

Honors Geometry Summer Packet 2019

(Must be completed by September 6th)

Remember to show your work where necessary for each question. Partial Credit will be given to incorrect responses only if work is shown.

Use the reference sheet attached to assist in specific problems. If you have any questions, email me ssalas@rpsd.org

Enjoy your summer

- Mr. Salas

Reference Sheet

Use the following formulas in the coordinate plane when given two points (x_1, y_1) and (x_2, y_2) .

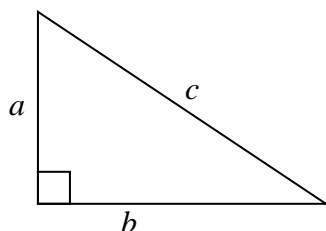
Distance Formula: $d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$

Midpoint Formula: $(x, y) = \left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right)$

Slope Formula: $m = \frac{y_2 - y_1}{x_2 - x_1}$

Pythagorean Theorem for right triangle side lengths.

$$a^2 + b^2 = c^2$$

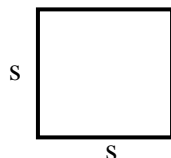


Use the following formula when solving an equation in the form $ax^2 + bx + c$

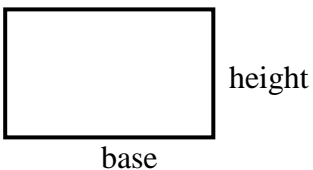
Quadratic Formula: $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

Use the following formulas to find the area of a figure:

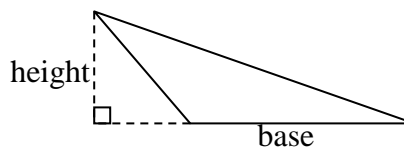
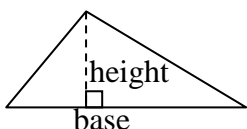
Square: s^2



Rectangle: base \cdot height



Triangle: $\frac{1}{2}$ base \cdot height



ORDER OF OPERATIONS

Evaluate the expression without using a calculator.

1. $6^2 \div 3 - 5 \cdot 7$

2. $6 + 2^3 \div 2 - 9$

SIMPLIFICATION

Simplify by using the distributive property and combining all like terms. Simplify as much as possible.

3. $3m(n - 2m) - 2n(2m - 3n)$

4. $(2a - 5) - (4a + 6) + (7 - 2a)$

5. $\frac{3a^2}{4} + \frac{2ab}{3} + ab - a^2$

6. $-3\left(-\frac{7}{4}a + \frac{1}{6}\right) + \frac{5}{2}\left(3 - \frac{a}{2}\right)$

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

8. $(4x^2 - 3x + 7) + (2x^2 + 4x)$

LAWS OF EXPONENTS

Simplify by using the laws of exponents. Simplify as much as possible.

9. $y^3 \cdot y^4 \cdot y$

10. $(-4a^2x)(-5a^3x^4)$

11. $\frac{-16a^3b^2x^4y}{-48a^4bxy^3}$

12. $(-3x^3y)^2(4x)^3$

13. $\frac{3}{4d} \cdot \frac{(2d)^4}{c^3}$

14. 4^{-2}

14. $\left(-\frac{2}{3}\right)^{-2}$

15. $\left(\frac{a^{-3}}{3b}\right)^4$

16. $y^0(8x^6y^{-3})^{-2}$

WORKING WITH RADICALS

Simplify these radicals. Do not give decimal answers. Leave answers in simplest radical form. Rationalize the denominator when necessary.

18. $\sqrt{144}$

19. $\sqrt{24}$

20. $\sqrt{108}$

21. $\frac{-2}{\sqrt{6}}$

22. $\frac{3\sqrt{3}}{\sqrt{2}}$

23. $4\sqrt{27} + 8\sqrt{48}$

24. $7\sqrt{6} - \sqrt{24}$

BINOMIAL (& more) MULTIPLICATION

Find each product. Simplify result as much as possible.

25. $(x-5)(x-4)$

26. $(4n+3)(3n-4)$

27. $(a-4)(a^2+5a-7)$

28. $(2x+9y)(3x-y)$

29. $(2x-y)^2$

FACTORING

Factor completely by using an appropriate factoring method.

30. $5a^2b^2c - 15abc^2$

31. $x^2 - 7x + 6$

32. $b^2 + 5b - 6$

33. $2r^2 - 3r - 20$

34. $6x^2 - 5x - 6$

35. $y^2 - 25$

36. $16m^2 - 1$

37. $y^3 + 2y^2 - 81y - 162$

SOLVING EQUATIONS

Solve these linear equations. Do not give decimal answers. Leave answers as simplified fractions.

38. $5a + 2a - 6 = 4a - 5$

39. $x + 5 = \frac{1}{3}(6x - 12)$

40. $\frac{8 - 5r}{6} = 3$

41. $\frac{-4a - 1}{-10a} = \frac{3}{8}$

42. $\frac{y + 4}{y - 1} = \frac{4}{3}$

Solve these quadratic equations. Find all possible solutions.

43. $(x - 8)(x - 4) = 0$

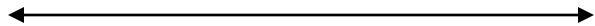
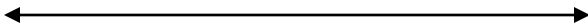
44. $x^2 - 8x - 20 = 0$

NUMBER LINE

Solve and graph the solution on the number line.

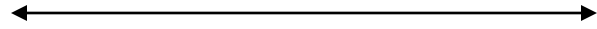
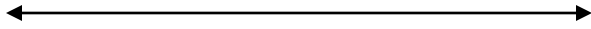
45. $3(5w + 4) < 12w - 11$

46. $-2 \leq 4 - 3a \leq 13$



47. $-5 \leq 2 - h$ or $6h + 5 \geq 71$

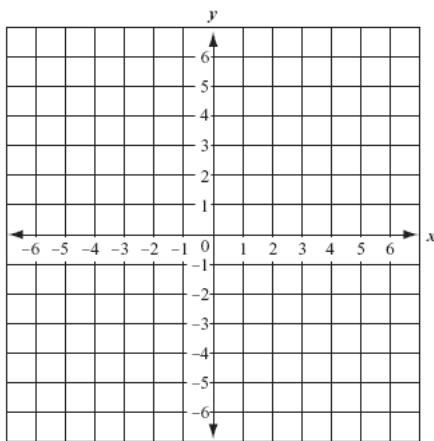
48. $|2d + 8| < 2$



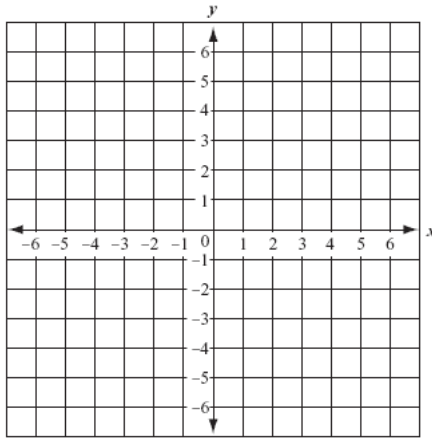
COORDINATE PLANE & GRAPHING

Graph the linear equations.

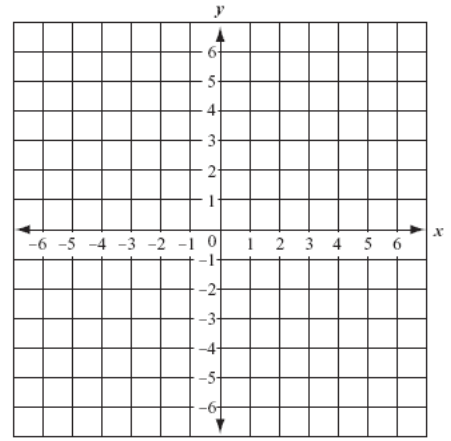
49. $y = -3x + 2$



50. $3x - 2y = 10$



51. $y = 2$



Determine if these lines are parallel, perpendicular, or neither.

52. $y = 2x - 6$ and $3x - 6y = 4$

53. $4y - 10x = 3$ and $5x = 7 + 2y$

54. Write an equation of a line in the form $y = mx + b$ that passes through the points $(-4, -1)$ and $(2, -4)$.

55. Find the slope of a line that passes through the points $(-6, 4)$ and $(3, 5)$.

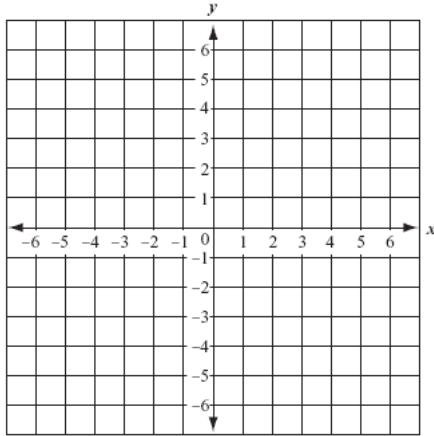
SYSTEMS OF LINEAR EQUATIONS

Solve the system by the indicated method. State the solution as an ordered pair.

56. The graphing method

$$3x - y = -6$$

$$x + y = 2$$



57. The substitution method

$$x = y - 11$$

$$x - 3y = 1$$

58. The elimination method

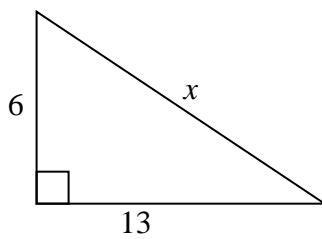
$$6x - 5y = 9$$

$$9x - 7y = 15$$

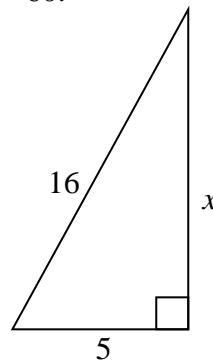
PYTHAGOREAN THEOREM

Use the Pythagorean Theorem to solve for the value of x in each right triangle.

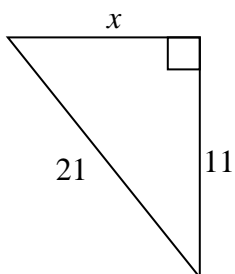
59.



60.



61.



VERBAL EXPRESSIONS

Translate each verbal expression into an algebraic expression or equation and solve.

62. The sum of six less than a number and five more than the same number is 9. Find the number.

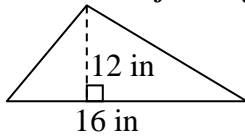
63. The product of the square of a number and 7 is the same as the sum of the cube of 3 and 1. Find the number.

64. 12 decreased by the square of a number is equal to 3. Find the number.

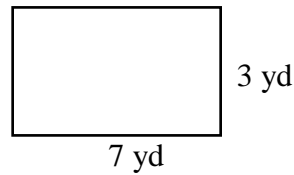
AREA OF A SHAPE

Find the area of each figure. Be sure to use correct units.

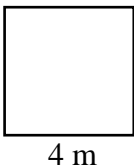
65.



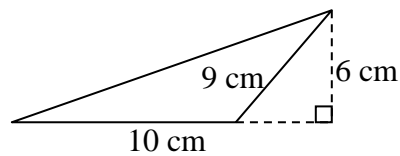
66.



67.



68.



Find the midpoint and distance of the following points.

69. (-4, 6), (3, 2)

70. (0, 0), (10, 8)

COMPLETING THE SQUARE

Complete the square for the two following problems.

71. $x^2 + 7x + 10 = 0$

72. $2x^2 + 4x - 6 = 0$