

Incoming Magnet Geometry Summer Review Assignment

Students,

This assignment should serve as a review of the Algebra skills necessary for success in Geometry. These skills were taught in previous math courses. Our hope is that this review will keep your mind mathematically active during the summer, identify weaknesses in Algebra, if they exist, and prepare you for the fun and challenging year ahead.

Because of the diverse backgrounds of the students coming into the magnet program some of the problems may be more challenging than others. We expect that you will do your best with this material and make an attempt of all the problems.

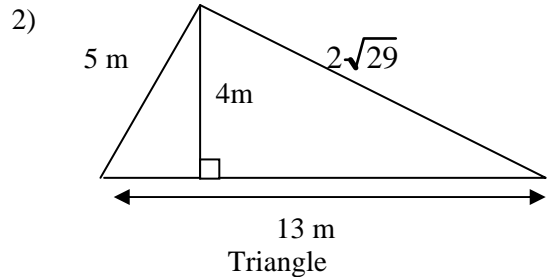
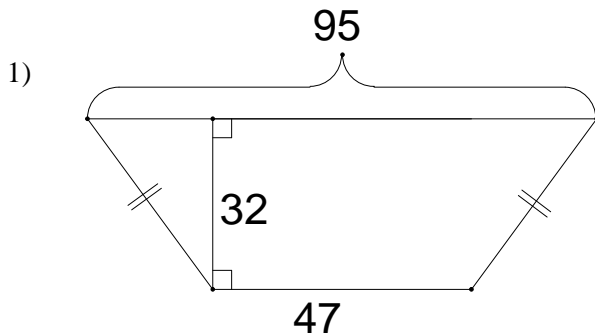
Directions:

- Answer all questions on a separate sheet of paper **in pencil**.
 - Show all work.
 - Carefully and neatly label your problems and solutions, including the original problem.
 - If your answer involves radicals or π , give an exact answer *and* a decimal approximation using a calculator
- This assignment will be *collected* on the **first day of school**. Enjoy your summer. See you in August ready to learn!!!

I. Convert from one kind of units to another:

- 1) 159 cm = _____ mm 2) 3.2 m = _____ km 3) 18 inches = _____ feet
4) _____ feet = 4 miles 5) 3.6 yards = _____ feet

II. Find the perimeter and area of each of the following figures.



III. For each of the following circles:

1. If the radius is 5.2 cm, find the area and the circumference.
2. If the circumference = 6π m, find the radius and the area.
3. If the area = 14π cm², find the circumference and the diameter.

IV. Simplify.

- 1) $\sqrt{8}$ 2) $4\sqrt{27}$ 3) $\frac{6}{\sqrt{3}}$
4) $\sqrt{16a^3b^2}$ 5) $\sqrt{8} + \sqrt{18} - \sqrt{32}$ 6) $\sqrt{21} \cdot \sqrt{14}$

V. Solve for x in each of the following equations:

- 1) $\frac{5x}{8} = \frac{6x-7}{3}$ 2) $\frac{6}{x+3} = \frac{4}{2x-7}$ 3) $\frac{2}{3}x + 4 = 6$
4) $\frac{3}{x+1} = \frac{x}{4}$ 5) $2(x+1) - 3 = 4$ 6) $\frac{1}{5}x - 3 = 2$

VI. Complete the following.

- a.) Give the equation of a line with a slope of 0 and a y-intercept of (0, 12).
b.) Sketch the line.
- a.) Give the equation of a line that contains the points A(-2, 3) and B(-6, -5).
b.) Sketch the line.
- a.) Give the equation of a line with a slope of -3 and a y-intercept of (0, 5).
b.) Sketch the line.
- a.) Give the equation of a line perpendicular to $3x - 4y = 2$ and passing through (1, 1).
b.) Sketch the line.

VII. Multiply the polynomials and expand.

- $(x - 9)(x + 8)$
- $(x - 8)^2$
- $(x + 2)^3$
- $(2x - 1)(x + 5)$
- $(x + y - 2)^2$
- $(x^2 - 3)(-4 + x - 3x^2)$

VIII. Solve the following equations for x by factoring:

- $x^2 - x - 72 = 0$
- $2x^2 + 9x - 5 = 0$
- $4x^2 - 36x + 72 = 0$
- $x^2 - 16x + 64 = 0$
- $x^3 - 64 = 0$
- $x^4 - 13x^2 + 36 = 0$

IX. Solve the following equations for x by using the quadratic formula (remember to give all solutions in two ways: exactly, using radicals and an approximation using your calculator):

- $x^2 + 3x - 5 = 0$
- $-2x^2 - 4x + 7 = 0$

X. Solve the following systems of equations:

- $$\begin{aligned} 5x + 4y &= 6 \\ -2x - 3y &= -1 \end{aligned}$$
- $$\begin{aligned} -2x + y &= 8 \\ y &= -3x - 2 \end{aligned}$$

XI. For each of the following functions:

- Graph the function
- State the domain of the function using interval notation. Example: $[-3, \infty)$ or $(-2, 7)$
- State the range of the function using interval notation

- $f(x) = -\frac{3}{4}x + 4$
- $f(x) = 3x + 2$
- $f(x) = (x - 2)^2 + 1$
- $f(x) = x^2 + 6x + 1$
- $f(x) = \sqrt{x - 4}$
- $f(x) = |x|$
- $f(x) = |x + 2|$
- $f(x) = |x| + 3$
- $f(x) = \frac{3}{x + 5}$

XII. For each of the following inequalities, sketch the set of points in the xy -plane that satisfies the inequality:

1) $y \geq 2x + 1$

2) $y < -3x + 4$

3) $y \leq 4$

4) $x > -2$

5) $y < |x|$

6) $y > x^2$

XIII. Simplify the following expressions:

1) $(-3x^2 + 4x - 7) + (2x^2 - 7x + 8)$

2) $\frac{64x^3y^2 - 16x^2y^3 + 32x^5y^5}{8x^2y^2}$

3) $(39a^4 - 4a^3 + 2a^2 - a - 7) - (10a^4 + 3a^3 - 2a^2 - a + 8)$

4) $2x^2z(3x - 2z)$

5) $-3xy^3(x - 2y)$

6) $(3x^2 + x - 1)(2x - 3)$

7) $\frac{10a^3b^2c^7}{5a^5bc^7}$

8) $(8a^3b^2)(2a^{-4}b^{-5})$

9) $(-3x^2y^3z)^3$

10) $(15a^4b^2c)^0$

11) $\frac{3x^3y^2}{6x^{-2}y^5}$

XIV. Solve for x in each of the following equations:

1) $\sqrt{2x} = 8$

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

3) $2 - \sqrt{x} = 4$

4) $\sqrt{3x} - 4 = 2$