Westerly High School

Algebra 2

Summer Work Packet

A TEST WILL BE GIVEN PERTAINING TO THE REVIEW
MATERIAL WITHIN THE FIRST WEEK OF CLASS
Helpful Websites

1. www.khanacademy.org


Section 1: Ordering Numbers

Example: Graph the numbers on a number line, then write the numbers in increasing order.

Given: \(3, \frac{3}{2}, -2, -\frac{1}{3}\)

Step 1: Rewrite #’s as decimals 3, 1.5, -2, -0.33

Step 2: Plot on number line

```
-2 -1 0 3 2
```

Step 3: Write the #’s from least to greatest.

\(-2, -\frac{1}{3}, \frac{3}{2}, 3\)

Try these:

1. \(4, -\frac{5}{2}, 0, \frac{3}{4}\)
2. \(1, -\frac{2}{3}, \frac{7}{2}, -4\)

Section 2: Vocabulary

Circle the sign of the operation that corresponds to the term.

3. Product + - • +
4. Sum + - • +
5. Difference + - • +
6. Quotient + - • +

Section 3: Order of Operation (no calculator)

When given an expression to evaluate use the following steps:

1. Parentheses
2. Exponents
3. Multiplication & Division (left to right)
4. Addition & Subtraction (left to right)

Example:

\((3 - 1)^2 + 10 \div 5\)
\((2)^2 + 10 + 5\)
\(4 + 10 \div 5\)
\(4 + 2\)
\(6\)
Try These:
Evaluate the following expressions without a calculator.

7. \(4 + 4 + 2 - 1\)  
8. \(20 + (7 - 5)^2 + 2\)

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Section 4: Combining Like Terms

Example:
\[5x^2 + 3x - 2 - 4x^2 + 5x - 4 =\]
\[5x^2 - 4x^2 + 3x + 5x - 2 - 4 =\]
\[x^2 + 8x - 6\]

Try these:
9. \(5x^2 + 3x - 2x + 4x^2\)
10. \(2(x - 2) + 4(x + 3)\)

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Section 5: Fractions (Without Calculator)

Simplifying or Reducing Fractions

Example:
\[\begin{align*}
a. \quad \frac{3}{6} & = \frac{1}{2} \\
b. \quad \frac{4 \pm 6\sqrt{2}}{2} & = \frac{4}{2} \pm \frac{6\sqrt{2}}{2} = 2 \pm 3\sqrt{2}
\end{align*}\]

Try These:
11. \(\frac{4}{16}\)
12. \(\frac{4 \pm 2\sqrt{5}}{6}\)
13. \(\frac{15 \pm 10\sqrt{5}}{25}\)

Adding and Subtracting (Find the Least Common Denominator)

Example:
To add: \(\frac{1}{4} + \frac{5}{6}\)  \[\text{LCD} = 12\]
\[\frac{3}{12} + \frac{10}{12} = \frac{13}{12}\]

To subtract: \(\frac{2}{3x} - \frac{1}{6}\)  \[\text{LCD} = 6x\]
\[\frac{4}{6x} - \frac{x}{6x} = \frac{4-x}{6x}\]

Try These: Add or Subtract
14. \(\frac{1}{3} + \frac{4}{5}\)
15. \(\frac{7}{12} - \frac{1}{4x}\)
16. \(\frac{2}{3} - \frac{1}{5} + \frac{3}{4}\)
Multiplying Fractions

Example:
Step 1: Multiply the numerators
Step 2: Multiply denominators
Step 3: Simplify or reduce if necessary

Ex. \( \frac{3}{4} \times \frac{3}{5} = \frac{9}{20} \)

Try these:
17. \( \frac{2}{3} \times \frac{4}{9} = \)  
18. \( \frac{2}{3} \times \frac{4}{5} = \)  
19. \( \frac{15}{4} \times \frac{6}{5} = \)

Dividing Fractions

Example:
Step 1: Find reciprocal of second fraction
Step 2: Multiply the 2 fractions
Step 3: Reduce if necessary

Ex. \( \frac{3}{10} \div \frac{1}{5} = \frac{3}{10} \times 5 = \frac{15}{10} = \frac{3}{2} \)

Try These:
20. \( \frac{1}{3} \div \frac{8}{5} = \)
21. \( \frac{4}{7} \div \frac{4}{5} = \)
22. \( \frac{8}{9} \div \left( \frac{-24}{15} \right) = \)

Section 6: Solving Equations

Example:
Step 1: Clear fraction by multiplying by LCD (Lowest Common Denominator) if necessary
Step 2: Move all variables to one side
Step 3: Move constants to other side

Given: \( \frac{3}{2}x + 6 = 5 + x \)

\[ \begin{align*}
\frac{3}{2}x + 6 & = 5 + x \\
3x + 12 & = 10 + 2x \\
x & = 2
\end{align*} \]

Try These: Find the value of x.
23. \( 3x - 9 = 2(x - 5) \)
24. \( \frac{3}{4}x + 1 = 4 \)
25. \( \frac{x}{5} = \frac{8}{2} \)
26. Perimeter = 20
Section 7: Inequalities

Example: Solve and Graph

\[ 2x + 1 \leq 6x - 1 \quad \Rightarrow \text{Move variable to one side} \]
\[ -4x + 1 \leq -1 \quad \Rightarrow \text{Bring constant to other side} \]
\[ -4x \leq -2 \quad \Rightarrow \text{Divide by -2} \]
\[ x \geq \frac{1}{2} \]

NOTE: When multiplying or dividing by a negative, flip the inequality sign.

If sign < or >, then dot on graph is open \( \circ \)

If sign \( \leq \) or \( \geq \), then dot on graph is solid \( \bullet \)

Try These: Solve and Graph

27. \( 3x + 2 \leq 5 \)

28. \( 3 - 2x \leq 5 \)

Section 8: Graphing

29. Complete the following.
   a.) Label the quadrants I, II, III, IV
   b.) Clearly label the x & y axis
   c.) Clearly label the origin, using a point and the ordered pair

Example:
Complete the table of values for the given function. Then graph the function.

\[ y = 2x + 3 \]

<table>
<thead>
<tr>
<th>x</th>
<th>y = 2x + 3</th>
<th>y</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2</td>
<td>2(-2) + 3</td>
<td>-1</td>
</tr>
<tr>
<td>-1</td>
<td>2(-1) + 3</td>
<td>1</td>
</tr>
<tr>
<td>0</td>
<td>2(0) + 3</td>
<td>3</td>
</tr>
<tr>
<td>1</td>
<td>2(1) + 3</td>
<td>5</td>
</tr>
<tr>
<td>2</td>
<td>2(2) + 3</td>
<td>7</td>
</tr>
</tbody>
</table>

\( (2, 7) \)
\( (1, 5) \)
\( (0, 3) \)
\( (-2, -1) \)
\( (-1, 1) \)
Try This: Complete the table of values for the given function. Then graph the function.

30. \( y = -\frac{1}{2}x + 4 \)

\[
\begin{array}{c|c}
 x & y \\
\hline
 & \\
 & \\
\end{array}
\]

Example:

Graph \( y = \frac{1}{2}x + 5 \) using the slope and the y-intercept.

\[
\text{slope} = \frac{1}{2} = \frac{\text{rise}}{\text{run}}
\]

y-int = (0, 5)

Try This: State the slope and y-intercept. Sketch the graph.

31. \( y = -3x - 5 \)

\[
\text{slope \hspace{1cm}}
\]

y-intercept \hspace{1cm}
Example:
Sketch the graph by finding the x & y intercepts.

$2x + 3y = 18$

x-intercept: $2x + 3y = 18$
$2x + 3(0) = 18$
$2x = 18$
$x = 9$
$(9, 0)$

y-intercept: $2x + 3y = 18$
$2(0) + 3y = 18$
$3y = 18$
$y = 6$
$(0, 6)$

Try This: Find the x and y intercepts. Sketch and graph.

32. $5x - 2y = 20$

x-intercept = __________
y-intercept = __________

Section 9: Write the Equation of a Line $(\omega, \ell, t)$

Example:
Given the following two points, find the slope.

$(-10, -12), (2, -6)$
$x_1, y_1, x_2, y_2$

$m = \frac{y_2 - y_1}{x_2 - x_1}$
$m = \frac{-6 - (-12)}{2 - (-10)}$
$m = \frac{-6 + 12}{2 + 10}$
$m = \frac{6}{12} = \frac{1}{2}$

Try this: Find the slope given the two points.

33. $(1, -4), (2, 6)$
Example:
W.E.L. if \( m = -3 \) and \( b = -4 \)
\[ y = mx + b \]
\[ y = (-3)x - 4 \]
\[ y = -3x - 4 \]

Try This: Write the equation of the line
34. \( m = \frac{3}{5}, b = 6 \)

Example:
W.E.L. given the point (-3, -7) and the slope = 2.
\[ y = mx + b \]
\[ -7 = (-3)(2) + b \]
\[ -7 = -6 + b \]
\[ -1 = b \]
\[ y = 2x - 1 \]

Try This: W.E.L.
35. point (1, 2), \( m = -2 \)

Example:
W.E.L. given the two points (1, 1) and (5, 9)
1st:
\[ m = \frac{9 - 1}{5 - 1} = \frac{8}{4} = 2 \]

2nd:
\[ y = mx + b \text{ (choose either point)} \]
\[ 1 = 2(1) + b \]
\[ 1 = 2 + b \]
\[ -1 = b \]
\[ y = 2x - 1 \]

Try This: W.E.L.
36. (2, 1) and (3, -7)
Example:
W.E.L. parallel to $y = 3x + 2$ passing through the point (-1, 2).

\[ m = 3 \text{ (parallel lines have SAME slope)} \]
\[ y = mx + b \]
\[ -2 = 3(-1) + b \]
\[ 1 = b \]
\[ y = 3x + 1 \]

Try This: W.E.L.
37. Parallel to $y = -2x + 1$ through (3, 1)

Example:
W.E.L. perpendicular to $y = \frac{-1}{2}x + 6$ through (1, 1)

\[ m = 2 \text{ (perpendicular lines have OPPOSITE RECIPROCAL slopes)} \]
\[ y = mx + b \]
\[ -1 = 2(1) + b \]
\[ -1 = 2 + b \]
\[ -3 = b \]
\[ y = 2x - 3 \]

Try This: W.E.L.
38. Perpendicular to $y = \frac{1}{2}x - 7$ through (1, 1)

Example:
Write the equation of the vertical and horizontal line through the point (-4, 7)

\[ \text{Vertical } x = -4 \]
\[ \text{Horizontal } y = 7 \]

Graph these lines......
Try this: Write the equation of the vertical and horizontal line through the given point, and sketch their graphs.

39. Through (2, -3)
   Vertical _______
   Horizontal _______

**Section 10: Solving Systems**

Solve the System by Graphing

Example:

\[ x + y = 3 \quad \text{x-int. (3, 0)} \]
\[ y - \text{int. (0, 3)} \]
\[ 2x + y = 4 \quad \text{x-int. (2, 0)} \]
\[ y - \text{int. (0, 4)} \]

Solution: (1, 2)

Try This:

40. Solve the system by graphing.
    \[ x - y = 7 \]
    \[ x + y = 3 \]

Solve the System by Substitution

Example:

\[ y = 4x + 8 \]
\[ x - 3y = 9 \]

Substitute:
\[ x - 3(4x + 8) = 9 \]
\[ x - 12x - 24 = 9 \]
\[ -11x = 33 \]
\[ x = -3 \]

Substitute \(x = -3\) to solve for \(y\):
\[ y = 4(-3) + 8 \]
(choose either equation)
\[ y = -4 \]

Solution: (-3, -4)

Try This: Solve by substitution.

41. \[ x = y + 12 \]
    \[ 2x + 3y = -1 \]
Solve System Using Linear Combination

Example:

Step 1: \[ x + 2y = 7 \text{ multiply by (-3)} \]
\[ 3x + 5y = 17 \]

Step 2:
\[ -3x - 6y = -21 \]
\[ 3x + 5y = 17 \]
\[ 0x - y = -4 \]
\[ -\frac{y}{-1} = -4 \]
\[ y = 4 \]

Step 3: Substitute \( y = 4 \) into either equation
\[ x + 2(4) = 7 \]
\[ x + 8 = 7 \]
\[ x = -1 \]

Solution: \((-1, 4)\)

Try this: Solve by linear combination
42. \[ 3x + 2y = -2 \]
\[ 2x - 5y = 24 \]

Section 11: Foiling

Example:

Multiply \( (2x + 3)(x - 5) \)

First, outside, inside, last
\[ 2x^2 - 10x + 3x - 15 \]

Combine like terms: \( 2x^2 - 7x - 15 \)

Try This: Multiply
43. \( (3x + 2)(x - 1) \)

Example:

Multiply \( (2x - 1)^2 = (2x - 1)(2x - 1) \)
\[ = 4x^2 - 4x + 1 \]

Try This: Multiply
44. \( (3x - 5)^2 \)
Section 12: Factoring

Example:
Factor:
\[3x^3y + 6x^2y + 9xy\]

Factor out
GCF (Greatest Common Factor): \(3xy\)

\[3xy(x^2 + 2x + 3)\]

Try This: Factor
45. \(2a^4b^2 - 4a^3b^2 + 10a^2b^2\)
46. \(10x^3y^2 + 15x^4y - 20x^2y^3\)

Example:
Factor:
\[x^2 - 5x - 24\]

Step 1: Is there a GCF? No, there isn’t!
Step 2: Notice: 3 terms
Step 3: List factors of last term

\[
\begin{array}{c}
24 \\
-1 \times 24 \\
-2 \times 12 \\
-3 \times 8 \\
-4 \times 6 \\
-6 \times 4 \\
-8 \times 3 \\
-12 \times 2 \\
\end{array}
\]

Step 4: Which multiplication pair adds up to the middle term (-5)?
\(-8 \times 3\)

Step 5: Write as 2 factors:
\((x - 8)(x + 3)\)

Try This: Factor
47. \(x^2 + 3x - 28\)
48. \(x^2 + 3x - 40\)
Example:

Factor: \(2x^2 - 5x - 3\)

Step 1: Is there a GCF? No there isn’t!
Step 2: Notice: 3 terms
Step 3: List factors of first term

\[
\begin{array}{c|c}
2 & 1 \\
\hline
2 & 1 \\
\end{array}
\]

use these factors in the first position of each grouping.

\((2x \quad \quad \quad ) (1x \quad \quad \quad )\)

Step 4: List the factors of -3

\[
\begin{array}{c|c}
-3 & 3 \\
\hline
-1 & 3 \\
1 & -3 \\
\end{array}
\]

use these factors in the last position of each grouping.

Step 5: "Guess" where each should go. Check by multiplying it back together.

\((2x - 3)(x + 1) = 2x^2 + 2x - 3x - 3 = 2x^2 - x - 3 \quad \text{No }\)

\((2x + 1)(x - 3) = 2x^2 - 6x + x - 3 = 2x^2 - 5x - 3 \quad \text{Yes!}\)

Step 6: Answer: \((2x + 1)(x - 3)\)

Try this: Factor

49. \(3x^2 + 11x - 4\) 
50. \(5x^2 - 7x - 6\)
Example:
Factor:
\[2x^2 - 50\]

Step 1: Look for GCF: \[2(x^2 - 25)\]
Step 2: 2 terms - Difference of two squares \[(a)^2 - (b)^2 = (a + b)(a - b)\]
Step 3: \[2\left[(x)^2 - (5)^2\right] = 2(x + 5)(x - 5)\]

Try This: Factor
51. \[16x^2 - 9\]
52. \[25x^2 - y^2\]

---

**Section 13: Solving Quadratics**

Example: Use the quadratic formula to find the solutions
\[x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}\]

\[y = x^2 - 3x - 2\]
\[a = 1 \quad b = -3 \quad c = -2\]
\[x = \frac{3 \pm \sqrt{(-3)^2 - 4(1)(-2)}}{2(1)}\]
\[x = \frac{3 \pm \sqrt{9 + 8}}{2} = \frac{3 \pm \sqrt{17}}{2}\]

Try this:
53. Use the quadratic formula to find the solutions
\[y = x^2 + 5x - 1\]
Section 14: Graphing Quadratics (No Calculator)

Steps for graphing a quadratic:

Step 1: Find the width
- \(|a| > 1\) narrow
- \(|a| = 1\) normal
- \(|a| < 1\) wide

Step 2: If \(a\) is positive, opens up
- If \(a\) is negative, opens down

Step 3: \(y\) intercept: substitute 0 in for \(x\) and simplify

Step 4: vertex: \(x\)-coordinate: \(\frac{-b}{2a}\)
- \(y\)-coordinate: substitute \(x\) into the equation and simplify

Step 5: \(x\)-intercepts: let \(y = 0\) and solve for \(x\) by factoring or quadratic formula.

Example:

\[ y = x^2 - 2x - 3 \]
\[ a = 1 \quad b = -2 \quad c = -3 \]

1. Width: normal
2. up/down: up
3. \(y\)-int: \(-3\)
4. vertex: \((1, -4)\)
   - \(x\)-coordinate: \(\frac{-b}{2a} = \frac{2}{2(1)} = 1\)
   - \(y\)-coordinate: \((1)^2 - 2(1) - 3 = -4\)
5. \(x\)-intercepts: \((-1, 0)\) and \((3, 0)\)

\[ x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} \]
\[ x = \frac{2 \pm \sqrt{(2)^2 - 4(1)(-3)}}{2(1)} \]
\[ x = \frac{2 \pm \sqrt{4 + 12}}{2} = \frac{2 \pm \sqrt{16}}{2} = \frac{2 \pm 4}{2} \]
\[ x = \frac{2 + 4}{2} = 3 \quad \quad x = \frac{2 - 4}{2} = -1 \]
Try This: Find the information and sketch the quadratic.

54. Graph $y = x^2 + 2x - 8$
   
   \[a = \_, b = \_, c = \_\]
   
   width: 
   
   up/down: 
   
   y-int: 
   
   vertex: 

   \[x \text{-coordinate} = \]

   \[y \text{-coordinate} = \]

   \[x \text{-intercepts: } (\_, 0) \& (\_, 0)\]

Exponents

55. Complete the table by raising each value of $x$ to the given power. (Note: you will be responsible for knowing the following values without a calculator)

<table>
<thead>
<tr>
<th>$x$</th>
<th>$x^2$</th>
<th>$x^3$</th>
<th>$x^4$</th>
<th>$x^5$</th>
</tr>
</thead>
<tbody>
<tr>
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</table>
Answers:

1. \(-\frac{5}{2}, 0, \frac{3}{4}, 4\)

2. \(-4, \frac{2}{3}, 1, \frac{7}{2}\)

3. 4. 5. 6.

4. 5. 6.

7. 5 8. 22

9. 9x^2 + x

10. 6x + 8

11. \(\frac{1}{4}\)

12. \(\frac{2 \pm \sqrt{3}}{3}\)

13. \(\frac{3}{5} = \frac{2\sqrt{5}}{5}\)

14. \(\frac{17}{15}\)

15. \(\frac{\frac{7x-3}{12x}}{\frac{73}{60}}\)

16. \(\frac{2}{3}\)

17. \(\frac{8}{15}\)

18. \(4\)

19. \(\frac{5}{24}\)

20. \(\frac{5}{7}\)

21. \(-\frac{5}{9}\)

22. \(x = -1\)

23. \(x = 4\)

24. \(x = 20\)

25. \(x = \frac{7}{4}\)

26. \(x < 1\)

27. \(x \geq -1\)

28. \(y = -\frac{1}{2}x + 4\)

29. \(\text{slope: } -3\)

30. \(y = -3x - 5\)

31. \(y\)-int: -5
32. x-int. (4, 0)  
    y-int. (0, -10)  
41. (7, -5)  
42. (2, -4)  
43. $3x^2 - x - 2$  
44. $9x^2 - 30x + 25$  
45. $2a^2 b^2 (a^2 - 2a + 5)$  
46. $5x^2 y(2xy + 3x^2 - 4y^2)$  
47. $(x + 7)(x - 4)$  
48. $(x - 5)(x + 8)$  
49. $(3x - 1)(x + 4)$  
50. $(5x + 3)(x - 2)$  
51. $(4x + 3)(4x - 3)$  
52. $(5x - y)(5x + y)$  
53. $\frac{-5 \pm \sqrt{25}}{2}$  
54. 

33. $m = 10$  
34. $y = \frac{3}{5}x + 6$  
35. $y = -2x + 4$  
36. $y = -8x + 17$  
37. $y = -2x + 7$  
38. $y = -2x + 3$  
39. $x = 2$  
40. 

40. 

54. 

Page 10
Introduction to Graphing Calculators
TI-83 or TI-83 Plus (Recommended Calculator)

1. **THE CONTRAST KEYS** To make the screen darker or lighter, press the following keys.
   - TI-83: 2nd ▲ (hold) Darker
   - 2nd ▼ (hold) Lighter

2. **THE VARIABLE X AND STORE KEYS** Evaluate the expression \( \frac{2}{3} x + 100 \) when \( x = 16.5 \).
   (The value is 111.)
   
   TI-83: 16.5 STO X,T,0 ENTER (2 + 3) X,T,0 + 100 ENTER

3. **THE ALPHABET KEY** The letters A through Z are located above the keys. Each letter of the alphabet can represent a variable in which a value can be stored. To see the value of the stored variable, H, press ALPHA H ENTER. To store a value of 10 in H, press the following:
   
   TI-83: 10 STO ALPHA H ENTER

   For many consecutive letters, you can activate the “Alpha-lock” key.
   
   TI-83: 2nd A-LOCK A L C E B R A ALPHA 2

   Press CLEAR to clear the screen.

4. **THE REPLAY AND CURSOR KEYS** Use to avoid retyping. Suppose you need to evaluate the volume of two cylinders using the formula \( V = \pi r^2 h \). Both have a radius of 17.8. The height of the first is 20 and the height of the second is 30. Instead of retyping the second calculation, you can use the replay and cursor keys.
   
   TI-83: 2nd \( \pi \times 17.8 \times ^{2} \times 20 \) ENTER 2nd ENTRY, Cursor to 2, Type 3, ENTER

   Also, use to make a correction. Suppose you entered a formula incorrectly and need to make a change. You entered 33.4(11.2 + 15.7) when you meant to enter 33.7(11.2 + 15.7). To correct your error, use the replay and cursor keys.
   
   TI-83: 33.4 (11.2 + 15.7 ) ENTER 2nd ENTRY, Cursor to 4, Type 7, ENTER

5. **THE INSERT AND DELETE KEYS** Suppose you entered 33.7 (11.2 + 15.7) when you meant to enter 33.7 (11 + 15.7). To correct your error, use the replay, cursor, and delete keys.
   
   TI-83: 2nd ENTER, cursor to .2, DEL DEL ENTER

   Suppose you entered 33.7 (11 + 15.7) when you meant to enter 33.17 (11 + 15.7). To correct your error, use the replay, cursor, and insert keys.
   
   TI-83: 2nd ENTER cursor to 7, 2nd INS 1 ENTER
6. **THE NEGATIVE AND SUBTRACTION KEYS** The negative key is \((-\)\) and the subtraction key is \((-\)\). To enter -8 * π or 50 - -1, use the following.

**TI-83:** \((-\) 8 \(-\) \(2nd\) \(\pi\) [ENTER]

\[50 \(-\) \((-\) 1 [ENTER]\]

7. **THE EXPONENT AND ABSOLUTE VALUE KEYS** Some common powers such as \(x^2\), \(x^3\), \(x^{\frac{1}{2}} = \sqrt{x}\), and \(x^{\frac{1}{3}} = \sqrt[3]{x}\) have special keys. For powers such as \(1.4^4\), use the following.

To evaluate the absolute value of a number such as \(|2 - 4|\), enter the following.

**TI-83:** \(MATH\) \(\left\{\) \(NUM\) [ENTER] \((-\) 2 \(-\) 4 \(\left\}\) [ENTER]

8. **FRACTIONS FOR THE TI-83** To add fractions such as \(\frac{5}{8} + \frac{6}{15}\) and have your answer given as a fraction do the following.

**TI-83:** \(\left\{\) \(5 \div 8\) \(\right\}\) \(\div\) \(\left\{\) \(6 \div 15\) \(\right\}\) \(MATH\) \(Frac\)

**Graphing Linear Equations with a Calculator**

Graph \(y = -3x + 5\)

I. Preparing to graph
   A. \(MODE\) everything should be highlighted on the left
   B. \(ZOOM\) \(8\) (standard)
   C. \(2nd\) \(ZOOM\) everything should be highlighted on the left
   D. \(2nd\) \(Y=\) \(4\) [ENTER] (Stat Plots off)

II. Entering equation
   A. \(Y_1=\) type in equation *Note: equation must be in slope-intercept form \((y = mx + b)\)
   B. \(GRAPH\)

III. Adjusting windows
   A. \(ZOOM\) \(3\) (zoom out) [ENTER]
   B. \(ZOOM\) \(2\) (zoom out) [ENTER]
Graphing Quadratics with a Calculator

Graph \( y = x^2 + 2x - 5 \)

I. Preparing to graph
   A. **MODE** everything should be highlighted on the left
   B. **ZOOM** 6 (standard)
   C. **2 nd** **ZOOM** everything should be highlighted on the left
   D. **2 nd** **Y**= 4 **ENTER** (Stat Plots off)

II. Entering Equation
   A. **Y**= type in equation

   B. **GRAPH**

III. Finding the Vertex
   A. **2 nd** **TRACE** select 4 (Maximum) or 3 (Minimum)

   B. Left Bound?: Move cursor to left of vertex **ENTER**
   C. Right Bound?: Move cursor to the right of vertex **ENTER**
   D. Guess?: **ENTER**
   E. Use values at bottom of screen for the vertex

       Answer: (-1, -6)

IV. Finding the x-intercepts/roots/zeros/solutions
   A. Left Intercept
      1. **2 nd** **TRACE** 2 (zero)
         a. Left Bound: Move cursor to the left (in this case above) of the left x-intercept **ENTER**
         b. Right Bound: Move cursor to the right (below) of the left x-intercept **ENTER**
         c. Guess:

   B. Right Intercept
      1. **2 nd** **TRACE** 2 (zero)
         a. Left Bound: Move cursor to the left (in this case above) of the left x-intercept **ENTER**
         b. Right Bound: Move cursor to the right (below) of the left x-intercept **ENTER**

   C. Guess: **ENTER**

       Answer: (1.4494897, 0)