

For students entering:
GEOMETRY

Name: _____

- ➔ Turn in completed packet on the first day of the school year.
- ➔ All work must be shown in the packet OR on separate paper.
- ➔ This packet will be graded – start off the year with a 100%.
- ➔ Expect a test on this material during the first week of school.

OURAY HIGH SCHOOL

Summer Review Packet

This packet has been designed to provide a review of pre-requisite skills that are essential for student success in mathematics next year. This packet contains review material of the algebraic concepts, skills, and procedures that should be mastered **prior** to entering Geometry in the fall. Students are expected to complete this booklet during the summer and bring it, with work shown, on the first day of school. A test assessing mastery of these skills will be given on the first week of school.

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

Khan Academy: <http://www.khanacademy.org/>

IXL: <http://www.ixl.com/math>

Algebra I Textbook (UCSMP):

<https://sites.google.com/a/bonnyeagle.org/brodiemath/ucsm-algebra/course-materials>

Geometry Textbook Resources (Discovering Geometry):

<http://math.kendallhunt.com/x19356.html>

Algebra II Textbook (Discovering Advanced Algebra):

<http://hsebooks.kendallhunt.com/DAA/ebook/daa.html?userid=48651>

Algebra II Textbook (Larson):

<https://sites.google.com/a/gaston.k12.nc.us/jcsmithweb/home/textbook-pdf>

If you have any questions, feel free to e-mail me at arosenberg@ouray.k12.co.us. I will not be checking my e-mail during certain periods of the summer, but I will definitely check in from time to time and get back to you.

Keep your brain in shape this summer by practicing your math and logic skills. And, brush up on the skills in this packet so that you start of the year feeling confident and strong! You can do it!

Miss Angela Rosenberg

OPERATIONS ON NUMBERS AND EXPRESSIONS

Simplify each expression. **SHOW WORK!!!**

1. $\sqrt{8}$

ANSWER: _____

2. $\sqrt{325}$

ANSWER: _____

3. $\sqrt{3} + \sqrt{12} + \sqrt{20} + \sqrt{80}$

ANSWER: _____

4. $2\sqrt{3}(4 + \sqrt{3})$

ANSWER: _____

5. $(2 - \sqrt{5})^2$

ANSWER: _____

6. $\frac{2}{\sqrt{5}}$

ANSWER: _____

7. $(3\sqrt{2})^2 + (2\sqrt{5})^2$

ANSWER: _____

8. $(x^3)(x^6)$

ANSWER: _____

9. $(-5x^2y^{-3})^{-2}$

ANSWER: _____

10. $\frac{6x^5y^2z^3}{4x^8yz^3}$

ANSWER: _____

Determine the area and perimeter of each figure described:

Include UNITS in your answers 😊

11. RECTANGLE with length $3\frac{3}{5}$ cm and width $4\frac{1}{5}$ cm

AREA: _____

PERIMETER: _____

12. SQUARE with sides of length 9mm

AREA: _____

PERIMETER: _____

Using the given information, determine each answer

13. Area and circumference of a circle with diameter 9 in

AREA: _____

CIRCUMFERENCE: _____

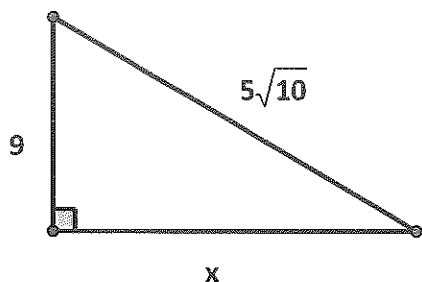
14. Circumference of a circle with area = 36π square centimeters CIRCUMFERENCE: _____

15. The diagonal length of a square with side length 5 mm. DIAGONAL: _____

16. The volume of a cone is given by $V = \frac{1}{3}\pi r^2 h$ where "r" is the radius of the base, "h" is the height, and "V" is the volume. Write an expression for the volume of a cone with a height of 24 units and a radius of $3b$ units. (Leave your answer in terms of pi and "b").

VOLUME: _____

16. Use the Pythagorean Theorem to determine the length of the missing side of the right triangle given below.

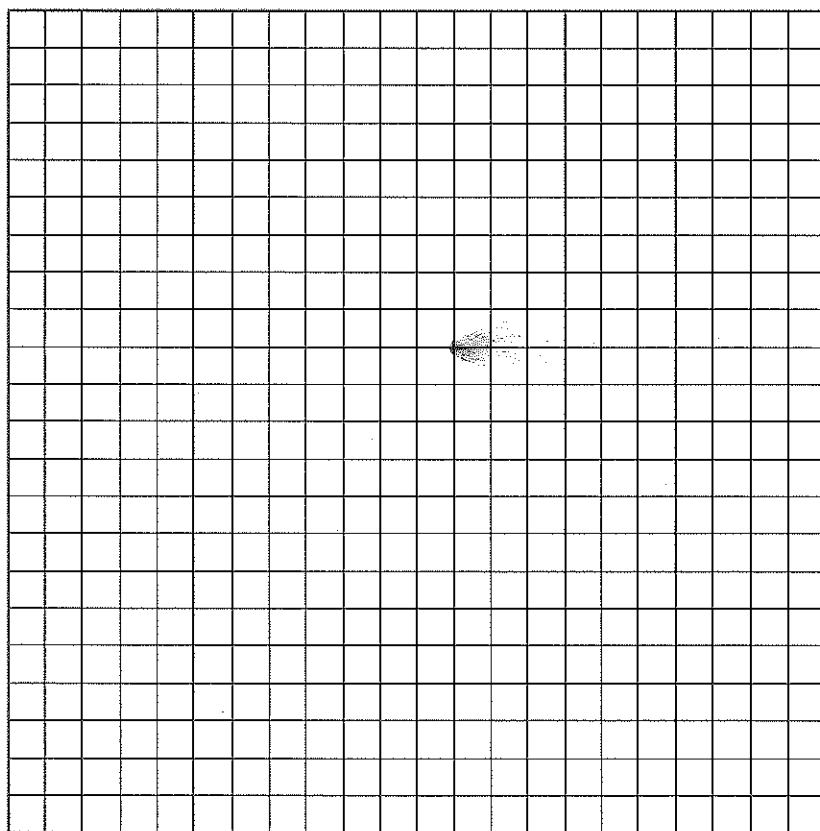


$x = \underline{\hspace{2cm}}$

Use for #17 – 20: Quadrilateral FGHI has vertices $F(-4, -1)$, $G(-2, -5)$, $H(4, -2)$, and $I(2, 2)$.

17. **Graph** the quadrilateral below.

A “rectangle” is a quadrilateral with four right angles and both pairs of opposite sides parallel and congruent to each other. You will determine whether FGHI is a rectangle.



18. Find the **slopes** of all four sides and explain their significance in terms of the definition of rectangle.

Slope $\overline{FI} =$

Slope $\overline{IH} =$

Slope $\overline{GH} =$

Slope $\overline{FG} =$

19. Find ~~ing~~ the **lengths** of all four sides and explain their significance.

$FI =$

$IH =$

$GH =$

$FG =$

20. Do you think FGHI is a rectangle? Explain why or why not.

slope formula:

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

LINEAR RELATIONSHIPS

21. Solve the equation $\frac{1}{3}(27x + 18) = 12 + 6(x - 4)$

x = _____

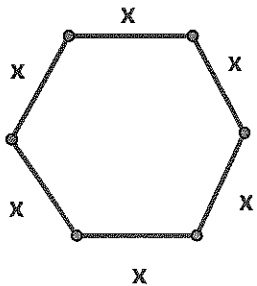
22. The area of a triangle is $A = \frac{1}{2}bh$. Solve the area formula for **b**.

ANSWER: _____

23. Name the x- and y-intercepts for the graph of the equation $3x - 4y = 9$

X-Intercept: _____

Y-Intercept: _____



24. Write an equation for the perimeter of the regular hexagon at left. Does your equation model "direct variation"?

PERIMETER EQUATION: _____

DIRECT VARIATION? (Yes or No)

25. Write the equation of the line that passes through (3, -9) and is *parallel* to $y = -5x + 2$

EQUATION: _____

26. Write the equation of the line that passes through (-4, 7) and is *perpendicular* to $y = -2x + 5$

EQUATION: _____

27. Write the equation of the line that passes through (-2, -8) and (-1, 0) in SLOPE-INTERCEPT FORM.

EQUATION: _____

28. Write the equation of the line that passes through (-3, 2) and (4, -1) in STANDARD FORM.

EQUATION: _____

29. Write the equation of the line that passes through (6, 2) and (8, -4) in POINT-SLOPE FORM.

EQUATION: _____

30. Solve for x: $\frac{x}{3} - \frac{x-2}{5} = 2$

x = _____

31. Solve the inequality and show the steps of your work: $|2x - 5| \leq 10$

32. Solve the system: $8x + 4y = -4$
 $y = 2x + 3$

Show all work!
ALWAYS!

33. Solve the system: $3x - 4y = 8$
 $\frac{9}{2}x - 6y = 12$

34. The total cost of 10 gallons of regular gasoline and 15 gallons of premium gasoline is \$32.75. Premium gasoline costs \$0.20 more per gallon than regular. What is the cost per gallon of each type of gasoline?

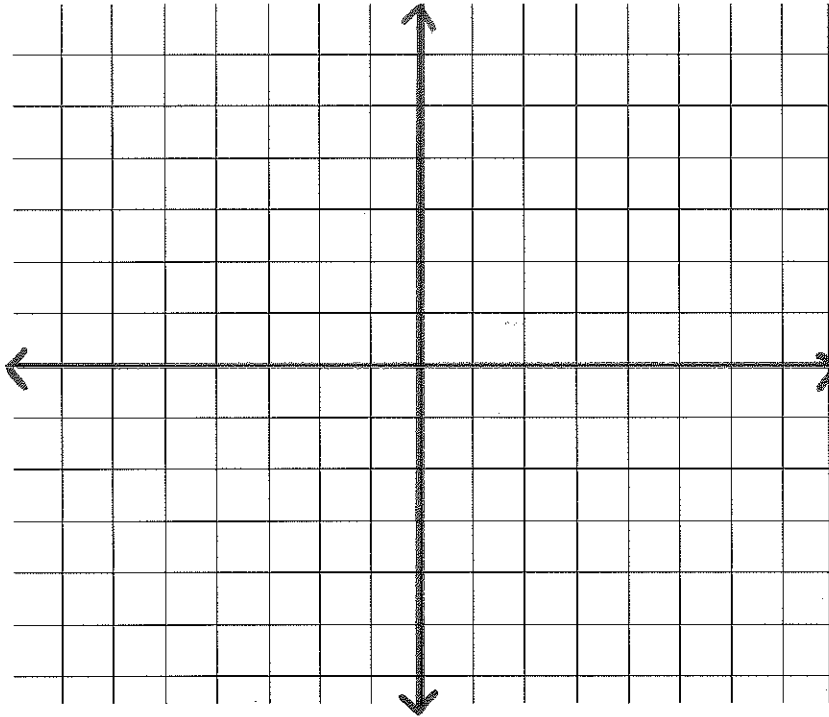
35. Explain how a system of linear equations could have "no solution."

36. Solve: $5 < 4x - 11 < 13$

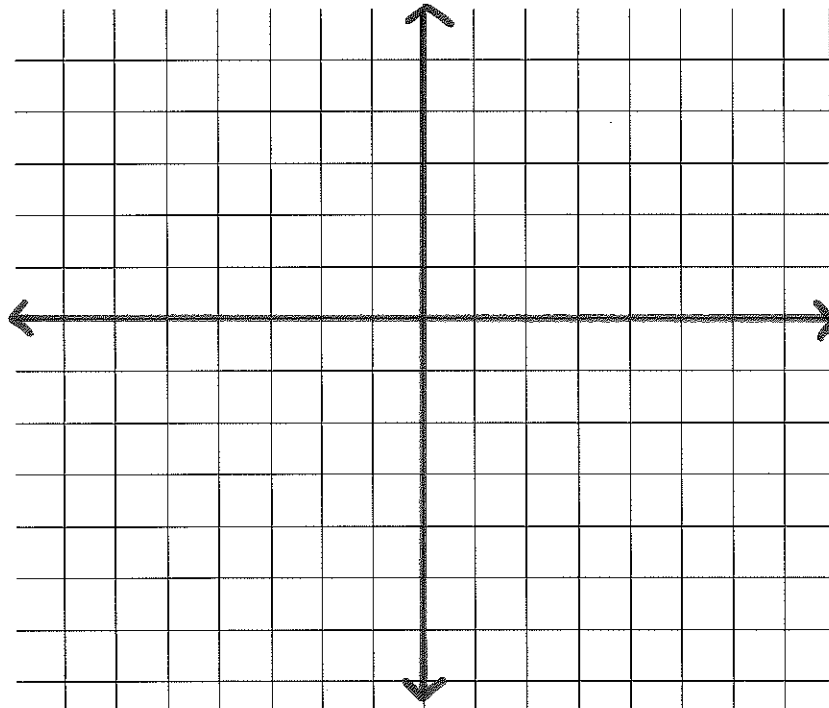
37. Graph the system of linear inequalities:

$$2x + y \geq -4$$

$$x - 2y < 4$$



38. What is the **AREA** of the region described by the system of linear inequalities:
 $x \leq 3$, $y \leq 1$, and $x + y \geq 0$?



NON-LINEAR RELATIONSHIPS

39. The surface area S of a cube is 150 square feet. What is the length (in feet) of each edge of the cube? ($S = 6s^2$)

40. Solve the proportion: $\frac{2\sqrt{3}}{x} = \frac{x}{6\sqrt{3}}$

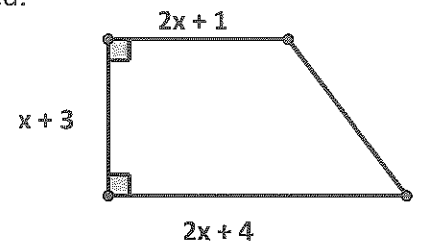
41. What are the x-intercepts of the graph of $y = -x^2 - 6x + 40$?

42. What are the coordinates for the VERTEX of the equation $y = -\frac{1}{2}x^2 - x + 8$?

43. Recall the vertical motion model for when an object is dropped: $h = -16t^2 + s$ where h = the height (feet), t = time in motion (seconds), and s = initial height (feet). If you drop a water balloon from a window 40 feet above the ground, then how long will it take for the balloon to hit the ground?

44. Write a trinomial to represent the AREA of the trapezoid represented.

Recall that the area of a trapezoid is $A = \frac{1}{2}h(b_1 + b_2)$.



45. Solve each equation below:

A. $x^2 + 42 - 6x = 7x$

B. $6x^2 - 12x = 0$

C. $20x^2 - 10x = 100$

46. Factor each expression:

A. $x^2 + 13x + 30$

B. $4x^2 + 12x + 9$

C. $5x^3 + 30x^2 + 40x$

47. Multiply:

A. $(d-5)(d+3)$

B. $(3x-4)^2$

C. $(x^2+6x-8)(x-6)$

48. Is it possible for a rectangle with a perimeter of 52 centimeters to have an area of 148.75 square centimeters? Show why or why not.

49. In 1970 the population, A , of Arizona was 1,755,000. Since then, the average annual percent of increase has been about 3.41%. Which model best fits this situation: linear, exponential, quadratic, or absolute value? Explain. Write a model that fits the situation.

50. Evaluate the DISCRIMINANT of $10x^2 - 11x + 3 = 0$ and explain what it means. Then solve the equation with the quadratic formula.