

Welcome to Geometry Honors
Incoming Students: Essential Practice

EXPECTATIONS:

Proficiency with the algebraic concepts listed below is essential to your success in Geometry Honors.

You are expected to be able to apply these concepts **without the use of a calculator**. Although we will review these concepts as they pop up within the Geometry curriculum, the pacing and rigor of the course does not allow for a full Algebra lesson.

You will begin applying many of these algebraic concepts as soon as Chapter 1.

PREREQUISITE KNOWLEDGE:

Do I know how to...?

- Add, Subtract, Multiply & Divide Fractions
- Combine Like Terms (CLT)
- Use the Distributive Property
- Solve Linear Equations – Multi-Step including CLT, Distributive Property and Fractions
- Solve Systems of Linear Equations using Substitution and Elimination
- Simplify Square Roots – No Decimals!
- FOIL Two Binomials
- Factor with a GCF; Factor using a Difference of Squares;
Factor a Quadratic Trinomial (without grouping)
- Graph a Linear Equation (including horizontal and vertical lines)
- Write Equations for Lines (including horizontal and vertical lines)

Attached you will find exercises to help you practice the concepts listed above. Remember - You should be able to complete the exercises **without a calculator**.

Khan Academy is a great resource should you need any help. <https://www.khanacademy.org/>

Please bring these completed exercises with you when you return to school in August.

Welcome to Geometry Honors
Incoming Students: Essential Practice

Adding and Subtracting Fractions

1. $\frac{20}{7} + \frac{13}{6}$

2. $\frac{18}{7} - \frac{1}{4}$

3. $\frac{6}{5} + \frac{1}{3}$

4. $\frac{13}{9} + \frac{9}{4}$

5. $\frac{17}{12} - \frac{3}{8}$

6. $\frac{2}{3} - \frac{3}{5}$

7. $\frac{16}{3} + \frac{13}{9}$

8. $\frac{3}{8} + \frac{9}{5}$

9. $\frac{1}{2} + \frac{8}{11}$

10. $\frac{5}{2} - \frac{23}{10}$

Multiplying and Dividing Fractions

1. $\frac{1}{9} \div \frac{3}{11}$

2. $\frac{22}{9} \bullet \frac{6}{11}$

3. $\frac{14}{11} \div \frac{3}{7}$

4. $\frac{12}{5} \div \frac{3}{2}$

5. $\frac{4}{5} \bullet \frac{9}{8}$

6. $\frac{19}{5} \div \frac{19}{8}$

7. $\frac{7}{4} \bullet \frac{9}{4}$

8. $\frac{1}{2} \div \frac{24}{5}$

9. $\frac{11}{2} \bullet \frac{2}{7}$

10. $\frac{10}{25} \bullet \frac{2}{5}$

Welcome to Geometry Honors
Incoming Students: Essential Practice

Adding and Subtracting Fractions

$$1. \frac{20}{7} + \frac{13}{6} = \frac{211}{42}$$

$$2. \frac{18}{7} - \frac{1}{4} = \frac{65}{28}$$

$$3. \frac{6}{5} + \frac{1}{3} = \frac{23}{15}$$

$$4. \frac{13}{9} + \frac{9}{4} = \frac{133}{36}$$

$$5. \frac{17}{12} - \frac{3}{8} = \frac{25}{24}$$

$$6. \frac{2}{3} - \frac{3}{5} = \frac{1}{15}$$

$$7. \frac{16}{3} + \frac{13}{9} = \frac{61}{9}$$

$$8. \frac{3}{8} + \frac{9}{5} = \frac{87}{40}$$

$$9. \frac{1}{2} + \frac{8}{11} = \frac{27}{22}$$

$$10. \frac{5}{2} - \frac{23}{10} = \frac{1}{5}$$

Multiplying and Dividing Fractions

$$1. \frac{1}{9} \div \frac{3}{11} = \frac{11}{27}$$

$$2. \frac{22}{9} \cdot \frac{6}{11} = \frac{4}{3}$$

$$3. \frac{14}{11} \div \frac{3}{7} = \frac{98}{33}$$

$$4. \frac{12}{5} \div \frac{3}{2} = \frac{8}{5}$$

$$5. \frac{4}{5} \cdot \frac{9}{8} = \frac{9}{10}$$

$$6. \frac{19}{5} \div \frac{19}{8} = \frac{8}{5}$$

$$7. \frac{7}{4} \cdot \frac{9}{4} = \frac{63}{16}$$

$$8. \frac{1}{2} \div \frac{24}{5} = \frac{5}{48}$$

$$9. \frac{11}{2} \cdot \frac{2}{7} = \frac{11}{7}$$

$$10. \frac{10}{25} \cdot \frac{2}{5} = \frac{4}{25}$$

Incoming Students: Essential Practice

Combine Like Terms and Distributive Property. Simplify each expression.

1) $b - 10 - 8 + 6b$

2) $-5n - 8 + 2 - 3n$

3) $-7(6 - m)$

4) $8(1 + 10p)$

5) $-9(k + 8) - 5k$

6) $3 - 8(8 - x)$

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

8) $6 + 2(-8b + 3)$

9) $-8m - 3(-10m + 10)$

10) $-2n - 9(1 - 9n)$

Solve each equation. Leave your answer as a fraction where necessary.

11) $-7 + k = -9$

12) $-32 = a - 13$

13) $-\frac{4}{11} = \frac{2}{11}p$

14) $-\frac{3}{13} - x = \frac{7}{26}$

15) $2 - 2m = 1 - 3m - 7$

16) $7n + 7n = n - 7 + 2n - 15$

17) $-1 + \frac{1}{3}x = x - \frac{1}{3}$

18) $-\frac{2}{5}x + 1 = -\frac{67}{60} + x + \frac{7}{6} + \frac{1}{2}x$

19) $-230 = -6(5 - 3n) + 7n$

20) $7(5 + 2x) = 133$

21) $-\frac{5}{3}\left(-8x + \frac{8}{5}\right) = 84$

22) $\frac{9}{2}\left(\frac{7}{2}x + 1\right) = -90$

23) $-8(k - 4) - 6(k - 6) = -16$

24) $36 = -(8n - 8) + 2(5n + 7)$

$$25) \frac{9}{2} \left(\frac{3}{7}a - 1 \right) - \left(\frac{9}{2}a + \frac{5}{4} \right) = -\frac{4}{7}a - 2a$$

$$26) -\left(\frac{1}{2}x - \frac{4}{5} \right) = -\frac{9}{5} \left(x - \frac{8}{3} \right)$$

Solve each proportion. Leave your answer as a fraction where necessary.

$$27) \frac{4}{7} = \frac{6}{x}$$

$$28) \frac{7}{2} = \frac{k}{4}$$

$$29) \frac{2}{p-9} = \frac{10}{5}$$

$$30) \frac{6}{5} = \frac{x+8}{7}$$

$$31) \frac{6}{3} = \frac{k-10}{10}$$

$$32) \frac{9}{10} = \frac{x+2}{6}$$

$$33) \frac{2}{6} = \frac{b-10}{b}$$

$$34) \frac{7}{a-3} = \frac{6}{a}$$

$$35) \frac{8}{k+3} = \frac{2}{k-4}$$

$$36) \frac{10}{x+7} = \frac{6}{x+8}$$

Solve each system by substitution.

$$37) \begin{aligned} y &= -6x - 15 \\ y &= 8x + 13 \end{aligned}$$

$$38) \begin{aligned} y &= -6x - 9 \\ y &= 7x + 4 \end{aligned}$$

$$39) \begin{aligned} y &= -6x + 3 \\ -2x - 4y &= -12 \end{aligned}$$

$$40) \begin{aligned} y &= -3x - 5 \\ -5x + 7y &= 17 \end{aligned}$$

$$41) \begin{aligned} x + 7y &= 9 \\ -7x - 6y &= -20 \end{aligned}$$

$$42) \begin{aligned} 5x + y &= 6 \\ -8x - 4y &= -24 \end{aligned}$$

$$43) \begin{aligned} -2x + 8y &= 24 \\ -6x - 7y &= -21 \end{aligned}$$

$$44) \begin{aligned} -7x + 3y &= 17 \\ -4x + 2y &= 8 \end{aligned}$$

Solve each system by elimination.

$$45) \begin{aligned} -2x - 2y &= 2 \\ -x + 2y &= 25 \end{aligned}$$

$$46) \begin{aligned} -5x - 6y &= -6 \\ 5x + 4y &= -6 \end{aligned}$$

$$\begin{aligned} 47) \quad & 8x + 6y = -26 \\ & -x + 6y = 10 \end{aligned}$$

$$\begin{aligned} 48) \quad & 8x + 3y = 1 \\ & 9x + 3y = 0 \end{aligned}$$

$$\begin{aligned} 49) \quad & 6x - 5y = 25 \\ & -x + 2y = -10 \end{aligned}$$

$$\begin{aligned} 50) \quad & 2x - 2y = -30 \\ & -5x - 6y = 20 \end{aligned}$$

$$\begin{aligned} 51) \quad & -10x + 3y = -30 \\ & -4x - 4y = -12 \end{aligned}$$

$$\begin{aligned} 52) \quad & 6x + 8y = 18 \\ & -7x + 10y = -21 \end{aligned}$$

Simplify. No Decimals.

$$53) \quad \sqrt{80}$$

$$54) \quad \sqrt{72}$$

$$55) \quad \sqrt{32}$$

$$56) \quad \sqrt{24}$$

$$57) \quad \sqrt{27}$$

$$58) \quad \sqrt{98}$$

$$59) \quad 7\sqrt{112}$$

$$60) \quad -8\sqrt{128}$$

$$61) \quad -5\sqrt{45}$$

$$62) \quad -4\sqrt{150}$$

Find each product by FOILING.

$$63) \quad (k - 5)(2k + 7)$$

$$64) \quad (6n - 7)(n + 1)$$

$$65) \quad (7x - 1)(7x - 7)$$

$$66) \quad (3n + 4)(2n + 6)$$

Factor each expression using the GCF.

$$67) \quad 6b + 6$$

$$68) \quad 6x^3 - 27x^2$$

$$69) \quad 10n^5 + 60n^3$$

$$70) \quad 5n^3 - 10n$$

Factor each completely without using grouping.

$$71) \quad v^2 - 64$$

$$72) \quad r^2 - 16$$

73) $4n^2 - 25$

74) $9p^2 - 100$

75) $n^2 + 9n + 18$

76) $p^2 - 9p + 20$

77) $x^2 + 9x - 10$

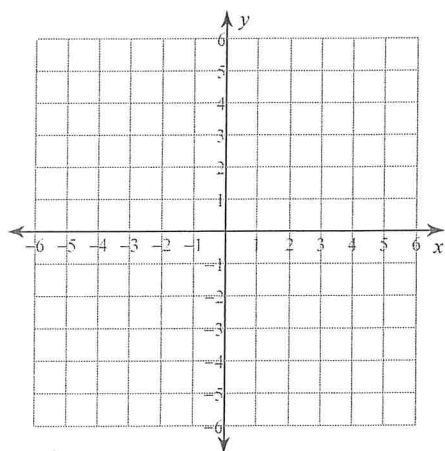
78) $n^2 + 3n - 28$

79) $b^2 - 2b - 8$

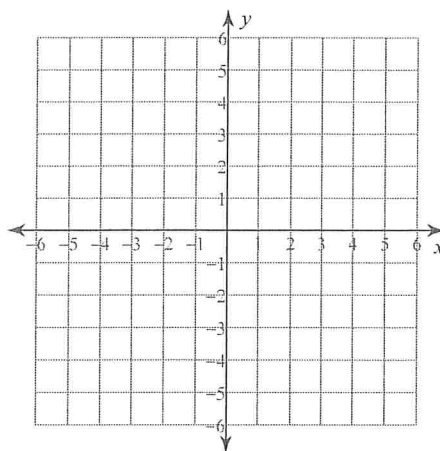
80) $x^2 + x - 72$

Sketch the graph of each line.

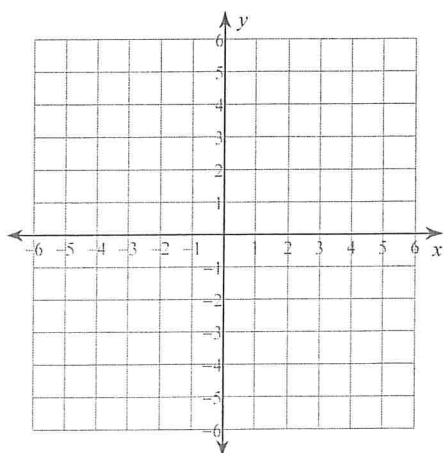
81) $y = -\frac{5}{4}x + 5$



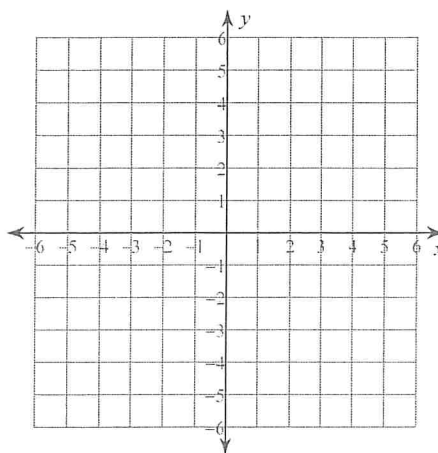
82) $y = \frac{7}{5}x + 4$



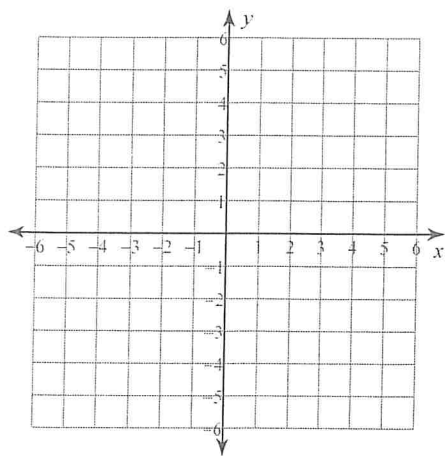
83) $y = 7x + 5$



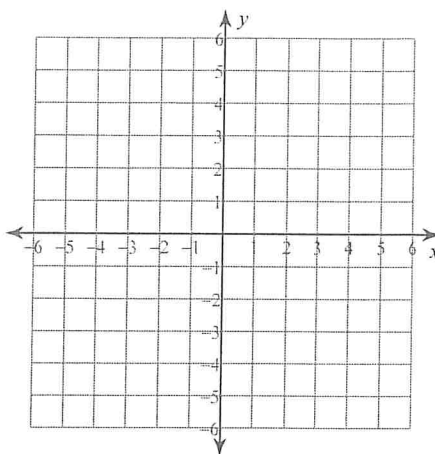
84) $y = -5x + 3$



85) $y = 5$

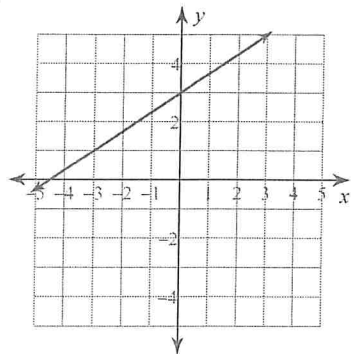


86) $x = -4$

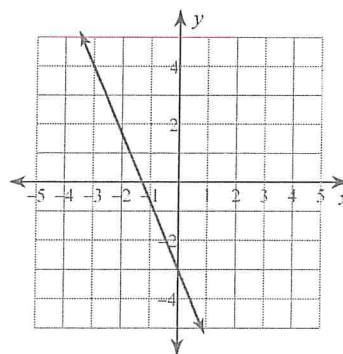


Write the slope-intercept form of the equation of each line.

87)



88)



89) Slope = $\frac{7}{2}$, y-intercept = -4

90) Slope = -1 , y-intercept = -4

91) through: $(-3, 2)$, slope = -7

92) through: $(-2, -1)$, slope = $\frac{5}{2}$

93) through: $(4, 2)$ and $(-1, -1)$

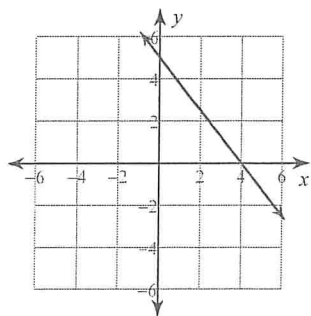
94) through: $(-2, 1)$ and $(-3, 4)$

95) through: $(-5, 3)$ and $(2, 3)$

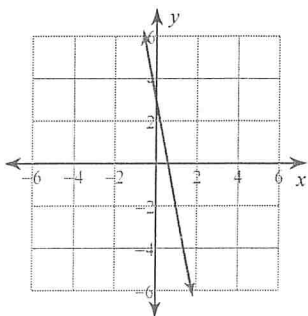
96) through: $(-2, -5)$ and $(-2, 4)$

Answers to Incoming Students: Essential Practice

- 1) $7b - 18$
 5) $-14k - 72$
 9) $22m - 30$
 13) $\{-2\}$
 17) $\{-1\}$
 21) $\left\{\frac{13}{2}\right\}$
 25) No solution.
 29) $\{10\}$
 33) $\{15\}$
 37) $(-2, -3)$
 41) $(2, 1)$
 45) $(-9, 8)$
 49) $(0, -5)$
 53) $4\sqrt{5}$
 57) $3\sqrt{3}$
 61) $-15\sqrt{5}$
 65) $49x^2 - 56x + 7$
 69) $10n^3(n^2 + 6)$
 73) $(2n - 5)(2n + 5)$
 77) $(x + 10)(x - 1)$
 81)
- 2) $-8n - 6$
 6) $-61 + 8x$
 10) $79n - 9$
 14) $\left\{-\frac{1}{2}\right\}$
 18) $\left\{\frac{1}{2}\right\}$
 22) $\{-6\}$
 26) $\left\{\frac{40}{13}\right\}$
 30) $\{0.4\}$
 34) $\{-18\}$
 38) $(-1, -3)$
 42) $(0, 6)$
 46) $(-6, 6)$
 50) $(-10, 5)$
 54) $6\sqrt{2}$
 58) $7\sqrt{2}$
 62) $-20\sqrt{6}$
 66) $6n^2 + 26n + 24$
 70) $5n(n^2 - 2)$
 74) $(3p + 10)(3p - 10)$
 78) $(n + 7)(n - 4)$
 82)
- 3) $-42 + 7m$
 7) $22x + 24$
 11) $\{-2\}$
 15) $\{-8\}$
 19) $\{-8\}$
 23) $\{6\}$
 27) $\{10.5\}$
 31) $\{30\}$
 35) $\{6.33\}$
 39) $(0, 3)$
 43) $(0, 3)$
 47) $(-4, 1)$
 51) $(3, 0)$
 55) $4\sqrt{2}$
 59) $28\sqrt{7}$
 63) $2k^2 - 3k - 35$
 67) $6(b + 1)$
 71) $(v - 8)(v + 8)$
 75) $(n + 6)(n + 3)$
 79) $(b - 4)(b + 2)$
 83)
- 4) $8 + 80p$
 8) $12 - 16b$
 12) $\{-19\}$
 16) $\{-2\}$
 20) $\{7\}$
 24) $\{7\}$
 28) $\{14\}$
 32) $\{3.4\}$
 36) $\{-9.5\}$
 40) $(-2, 1)$
 44) $(-5, -6)$
 48) $(-1, 3)$
 52) $(3, 0)$
 56) $2\sqrt{6}$
 60) $-64\sqrt{2}$
 64) $6n^2 - n - 7$
 68) $3x^2(2x - 9)$
 72) $(r + 4)(r - 4)$
 76) $(p - 4)(p - 5)$
 80) $(x - 8)(x + 9)$



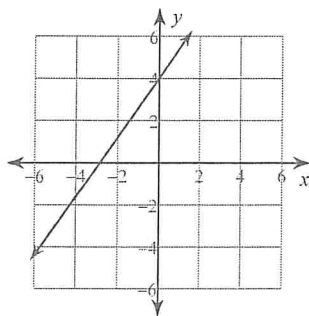
84)



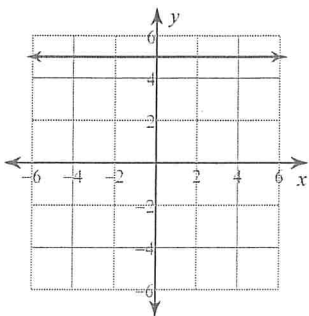
87) $y = \frac{2}{3}x + 3$

91) $y = -7x - 19$

95) $y = 3$



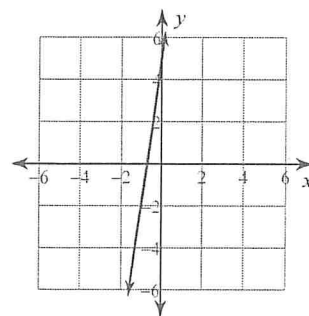
85)



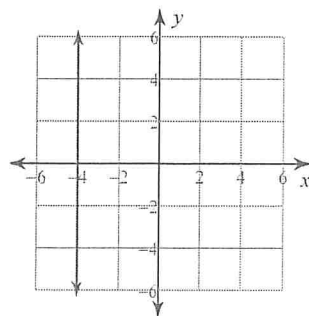
88) $y = -\frac{7}{3}x - 3$

92) $y = \frac{5}{2}x + 4$

96) $x = -2$



86)



90) $y = -x - 4$

94) $y = -3x - 5$