Honors Geometry – Middle School

Summer Assignment 2026

Classroom Supplies:
Before the school year starts please make sure you have the following supplies:

1. TI-84 Graphing calculator
2. Compass
3. Straight edge

Directions: Please show all work on a separate sheet of paper, labelling each problem neatly. All final answers should be written on the answer sheet. On the first day of school, you will turn in the answer sheet along with each page you did your work on. This will be your first grade of the course. Answers without sufficient work with earn no credit.

You many use any reasonable resources to help you complete this assignment, but the work must be your own. Please prepare for a quiz within the first week of returning to school.

1. Simplify each expression.
   a) $|-17|$
   b) $\left|\frac{4}{3}\right|$
   c) $\frac{2}{3} \div 3\frac{1}{6}$
   d) $\frac{8}{5} + \frac{10}{3}$
   e) $48 \div (5+7) - 9$
   f) $2 \cdot 7.5 + 2 \cdot 11$
   g) $9a - [7 - 5(7a - 3)]$
   h) $4^3 - 5(2) + 13$

2. Solve each equation.
   a) $3x + 2 - 2(x + 4) = 7$
   b) $\frac{x+2}{3} = \frac{8}{15}$
   c) $\frac{21}{x} = 7$
   d) $\frac{3}{4}x = -12$
   e) $\frac{3r}{5} + \frac{r}{10} = 1$
   f) $\frac{3}{4}p - 8 = \frac{2}{3}p + 5$

3. Solve the following equations for w.
   a) $3x - w = 3$
   b) $-6x + 12w = 24$

4. Use the slope formula to find the slope between the two points.
   a) (8, 10) and (-3, 4)
   b) (5, -9) and (8, -9)

5. a) Write the equation of a line with a slope of 7 and a y-intercept of 12 in slope-intercept form.
   b) Write the equation of a line passing through (3, 6) and (-8, 2) in point-slope form.
   c) Write the equation of a line with a slope of -2 that passes through (2, -9) in slope-intercept form.

6. On **graph paper**, graph each of the following lines, showing at least 2 points.
   a) $3y = -2x - 3$
   b) $-6x + 12y = 24$
   c) $y = -8$
   d) $x = 5$

7. Simplify each of the following radicals. Rationalize all denominators.
   a) $\sqrt{81}$
   b) $\sqrt{125}$
   c) $\sqrt{32}$
   d) $\sqrt{\frac{28}{63}}$
   e) $\sqrt{\frac{100}{49}}$
   f) $2\sqrt{48}$
   g) $\sqrt{\frac{75}{10}}$
   h) $3\sqrt{45} - \sqrt{50}$
   i) $\sqrt{2}\left(2 - 3\sqrt{6}\right)$
   j) $\sqrt{5} \cdot \sqrt{20}$
   k) $\left(9 + \sqrt{2}\right)\left(9 - \sqrt{2}\right)$
   l) $\frac{\sqrt{3}}{\sqrt{3} - 2}$

8. Simplify the following expressions. Answers should only contain positive powers.
   a) $\left(3x^2y^3\right)^2\left(-6xy^6\right)$
   b) $\frac{75x^2y^3z^4}{-50xy^4z^3}$
   c) $10b^{-2}$
   d) $(d - 6)\left(-2d^2 + d - 7\right)$
   e) $(8r - 5)^2$
   f) $\left(8w^4 - 3w^3 + 2w - 5\right) - \left(9w^4 + 5w^3 - 6w + 8\right)$

9. Factor the following.
   a) $3fg - 12f^2$
   b) $81x^2 - 100y^4$
   c) $x^2 - 9x + 18$
   d) $3y^2 + 21y + 18$

e) $5w^2 + 10w + 5$

f) $2r^2 + r - 6$

10. Solve each system using the substitution method.

a) $\begin{cases} 3x + y = -10 \\ -7x - 7y = 0 \end{cases}$

b) $\begin{cases} x + 7y = 6 \\ -5x - 4y = 1 \end{cases}$

11. Solve each system using the elimination method.

a) $\begin{cases} -18x + 9y = -27 \\ -4x + 2y = -6 \end{cases}$

b) $\begin{cases} -9x + 5y = -8 \\ -6x - 3y = -18 \end{cases}$

12. Solve for j. Please write answers in simplest radical form.

a) $5^2 + j^2 = 10^2$

b) $5^2 + 12^2 = j^2$

c) $j^2 + 3^2 = 7^2$

13. Solve each equation by factoring.

a) $r^2 + 5r - 14 = 0$

b) $t^2 - 6t + 5 = 0$

c) $p^2 - 30 = -p$

d) $b^2 = b$

e) $x^2 + 8x - 8 = -4 + 5x$

f) $m^2 - 17 - 2m = 8 - 2m$

14. Solve each equation using the Quadratic Formula.

a) $k^2 - 12k = -27$

b) $5s^2 - 18 = -9s$

15. Solve each equation by completing the square. Please write answers in simplest radical form.

a) $f^2 + 10f - 33 = 8$

b) $d^2 + 16d - 26 = 0$

16. The sides of a rectangle in the coordinate plane are parallel to the axes. Two of the vertices of the rectangle are $(3, -2)$ and $(-4, -7)$. Find the coordinates for the other two vertices. Find the area of the rectangle.

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Answer Sheet

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1)

a) _____

b) _____

c)_____

d) _____

e) _____

f) _____

g) _____

h) _____

2)

a) _____

b) _____

c) _____

d) _____

e) _____

f) _____

3)

a) _____

b) _____

4) a) _____

b) _____

5)

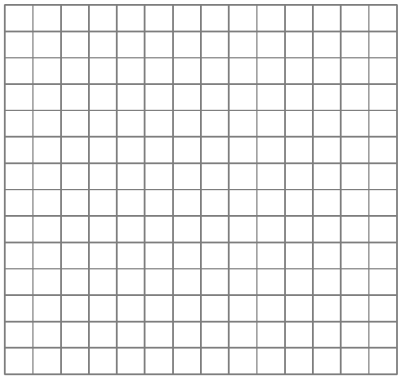
a) _____

b) _____

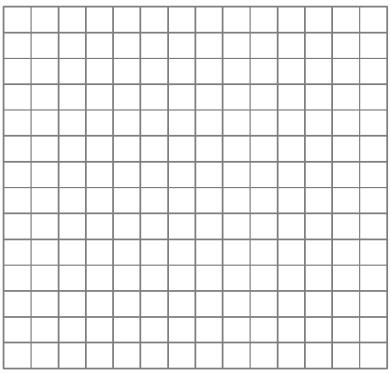
c)_____

6)

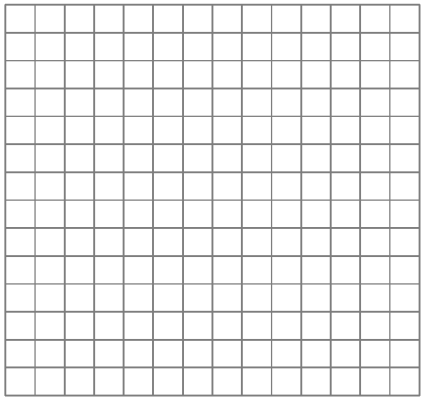
a)



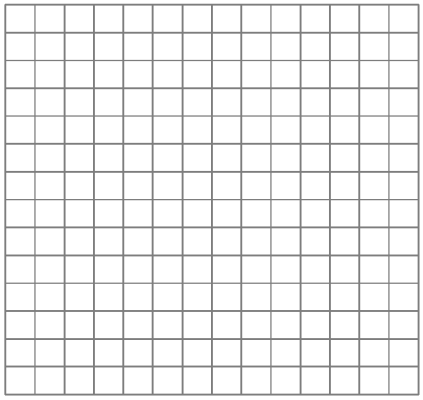
b)



c)



d)



7)

a) _____

b) _____

c) _____

d) _____

e) _____

f) _____

g) _____

h) _____

i) _____

j) _____

k) _____

l) _____

8)

a) _____

b)_____

c) _____

d) _____

e) _____

f) _____

9)

a) _____

b) _____

c) _____

d) _____

e) _____

f) _____

10)

a) _____

b) _____

11)

a) _____

b) _____

12)

a) _____

b) _____

c) _____

13)
a) _____

b) _____

c) _____

d) _____

e) _____

f) _____

14)
a) _____

b) _____

15)
a) _____

b) _____

16) _____