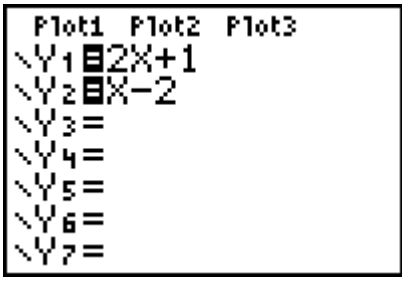
Name _____

Class _____

Problem 1 – Intersecting Lines

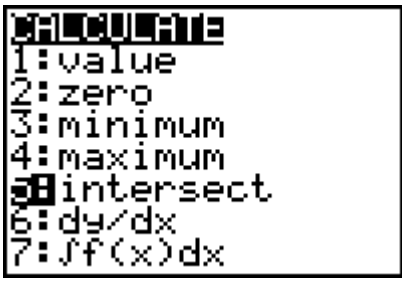
Graph $y = 2x + 1$ and $y = x - 2$. Press ! and enter the first equation as **Y1** and the second as **Y2**.



Press # and select **ZStandard**.

1. What is the slope of each line?

Use the **Intersect** command to find the intersection point of the two lines. Press ` è and select **intersect**.



Now, use the arrow keys to move the cursor to

- the first line, Y1, and press e
- the second line, Y2, and press e
- the guess of the intersection point and press e

2. What is the intersection point? What does this point represent for the equations?

3. Graph $y = \frac{2}{3}x + 1$ and $y = -x + 6$. What is the slope of each line?

4. What is the point of intersection of the two lines in Question 3? How can you verify that this point on the graph is actually the intersection point?

5. Two lines with different slopes will intersect in one point.

   □ Always □ Sometimes □ Never

Problem 2 – Parallel Lines

6. What is the slope of $y = \frac{1}{2}x + 4$ and $y = \frac{1}{2}x - 1$?

7. Graph the lines in Question 6. Graph two more sets of equations that have the same slope. Record the equations below.

Parallel lines intersect. ☐ True ☐ False

8. Solve $x + 3y = 1$ and $x - 3y = 1$ for y. What is the slope of each line?

9. The lines $x + 3y = 1$ and $x - 3y = 1$ are parallel.

☐ True ☐ False

10. What kind of lines are $y = 4$ and $x = 4$?

11. What is another way to describe or name that pair of lines?

Problem 3 – Same Lines, Infinite solutions

12. Solve $x + y = 3$ and $2x + 2y = 6$ for y. What is the slope of each line?

13. How are the two lines related to each other?

14. Consider $3x + y = 3$ and $6x + 2y = 6$. Are the two lines the same or different? How do you know?

15. The slope of both lines in Question 14 is –3.

☐ True ☐ False

Homework – Word problems

Problem 4

1. The sum of two numbers is 12. The difference between the numbers is 4. Write two equations that represent this problem.

2. Enter three pairs of numbers that add up to 12 in **L1** and **L2**. What are your three pairs?

3. Graph your equations from Question 16, with a **Stat Plot** of **L1** and **L2**, and determine the solution. Use the **Intersect** command if needed.

Problem 5

4. Ferdie (*x*) is 3 years older than Zohan (*y*) and their ages total 19. Write two equations that represent the problem.

5. Enter three pairs of ages into **L1** and **L2**. What are your three pairs?

6. Graph your equations from Question 19, with a **Stat Plot** of **L1** and **L2**, and determine the solution Use the **Intersect** command if needed.