

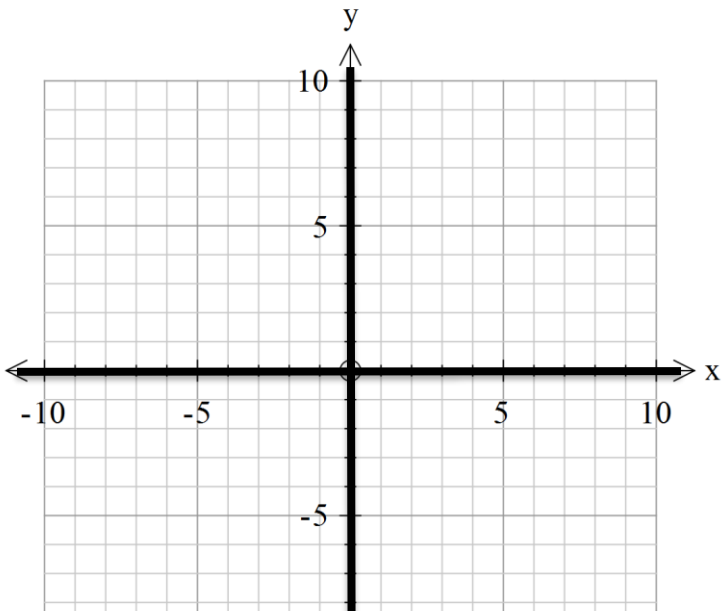
<u>Remember Order of Operations</u>:

P	Parentheses ( )
E	Exponents
MD	Multiply or Divide
AS	Add or Subtract

<u>Let's summarize:</u>

We've determined that this <u>equation</u> matches the table:

And it turns out that if we plot the (x, y) combinations in the table as points, it forms a line:



1.2 Graphing Ordered Pairs

Ordered pairs are (x, y) combinations, and you can put a point on the graph for each by moving left or right by the amount that the first integer (x-value) shows, then up or down the amount of the second integer (y-value). Work carefully to plot the ordered pairs below, *connecting each group in order*, and you will get a picture.

(-1, 7)
(-10, 8)
(-10, 6)
(-1, 6)
STOP

(3, -5)
(4, _____) if $y = 2x - 15$
(-1, -7)
(0, -5)
STOP

Plot the point (2, 1) only if it is a solution to $x + 3y = 5$
(2, -1)
(0, -1)
(0, 1)
(2, 1)
STOP

(10, -7)
(10, -6)
(8, -7)
(5, -7)
(4, -5)
(6, -5)
(8, -3)
(8, _____) if $y = 3x - 24$
(6, _____) if $y = 4x - 22$
STOP

(-10, 2)
(-9, 1)
(-7, 1)
(-2, -3)
(-1, -5)
(4, -5)
STOP

(9, 8)
(9, _____) if $y = 3x - 21$
(0, 6)
(0, _____) if $y = 5x + 7$
STOP

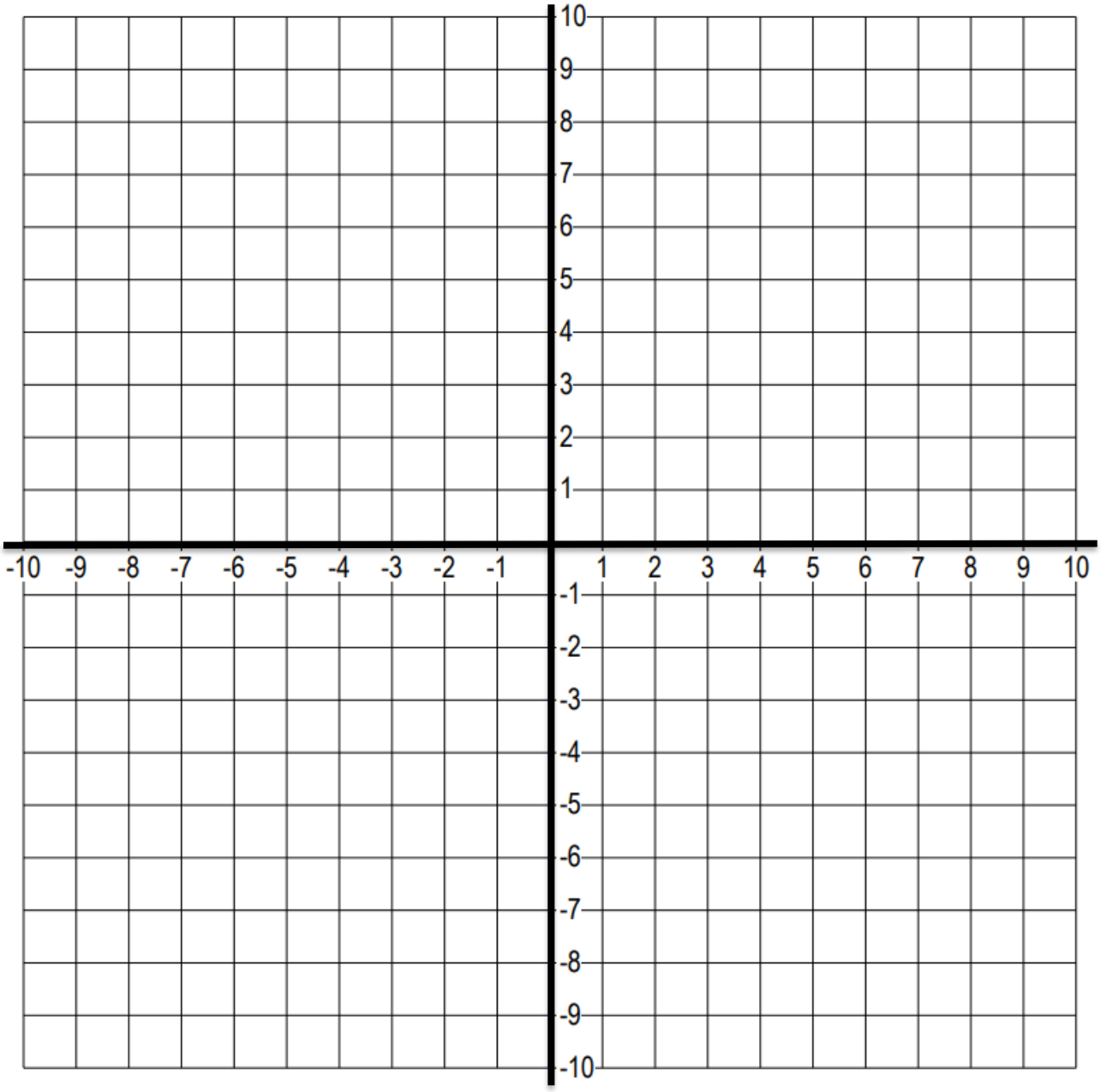
Plot the point (7, 3) only if it is a solution to $5x - 5y = 30$
(-1, -5)
(-2, -7)
(-5, -7)
(-5, -8)
(8, -8)
(10, -7)
STOP

(0, _____) if $y = 3x + 6$
(0, _____) if $y = 5x + 4$
(2, 4)
(3, 3)
STOP

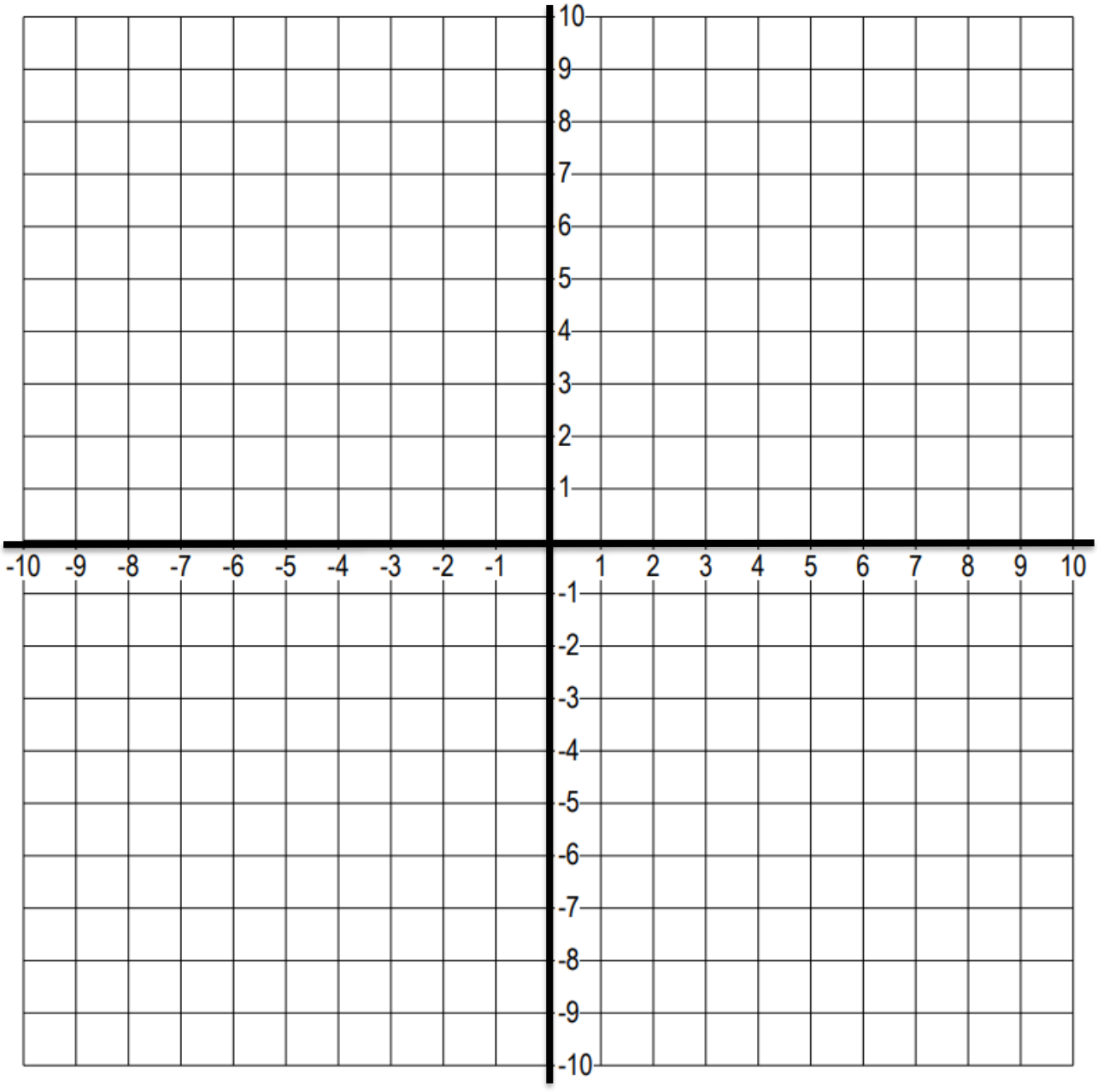
(-6, 2)
(-4, 1)
(-3, 2)
(-3, 4)
(-1, 4)
(-1, 8)
(0, _____) if $y = x + 8$
(0, _____) if $y = 6x + 7$
(9, _____) if $y = x + 1$
STOP

(-7, 1)
(-8, 2)
(-8, 3)
(-6, 2)
(-6, 4)
(-7, 5)
(-9, 5)
(-10, 4)
(-10, 2)
STOP

(-3, 2)
(-2, 3)
(5, 3)
(6, 2)
(3, 1)
(3, -1)
(7, -4)
STOP



On the next page, create your own set of points that connect to make a picture. Share the points with a partner and see if they get the same picture you intended!


10
9
8
7
6
5
4
3
2
1
-10 -9 -8 -7 -6 -5 -4 -3 -2 -1
1 2 3 4 5 6 7 8 9 10
-1
-2
-3
-4
-5
-6
-7
-8
-9
-10

1.3 Introduction to Spreadsheets

- **Watch these videos with your class:** https://www.youtube.com/watch?v=VFp6Yufsg-Q and https://www.youtube.com/watch?v=xc14gFFyiTw
- **Open a blank Microsoft Excel spreadsheet and save your document as "Intro to Spreadsheets."**

1. Type numbers 5, 9, 1, 11, 3, 14, 2, 26 in cells A1 though A8
2. Organize cells using sorting function for cells A1 though A8 from least to greatest
3. In A9 use spreadsheets formulas to add up cells A1 though A8 (Hint: start formula with =)
4. Using formulas, take the average of cells A1 though A8 and put the answer in A10
5. Type in 111, 342, 598 in cells C1 though E1
6. Change the color and font of the number 111. Highlight the cell that 111 is in.

******* Use spreadsheet formulas for all remaining calculations! *******

7. Add cells C1 though E1 and put the total in F1
8. Change the total in F1 to represent a $ amount.
9. Type in 431, 39, 46, 74 in cells C3 through C6
10. Take cell C3 and subtract cell C6 and put the answer in C7
11. Use the answer from C7 and multiply by cell C1 and put the answer in C8
12. Find 15% of the cell C8 and put it in cell C9
13. Divide cell D1 by C4 and put your answer in D4
14. In cell D2 write "Spreadsheets rock my world!" and then merge cells D2 and E2
15. In cell D12 Write "I love this class so much!" and then click the wrap text button
16. Take cell C5 and raise it to the 5^{th} power and put the answer in cell D5
17. Find 10% of cell C1 and add the answer to D4 and put your answer in D6
18. Create another sheet in the document (using the tabs at the bottom) and title the sheet "PCM." Write your name in cell A1 of this sheet.
19. Familiarize yourself with the tool bar and write one thing below that you discovered through these tool bars. You will need to know how to use all these features in this class so take time to play around and try different things.

20. Create a third sheet in the document (using the tabs at the bottom) and title this one “Exploration.” Get ready for your teacher’s instructions on what to do with this one.

1.4 Exponents and Order of Operations

EXAMPLE 1 Evaluating Exponential Expressions

Find the value of each exponential expression.

(a) 5^2 **(b)** 6^3 **(c)** 2^5 **(d)** $\left(\frac{2}{3}\right)^3$ **(e)** $(0.3)^2$

Order of Operations:

P Parentheses ( )

E Exponents

MD Multiply or Divide *(either can be 1st – go left → right!)*

AS Add or Subtract *(either can be 1st – go left → right!)*

EXAMPLE 2 Using the Rules for Order of Operations

Find the value of each expression.

a) $4 + 5 \cdot 6$ **b)** $9(7 + 6)$ **c)** $6 \cdot 8 + 24 \div 2$

d) $2(5 + 6) + 7 \cdot 3$ **f)** $12 \div 3 \cdot 6 + 4 \cdot 2^3 - 3^3$

Now you try!

h) $6(2 + 4) - 7 \cdot 5$ **i)** $80 \div 10 \cdot 2 - 2^3 + 3 \cdot 4^2$

EXAMPLE 3 Using Brackets and Fraction Bars as Grouping Symbols

Simplify each expression.

a) $2[8 + 3(6 + 5)]$

b) $\frac{4(5+3)+3}{2(3)-1}$

Now you try!

c) $7[(3^2 - 1) + 4]$

d) $\frac{9(14-4)-2}{4 + 3 \cdot 6}$

Variable	**Algebraic expression**

EXAMPLE 1 Evaluating Expressions

Find the value of each algebraic expression for $x = 5$.

a) $8x$

b) $3x^2 - 4$

EXAMPLE 2 Evaluating Expressions

Find the value of each expression for $x = 5$ and $y = 3$.

a) $2x + 7y$

b) $\frac{9x-8y}{2x-y}$

c) $x^2 - 2y^2$

EXAMPLE 4 Deciding Whether a Number Is a Solution of an Equation

Decide whether the given number is a solution of the equation.

(a) $5p + 1 = 36;\quad 7$ **(b)** $9m - 6 = 32;\quad 4$

c) $4x - 3 = 8;\quad \frac{11}{4}$

***** Group Activity: Brainstorm words that tell you to add, subtract, multiply, and divide ******

EXAMPLE 5 Finding a Solution from a Given Set

Write each word statement as an equation. Use x as the variable. Then find all solutions of the equation from the set

$$\{0, 2, 4, 6, 8, 10\}.$$

(a) The sum of a number and four is six. **(b)** Nine more than five times a number is 49.

(c) The sum of a number and 12 is equal to four times the number.

EXAMPLE 6 Distinguishing between Equations and Expressions

Decide whether each of the following is an *equation* or an *expression*.

a) $2x - 5y$ b) $2x = 5y$

c) $2x + 5 = 6$ d) $2x + 5 - 6$

1.5 Adding and Subtracting Real Numbers

EXAMPLE 1 Using Negative Numbers in Applications

Use an integer to express the number in boldface italics in each application.

(a) The lowest Fahrenheit temperature ever recorded was ***129°*** below zero at Vostok, Antarctica, on July 21, 1983. (*Source: World Almanac and Book of Facts.*)

(b) General Motors had a loss of about $***31*** billion in 2008. (*Source: The Wall Street Journal.*)

- **Whole Numbers:**
- **Integers:**
- **Rational Numbers:**
- **Irrational Numbers:**
- **Real Numbers:**

EXAMPLE 2 Determining Whether a Number Belongs to a Set

List the numbers in the following set that belong to each set of numbers.

$$\left\{-5, -\frac{2}{3}, 0, 0.\overline{6}, \sqrt{2}, 3\frac{1}{4}, 5, 5.8\right\}$$

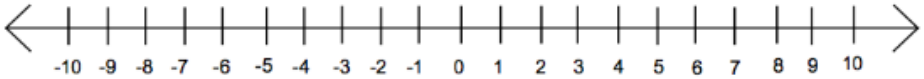
a) Integers:

b) Rational Numbers:

c) Real Numbers:

Use the number line provided to help answer Example 3 below.

Hint: $<$ is "less than"
$>$ is "greater than"



EXAMPLE 3 Determining the Order of Real Numbers

a) Is the statement $-3 < -1$ true or false?

b) True or false? $-5 > -4$

Absolute Value:

Distance from zero

EXAMPLE 4 Finding the Absolute Value

Simplify by finding the absolute value.

a) $|0|$ b) $|-6|$ c) $|7|$ d) $3 \cdot |-6|$

d) $-|5|$ e) $-|-5|$ f) $|8-2|$ g) $-|8-2|$

h) True or false? $-5 > |-4|$ i) True or false? $-3 < -|4-2|$

EXAMPLE 1 Adding Numbers on a Number Line

Use a number line to find each sum.

a) $1 + 7$

b) $(-2) + (-4)$

c) $3 + 5$

d) $-1 + (-3)$

Adding numbers with the same sign

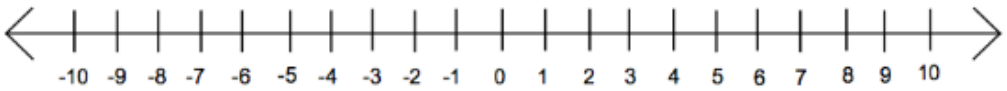
EXAMPLE 2 Adding Two Negative Numbers

Find each sum.

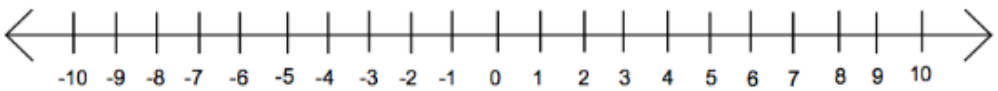
(a) $-2 + (-9)$ **(b)** $-8 + (-12)$ **(c)** $-15 + (-3)$

EXAMPLE 3 Adding Numbers with Different Signs

Use a number line to find the sum $-2 + 5$.



Use the number line to find the sum: $4 + (-8)$



Adding numbers with different signs

EXAMPLE 4 Adding Numbers with Different Signs

a) -8 + 12 **b) 7 + (-4)** **c) -16 + 16**

EXAMPLE 6 Using the Definition of Subtraction

Subtraction is the same as "adding the opposite"

(a) $12 - 3$ **(b)** $5 - 7$ **(c)** $-6 - 9$ **(d)** $-3 - (-5)$

Uses of the Symbol −

We use the symbol − for three purposes:

1. ***to represent subtraction,*** as in $9 - 5 = 4$;
2. ***to represent negative numbers,*** such as -10, -2, and -3;
3. ***to represent the opposite (or negative) of a number,*** as in "the opposite (or negative) of 8 is -8."

EXAMPLE 7 Adding and Subtracting with Grouping Symbols

Perform each indicated operation.

a) $-6 - [2 - (8 + 3)]$ b) $|4 - 7| + 2|6 - 3|$

You try!

e) $8 - [(-3 + 7) - (3 - 9)]$ f) $3|6 - 9| - |4 - 12|$

Word or Phrase	*Example*	*Numerical Expression and Simplification*
Sum of	The *sum of* −3 and 4	−3 + 4, or 1
Added to	5 *added to* −8	−8 + 5, or −3
More than	12 *more than* −5	−5 + 12, or 7
Increased by	−6 *increased by* 13	−6 + 13, or 7
Plus	3 *plus* 14	3 + 14, or 17

Word, Phrase, or Sentence	*Example*	*Numerical Expression and Simplification*
Difference between	The *difference between* −3 and −8	−3 − (−8) simplifies to −3 + 8, or 5
Subtracted from*	12 *subtracted from* 18	18 − 12, or 6
From . . . , subtract	From 12, subtract 8.	12 − 8 simplifies to 12 + (−8), or 4
Less	6 *less* 5	6 − 5, or 1
Less than*	6 *less than* 5	5 − 6 simplifies to 5 + (−6), or −1
Decreased by	9 *decreased by* −4	9 − (−4) simplifies to 9 + 4, or 13
Minus	8 *minus* 5	8 − 5, or 3

EXAMPLE 8 Translating Words and Phrases (Addition)

Write a numerical expression for each phrase, and simplify the expression.

a) The sum of -8 and 4 and 6

b) 3 more than -5, increased by 12

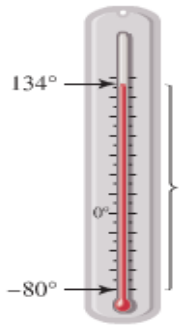
Write a numerical expression and then simplify.

c) The difference between 5 and -8, decreased by 4

d) 7 less than -2

EXAMPLE 10 Solving a Problem Involving Subtraction

The record-high temperature in the United States is 134°F, recorded at Death Valley, California, in 1913. The record low is −80°F, at Prospect Creek, Alaska, in 1971. See FIGURE 16. What is the difference between these highest and lowest temperatures? (*Source: National Climatic Data Center.*)



10b) Find the difference between a gain of 226 yards on the football field by the Chesterfield Bears and a loss of 7 yards by the New London Wildcats.

Multiplying and Dividing Real Numbers

Multiplying numbers with different signs

Multiplying two negative numbers

EXAMPLE 1 Multiplying a Positive Number and a Negative Number

Find each product, using the multiplication rule given in the box.

(a) $8(-5)$ **(b)** $(-5)4$ **(c)** $-9\left(\frac{1}{3}\right)$

EXAMPLE 2 Multiplying Two Negative Numbers

(a) $-9(-2)$ **(b)** $-6(-12)$ **(c)** $-8(-1)$

EXAMPLE 4 Dividing Signed Numbers

Find each quotient.

(a) $\frac{8}{-2}$ **(b)** $\frac{-100}{5}$ **(c)** $\frac{-1.47}{-7}$

c) $-\frac{1}{8} \div \left(-\frac{3}{4}\right)$ d) $\frac{0}{14.2}$ e) $\frac{14.2}{0}$

EXAMPLE 5 Using the Rules for Order of Operations

Perform each indicated operation.

a) $-9(2) - (-3)(2)$ b) $-5(-2-3)$ c) $-6 + 2(3-5)$

d) $\frac{5(-2)-3(4)}{2(1-6)}$ e) $-4(6) - (-5)(12)$

EXAMPLE 6 Evaluating Expressions for Numerical Values

Evaluate each expression for $x = -1$, $y = -2$, and $m = -3$.

a) $(3x + 4y)(-2m)$ b) $2x^2 - 3y^2$ c) $\frac{4y^2+x}{m}$