

# Monroe Township Middle School Monroe Township, New Jersey

## 2026 Middle School ALGEBRA I \*PREPARATION PACKET\*



Blaise Pascal

Middle School Algebra I is a fast-paced, rigorous course that will provide you with the fundamental tools of algebraic understanding that will support you in all future advanced mathematics courses. Since you will be taking Middle School Algebra I in place of our Grade 7 or Grade 8 program, the *Monroe Township Middle School Algebra I PREPARATION PACKET* contains review material of the concepts, skills, and procedures that should be mastered **BEFORE** entering Algebra I in the fall. Essentially, this packet provides an overview of the pre-algebra topics.

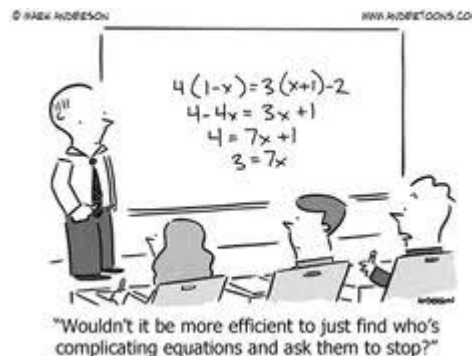
Below are some online resources that you might find useful for extra review:

- <http://www.khanacademy.org/>
- <http://www.studyisland.com/web/index/>
- <http://www.ixl.com/math/>

This practice problem packet is the only formal review of the concepts, procedures, and skills that you will have before beginning your Middle School Algebra I course. Your teacher will expect you to have mastered all topics included here.

This collection of problems will identify those concepts that you have mastered as well as those you will need to practice and review. You are expected to seek extra help immediately on those concepts with which you have not demonstrated proficiency. Be resourceful – use the online resources! You may need to reconsider your placement in the course if you are unable to demonstrate proficiency in these pre-algebra concepts – your Algebra I teacher will be introducing new material immediately in September.

**You will be responsible for handing in the completed packet with all work shown THE FIRST DAY OF SCHOOL.** All problems should be completed **without** the use of a calculator. The problems here are very representative of the types of items you will need to have mastered BEFORE Algebra I... so we strongly encourage that you include it in your summer festivities! Good luck and enjoy! 😊



Evaluate the expression for the given value(s) of the variable(s): **\*\*SHOW WORK!!!\*\***

1.  $(x - y)^2$  when  $x = -7$  and  $y = -3$

ANSWER: \_\_\_\_\_

2.  $a + b^3$  when  $a = 2.4$  and  $b = -4$

ANSWER: \_\_\_\_\_

3.  $2\left(d - \frac{1}{5}\right)^2$  when  $d = \frac{18}{45}$

ANSWER: \_\_\_\_\_

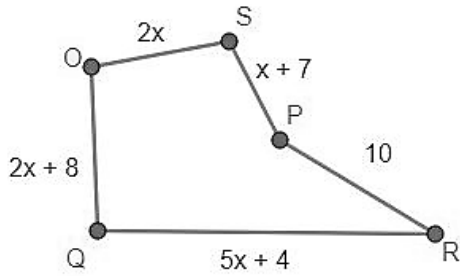
4.  $10 - (-x)^3 + y^2$  when  $x = -2$  and  $y = -1$

ANSWER: \_\_\_\_\_

5.  $(a - b)^4$  when  $a = 1$  and  $b = -\frac{1}{3}$

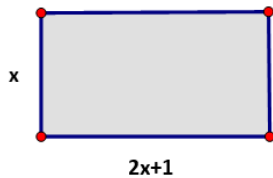
ANSWER: \_\_\_\_\_

6. The perimeter of the figure below is equal to 169 cm. What is the length of the longest side of the polygon? **\*\*SHOW WORK!!!\*\***



LONGEST SIDE: \_\_\_\_\_

7. Use the image below to answer the following questions.



- A) The perimeter of a rectangle is the sum of the lengths of its four sides. Write an expression in simplest form for the perimeter of the rectangle and then evaluate when  $x = \frac{1}{4}$  foot.

PERIMETER EXPRESSION: \_\_\_\_\_ When  $x = \frac{1}{4}$  foot \_\_\_\_\_

- B) The area of a rectangle is the product of its length and width. Write an expression for the area of the rectangle in simplest form and then evaluate when  $x = \frac{1}{2}$  foot. **\*\*SHOW WORK!!!\*\***

AREA EXPRESSION: \_\_\_\_\_ When  $x = \frac{1}{2}$  foot: \_\_\_\_\_

Write the verbal phrase as an equation or an inequality. Use "x" for the variable.

8. "Ten less than the quotient of six and a number is twenty-three."

\_\_\_\_\_

9. "The product of one third and a number is less than or equal to negative ninety-eight."

\_\_\_\_\_

10. "Three and two-fifths decreased by a number is thirty."

\_\_\_\_\_

**\*\*SHOW WORK!!!\*\***

11. Solve for x:  $9 - 9x \geq 27$

ANSWER: \_\_\_\_\_

For #12-#13: As a salesperson, you are paid \$80 per week plus \$3 per sale. This week you want your pay to be at least \$120. Be sure to define your variable.

12. Write the inequality and solve the inequality for the number of sales you need to make. Make sure your answer is in the context of the problem.



13. Graph your solution to the inequality from #12 on a number line.

14. For  $n(34 - n) - 2n < -111 + 5n$ , check whether  $n = -3$  is a solution.

SOLUTION? (Yes or No)\_\_\_\_\_

15. Write the numbers in decreasing order:

$$6, -\frac{4}{15}, -\frac{34}{9}, -4.1, -3.5, -1$$

DECREASING ORDER: \_\_\_\_\_

Simplify each expression: **\*\*SHOW WORK!!!\*\***

16.  $\frac{2}{3} + 6 - \frac{3}{24}$

ANSWER: \_\_\_\_\_

17.  $-7 - (-2.99)$

ANSWER: \_\_\_\_\_

18.  $-12 - |-4.25|$

ANSWER: \_\_\_\_\_

19.  $(-5)(-5)(-3)$

ANSWER: \_\_\_\_\_

20.  $-4(x - 9)$

ANSWER: \_\_\_\_\_

21.  $5x - 3(-1 - x)$

ANSWER: \_\_\_\_\_

22.  $-4(-2x + 1)$

ANSWER: \_\_\_\_\_

23.  $\frac{-20}{\frac{3}{8}}$

ANSWER: \_\_\_\_\_

24. Evaluate  $-2x^2$  for  $x = -4$

ANSWER: \_\_\_\_\_

25.  $\frac{5}{16} + \frac{3}{4}$

ANSWER: \_\_\_\_\_

26.  $1\frac{5}{8} - 5\frac{3}{32}$

ANSWER: \_\_\_\_\_

27.  $1\frac{4}{5} \cdot 20$

ANSWER: \_\_\_\_\_

28.  $3\frac{1}{2} \div -\frac{3}{4}$

ANSWER: \_\_\_\_\_

29.  $10 - (50 \div (-2 \cdot 25) + 7) \cdot 2^2$

ANSWER: \_\_\_\_\_

30. Fill in the missing fraction/decimal/percent conversions below.

FRACTION	DECIMAL	PERCENT
	0.12	
$\frac{7}{8}$		
		125%

Solve each equation. \*\*\*SHOW WORK!!!\*\*\*

31.  $x + 2\frac{4}{5} = 9\frac{7}{10}$

x = \_\_\_\_\_

32.  $\frac{4y}{5} = -19$

y = \_\_\_\_\_

33.  $8a = 17$

$a = \underline{\hspace{2cm}}$

34.  $-\frac{3}{4}x = 16$

$x = \underline{\hspace{2cm}}$

35.  $5x - 7 = 14 - 2x$

$x = \underline{\hspace{2cm}}$

36.  $15x + 3x - 20 = -38$

$x = \underline{\hspace{2cm}}$

37.  $\frac{5}{6}(30 - 24b) = 8(2b + 4)$

$b = \underline{\hspace{2cm}}$

38.  $\frac{1}{2}(x - 4) = -(3x + 1)$

$x = \underline{\hspace{2cm}}$

39.  $3.5x + 0.9 = 8.8 - 1.5x$

$x = \underline{\hspace{2cm}}$

40. Felicia is planning a white water rafting trip. She compares two companies to find the better buy.



- a. Sinking Rivers charges two hundred dollars for insurance and fifteen dollars an hour to rent the raft. Write an equation to represent Sinking Rivers' total cost (c) for any number of hours (h).
  
- b. Floating Down the Stream charges thirty dollars an hour and one hundred ten dollars for insurance. Write an equation to represent Floating Down the Stream's total cost (c) for any number of hours (h).
  
- c. Determine which company will be cheaper for a trip that lasts 3.5 hours.

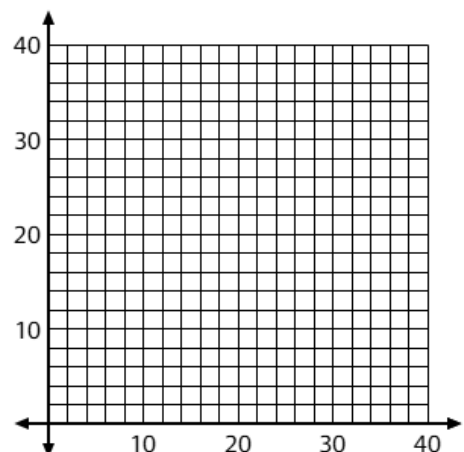
41. The table shows the rate at which water is being pumped into a swimming pool. Does the table represent a proportional relationship? If so, what is the equation?



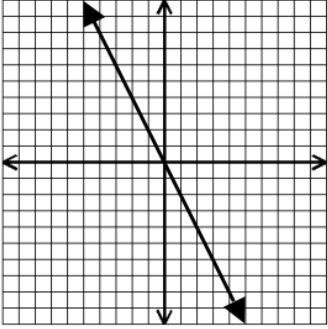
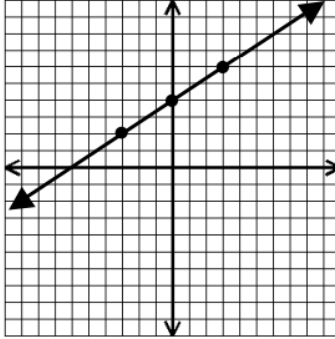
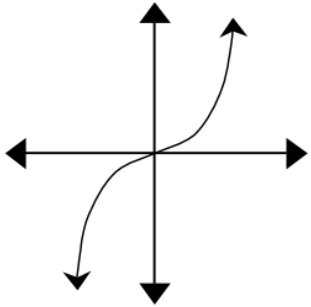
<b>Time (min)</b>	2	5	7	12
<b>Amount (gal)</b>	36	90	126	216

42. Graph the following data set. Determine if the data is proportional. Be sure to label your axes.

<b>Blue</b>	4	8	12	16	20
<b>Green</b>	7	14	21	28	35



43. Determine which of the following graphs represent proportional relationships. Circle the appropriate response.

		
Proportional    non-proportional	Proportional    non-proportional	Proportional    non-proportional

44. Quinn has grades of 92 and 73 on her first two tests. What score must she earn on her third test to have an average of at least 85? Create an algebraic inequality and solve. Be sure to define your variables.



45. Paul collects 5 Pokémon on Monday, 18 Pokémon cards on Tuesday and 14 Pokémon cards on Thursday. If he collects more Pokémon cards on Friday, how many cards would he need to get an average of at least 12 Pokémon cards for each day he collected cards.

