

**MAT 0012 Basic Algebra I**

**KEY CONCEPTS REVIEW**

**CHAPTER 2: SECTIONS 2.1 – 2.3**

**TO RECEIVE CREDIT, DO ALL PROBLEMS, MAKE CORRECTIONS, AND SHOW ALL WORK.**

1) **Represent each quantity by an integer.**

- a) The team gave up 20 points.
- b) The temperature was  $11^{\circ}$  above 0.

**Graph the integers on the number line.**

2) -4, -2, 0, 3



3) **Insert < or > to make the statement true.**

- a)  $-18$  \_\_\_\_\_  $-22$
- b)  $-15$  \_\_\_\_\_  $-12$

4) Which number lies further from  $-7$  on the number line?

- A)  $-15$                       B)  $2$

5) **Simplify each expression.**

- a)  $|-10|$
- b)  $|0|$
- c)  $|18|$

6) **Complete the table below.**

Number	Absolute Value of Number	Opposite of Number
17		
-42		

7) **Simplify each expression.**

- a)  $-|-32|$
- b)  $-(-24)$

8) **Insert <, >, or = between the numbers to make a true statement.**

- a)  $|-25|$  \_\_\_\_\_  $-(-25)$
- b)  $-|-21|$  \_\_\_\_\_  $-|-17|$
- c)  $-(-36)$  \_\_\_\_\_  $-(-27)$

**Write the integers in order from smallest to largest.**

9)  $-(-5), 2^3, -14, -|-7|, |-15|$

10) Determine whether each statement is true or false.

- a) To find the opposite of a negative number, make the number positive.
- b) If  $x > y$ , then  $x$  must be a positive number.
- c) To find the absolute value of a number, change the sign of the number.
- d) The number  $-x$  is always a negative number.

11) When you add two numbers with opposite signs, how do you determine the sign of their sum? Explain.

12) Which number was added to 17 to get a sum of  $-5$ ?

- A)  $-22$                       B)  $12$

**Add.**

13)  $-27 + 52$

14)  $35 + (-89)$

15)  $-26 + (-48)$

**Subtract.**

16)  $15 - 24$

17)  $-14 - (-9)$

18)  $-16 - (-16)$

19)  $-11 - 28$

**Add or subtract as indicated.**

20)  $12 + (-16) + 9 + (-7)$

21)  $6 + (-13) - (-11) + 7$

22)  $-18 + 5 - (-10) - 9 - (-4)$

A) 8                      B) -18

C) -10                    D) -8

23) Find the sum of  $-7$ ,  $5$ ,  $3$ , and  $-4$ .24) Subtract 25 from  $-12$ .

A)  $-13$                       B)  $13$

C)  $-37$                       D)  $37$

25) Find the difference of  $-31$  and  $-16$ .

A)  $15$                       B)  $-15$

C)  $47$                       D)  $-47$

**Solve each problem.**

26) A bike race starts at an elevation of 840 feet and passes through 5 stages where the elevation changes by  $-574$  feet, 560 feet,  $-485$  feet,  $-114$  feet, and 413 feet. At what elevation does the race end?

A) 2986 feet              B) 640 feet

C)  $-2986$  feet            D) 1153 feet

27) The temperature at 4 a.m. was  $-4^{\circ}$ . If the temperature dropped  $5^{\circ}$  by 5 a.m., rose  $7^{\circ}$  by 6 a.m., and then dropped  $3^{\circ}$  by 7 a.m., what was the temperature at 7 a.m.?

**Translate each phrase to an algebraic expression. Use  $x$  to represent the unknown number.**28) The sum of  $-14$  and a number29) Subtract  $-19$  from a number

A)  $x + (-19)$               B)  $-19 - x$

C)  $x - (-19)$               D)  $-19 + x$

30) The difference of  $-33$  and a number31) Evaluate  $x - y$  for  $x = -17$  and  $y = -5$ .

A)  $-22$                       B)  $22$

C)  $12$                       D)  $-12$

32) **Determine whether each statement is true or false.**

a)  $|-8 - 2| = 8 - 2$

b)  $|-11| - |-5| = 6$