

# THE SCHOOL FOR THE CREATIVE & PERFORMING ARTS

## 9th Grade Summer pre-Geometry Work

It's hard to think about school next year when the current school year hasn't ended. I want ALL of my students to be successful in Geometry and that means having the right tools for the job. Here are the items I will require each student to have at the beginning of the first full week of school:

**Course Supplies: NONE of these items is optional. I don't provide calculators!**

- A durable 2 pocket folder **or** binder
- Mechanical Pencil -0.7mm lead (BIC Xtra Life,24-Count \$9 on Amazon)  
**(I DO NOT accept work in pen and I don't have a pencil sharpener in my room!)**
- Staedtler White Eraser
- 3"x 5" Index Cards (Qty. 300, \$2.49)
- Graph Paper (100 Sheets)
- Lined Paper (if spiral, must have clean tear edge) (200 Sheets)
- Highlighter Pens, 4 colors (req'd by other teachers as well)
  
- TI-30 or Casio fx-260 Calculator (\$10 on Amazon)
  - **I can only help you if you have a TI-30 or this Casio calculator.**
- Box of tissues with your name on it.

Just as proper spelling and grammar are prerequisites for writing a thoughtful paper or email, solid math skills are a prerequisite for marketing, engineering, medicine and other fields of study. There is a unique language to math that is not unlike learning Spanish or French. You will be required to communicate clearly and logically in Geometry – it will take time to become proficient in the language and there will be many errors along the way. That's why I recommend that students use a mechanical pencil so they always have something sharp to write with and the writing can be erased. We will start doing our work on graph paper to ensure that students practice keeping equations "lined up" as they work them. I want to help you develop good study skills so we will be creating flash cards to help study the approximately 200 key terms, theorems and formulas in Geometry. You will be hard pressed to remember them without some kind of study aid, especially when it's time for semester exams.

Geometry relies far less on a graphing calculator than Algebra I or Algebra II but having a graphing calculator for this class will help familiarize you with one for these classes and for the ACT test. The ACT test will determine to a large degree, whether you get accepted to the

college of your choice. I truly believe it's worth the cost of buying a TI-84 calculator if you don't already have a calculator – just be sure to mark it so it can be easily identified.

This packet **MUST** be turned in the first day of school and be sure to **SHOW YOUR WORK** and do **NOT** turn in work from a spiral notebook with the torn edges. All of the problems are taken from lower level math classes. You must **ALWAYS** show your work in my class. **If you are not proficient in Algebra, you will struggle to pass this class. If you are weak, now is the time to review and master the Algebra skills.**

I am looking forward to having you in my class next year. Enjoy your summer!

-Mr. Leugers (leugerr@cps-k12.org)

**SHOW ALL WORK or you will NOT receive credit.**

Group 1 Problems - Solve each equation. If you get stuck, search the web for how to solve multi-step linear equations. **I'll show you what I expect for showing your work by doing the first problem for you.**

1)  $6r + 7 = 13 + 7r$

$-6r$                        $-6r$  (optional – you don't have to show this)

$7 = 13 + r$

$-13$   $-13$                       (optional – you don't have to show this)

$-6 = r$

2)  $13 - 4x = 1 - x$

3)  $-7x - 3x + 2 = -8x - 8$

4)  $-8 - x = x - 4x$

5)  $-14 + 6b + 7 - 2b = 1 + 5b$

6)  $n + 2 = -14 - n$

7)  $n - 3n = 14 - 4n$

8)  $7a - 3 = 3 + 6a$

9)  $5 + 2x = 2x + 6$

10)  $-10 + x + 4 - 5 = 7x - 5$

11)  $-8n + 4(1 + 5n) = -6n - 14$

12)  $-6n - 20 = -2n + 4(1 - 3n)$

13)  $4n - 40 = 7(-2n + 2)$

14)  $7(5a - 4) - 1 = 14 - 8a$

Group 2 Problems - If you get stuck, search the web for how to solve multi-step linear equations. Solve each equation.

1)  $6a + 5a = -11$

2)  $-6n - 2n = 16$

3)  $4x + 6 + 3 = 17$

4)  $0 = -5n - 2n$

5)  $6r - 1 + 6r = 11$

6)  $r + 11 + 8r = 29$

7)  $-10 = -14v + 14v$

8)  $-10p + 9p = 12$

9)  $42 = 8m + 13m$

10)  $a - 2 + 3 = -2$

11)  $18 = 3(3x - 6)$

12)  $30 = -5(6n + 6)$

13)  $37 = -3 + 5(x + 6)$

14)  $-13 = 5(1 + 4m) - 2m$

15)  $4(-x + 4) = 12$

16)  $-2 = -(n - 8)$

17)  $-6(1 - 5v) = 54$

18)  $8 = 8v - 4(v + 8)$

Group 3 Problems - Solve for the indicated variable. If you get stuck, search the web for solving literal equations.

1.  $V = Bh$  for  $h$

2.  $P = RB$  for  $B$

3.  $C = 2\pi r$  for  $r$

4.  $e = mc^2$  for  $m$

5.  $V = LWH$  for  $H$

6.  $I = Prt$  for  $r$

7.  $V = \pi r^2 h$  for  $h$

8.  $S = 2\pi r h$  for  $r$

9.  $V = \frac{1}{3}Bh$  for  $B$

10.  $V = \frac{1}{3}\pi r^2 h$  for  $h$

11.  $I = \frac{E}{R}$  for  $R$

12.  $V = \frac{KT}{P}$  for  $T$

13.  $ax + b = 0$  for  $x$

14.  $y = mx + b$  for  $x$

15.  $P = 2L + 2W$  for  $W$

16.  $ax + by = c$  for  $y$

Group 4 Problems - Solve for the specified variable.

1. Solve  $d = rt$  for  $r$

11. Solve  $S = 2(lw + lh + wh)$  for  $w$

2. Solve  $P = \frac{144p}{y}$  for  $p$

12. Solve  $P = 2(l + w)$  for  $l$

3. Solve  $R = \frac{cS}{a}$  for  $C$

13. Solve  $d = \frac{c}{\pi}$  for  $\pi$

4. Solve  $P = a + b + c$  for  $b$

14. Solve  $\frac{1}{f} = \frac{1}{a} + \frac{1}{b}$  for  $f$

5. Solve  $T = m - n$  for  $n$

15. Solve  $A = p(1 + rt)$  for  $t$

6. Solve  $A = \frac{a+b}{2}$  for  $b$

16. Solve  $I = prt$  for  $r$

Group 5 Problems - put all answers in lowest terms. SHOW YOUR WORK.

$$1) \frac{14}{20} \times \frac{5}{6} =$$

$$2) \frac{2}{3} + \frac{3}{4} =$$

$$3) \frac{4}{18} + \frac{1}{2} =$$

$$4) \frac{2}{6} \times \frac{3}{4} =$$

$$5) \frac{9}{10} + \frac{11}{20} =$$

$$6) \frac{2}{3} \div \frac{1}{7} =$$

$$7) \frac{9}{16} \times \frac{16}{20} =$$

$$8) \frac{5}{6} \div \frac{11}{18} =$$

$$9) \frac{5}{7} - \frac{3}{6} =$$

$$10) \frac{4}{8} - \frac{1}{4} =$$

$$11) \frac{10}{20} - \frac{4}{10} =$$

$$12) \frac{1}{14} \div \frac{15}{16} =$$

Group 6 Problems - put all answers in lowest terms. SHOW YOUR WORK.

$$1. \frac{9}{7} \times \frac{1}{4}$$

$$5. \frac{4}{9} \times \frac{4}{3}$$

$$9. \frac{3}{4} \times \frac{3}{8}$$

$$2. \frac{1}{12} \times \frac{17}{2}$$

$$6. \frac{1}{4} \times \frac{3}{5}$$

$$10. \frac{1}{3} \times \frac{5}{4}$$

$$3. \frac{9}{7} \times \frac{1}{2}$$

$$7. \frac{2}{3} \times \frac{2}{3}$$

$$11. \frac{7}{3} \times \frac{1}{12}$$

$$4. \frac{1}{3} \times \frac{1}{4}$$

$$8. \frac{1}{3} \times \frac{17}{7}$$

$$12. \frac{2}{7} \times \frac{4}{3}$$

Group 7 Problems - put all answers in lowest terms. SHOW YOUR WORK.

$$1. \frac{7}{4} - \frac{8}{5}$$

$$5. \frac{3}{2} - \frac{9}{7}$$

$$9. \frac{4}{3} - \frac{2}{5}$$

$$2. \frac{23}{2} + \frac{9}{4}$$

$$6. \frac{7}{10} + \frac{2}{5}$$

$$10. \frac{5}{2} + \frac{2}{3}$$

$$3. \frac{8}{3} - \frac{3}{2}$$

$$7. \frac{14}{5} - \frac{4}{3}$$

$$11. \frac{9}{8} + \frac{5}{6}$$

4.  $\frac{5}{2} - \frac{13}{12}$

8.  $\frac{17}{7} - \frac{5}{3}$

12.  $\frac{9}{7} - \frac{5}{6}$

Group 8 Problems – factor the following trinomials

1)  $y^2 - 2y - 15$

6)  $n^2 + 11n + 24$

answer to #1:  $(y-5)(y+3)$

2)  $y^2 + 3y - 54$

7)  $b^2 - 15b + 54$

3)  $b^2 + 5b - 14$

8)  $c^2 + c - 12$

4)  $y^2 - 12y + 32$

9)  $x^2 - 2x - 8$

5)  $z^2 + 3z - 10$

10)  $q^2 + 15q + 56$

Group 9 Problems – find the values of the variable which make the equation true.

1)  $(k + 1)(k - 5) = 0$

2)  $(a + 1)(a + 2) = 0$

3)  $(4k + 5)(k + 1) = 0$

4)  $(2m + 3)(4m + 3) = 0$

These need to be factored first.

5)  $x^2 - 11x + 19 = -5$

6)  $n^2 + 7n + 15 = 5$

7)  $n^2 - 10n + 22 = -2$

8)  $n^2 + 3n - 12 = 6$

Group 10 Problems – remember that  $y=mx + b$  is the slope-intercept form of an equation of a line. Put each of the equations in slope intercept form. **SHOW YOUR WORK.**

1)  $3x - 2y = -16$

2)  $13x - 11y = -12$

3)  $9x - 7y = -7$

4)  $x - 3y = 6$

5)  $6x + 5y = -15$

6)  $4x - y = 1$

7)  $11x - 4y = 32$

8)  $11x - 8y = -48$

9)  $3x + 2y = -6$

10)  $3y = 2x + 15$

11)  $y - 4x = 8$

12)  $y - 8 = -\frac{1}{2}(x + 4)$