

HONORS GEOMETRY

SUMMER REVIEW

(ALGEBRA SKILLS)

Directions:

The skills represented in this assignment are crucial to your success in this class. You will be asked to recall and apply these skills throughout the year. Complete the problems on separate paper, not on this worksheet. Rewrite each problem and show all work. Circle your final answer. This will be collected on Wednesday 9/3/25. This will be your first grade of the marking period.

It is highly recommended that you complete this packet at the end of the summer to jump-start your brain.

Section I - Slope, Equations of Lines & Graphing Lines

When asked to write the equation of a line, use either point-slope or slope-intercept form.

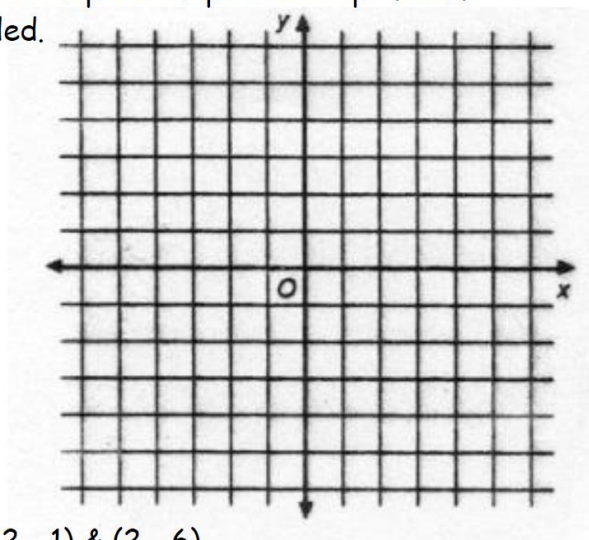
For #'s 1 - 4 graph the following lines on the graph provided.

1) $x = 4$

2) $y = 2$

3) $y = -\frac{1}{2}x - 4$

4) $y = 2x + 1$



5) a) Write the equation of the line through the points $(2, -1)$ & $(2, -6)$.

b) Write the equation of a horizontal line through the point $(1, 5)$.

6) Write the equation for the lines provided.

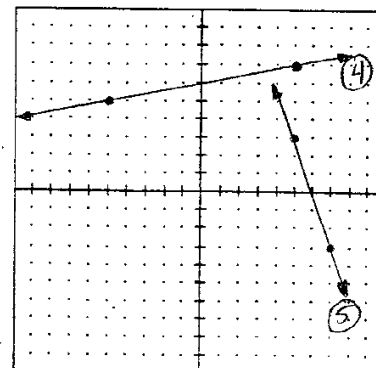
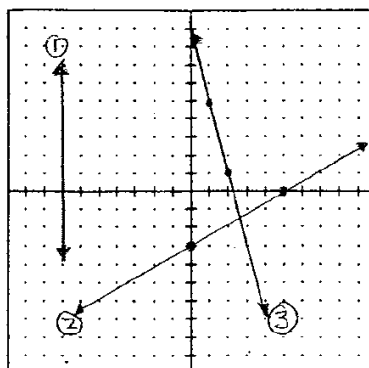
1) _____

2) _____

3) _____

4) _____

5) _____



7) Write the equation of the line where slope = -5 & y-int. = 0 .

8) Write the equation of the line that passes thru the points $(1, -3)$ & $(3, -5)$.

9) Find an equation of the line that passes through the point $(2, -1)$ & is ...

a) parallel to the line $2x - 3y = 5$

b) perpendicular to the line $2x - 3y = 5$

Section II - Factoring, Multiplying, & Combining Like Terms

For #'s 1 - 10, factor completely.

1) $3x^2 - 19x - 14$

2) $x^2 - 49$

3) $x^2 - 5x - 24$

4) $x^2 + 10x + 16$

5) $4x^2 + 16x$

6) $3x^3 - 12x^2$

7) $4x^3 + 6x^2 - 10x$

8) $9x^2 - 42x + 49$

9) $14x^2 - 19x - 3$

10) $81 - 9y^2$

For #'s 11 - 16, perform the indicated operation & simplify.

11) $(3x - 2)(3x + 2)$

12) $(x - 4)^2$

13) $(4x - 3)(2x - 5)$

14) $(2x - y)^3$

15) $(3x^3 + 2x - 5) + (-5x^3 + 5)$

16) $(2x^2 + 3x - 1) + (x^3 + x^2 + 5) - (2x^2 - 5x + 7)$

Section III - Properties of Exponents & Radicals

For #'s 1 - 7, perform the indicated operation & simplify. Write your answers with no negative exponents.

1) $\frac{3}{7} + \frac{1}{4}$

2) $\frac{x}{2} - \frac{5x}{4}$

3) $\frac{6}{5} \div \frac{27}{75}$

4) $\frac{-3}{4} \cdot \frac{17}{34}$

5) $\frac{a^2}{2c} \div \frac{a}{4c}$

6) $\frac{24a}{3(b-1)} \div \frac{3a^2}{b-1}$

7) $\frac{4x^3y^2}{3y} \cdot \frac{4xy}{x^2}$

For #'s 8 - 22, perform the indicated operation and simplify according to properties of exponents. Write your answers with no negative exponents.

8) $(3^5)(3^{-2})$

9) $(2xy^2)(3x^3y)$

10) $(2x^{-4})^{-3}$

11) $(3ab^2c)(4bc)$

12) $\left(\frac{3a^{-1}}{5c^2}\right)^2$

13) $\left(\frac{x^2y^4}{x^3y^{-3}}\right)^{-5}$

14) $\frac{x^{8a}y^{4b}}{x^{2a}y^b}$

15) 4^{-3}

16) $7\sqrt{12} - 2\sqrt{48}$

17) $\sqrt{45x^3y^5}$

18) $\sqrt{25x^2y^4}$

19) $(-2x^2)^3$

20) $(4x^3)^{-1}$

21) $(2xy)^0$

22) $(3xy)^2(2x^2y)^3$

Section IV - Solving Equations

Solve the equations provided.

1) $\frac{2x-5}{x-3} = \frac{4x+1}{2x}$

2) $4(2x-3) = 6 - (3-2x)$

3) $6[x - (2x+3)] = 8 - 5x$

4) $\frac{2}{3}x = 8$

5) $4x + 3 = 8x - 13$

6) $\frac{1}{2}(4x-10) = -2$

7) $4x - 7(3x+6) = 3 - 2x$

8) $\frac{3x}{2} - \frac{x+1}{4} = 6$

9) $\frac{6}{x} - \frac{2}{x+3} = \frac{3(x+5)}{x(x+3)}$

10) $x^2 + 2(3x-2) = x^2 + 6x - 4$

11) $\frac{3}{4}x - \frac{1}{2}(x+5) = 2$

12) $\frac{1}{x-2} + \frac{3}{x+3} = \frac{4}{x^2+x-6}$

Section V - Solving Systems of Equations

Solve the following by the method of your choice (i.e., substitution or elimination).

$$\begin{array}{l} -2x + y = 7 \\ 1) \quad \frac{1}{2}x - y = -1 \end{array}$$

$$\begin{array}{l} x - y = 3 \\ 2) \quad x + y = 1 \end{array}$$

$$\begin{array}{l} 5x + 2y = 2 \\ 3) \quad 4x + 3y = 4 \end{array}$$

$$\begin{array}{l} 3x + 2y = 8 \\ 4) \quad 2x + y = 5 \end{array}$$

$$\begin{array}{l} -2x + 5y = -23 \\ 5) \quad 24 + 4y = 3x \end{array}$$

$$\begin{array}{l} 6x = 10 - 2y \\ 6) \quad 3x + y = 5 \end{array}$$

$$\begin{array}{l} 6x - 8y = 2 \\ 7) \quad \frac{9}{2}x - 6y = \frac{3}{2} \end{array}$$

$$\begin{array}{l} 2x + 3y = 10 \\ 8) \quad 5x - 4y = 2 \end{array}$$

$$\begin{array}{l} 9) \quad 10x + 4y = 12 \\ y = -\frac{5}{2}x + 2 \end{array}$$

$$\begin{array}{l} 10) \quad -2y + 3x = 3 \\ -6x + 4y = -6 \end{array}$$

Section VI - Solving Quadratic Equations

For #'s 1 - 6, solve by factoring.

1) $0 = x^2 + 2x - 8$

2) $9x^2 = 30x - 24$

3) $6x^2 + 17x + 5 = 0$

4) $0 = -4x + 12 - x^2$

5) $0 = -x^2 - 3x + 28$

6) $-48 = 2x^2 + 20x$

For #'s 7 - 12, solve by completing the square.

7) $x^2 - 4x - 12 = 0$

8) $x^2 + 12x - 13 = 0$

9) $x^2 + 20x - 21 = 0$

10) $x^2 - 14x + 13 = 0$

11) $x^2 - 8x - 36 = 0$

12) $x^2 + 7x - 8 = 0$

For #'s 13 - 16, solve using the quadratic formula.

13) $0 = x^2 - 5x - 14$

14) $0 = 2x^2 + 3x - 20$

15) $0 = -2x^2 - x - 1$

16) $0 = 9x^2 + 6x + 1$

For #'s 17 - 20, solve by the method of your choice.

17) $0 = 4x^2 - 16x + 13$

18) $2x^2 + 4x = 9x + 18$

19) $4x^2 + 16x + 15 = 0$

20) $6x^3 - 54x = 0$

Section VII - Simplifying Radical Expressions

In #'s 1 - 8, write each radical expression in simplest form. Rationalize denominators.

1) $\sqrt{32}$

2) $\sqrt{300}$

3) $5\sqrt{150}$

4) $15\sqrt{60}$

5) $\frac{3}{\sqrt{5}}$

6) $\frac{12}{5\sqrt{3}}$

7) $13\sqrt{5} - \sqrt{75}$

8) $\sqrt{28} + \sqrt{36} + \sqrt{63}$

9) $(3\sqrt{5})^2$

10) $(5\sqrt{3})(4\sqrt{6})$