Summer Assignment for Students Going Into Algebra 2 (all grades)

Directions:

- ❏ Set up Khan Academy to be able to access helpful videos for your summer homework.
    - ❏ Go to khanacademy.org and log in using your JBHA email (if you don't yet have one, use your personal email address).
    - ❏ Go to "Teachers" and enter the code **AJE8SZFX** to add "Algebra 2 - Summer 2021" to your courses.
    - ❏ You will be added to the course shortly. Once you have been added to the course by your teacher, then you should see a list of recommended videos that match the topics in this packet.
        - ❏ These videos are **not** required. They are optional to provide additional support.
- ❏ Complete this packet one topic at a time following the directions below:
    - ❏ Complete all problems in the section, showing all of your work. If there is no work to show, write a sentence or two explaining your answer. ==**You may not use a calculator on this assignment. Only questions with work and/or explanations will be counted as complete.**==
    - ❏ Write your final answer/solution on the chart on the next page.
    - ❏ Check your answers using the answer key on the last page of this packet.
        - ❏ If a question is wrong, that's okay! Check your work for any mistakes and try again :).
        - ❏ If multiple questions are wrong or you don't understand how to arrive at the correct answer, it's probably time to get extra help (see below).
- ❏ If you need extra help you should:
    - ❏ Look at the topics that correspond to the problems in the assignment. Videos have been assigned in the Khan Academy class that will cover all topics. No googling required :)
        - ❏ Please make sure to use the link on your Khan Academy class so we have a record of which topics may need to be reviewed upon returning to school in September.
- ❏ Bring this packet with you on the first day of school.
    - ❏ While we will be looking at the chart to see trends across the class, your grade will be based on **completion** not correct answers.
    - ❏ Please draw a ☆ next to any topic you would like your teacher to review with you or the whole class.

Name: _____

Solution/Reflection Chart

Topic	Question	My Answer	Correct?
Evaluating Expressions	1		
	2		
	3		
	4		
Simplifying Expressions (Like Terms)	5		
	6		
	7		
	8		
Solving Equations	9		
	10		
	11		
Solving Literal Equations	12		
	13		
	14		
	15		
Word Problems	16		
	17		
Linear Inequalities	18		
	19		
	20		
	21		
Slope	22		
	23		
	24		
	25		

Graphing Linear Equations	26	**Graph**	
	27		
	28		
	29		
Slope Intercept Form	30		
	31		
	32		
Solving Systems of Linear Equations	33	**Graph**	
	34		
	35		
	36		
	37		
	38		
Factoring Expressions	39		
	40		
	41		
	42		
	43		
	44		
	45		
	46		
Solving Quadratic Equations	47		
	48		
Simplifying Expression (Exponents & Radicals)	49		
	50		
	51		
	52		

Topic 1: Evaluating Expressions

    1. $-3 - 6 \div 2 - 12$

    2. $-5 \div 1 + 2(7 - 10)^2$

    3. $7x - 3x - 8x^2$ when $x = -1$

    4. $3ab^2 + 5a^2b - 1$ for $a = 2$ and $b = -2$

Topic 2: Simplifying Expressions (Like Terms)

    5. $7y - 2x + 5x - 3y + 2x$

    6. $4(3 - x) + 5(x - 6)$

    7. $6x^2 - 3x + 5x^2 + 2x$

    8. $2(x^2 + x) - 3(x^2 - 4x)$

Topic 3: Solving Equations

    9. $2 - 3a = 4 + a$

    10. $8(n - 6) = -16$

    11. $-4x - 4 = 3(2 - x)$

Topic 4: Solving Literal Equations

Solve for y in terms of x

12. $5x - y = 10$ 13. $x + 4y = -8$ 14. $0.1x + 0.5y = 3.5$

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

Topic 5: Word Problems

16.   How long will it take to drive 325 miles at 55 miles per hour?

17.   While on vacation, you take a taxi from the airport to your hotel for $21.85. The taxi costs $2.95 plus $1.35 per mile. How far is it from the airport to the hotel?

Topic 6: Linear Inequalities

Solve each of the following inequalities and graph your solution(s) on a number line

18. $12 - 5x \geq -13$ 19. $-3x + 4 \geq 2x + 19$

20. $-3 \leq 2y + 1 \leq 10$

21. $3a + 1 < -2$ or $3a + 1 > 7$

Topic 7: Slope

Determine the slope of the line passing through the given points

22.   (3, 6) and (-6, 0)

23.   (2, 4) and (-2, 4)

24.   (-7, 2) and (-1, -4)

25.   (5, 1) and (5, 4)

Topic 8: Graphing Linear Equations

26. $y = -x + 3$
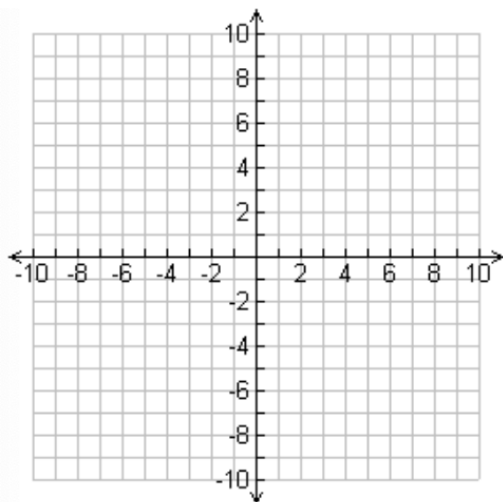
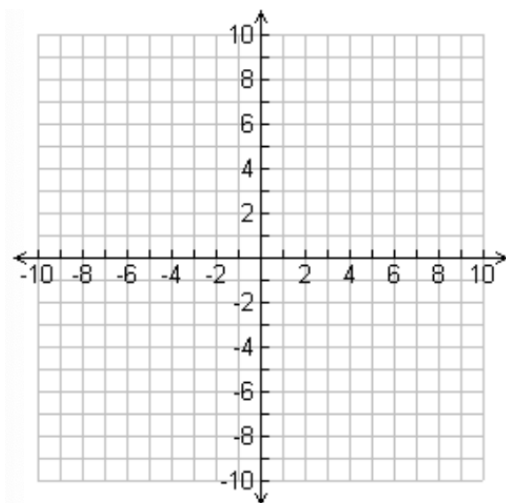27. $y = \frac{5}{3}x - 5$
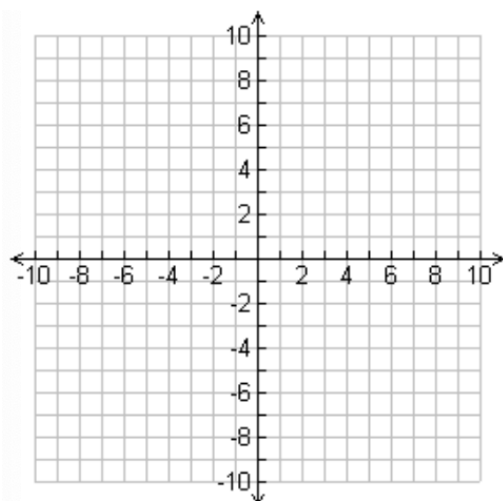
28.   4x + 2y = 6
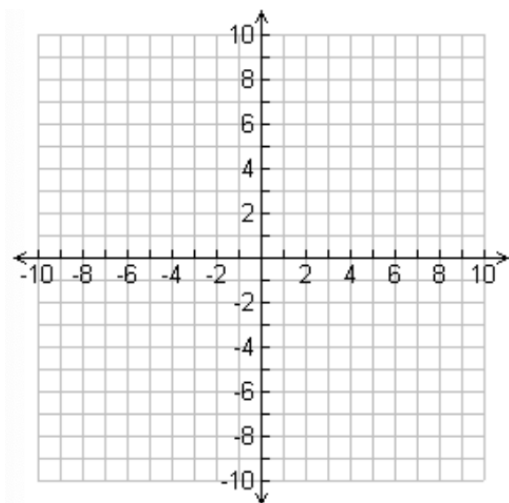
29.   -4x + 8y = -16

Topic 9: Slope Intercept Form

Write each equation in slope intercept form

30.   Slope = -1, y-intercept: (0, 2)

31.   Slope = 3, contains the point (-4, 1)

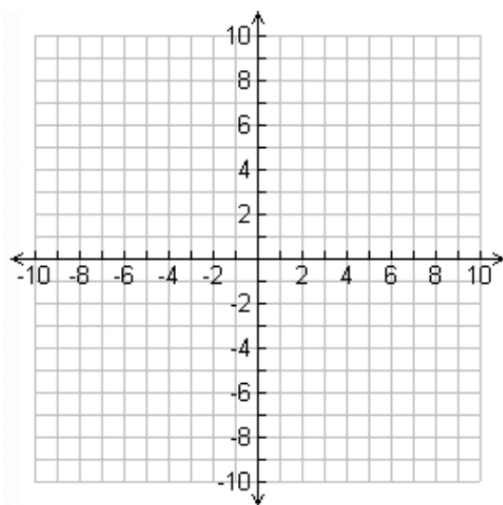32.   Passes through the points (3, -8) and (8, 2)

Topic 10: Systems of Linear Equations

Solve each system graphically:

33. $x + y = 2$

   $2x - 3y = 9$
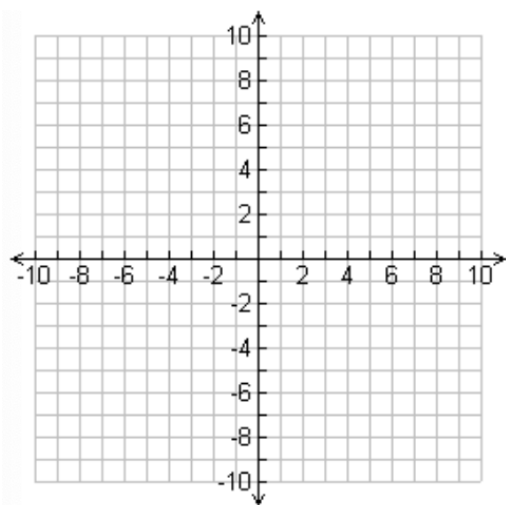
34. $x = 3y$

   $y = \dfrac{1}{3}x - 2$

Solve each system using any algebraic method:

35. $9x - 5y = -30$

   $x + 2y = 12$

36. $x + 3y = -2$

   $x + 2y = 2$

37. 2x + 3y = -7
     -4x - 5y = 13

38. 3x + 4y = 15
     -2x + 6y = 3

Topic 11: Factoring Expressions

39. $5x^2 - 15x$

40. $x^2 - 4x - 21$

41. $2x^2 - 18$

42. $3x^2 + 13x - 10$

43. $3x^2 + 7x + 2$

44. $2x^2 - 15x$

45. $4x^2 - 9x + 2$

46. $2x^2 - 13x + 15$

Topic 12: Solving Quadratic Equations

47.　　$x^2 - 5x - 14 = 0$

48.　　$3x^2 - 16x + 5 = 0$

Topic 13: Simplifying Expressions (Exponents and Radicals)

49.　　$(5a^3)^2$

50.　　$\dfrac{60x^4y}{15xy}$

51.　　$\sqrt{28}$

52.　　$\sqrt{50} + \sqrt{18}$

Answer Key:

1. -18	19. $x \leq -3$ **<see graph below>**	37. (-2,-1)

|		
2. 13	**20.** $-2 \le y \le \frac{9}{2}$ **<see graph below>**	**38.** $(3, \frac{3}{2})$
3. -12	**21. a<-1 or a>2 <see graph below>**	**39. 5x(x-3)**
4. -17	**22.** $\frac{2}{3}$	**40. (x-7)(x+3)**
5. 5x+4y	**23. 0**	**41. 2(x+3)(x-3)**
6. x-18	**24. -1**	**42. (x+5)(3x-2)**
7. $11x^2 - x$	**25. Undefined**	**43. (x+2)(3x+1)**
8. $-x^2 + 14x$	**26. <see graph below>**	**44. x(2x-15)**
9. $a = -\frac{1}{2}$	**27. <see graph below>**	**45. (4x-1)(x-2)**
10. n=4	**28. <see graph below>**	**46. (2x-3)(x-5)**
11. x=-10	**29. <see graph below>**	**47. x=-2,7**
12. y=5x-10	**30. y=-x+2**	**48.** $x = \frac{1}{3}, 5$
13. $y = -\frac{1}{4}x - 2$	**31. y=3x+13**	**49.** $25a^6$
14. $y = -\frac{1}{5}x + 7$	**32. y=2x-14**	**50.** $4x^3$
15. $L = \frac{1}{2}P - W$	**33. (3,-1) <see graph below>**	**51.** $2\sqrt{7}$
16. About 5.9 hours	**34. No Solution (parallel lines)**	**52.** $8\sqrt{2}$
17. 14 miles	**35. (0,6)**	
18. $x \le 5$ **<see graph below>**	**36. (10,-4)**	

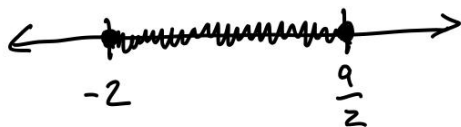18. $12 - 5x \geq -13$

$x \leq 5$

19. $-3x + 4 \geq 2x + 19$

$x \leq -3$
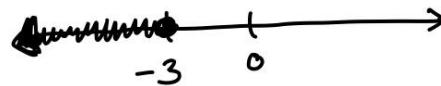
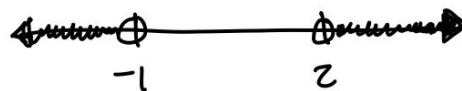20. $-3 \leq 2y + 1 \leq 10$

$-2 \leq y \leq \frac{9}{2}$

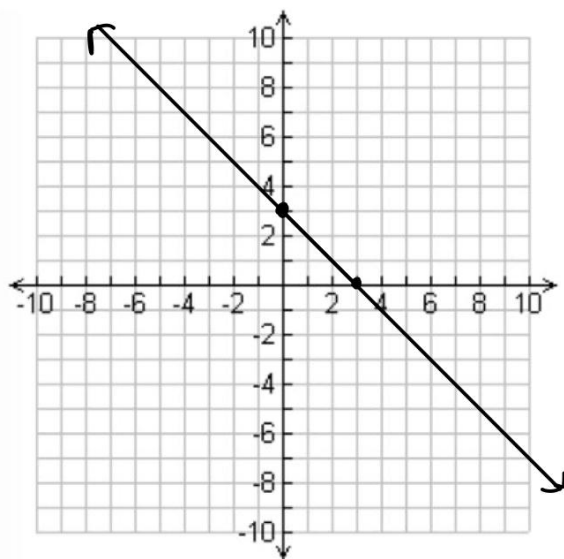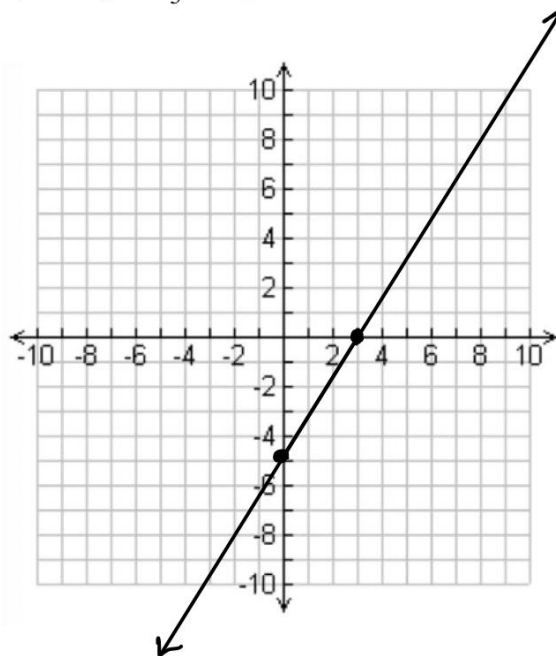

21. $3a + 1 < -2$ or $3a + 1 > 7$

$a < -1$ or $a > 2$

26. $y = -x + 3$

27. $y = \frac{5}{3}x - 5$

12
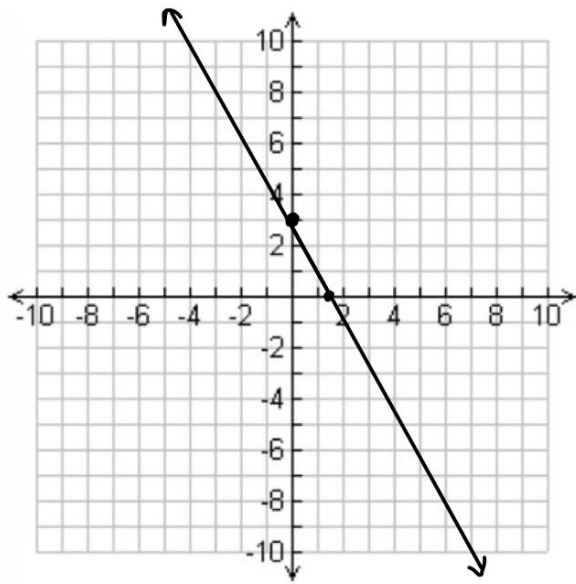
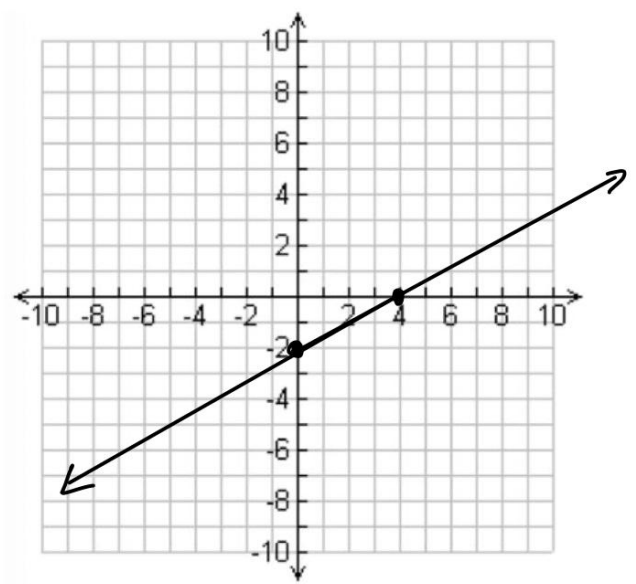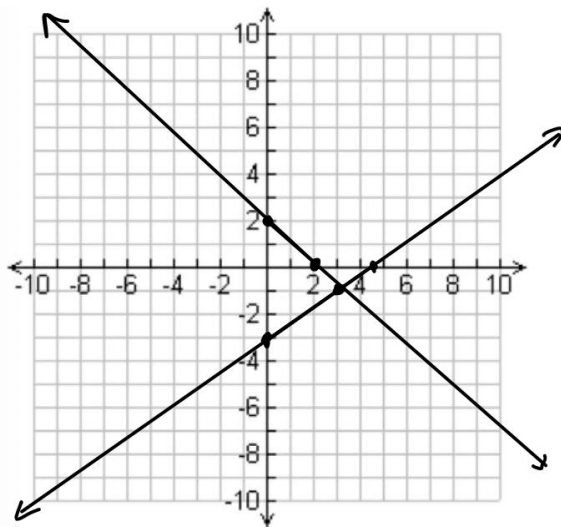28. $4x + 2y = 6$

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