Summer Work Packet for MPH Math Classes

Students going into
Algebra II/Trig
Sept. 2019

Name: _____

This packet is designed to help students stay current with their math skills.

Each math class expects a certain level of number sense, algebra sense and graph sense in order to be successful in the course.

These problems need to be completed in the space provided, or a separate sheet of paper, by the first day of class. Be sure to show all work.

Students can expect this packet to be graded, and/or to have a test on this material during the first marking period. If you have any questions, please email Mrs. Reeve at sreeve@mphschool.org.

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You will need a TI-84^{+} calculator for this class.

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Name _____

Solve each equation for the given variable. CHECK your answer.

1. $12x - 1 = 6x + 2$

2. $4(3x - 2) = 12x - 8$

3. $4z = 2(1 + 2z)$

4. $\frac{x+5}{7} = \frac{5}{3}$

5. $\frac{2x-1}{9} = \frac{x-2}{5}$

Graph the following points on graph paper. Draw a line through the points.
Find the slope of the line.
Label the coordinates of the x-intercept and y-intercept.

6. (5, 11) and (3, 7)

7. (–4, 8) and (–3, 4)

Write the equation of the line with the given information.

8. m= ½ and going through the point (0, –3)

9. m= 5 and going through the point (–3, 4)

10. m = ⅔ and going through the point (9, –1)

Graph the lines on graph paper. Find the slope and the y-intercept of each. Find the coordinates of the point of intersection. CHECK the point in both equations.

11. y = 3x – 2 and y = ½x + 3 Intersection point: _____

slope: _____ slope: _____ CHECK:

y-int.:_____ y-int.: _____

RULES FOR SIMPLIFYING RADICALS (square roots)

$a\sqrt{b}\cdot c\sqrt{d} = ac\sqrt{bd}$ $\qquad \frac{\sqrt{a}}{\sqrt{b}} = \sqrt{a/b}$ $\qquad \sqrt{a}\cdot\sqrt{a} = \sqrt{a^2} = |a|$

$a\sqrt{b} + c\sqrt{b} = (a+c)\sqrt{b}$

Remember, proper form for radicals means:

a. No perfect square factor under the radical. For example, $\sqrt{45} = \sqrt{9}\cdot\sqrt{5} = 3\sqrt{5}$

b. No fractions/decimals may be left under the radical. For example, $\sqrt{3/4} = \frac{\sqrt{3}}{\sqrt{4}} = \frac{\sqrt{3}}{2}$

c. No radical may be left in the denominator of a fraction. For example,

$\sqrt{3/7} = \frac{\sqrt{3}}{\sqrt{7}} = \frac{\sqrt{3}}{\sqrt{7}}\cdot\frac{\sqrt{7}}{\sqrt{7}} = \frac{\sqrt{21}}{7}$. Another example, $\frac{15\sqrt{75}}{20\sqrt{21}} = \frac{3\sqrt{25}\sqrt{3}}{4\sqrt{7}\sqrt{3}} = \frac{3\cdot 5}{4\sqrt{7}} = \frac{3\cdot 5\cdot\sqrt{7}}{4\sqrt{7}\sqrt{7}} = \frac{15\sqrt{7}}{28}$.

Simplify each. Leave in best radical form. NO DECIMAL EQUIVALENTS.

12. $\frac{\sqrt{49}}{\sqrt{25}}$

13. $\sqrt{28}$

14. $4\sqrt{75}$

15. $7\sqrt{30} \cdot 2\sqrt{6}$

16. $\frac{3}{\sqrt{13}}$

17. $\frac{2\sqrt{5}}{\sqrt{81}}$

18. $\sqrt{48} + \sqrt{27}$

Use the distributive property to expand the product. Follow the example.
EXAMPLE: $(x + 4)(x – 11) = x^2 – 11x + 4x – 44 = x^2 – 7x – 44$

19. $(x + 1)(x + 4)$

20. $(x – 3)(x – 6)$

21. $(x – 7)(x + 9)$

22. $(x + 5)(x – 4)$

23. $(3x – 1)(3x + 1)$

24. $(2x + 5)(x – 8)$

Factor each into the product of two binomials. Follow the example.
EXAMPLE: $3x^2 + 7x - 6 = (3x - 2)(x + 3)$

25. $x^2 + 4x + 3$

26. $k^2 + 6k + 9$

27. $x^2 - 12x + 36$

28. $t^2 – 25$

29. $x^2 - 10x + 24$

30. $x^2 + 11x + 24$

31. $x^2 + 10x - 24$

Factor each and solve for x. Follow the example.

EXAMPLE: $x^2 + 5x - 6 = 0$

$(x + 6)(x - 1) = 0$ **Factored and equal to 0**

$(x + 6) = 0$ **OR** $(x - 1) = 0$ **One of the factors must equal 0**

$x = -6$ **OR** $x = 1$ **Solve for x**

32. $x^2 + 3x - 18 = 0$

33. $x^2 - 7x + 10 = 0$

34. $x^2 - 25 = 0$

35. $x^2 + 25x + 24 = 0$

36. $2x^2 - x - 10 = 0$

37. $x^2 + 25 = 10x$

Simplify the following polynomials by combining like terms:

38. $2(x - 5) + (5x + 2) + (8x + 1)$

39. $(x - 10) + 4(x + 7) - 2(x + 3)$

40. $(3y^2 - 8) + (5y + 9) - (y^2 + 6y - 4)$

41. $(9x^3 + 3x - 13) - (6x^2 - 5x) + (2x^3 - x^2 - 8x + 4)$

Draw and label a picture, then write an equation to solve the problems.

42. Two angles are supplementary. If the second angle is 30˚ more than twice the first angle, find the measure of each angle.

43. The lengths of the sides of parallelogram ABCD are AB = 2x + 5, BC = 5x – 4 and CD = 6x – 7. Find the value of x. What type of special parallelogram is ABCD?

44. The legs of a right triangle measure 16 and 30. Find the length of the hypotenuse.

45. In $\Delta ABC, \angle A = 3x - 20, \angle B = 6x + 15$ *and* $\angle C = x - 5$. Find the measure of the three angles.