Monroe Township Middle School
Monroe Township, New Jersey

2025 Middle School ALGEBRA I *PREPARATION PACKET*

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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 taking Middle School Algebra I in place of our Connected Mathematics 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 project 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 = 2 and y = -5   ANSWER:_____

2. $a+b^3$ when a = 2.4 and b = 4   ANSWER:_____

3. $2\left(d-\dfrac{1}{5}\right)^2$ when $d = \dfrac{18}{45}$ ANSWER:_____
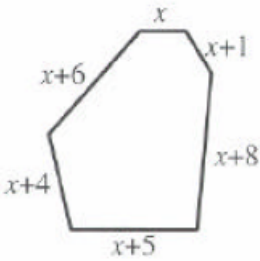
4. $10-(-x)^3 + y^2$ when x = -2 and y = -1   ANSWER:_____

5. $(a-b)^4$ when $a = 1$ and $b = -\dfrac{1}{3}$ ANSWER:_____

6. The perimeter of the figure below is equal to 168 cm. What is the length of the longest side of the polygon?   **SHOW WORK!!!**
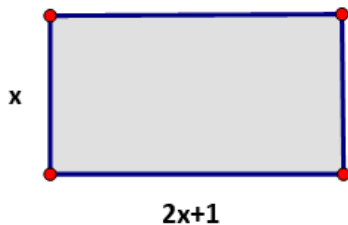

LONGEST SIDE: _____

7. 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 = ¼ 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 = ½ foot.
   SHOW WORK!!

PERIMETER EXPRESSION: _____   When x = ¼ foot   _____

AREA EXPRESSION: _____   When x = ½ foot: _____

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

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

_____

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

_____

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

_____

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.

12. Write the inequality and solve the inequality for the number of sales you need to make.

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

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

SOLUTION? (Yes or No)_____

15. Write the numbers in increasing order:

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

INCREASING ORDER:_____

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

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

17. $-8 - (-2.99)$ ANSWER:_____

18. $-12 - |-4.5|$ ANSWER:_____

19. $(-2)(-5)(-3)$ ANSWER:_____

20. $4(x - 9)$ ANSWER:_____

21. $5x - 3(1 - x)$ ANSWER:_____

22. $-4(-2x + 1)$ ANSWER:_____

23. $\dfrac{-20}{\frac{3}{8}}$ ANSWER:_____

24. Evaluate $-2x^2$ for $x = -4$ ANSWER:_____

25. $\dfrac{5}{16} + \dfrac{3}{4}$ ANSWER:_____

26. $5\dfrac{3}{32} - 1\dfrac{5}{8}$ ANSWER:_____

27. $1\dfrac{4}{5} \bullet 20$ ANSWER:_____

28. $\dfrac{1}{2} \div \dfrac{3}{4}$ ANSWER:_____

29. $10 - (50 \div (-2 \bullet 25) + 7) \bullet 2^2$ ANSWER:_____

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

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

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

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

32. $\dfrac{y}{5} = -19$ y = _____

33. $8a = 17$ a = _____

34. $\dfrac{3}{4}x = 16$ x = _____

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

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

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

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

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

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).

Taylor is participating in a new fitness program in which he is required to report his weight at the end of each week. The table below shows some of his results.

Number of Weeks in the Fitness Program	Weight (in pounds)
2	181
5	176
9	167
12	160
16	153
19	148

41. Graph the data from the table on the grid provided. Use a straight edge to sketch the trend line. Please label your axes properly.
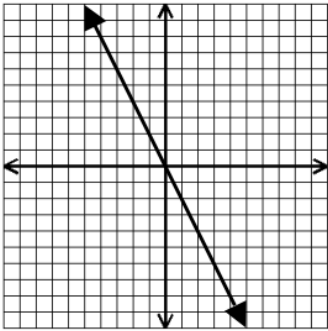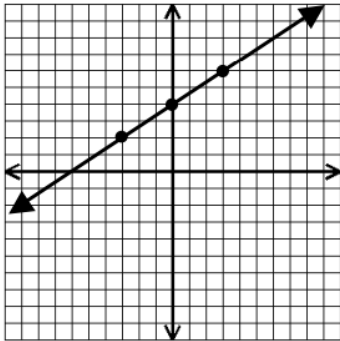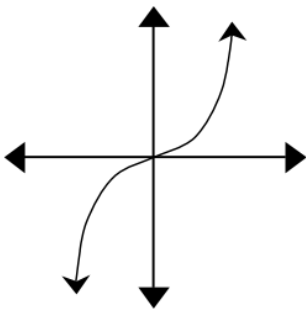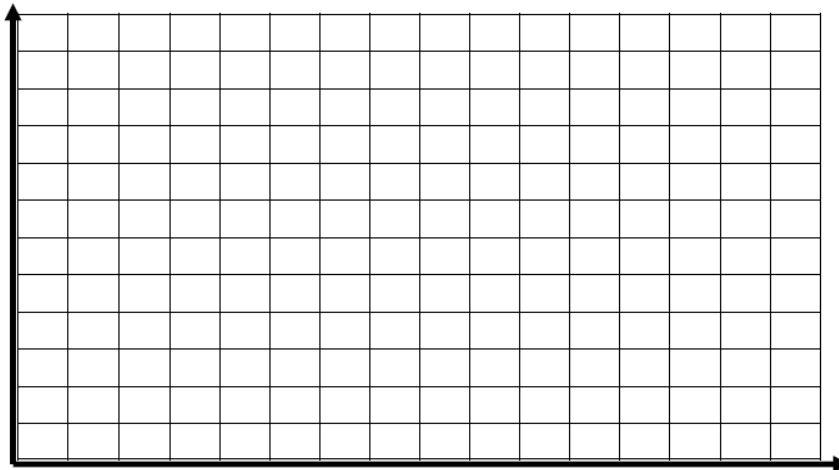
42. Explain the relationship between the number of weeks in the Fitness program and his weight in pounds.

43. Using the information from the graph and table, predict Taylor's starting weight (before he began the program). Show or explain how you arrived at your answer.

44. Using the information from the graph and table, predict Taylor's weight after 24 weeks in the fitness program. Show or explain how you arrived at your answer.

45. 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?

Time (min)	2	5	7	12
Amount (gal)	36	90	126	216

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

Proportional   non-proportional

Proportional   non-proportional

Proportional   non-proportional