Welcome to Algebra 2 Honors
Incoming Students: Essential Practice

EXPECTATIONS:

Proficiency with the algebraic concepts listed below is essential to your success in Algebra 2 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 Algebra 2 curriculum, the pacing and rigor of the course is demanding and challenging.

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.

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Adding and Subtracting Fractions

1. $\frac{15}{7}+\frac{12}{5}$

2. $\frac{18}{5}-\frac{2}{3}$

3. $\frac{25}{3}+\frac{15}{2}$

4. $\frac{13}{9}+\frac{4}{3}$

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

6. $\frac{20}{3}-\frac{7}{8}$

7. $\frac{16}{3}+\frac{11}{12}$

8. $\frac{16}{9}+\frac{2}{7}$

9. $\frac{7}{10}+\frac{5}{4}$

10. $\frac{7}{2}-\frac{21}{10}$

Multiplying and Dividing Fractions

1. $\frac{2}{9}\div\frac{11}{3}$

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

3. $\frac{7}{11}\div\frac{7}{4}$

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

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

6. $\frac{8}{5}\div\frac{18}{7}$

7. $\frac{9}{4}\bullet\frac{6}{5}$

8. $\frac{1}{2}\div\frac{23}{3}$

9. $\frac{14}{6}\bullet\frac{6}{7}$

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

Answer Key

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Adding and Subtracting Fractions

1. $\frac{15}{7}+\frac{12}{5}$ $\frac{159}{35}$

2. $\frac{18}{5}-\frac{2}{3}$ $\frac{44}{15}$

3. $\frac{25}{3}+\frac{15}{2}$ $\frac{95}{6}$

4. $\frac{13}{9}+\frac{4}{3}$ $\frac{25}{9}$

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

6. $\frac{20}{3}-\frac{7}{8}$ $\frac{139}{24}$

7. $\frac{16}{3}+\frac{11}{12}$ $\frac{25}{4}$

8. $\frac{16}{9}+\frac{2}{7}$ $\frac{130}{63}$

9. $\frac{7}{10}+\frac{5}{4}$ $\frac{39}{20}$

10. $\frac{7}{2}-\frac{21}{10}$ $\frac{7}{5}$

Multiplying and Dividing Fractions

1. $\frac{2}{9}\div\frac{11}{3}$ $\frac{2}{33}$

2. $\frac{11}{9}\bullet\frac{6}{22}$ $\frac{1}{3}$

3. $\frac{7}{11}\div\frac{7}{4}$ $\frac{4}{11}$

4. $\frac{12}{3}\div\frac{2}{3}$ 6

5. $\frac{4}{5}\bullet\frac{9}{8}$ $\frac{9}{10}$

6. $\frac{8}{5}\div\frac{18}{7}$ $\frac{28}{45}$

7. $\frac{9}{4}\bullet\frac{6}{5}$ $\frac{27}{10}$

8. $\frac{1}{2}\div\frac{23}{3}$ $\frac{3}{46}$

9. $\frac{14}{6}\bullet\frac{6}{7}$ 2

10. $\frac{10}{25}\bullet\frac{2}{5}$ $\frac{4}{25}$

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Combine Like Terms and Distributive Property. Simplify each expression.

1) $1 - 9n + 6 + 5n$

2) $n - 6 + 3n + 1$

3) $10(1 - 7x)$

4) $-2(6 - 8k)$

5) $4 + 2(1 - 9a)$

6) $-3 - 10(1 + 9r)$

7) $2p - 6(7p - 9)$

8) $-9 - 2(9 - 2n)$

9) $3b - 7(5b - 8)$

10) $-m - (-9m - 4)$

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

11) $n - 15 = -20$

12) $-2 - x = 3$

13) $\frac{14}{3} = -6x$

14) $\frac{43}{6} = -\frac{1}{3} + n$

15) $-5n - 7n - 8 = -7n - 7n$

16) $-6 + 5m + 7 = 3m - 8m - 9$

17) $-\frac{11}{7}x - \frac{127}{21} = \frac{9}{2}x - 2$

18) $-\frac{4}{3}a - \frac{27}{8} = \frac{5}{3}a - \frac{7}{8}$

19) $6(3 - 3x) + 8x = 98$

20) $88 = -4 + 4(-5n - 2)$

21) $-5\left(\frac{9}{4}n + \frac{3}{5}\right) = -93$

22) $-\frac{615}{7} = \frac{8}{7} - 4\left(5r + \frac{19}{4}\right)$

23) $-5(7 - 6k) - 2(5 - 5k) = -45$

24) $-50 = 8(n - 7) + 2(n + 8)$

25) $-2\left(\frac{5}{3}v-1\right)+\frac{13}{4}-\frac{5}{4}=-\frac{5}{3}\left(2v-\frac{12}{5}\right)$

26) $-2\left(\frac{1}{6}x-\frac{2}{5}\right)=\frac{4}{3}\left(\frac{17}{5}x-\frac{6}{5}\right)$

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

27) $\frac{8}{x}=\frac{5}{2}$

28) $\frac{6}{p}=\frac{8}{5}$

29) $\frac{8}{6}=\frac{4}{v-6}$

30) $\frac{2}{8}=\frac{5}{b-5}$

31) $\frac{4}{2}=\frac{5}{v-2}$

32) $\frac{b+8}{8}=\frac{10}{4}$

33) $\frac{9}{x}=\frac{5}{x+10}$

34) $\frac{n}{3}=\frac{n-10}{8}$

35) $\frac{8}{7}=\frac{m-1}{m-9}$

36) $\frac{v+3}{v-9}=\frac{3}{2}$

Solve each system by substitution.

37) $y=4x+8$
$y=-5x-1$

38) $y=-8x-23$
$y=6x+5$

39) $y=-5x-22$
$-2x-2y=-4$

40) $y=x-11$
$-3x-5y=23$

41) $-5x-7y=8$
$x-8y=-11$

42) $-7x+y=-23$
$-2x+8y=-22$

43) $3x+5y=-5$
$2x+6y=2$

44) $6x+2y=0$
$-4x-8y=20$

Solve each system by elimination.

45) $-9x+2y=20$
$10x-2y=-24$

46) $x-4y=-2$
$-x-y=-3$

47) $9x - 3y = 3$
$x - 3y = 19$

48) $-6x + y = -28$
$-6x + 9y = -12$

49) $-6x + 6y = 6$
$-2x + 4y = 18$

50) $-10x + 8y = -16$
$20x + y = -2$

51) $-2x - 5y = -7$
$-5x - 8y = -13$

52) $8x - 7y = -23$
$7x - 6y = -19$

Simplify. No Decimals.

53) $\sqrt{108}$

54) $\sqrt{200}$

55) $\sqrt{175}$

56) $\sqrt{63}$

57) $\sqrt{27}$

58) $\sqrt{45}$

59) $-8\sqrt{12}$

60) $2\sqrt{96}$

61) $3\sqrt{50}$

62) $7\sqrt{98}$

Find each product by FOILing.

63) $(7x + 8)(2x + 8)$

64) $(5b - 2)(5b - 6)$

65) $(5b + 7)(5b - 1)$

66) $(2n - 2)(3n + 5)$

Factor each expression using the GCF.

67) $-10n + 20$

68) $-18x^2 + 3x$

69) $-60b^2 + 50b$

70) $4a^4 - 8a^{11}$

Factor each completely without using grouping.

71) $a^2 - 25$

72) $k^2 - 64$

73) $9x^2 - 64$

74) $4n^2 - 1$

75) $b^2 - 9b + 18$

76) $x^2 + 15x + 54$

77) $v^2 + 5v - 36$

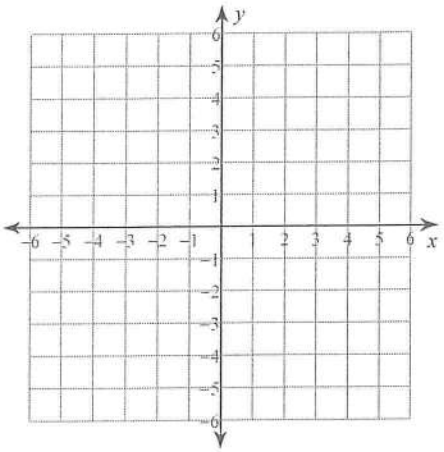
78) $n^2 - n - 12$

79) $6m^2 - 6m - 36$

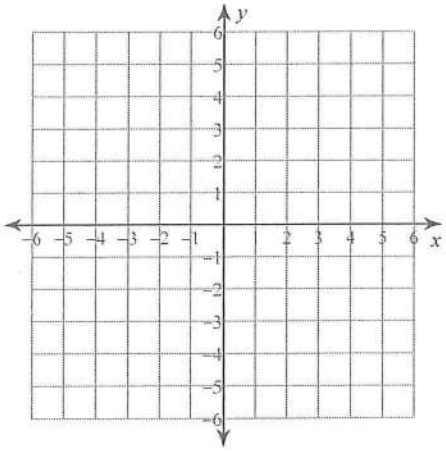
80) $3v^2 + 15v - 108$

Sketch the graph of each line.

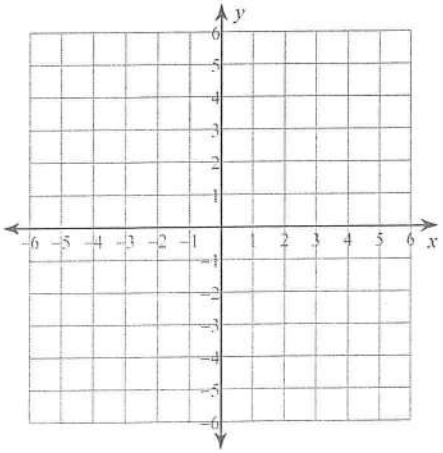
81) $y = -\frac{7}{2}x + 3$



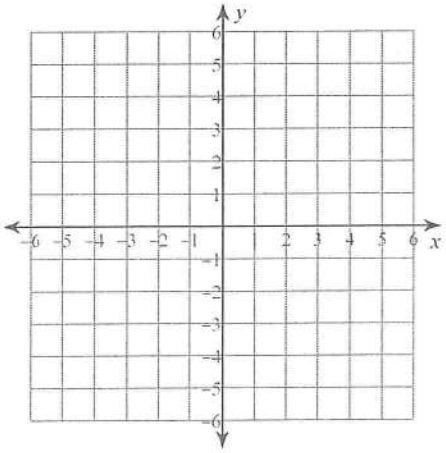
82) $y = \frac{5}{3}x + 2$



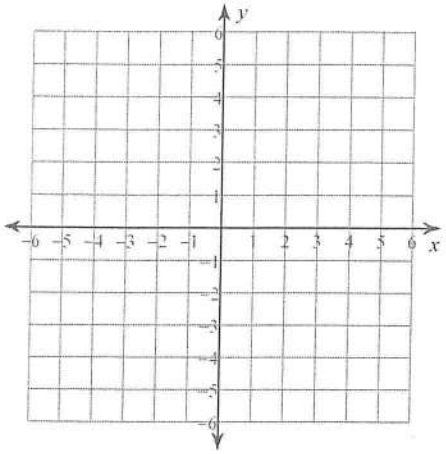
83) $y = -2x - 3$



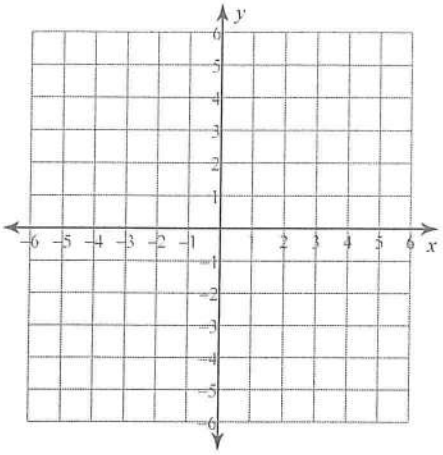
84) $y = 4x + 1$



85) $y = 4$

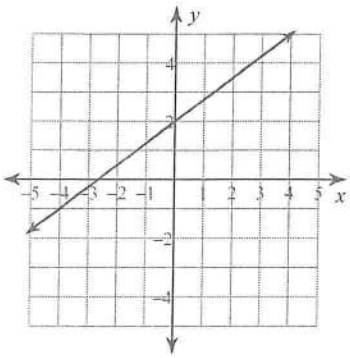


86) $x = -2$

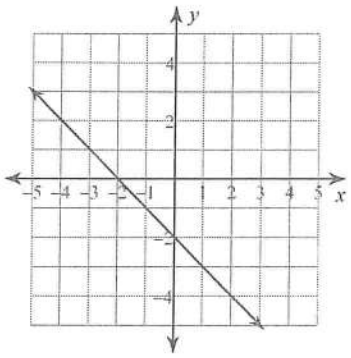


Write the slope-intercept form of the equation of each line.

87)



88)



89) Slope $= -\frac{7}{5}$, y-intercept $= -4$

90) Slope $= \frac{4}{5}$, y-intercept $= 3$

91) through: $(3, -3)$, slope $= -\frac{7}{3}$

92) through: $(-1, -1)$, slope $= -4$

93) through: $(3, 1)$ and $(1, -4)$

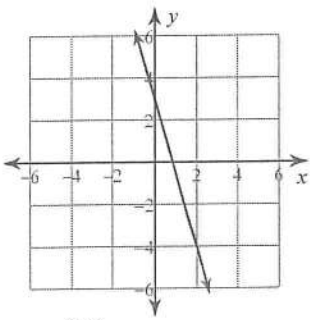
94) through: $(-1, -5)$ and $(-2, -3)$

95) through: $(5, 1)$ and $(5, 5)$

96) through: $(4, 2)$ and $(0, 2)$

Answers to Incoming Students: Essential Practice

1) $7-4n$
2) $4n-5$
3) $10-70x$
4) $-12+16k$
5) $6-18a$
6) $-13-90r$
7) $-40p+54$
8) $-27+4n$
9) $-32b+56$
10) $8m+4$
11) $\{-5\}$
12) $\{-5\}$
13) $\left\{-\frac{7}{9}\right\}$
14) $\left\{\frac{15}{2}\right\}$
15) $\{4\}$
16) $\{-1\}$
17) $\left\{-\frac{2}{3}\right\}$
18) $\left\{-\frac{5}{6}\right\}$
19) $\{-8\}$
20) $\{-5\}$
21) $\{8\}$
22) $\left\{\frac{7}{2}\right\}$
23) $\{0\}$
24) $\{-1\}$
25) { All real numbers. }
26) $\left\{\frac{36}{73}\right\}$
27) $\{3.2\}$
28) $\{3.75\}$
29) $\{9\}$
30) $\{25\}$
31) $\{4.5\}$
32) $\{12\}$
33) $\{-22.5\}$
34) $\{-6\}$
35) $\{65\}$
36) $\{33\}$
37) $(-1, 4)$
38) $(-2, -7)$
39) $(-6, 8)$
40) $(4, -7)$
41) $(-3, 1)$
42) $(3, -2)$
43) $(-5, 2)$
44) $(1, -3)$
45) $(-4, -8)$
46) $(2, 1)$
47) $(-2, -7)$
48) $(5, 2)$
49) $(7, 8)$
50) $(0, -2)$
51) $(1, 1)$
52) $(5, 9)$
53) $6\sqrt{3}$
54) $10\sqrt{2}$
55) $5\sqrt{7}$
56) $3\sqrt{7}$
57) $3\sqrt{3}$
58) $3\sqrt{5}$
59) $-16\sqrt{3}$
60) $8\sqrt{6}$
61) $15\sqrt{2}$
62) $49\sqrt{2}$
63) $14x^2+72x+64$
64) $25b^2-40b+12$
65) $25b^2+30b-7$
66) $6n^2+4n-10$
67) $10(-n+2)$
68) $3x(-6x+1)$
69) $10b(-6b+5)$
70) $4a^4(1-2a^7)$
71) $(a-5)(a+5)$
72) $(k-8)(k+8)$
73) $(3x+8)(3x-8)$
74) $(2n-1)(2n+1)$
75) $(b-3)(b-6)$
76) $(x+6)(x+9)$
77) $(v+9)(v-4)$
78) $(n+3)(n-4)$
79) $6(m+2)(m-3)$
80) $3(v-4)(v+9)$
81)



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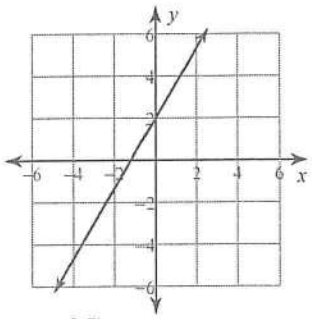

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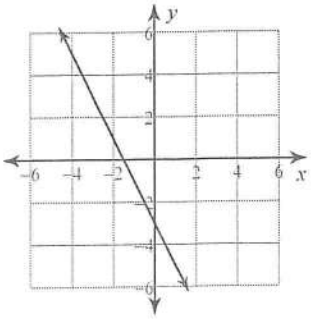

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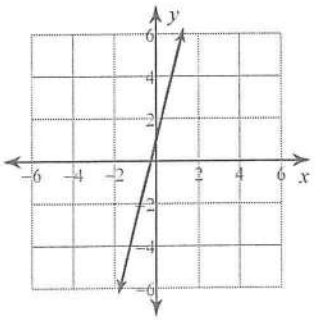

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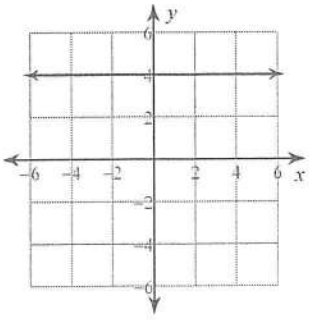

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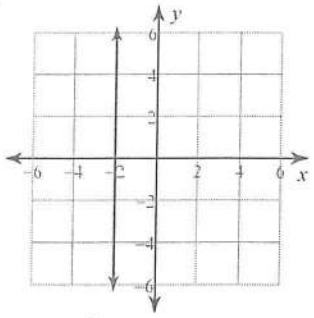

87) $y = \frac{3}{4}x + 2$

88) $y = -x - 2$

89) $y = -\frac{7}{5}x - 4$

90) $y = \frac{4}{5}x + 3$

91) $y = -\frac{7}{3}x + 4$

92) $y = -4x - 5$

93) $y = \frac{5}{2}x - \frac{13}{2}$

94) $y = -2x - 7$

95) $x = 5$

96) $y = 2$