Name:_____

Sterling High School

Summer Review Packet

Geometry Honors

The completion of this review packet is a requirement for all students enrolled in Geometry Honors at Sterling High School. It is a review of the essential mathematical skills necessary for success in Geometry Honors and subsequent math courses.

This packet is a graded assignment, and it must be completed to receive full credit. Please show all work for each problem. The teacher will quickly review the material in the packet and an assessment will be given after the topics have been reviewed.

S1 classes: Submit to teacher 1st day of class

S2 classes: Bring to Room 305 by 9/7/2023

Have a wonderful summer and GO KNIGHTS!

I. Fractions

a. Simplify each expression completely.

1. $-\frac{3}{2}+\frac{8}{5}$
2. $\frac{7}{4}-\frac{1}{5}$
3. $\frac{4}{3}-2\frac{4}{5}$
4. $-3\frac{7}{9}-9\frac{2}{3}$
5. $\frac{2}{5}+\frac{11}{15}$
6. $\frac{1}{2}-\left(-3\frac{1}{3}\right)$
7. $2\cdot-\frac{4}{7}$
8. $\frac{3}{5}\cdot\frac{7}{11}$
9. $3\frac{1}{3}\cdot\frac{3}{7}$
10. $\frac{\frac{5}{4}}{-3}$
11. $\frac{1}{2}\div\frac{8}{7}$
12. $-3\frac{5}{9}\div\frac{2}{6}$

II. Proportions

a. Find the value of each variable by solving the proportion.

1. $\frac{10}{8}=\frac{n}{10}$
2. $\frac{7}{b+5}=\frac{10}{5}$
3. $\frac{7}{9}=\frac{x}{x-10}$
4. $\frac{n}{n-3}=\frac{2}{3}$
5. $\frac{5}{r-9}=\frac{8}{r+5}$
6. $\frac{n-5}{n+8}=\frac{2}{7}$

III. System of Equations

a. Solve each system of equation using the substitution or elimination (linear combination) methods.

1. $-14 = -20y - 7x$
   $10y + 4 = 2x$

2. $5x + y = 9$
   $10x - 7y = -18$

3. $3 + 2x - y = 0$
   $-3 - 7y = 10x$

4. $-2x - y = -9$
   $5x - 2y = 18$

5. $5x + 4y = -14$
   $3x + 6y = 6$

IV. Factoring

a. Simplify the expression using any method of factoring.

1. $x^2 + 8x + 15$
2. $x^2 - 7x + 12$
3. $x^2 + 6x + 8$
4. $x^2 - x - 90$
5. $x^2 - 13x + 40$
6. $x^2 + 11x + 18$
7. $5x^2 + 10x + 20$
8. $3x^2 - 2x - 5$
9. $4x^2 - 35x + 49$
10. $7x^2 - 20x + 12$
11. $x^2 - 5x$
12. $4x^2 - 16$

b. Solve each equation by factoring.

13. $8x^2 + 21 = -59x$
14. $15a^2 - 3a = 3 - 7a$
15. $5r^2 - 44r + 120 = -30 + 11r$
16. $6b^2 - 13b + 3 = -3$
17. $35k^2 - 22k + 7 = 4$
18. $9m^2 + 48m = -64$

c. Solve each equation using the quadratic formula. $\left(x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}\right)$

19. $9n^2 = 4 + 7n$
20. $5x^2 + 9x = -4$
21. $x^2 + 2x - 1 = 2$
22. $5r^2 = 80$

V. Radicals

a. Simplify each. Leave answers in simplest radical form.

1. $\sqrt{48}$ 2. $\sqrt{84}$ 3. $\sqrt{75}$ 4. $\sqrt{126}$

5. $3\sqrt{8}$ 6. $5\sqrt{128}$ 7. $(3\sqrt{5})^2$ 8. $(-4\sqrt{7})^2$

9. $\frac{7}{\sqrt{2}}$ 10. $\frac{11}{\sqrt{3}}$ 11. $\frac{12}{\sqrt{2}}$ 12. $\frac{15}{\sqrt{3}}$

VI. Linear Equations

a. Find the x and y intercepts of the graph of the equation.

1. $x + 6y = 7$ 2. $4x + y = 3$ 3. $y - 3x = 4$

b. Find the slope of the line passing through the following points.

4. $(3,4), (1,3)$ 5. $(2,-7), (-5,6)$ 6. $(-3,0), (-3,10)$

c. Determine whether the slope of the line passing through the points is positive, negative, undefined, or zero.

7. (4,7), (4,2)

8. (3,8), (5,1)

9. (1,6), (4,6)

d. Write the equation of a line using the given information. Write the equation in slope-intercept form, standard form, and point-slope form.

10. $(1, -8); m = 5$

11. $(-2, -9), (-1,7)$

12. $m = 4, b = -3$

e. Solve each.

13. Write the equation of a line parallel to the line that is the answer to question #10 above and passes through $(4, -3)$.

14. Write the equation of a line perpendicular to the line that is the answer to question #11 above and passes through $(4, -3)$.