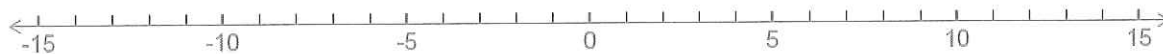


Section 1.1: Arithmetic with Negative Numbers

1. Add. Use the sign rules or the context of money or the number line.



a. $-\$10 + \10

$\$0$

b. $-\$5 + (-\$10)$

$-\$15$

c. $\$12 + (-\$3) + (-\$8)$

$\$1$

d. $6 + (-10)$

-4

e. $-14 + 15$

1

f. $9 + (-1) + 7$

15

g. $-15 + (-15)$

-30

h. $-5.50 + (-5.01)$

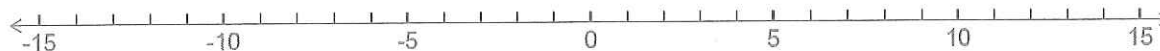
-10.51

$$\begin{array}{r} 5.50 \\ 5.01 \\ \hline -10.51 \end{array}$$

i. $-10 + 24$

14

2. Subtract. Use the sign rules or the context of money or the number line.



a. $-\$7 - \7

$-\$14$

b. $-\$4 - \9

$-\$13$

c. $\$6 - (-\$4)$

$\$10$

d. $3 - (-3)$

6

e. $-5 - (-10)$

5

f. $8 - 5 + 10$

$= 3 + 10$
 $= 13$

g. $-7 - (-7)$

0

h. $-3.50 - (-6.49)$

2.99

$\begin{array}{r} 6.49 \\ -3.50 \\ \hline 2.99 \end{array}$

i. $10 - 24.5$

-14.5

3. Simplify each expression. Show your steps.

$$\begin{aligned} \text{a. } & -12 - 5 + 4 - (-2) \\ & = -17 + 6 \\ & = -11 \end{aligned}$$

$$\begin{aligned} \text{b. } & 8 - 1 - (-8.5) + (-10) \\ & = 8 + 8.5 - 1 - 10 \\ & = 16.5 - 11 \\ & = 5.5 \end{aligned}$$

4. Write an expression for each situation and simplify it.

a. At the end of last month your checking account balance was \$432. So far this month, you got paid \$878, spent \$204 on groceries, spent \$32 on coffee at PCC, and returned an item to the store for a credit of \$25. What is your new balance? Write all of the operations on a single line and then simplify it. Write your answer in a complete sentence.

$$\begin{aligned} & 432 + 878 - 204 - 32 - (-25) \\ & = 1310 - 204 - 32 + 25 \\ & = 1106 - 32 + 25 \\ & = 1074 + 25 \\ & = \$1099 \end{aligned}$$

My balance
is \$1099.

b. In problem a above, where did you or where could you have subtracted a negative?

c. The highest point in California is the top of Mt. Whitney, which has an elevation of 14,505 feet above sea level. The lowest point in California is in Death Valley, with an elevation of 282 feet below sea level. Draw a diagram and write an expression that involves subtraction to find the difference between the two elevations. Write your answer in a complete sentence.



$$14,505 - (-282) = 14,787 \text{ ft}$$

The difference
is 14,787 ft

5. Multiply or divide as indicated.

a. $-6 \cdot 7 = -42$

b. $0(-2) = 0$

c. $-15 \div 5 = -3$

d. $-12 \div (-2) = 6$

e. $-1(5)(-6) = 30$

f. $(-10)(-18)(0)(-65) = 0$
↑

g. $8(-0.25) = -2$
Think $\frac{1}{4}$ of 8

h. $-15(-0.5) = 7.5$
half of 15

i. $-3.22(7.8)$ if $322 \cdot 78 = 25116$
 $= -25.116$

j. $-480.1(0) = 0$

k. $\frac{18}{0}$ undefined

l. $\frac{0}{-5} = 0$

6. Simplify each exponential expression.

a. $5^2 = 25$

b. $-5^2 = -25$
-5.5

c. $(-5)^2 = 25$
 $(-5)(-5)$

d. $0^2 = 0$

e. $-0^5 = 0$

f. $(-3)^3 = (-3)(-3)(-3)$
 $= -27$

g. $-1^{304} = -1$

h. $(-1)^{92} = 1$

i. $-2^6 = -2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2$
 $= 64$

7. Simplify the expressions with absolute value and square roots. If a perfect square is not a

a. $|10| = 10$

b. $|-25| = 25$

c. $-|-16| = -16$

d. $|-6-8|$
 $= |-14|$
 $= 14$

e. $-|8-10|$
 $= -|-2|$
 $= -2$

f. $4|1-12|$
 $= 4|-11|$
 $= 4 \cdot 11$
 $= 44$

g. $\sqrt{0}$
 $= 0$

h. $\sqrt{1}$
 $= 1$

i. $\sqrt{-1}$
not a real number

j. $\sqrt{25}$
 $= 5$

k. $-\sqrt{9}$
 $= -3$

l. $-\sqrt{81-17}$
 $= -\sqrt{64}$
 $= -8$

m. $\sqrt{100} - \sqrt{64}$
 $= 10 - 8$
 $= 2$

n. $-\sqrt{\frac{144}{25}}$
 $= -\frac{12}{5}$

o. $\sqrt{-\frac{4}{9}}$
not a real number

8. Use a calculator to approximate the following. Write your answer with four significant digits.

a. $\sqrt{10}$
 ≈ 3.162

b. $-\sqrt{80}$
 ≈ -8.944

c. $\sqrt{72}$
 ≈ 8.485

9. Personal Reflection. Do you feel that you are placed in the correct math class? If this material seems too easy or too hard, please talk with me.

Please email me or talk with me right away if you think you're not in the right class. Saturday is the last day to drop for a refund.