

Name _____

8th Grade Teacher _____

Watertown Public Schools

Linear Algebra Skills Review Packet



This packet contains topics that you are expected to know prior to entering Linear Algebra. You have learned these skills over the past few years. These examples focus on both mathematical skills and problem solving. This packet should be completed independently. Upon your completion, your parent/guardian needs to sign the packet.

If you are having a difficult time adding, subtracting, and multiplying numbers, we suggest you study this over the summer. For example, flashcards can be used to help you with basic facts. Also, you can do a Google search for more practice problems.

There are links to instructional videos from Khan Academy to help you remember some topics.

Due Date: First Day of class

If you have any questions regarding this packet, please email your Linear Algebra teacher listed on your schedule.

Please show your work in the packet. You will be assessed on this material at the beginning of the school year. Good Luck!

Parent/Guardian Signature: _____ Date _____

Adding and Subtracting Positive and Negative Numbers

DO NOT USE A CALCULATOR FOR THIS SECTION!!

1.) $4 + 6$

2.) $-4 + 6$

3.) $4 - 6$

4.) $-6 - 8$

5.) $8 - 6$

6.) $-9 + -5$

7.) $9 - 8$

8.) $-6 + 8$

9.) $7 + -8$

10.) $-2 + 4$

11.) $-4 - 7$

12.) $-12 + 4$

13.) $8 + (-5)$

14.) $-5 + (-4)$

15.) $14 + (-4)$

16.) $6 - 8 =$

17.) $13 + (-25)$

18.) $(-4) + (-3)$

19.) $15 + (-3) =$

20.) $-4 + 4 =$

21.) $-10 + (-10)$

22.) $14 - (-5)$

23.) $-15 - (-7)$

24.) $14 - 6$

Multiplying and Dividing Positive and Negative Numbers

DO NOT USE A CALCULATOR FOR THIS SECTION!!

1.) $5 \cdot 8$

2.) $6 \cdot 7$

3.) $-8 \cdot 2$

4.) $6 \cdot -3$

5.) $-8 \cdot -3$

6.) $-\frac{12}{4}$

7.) $\frac{2}{4}$

8.) $\frac{4}{-2}$

9.) $\frac{21}{7}$

10.) $(3)(4)$

11.) $(-2)(7)$

12.) $(-1)(3)$

13.) $(-5)(3)$

14.) $(4)(-2)(-2)$

15.) $(-6)(-3)$

16.) $(-7)(-2)$

17.) $(3)(-4)(0)$

18.) $(-2)(-5)(-3)$

19.) $(-4) \div (-2)$

20.) $(8) \div (-2)$

21.) $(-24) \div (3)$

22.) $\frac{35}{-7}$

23.) $\frac{-6}{-9}$

24.) $\frac{-14}{7}$

Order of Operations

Online Tutorial: <https://www.khanacademy.org/math/cc-seventh-grade-math/cc-7th-negative-numbers-multiply-and-divide/cc-7th-order-of-operations/v/introduction-to-order-of-operations>

- Example: Order of Operations - PEMDAS

- $3^2(4 \bullet 6 \div 12) + 7$

- $3^2(24 \div 12) + 7$

- $3^2(2) + 7$

- $9(2) + 7$

- $18 + 7$

- 25

1.) $(4 \bullet -7) + 6 \bullet 4 - 3$

2.) $\frac{2+6\bullet 3}{2(2+8)-5\bullet 3}$

3.) $(4 + 4 - 6)^3 - 18 \div 6 - 4$

4.) $4 + (-2 + 3)^2 - 5$

5.) $-3(4 + 2 - 5)^2 + 18 \div 2$

6.) $\frac{9(-8 + 5)}{5 - 8(3 - 2)}$

7.) $\frac{5(16 - 5) - 1}{4^2 - 7}$

8.) $(8^2 - 2^5) \div (24 \div 6) + 3^2$

Multiple Choice

DO NOT USE A CALCULATOR FOR THIS SECTION!!

Simplify the following expressions

1) $5 - 3 * 7 + 4 \div 2$

- a. 9
- b. -14
- c. 16
- d. 20

2.) $|9 - (-5) + 8| - 2$

- a. -20
- b. -24
- c. 20
- d. 22

3.) $-|-4| + 5$

- a. 9
- b. -1
- c. 1
- d. 20

4.) $20 + 12 - 7$

- a. 35
- b. -25
- c. 15
- d. 25

5.) $-5 + 1 - 13$

- a. -17
- b. -7
- c. 7
- d. 9

6.) $(2)(-4)(-5)(-1)$

- a. 40
- b. -40
- c. -8
- d. -41

7.) $\frac{3}{4} + \frac{4}{5}$

- a. $\frac{7}{9}$
- b. $\frac{3}{5}$
- c. $\frac{31}{20}$
- d. $\frac{4}{3}$

8.) $-\frac{3}{4} * \frac{2}{7}$

- a. $\frac{3}{14}$
- b. $-\frac{3}{14}$
- c. $\frac{21}{8}$
- d. $-\frac{21}{8}$

9.) $-\frac{1}{3} \div \frac{3}{5}$

- a. $-\frac{1}{5}$
- b. $-\frac{5}{6}$
- c. $-\frac{5}{9}$
- d. -5

10.) $-4 + 8$

- a. -4
- b. 4
- c. -12
- d. 12

Distributing

DO NOT USE A CALCULATOR FOR THIS SECTION!!

Online Tutorial:

Example: $4(x + 6) = 4x + 24$

1.) $4(x + 3)$

2.) $6(2+x)$

3.) $5(4x + 3)$

4.) $7(x + 8)$

5.) $12(2x + 5)$

6.) $5(x - 8)$

7.) $5(2x - 4y)$

8.) $-3(x + 7)$

9.) $-9(b + 2)$

10.) $x(-4 + y)$

Evaluating Expressions

DO NOT USE A CALCULATOR FOR THIS SECTION!!

Online Tutorial: <https://www.khanacademy.org/math/algebra-basics/core-algebra-expressions/core-algebra-variables-and-expressions/v/expressions-with-two-variables>

Example: Evaluate $15x$ when $x = 4$:

$$15(4) = 60$$

1.) Evaluate $w - 8$ when $w = 20$:

2.) Evaluate $-6b - 4b + 6$ when $b = 7$

3.) Evaluate $4(v + 7) - 10$ when $v = 2$

4.) Evaluate $\frac{5(t+8)}{2-t+5}$ when $t = 2$

5.) Evaluate $20r + 6y - 15 - r^2$ when $r = 3$ and $y = 2$

6.) Evaluate $20 + 3a - 2(5 - a)$ when $a = 4$

7.) Evaluate $12 - 7w + 8(4 - y) + w - y$ when $w = 5$ and $y = 2$

Like Terms

Online Tutorial: <https://www.khanacademy.org/math/algebra/introduction-to-algebra/manipulating-expressions/v/combining-like-terms-1>

and <https://www.khanacademy.org/math/algebra/introduction-to-algebra/manipulating-expressions/v/combining-like-terms-3>

and <https://www.khanacademy.org/math/algebra/introduction-to-algebra/manipulating-expressions/v/combining-like-terms-and-the-distributive-property>

Example: $4g + -6g = -2g$

1.) You try: $3x + 2k - 4x + 7k$

2.) $y + 4 - 3x + 5 - 6y$

3.) $4x + 7y - 2x + 7y + x$

4.) $3x^3 + 2x - 4x^2 + 5x^3 + 7x$

Identifying Parts of Algebraic Expressions

Online Tutorial: <https://www.khanacademy.org/math/cc-sixth-grade-math/cc-6th-expressions-and-variables/cc-6th-parts-of-expressions/v/expression-terms-factors-and-coefficients>

Consider the following algebraic expressions:

$$4x - 5v + 7x - 6 + 4x$$

Number of terms: _____

List coefficient(s): _____

List constant(s): _____

Circle the like terms

Simplify:

$$6x + 2y - 5y + 3x + 11 - 4x$$

Number of terms: _____

List coefficient(s): _____

List constant(s): _____

Circle/Underline the like terms

Simplify:

Solving 1-step and 2-step equations
DO NOT USE A CALCULATOR FOR THIS SECTION!!

Online Tutorial:

$$\begin{array}{r} \text{Example 1: } x + 6 = 7 \\ -6 \quad | \quad -6 \\ \hline x = 1 \end{array}$$

$$\begin{array}{r} \text{Example 2: } 3x - 8 = 4 \\ +8 \quad | \quad +8 \\ \hline 3x = 12 \\ \frac{3x}{3} = \frac{12}{3} \\ \hline x = 4 \end{array}$$

1.) $x + 6 = 9$

2.) $8x = 24$

3.) $x - 9 = 10$

4.) $\frac{x}{3} = 4$

5.) $5x + 3 = 23$

6.) $-1 = \frac{x}{6}$

7.) $4 = 3x - 14$

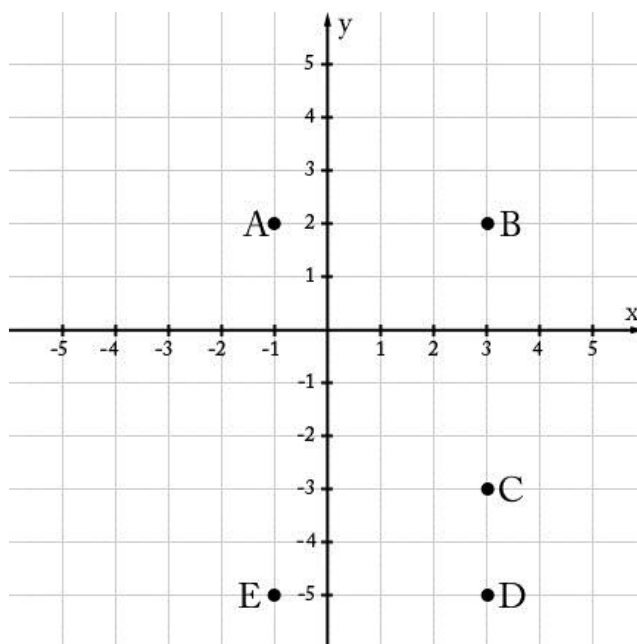
8.) $13 = \frac{x}{3} - 4$

Plotting Points on the Coordinate Plane

Online Tutorial:

Example: Plot and label the following points:

$A: (-1, 2)$ $B: (3, 2)$ $C: (3, -3)$ $D: (3, -5)$ $E: (-1, -5)$



Plot and label the following points on the graph provided:

$A: (1, 5)$

$B: (-5, 6)$

$C: (-1, 0)$

$D: (3, -4)$

$E: (0, 3)$

$F: (-2, -7)$

$G: (0, -3)$

$H: (3, 0)$

