Section 1.1: Review of Arithmetic with Negative Numbers

<u>Adding</u>
1. Using the context of money, find the answer to each problem.
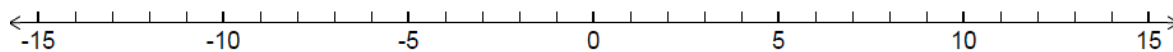
　　　a. $\$6+\$7$
　　　　earn, earn

　　　c. $\$3+(-\$9)$
　　　　earn, spend

　　　b. $-\$2.10+(-\$7.49)$
　　　spend, spend

　　　d. $-\$10+\$12$

2. Using the context of a number line, find the answer to each problem.

　　　a. $4+5$
　　　　right, right

　　　c. $4.5+(-6.5)$
　　　　right, left

　　　b. $-1+(-6)$
　　　left, left

　　　d. $-7+12$

3. Write down some notes in your own words for adding signed numbers.

4. Practice. Use the method that is most useful for you.

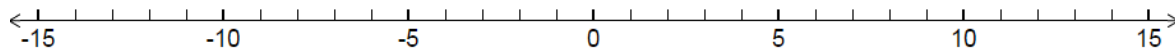a. $-\$10+\$10$

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

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

d. $-14+15$

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

f. $-5.50+(-5.01)$

Subtracting

5. Using the Context of a Number Line

a. $4-9$
   right, left

b. $-3-7$
   left, left

c. $4-(-6)$
   right, right

d. $-7.3-(-6.1)$

6. Using the Context of Money

a. $\$10-\$13$
   earn, spend

b. $-\$7-\$8$

c. $\$11.75-(-\$7.25)$
   earn, get a credit

d. $-\$4-(-\$9)$

7. Write down some notes in your own words for subtracting signed numbers.

8. Practice. Use the method that is most useful for you.

a. $-\$7-\$7$

b. $-\$4-\$9$

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

d. $-7-(-7)$

e. $-5-(-10)$

f. $10-24.5$

9. Simplifying Longer Expressions. Show each step.

    a. $15+(-7)+5-(-14)$ b. $4.5-5-(-11)-(-9)$

Multiplying and Dividing

10. Sign rules for multiplying and dividing.

   positive • positive =   negative • negative =

   positive • negative =   negative • positive =

   a. −4 • 3   b. −2(−9)   c. −12 ÷ 3

   d. −40 ÷ (−8)   e. −2(3)(−4)   f. (−1)(−2)(−3)(−4)

   g. −10(−0.5)   h. 100(−0.4)   i. −5.2(−6.1) if 52 • 61 = 3172

   j. −4(0)   k. 0 ÷ 4   l. 4 ÷ 0

Exponents

11. Expand each exponential expression in a-f. The first two are shown for you.

    a. $(-4)^2 = (-4)(-4) =$ b. $-4^2 = -4 \cdot 4 =$

    c. $(-2)^3$ d. -2^3
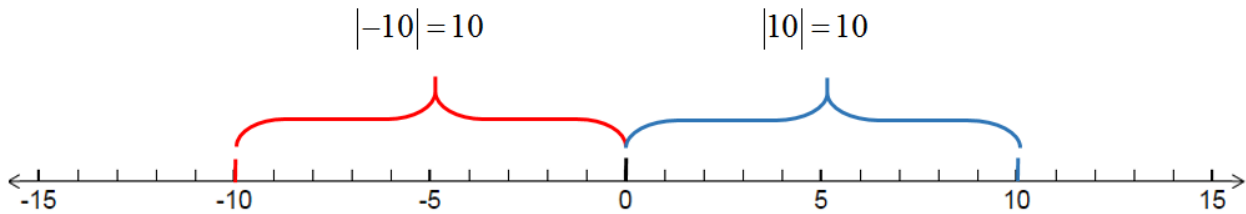
    e. $(-5)^4$ f. -5^4

    g. $(-1)^{804}$ h. $(-1)^{805}$

12. Write what you know or have learned about even and odd exponents.

Section 1.3: Absolute Value and Square Roots

The <u>absolute value</u> of a number is its distance from 0 on the number line. Distance is always _____

$$|-10|=10 \qquad |10|=10$$

13. a. $|-6|$ b. $-|-1\ 6|$ c. $|-11-6|$ d. $-2|11-20|$

<u>Square Root Facts</u>   <u>Square Roots of Fractions</u>

14. a. $\sqrt{81}$ b. $-\sqrt{100}$

                                                15. a. $-\sqrt{\dfrac{144}{49}}$ b. $\sqrt{\dfrac{1}{36}}$

<u>Square Roots of Negative Numbers</u>

16. a. $\sqrt{-36}$ b. $-\sqrt{-\dfrac{81}{100}}$

<u>Finding Square Roots on the Calculator</u>

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

    a. $\sqrt{10}$ b. $-\sqrt{80}$ c. $\sqrt{-72}$

18. 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 and I will help you.

More Practice.

19. Write an expression with all the operations on a single line and simplify it. Write your answer in a complete sentence.

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?

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 involve subtraction to find the difference between the two elevations.

20. Complete each operation.

   a. $3+(-8)$

   b. $3-8$

   c. $3-(-8)$

   d. $-5-15$

   e. $-9-(-11)$

   f. $18+(-6)$

   g. $-4(-9)$

   h. $-72 \div 9$

   i. $4(-10)$

21. Simplify each exponential expression.

   a. 5^2

   b. -5^2

   c. $(-5)^2$

   d. -1^{304}

   e. $(-1)^{92}$

   f. -2^6

22. Simplify the expressions with absolute value and square roots.

   a. $|10|$

   b. $|-25|$

   c. $-|-16|$

   d. $|-6-8|$

   e. $-|8-10|$

   f. $4|1-12|$

   g. $\sqrt{0}$

   h. $\sqrt{1}$

   i. $\sqrt{-1}$

   j. $\sqrt{100}-\sqrt{64}$

   k. $-\sqrt{\dfrac{144}{25}}$

   l. $\sqrt{-\dfrac{4}{9}}$