| **Parallel Lines (∥):** | **Perpendicular Lines (⊥):** |
|---|---|

- Lines that are always the same distance apart.
- They will NEVER intersect.

- Lines that intersect to form right (90°) angles.
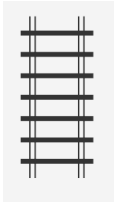
Railway tracks                    Lines on notebook paper
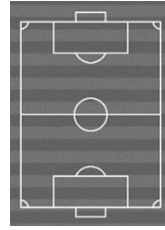
Corners of a soccer field                    The xy axis
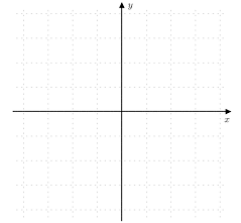
Consider this graph of two parallel lines

Consider this graph of two perpendicular lines

**Line 1:   y = 2x + 4**          **Line 2:   y = 2x - 2**
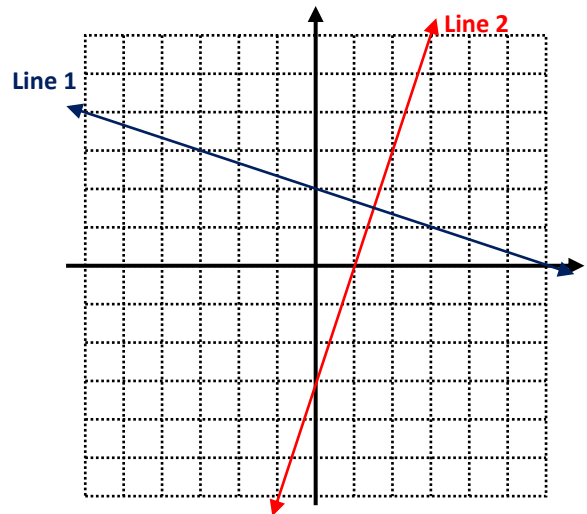
**Line 1:** $y = \dfrac{-1}{3}x + 2$          **Line 2:   y = 3x - 3**

Use $\dfrac{rise}{run}$ to find the slope of each line

Use $\dfrac{rise}{run}$ to find the slope of each line

**m  =**                    **m  =**

**m  =**                    **m  =**
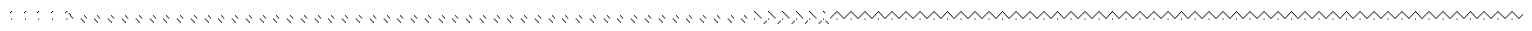
Write a statement about the slopes of parallel lines:

Write a statement about the slopes of perpendicular lines:

- When questions ask about parallel or perpendicular lines, you need to focus **ONLY** on the slopes.
- Always be sure your equation is in y = mx + b format first.

Find the slope of each equation. Then find the slope of the line parallel and perpendicular.

| Equation | Standard Form $y = mx + b$ | Slope | Slope of the line parallel | Slope of the line perpendicular |
|---|---|---|---|---|
| $y = -3x + 8$ | | | | |
| $x + 4y = 16$ | | | | |
| $y + \frac{1}{3}x = 2$ | | | | |
| $5x - 2y = 6$ | | | | |
| $2y + 5x = 2$ | | | | |

1. What is the equation of the line **parallel** to $y = 6x + 2$ with the same y intercept as $y = 4x -5$?

2. What is the equation of the line **parallel** to $3y = 6x + 2$ with a y-intercept of 7?

3. Write the equation of the line **perpendicular** to $y = 5x + 8$ with the same y-intercept as $4y + 2x = 16$.

4. Write the equation of the line **parallel** to $5y - 20x = 15$ that passes through the point (3,5).

5. Write an equation of the line that is **parallel** to the line $y = 2x - 4$ and has a y-intercept of 7.

6. Write an equation of the line that is **parallel** to the line $y - 3x = 6$ and has a y-intercept of $-2$.

7. Write an equation of the line that is **parallel** to the line $2x + 3y = 12$, and that passes through the origin.

8. Write an equation of the line that is **parallel** to the line $y = 4x + 1$, and that passes through the point (2, 3).

9. Write an equation of the line that is **parallel** to the line $2y - 6x = 9$, and that passes through the point (-2, 1).

10. Write an equation of the line that is **perpendicular** to the line $y = -\frac{1}{2}x$, and that has the same y-intercept as the line $2y = 7x + 6$.