

Algebra 2 level III

Summer Packet

This packet of exercises reflects skills that the Math Department considers essential for your success in Algebra 2!

In this packet you will find the following:

- Questions on material previously learned in both Algebra 1 and Geometry.
- Topics from Khan Academy referenced in the directions for each problem set. If you are having difficulty recalling how to do a specific type of problem, the Khan Academy videos are an excellent resource for re-teaching. Go to www.khanacademy.org, type in the phrase provided, and it will take you to a video(s) about the topic. Khan Academy also provides further practice on the topics that you can do for your own self-assessment.

Your Responsibility is to:

- Complete all problems and show all necessary work **clearly and carefully**
- Turn in the packet on **THE FIRST DAY OF SCHOOL!** It will be collected and checked for completion on the first day of school.

You will be tested on the material within the **first two** weeks of school.

Have a great summer!

Summer Assignment

Solve each equation. (Khan Academy Video: Variables on both sides)

1) $\frac{14}{9} - n = \frac{4}{3}\left(\frac{1}{2}n + \frac{1}{3}\right)$

2) $-x - 4x = 3(6x + 1) - 3(1 + x)$

3) $-5(k - 5) - 4(k - 6) = -2k - 7k$

Solve each inequality and graph its solution. (Khan Academy Video: Two Step Inequality example)

4) $88 < 5(6 - 6b) - 2$



5) $6(8m + 8) \leq 336$



Solve each proportion. (Khan Academy Video: Proportions 2)

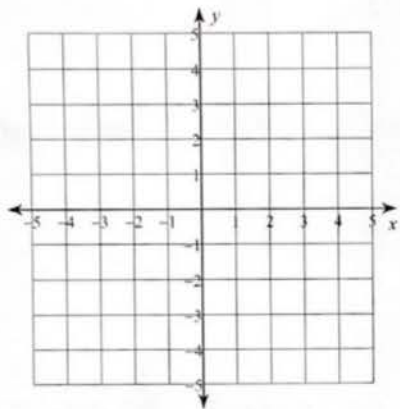
6) $\frac{10}{2x + 6} = \frac{9}{x + 11}$

7) $\frac{5a + 5}{11} = \frac{11a + 11}{6}$

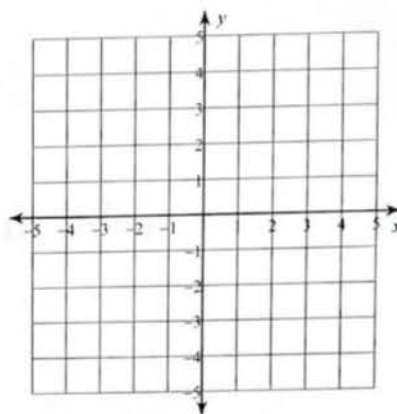
Solve each system by graphing. (Khan Academy Topic: Solving Linear Systems by Graphing)

8) $y = \frac{2}{3}x - 1$

$y = -\frac{1}{3}x - 4$



9) $-2y = 2 - x$
 $0 = x + 6 + 2y$



Solve each system by substitution. (Khan Academy Topic: Solving Linear Systems by Substitution)

10) $4x + y = 4$
 $-3x - 2y = 7$

11) $2x - 8y = 12$
 $-3x - 2y = 24$

Solve each system by elimination. (Khan Academy Topic: Solving Linear Systems by elimination and Solving Linear Systems by Multiplication)

12) $6x + 4y = 18$
 $-6x - 3y = -18$

13) $3x - 2y = -11$
 $5x - 3y = -20$

Simplify.(Khan Academy Topic: Adding and simplifying radicals)

14) $\sqrt{32}$

15) $3\sqrt{80}$

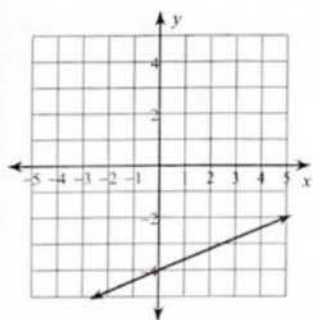
16) $-\sqrt{108}$

17) $-5\sqrt{196}$

18) $\frac{\sqrt{6}}{2\sqrt{8}}$

Write the slope-intercept form of the equation of each line given the information provided.(Khan Academy Topic:Constructing equations in slope intercept form - there are multiple videos on this topic, Also see equations of parallel and perpendicular lines)

19)



20) $4x + 3y = 22$

21) $y - 3 = 3(x - 4)$

22) Slope = $-\frac{1}{2}$, y-intercept = -1

23) through: $(3, -1)$, slope = $-\frac{2}{3}$

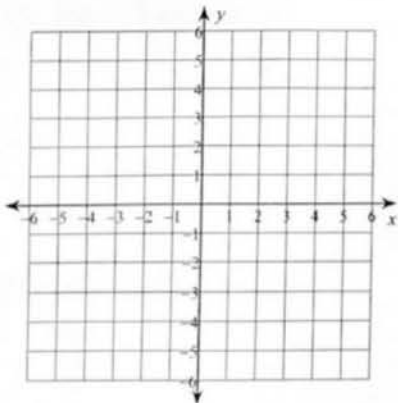
24) through: $(-5, 2)$ and $(4, -4)$

25) through: $(-1, 4)$, parallel to $y = -2x - 5$

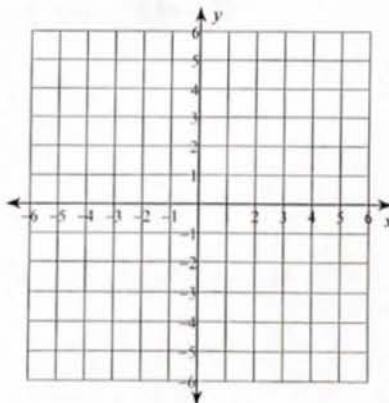
26) through: $(1, -1)$, perp. to $y = \frac{1}{4}x + 4$

Sketch the graph of each line. (Khan Academy Topic: Graphing linear equations in slope intercept form)

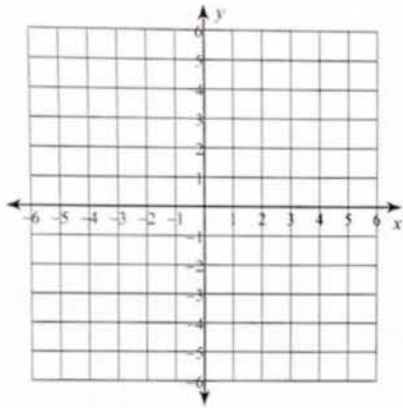
27) x-intercept = -1 , y-intercept = 1



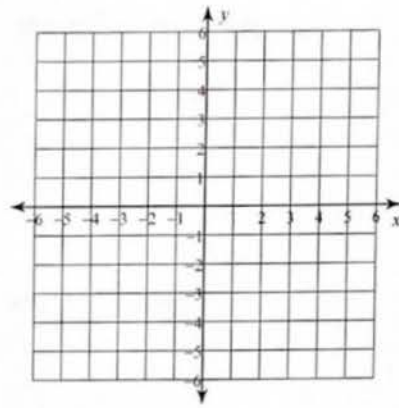
28) $4x - y = -3$



29) $y = -2x + 5$



30) $x = 4$



Simplify each expression. (Khan Academy Topic: Addition and subtraction of polynomials)

31) $-3(b - 3) + 3(4b + 3)$

32) $7(6r + 8) - 5(1 + 8r)$

Find each product. (Khan Academy Topic: Multiplying polynomials)

33) $(3x + 7)(6x + 3)$

34) $(4n - 7)(5n - 8)$

35) $(6m + 6n)(2m - 7n)$

36) $(8x + 2)(x^2 - 2x + 4)$

Factor each completely. (Khan Academy Topic: Factoring Quadratics)

37) $a^2 - 7a + 10$

38) $5x^2 + 100x + 500$

39) $4x^3 - 44x^2 + 112x$

40) $3a^3 - 27a$

41) $5n^2 + 17n + 6$

Evaluate each function. (Khan Academy Video: Evaluating with function notation)

42) $p(t) = 2t + 4$; Find $p(2)$

43) $p(n) = -n^2 + 5n$; Find $p(-3)$

44) $p(x) = x^2 + 5$; Find $p(-5)$

Evaluate each expression. (Khan Academy Video: Adding and subtracting fractions)

$$45) 1\frac{2}{3} + \left(-1\frac{6}{7}\right) + 3 + 2$$

$$46) 2\frac{1}{4} - \frac{1}{4} + \left(-2\frac{5}{6}\right) + 3\frac{1}{4}$$

Find each quotient. (Khan Academy Video: Multiplying and dividing fractions)

$$47) \frac{3\frac{3}{4}}{\frac{4}{5}}$$

$$48) \frac{-2}{\frac{1}{4}}$$

Evaluate each using the values given. (Khan Academy Video: Evaluating expressions in one variable)

$$49) yx - x - (x^2 + y); \text{ use } x = -3, \text{ and } y = -13$$

$$50) (a + b)(c - b - |c|); \text{ use } a = 24, b = -9, \text{ and } c = 3$$