

## Advanced Algebra - Summer Math Assignment 2026

### Assignment Instructions

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- Complete the attached assignment.
- Please do not use a calculator
- Show all work to receive full credit
- Supplemental material and links can be found within the document to help if you get stuck
- Completed assignment is due when we return to school in September

**This assignment will count as a 20-point Formative Grade!**

### Supplemental Material

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*These are notes from prior years of teaching. Think of this as a textbook. Video notes are found throughout the document.*

- Notes on Numbers, Order of Operations, and Solving: <https://tinyurl.com/numberoperationandsolve>
  - Notes on Interval Notation, Linear Inequalities, and Absolute Value:  
<https://tinyurl.com/inequalitiesandabsolutevalue>
  - Notes on Slope and Writing Equations of Lines: <https://tinyurl.com/slopeandeqnsoflines>
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## 1. Classify the Numbers

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Put a check in the column in which each number belongs. A number may belong to more than one set.

Helpful Video on classifying numbers: <https://tinyurl.com/algebra2explain1>

Number	Real	Rational	Irrational	Integer	Whole	Natural
$\sqrt{25}$						
$-\frac{1}{4}$						
$\pi$						
-2						
1.36						
$\sqrt{11}$						

## Simplify

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2.  $(2 + 4)^2 - 3 \times 7$

3.  $2 + 4[20 - (1 + 2)^2]$

4.  $\frac{2^4 \div 8 \times 7}{6 + 8}$

## Solve for the Specified Variable

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Helpful Video: <https://tinyurl.com/algebra2solvevar>

5.  $A = \pi r^2$  Solve for r.

6.  $2x - 4y = 5$  Solve for y.

7.  $A = \frac{1}{2}(b_1 + b_2)h$  Solve for  $b_2$ .

**Solve the Following Equations**

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Helpful Video – Solving Equations: <https://tinyurl.com/algebra2problemsolvinglinear>

Helpful Video – Solving Equations with Fractions: <https://tinyurl.com/algebra2solvingfractions>

**8.**  $7x - 2 = 26$

**9.**  $6(2x + 1) = 24$

**10.**  $\frac{2}{3}x - \frac{1}{6} = 5$

**11.**  $3 - (x - 7) = 2x + 9$

**12.**  $\frac{2}{3}(2x - 1) = 5x + 1$

**13.**  $\frac{2x-5}{3} = 3x - 1$

**14.**  $\frac{4}{3}x + \frac{10}{9} = 3 - \frac{2}{9}x$

**15.**  $14 + 9x = 11 - 5(x - 3)$

### Solve Absolute Value Equations

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Helpful Video: <https://tinyurl.com/algebra2solvingabsvalue>

16.  $|4x + 2| = 10$

17.  $-2|x + 4| + 9 = 3$

18.  $|2x - 7| = 7x + 7$

19.  $|3x - 2| = x - 1$

### Solve Inequalities, Graph, and Write in Interval Notation

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For each problem:

A. Solve the inequality

B. Graph on a number line

C. Write in interval notation

Helpful Video – Interval Notation: <https://tinyurl.com/algebra2interval>

Helpful Video – Solving Inequalities: <https://tinyurl.com/algebra2solveinequality>

20.  $-2 < 3x - 4 \leq 7$

21.  $3x + 2 < -10$  or  $2x - 4 > -4$

22.  $-1 \leq 3 - 2x \leq 9$

23.  $\frac{3x+2}{5} \leq 1$  or  $7x + 2 > 23$

**Find the Slope**

Helpful Video: <https://tinyurl.com/algebra2calcslope>

24. (2, 4) and (-2, 5)

25. (5, 2) and (5, -1)

26. (-1, -2) and (-3, 7)

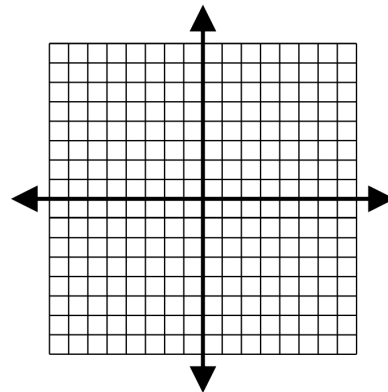
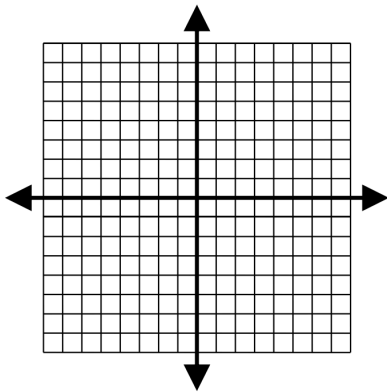
27. (3, -1) and (-5, -1)

**Graph the Following Equations or Inequalities**

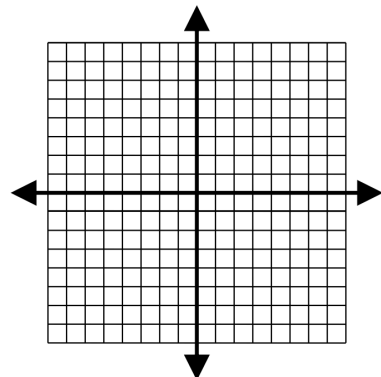
Helpful Video – Graphing Lines: <https://tinyurl.com/algebra2eqnline>

28.  $y = \frac{-2}{3}x + 5$

29.  $2x + 4y = -4$

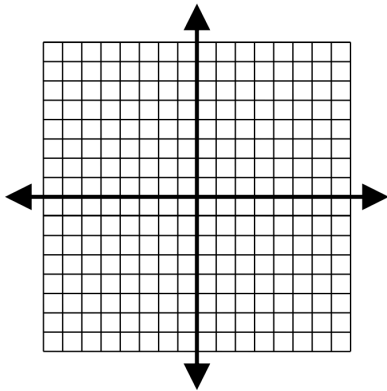


30.  $4x - 3y = -9$

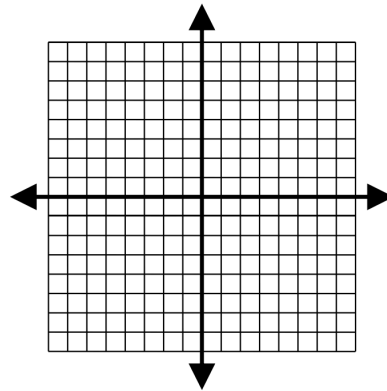


Helpful Video – Graphing Linear Inequalities: <https://tinyurl.com/algebra2graphineq>

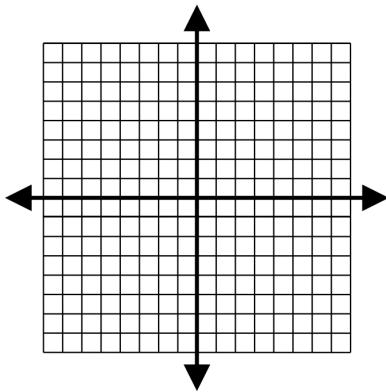
31.  $x \leq 3$



32.  $y \leq -\frac{3}{5}x + 2$



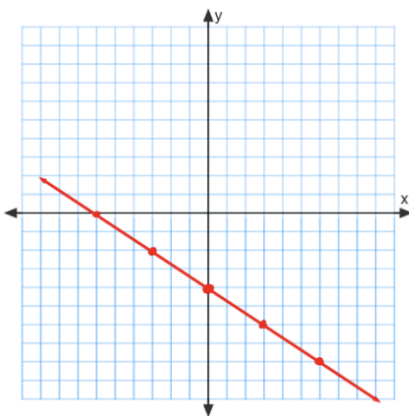
33.  $y > 3x - 2$



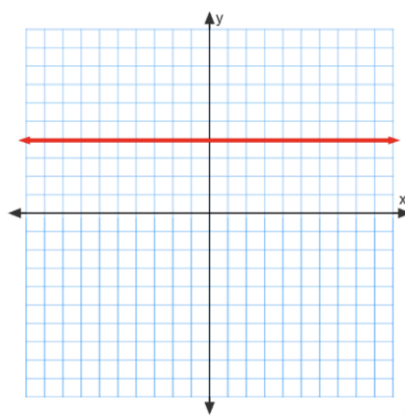
**Write the Equation of the Graph in Slope-Intercept Form**

Helpful Video: <https://tinyurl.com/algebra2writeeqn>

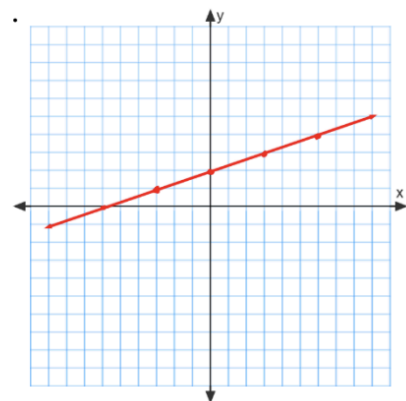
34.



35.



36.



### Word Problem

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**37.** The length of a rectangle is 5 more than the width. The perimeter of the rectangle is 86. Find the dimensions of the rectangle. Make sure to define the variable, set up an equation, and solve.

*Helpful resource:* <https://tinyurl.com/algebra2word>