

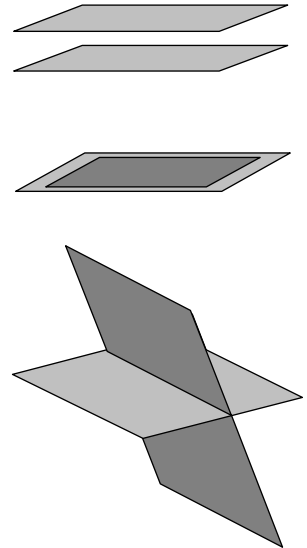
# INTERSECTION OF TWO PLANES

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In 3-space, two planes may

- 1) \_\_\_\_\_
- 2) \_\_\_\_\_
- 3) \_\_\_\_\_



- If two planes are parallel, their \_\_\_\_\_ are scalar multiples.
- If two planes are identical, their \_\_\_\_\_ are scalar multiples.



### Example

Investigate the intersection of the following pairs of planes.

$$\begin{aligned}\pi_1: & 2x + 4y - z + 2 = 0 \\ \pi_2: & 4x + 8y - 2z + 9 = 0\end{aligned}$$

$$\begin{aligned}\pi_1: & 2x + 4y - z + 2 = 0 \\ \pi_2: & 4x + 8y - 2z + 4 = 0\end{aligned}$$

$$\pi_1: 2x + 4y - z + 2 = 0$$

$$\pi_2: x - y + 2z + 5 = 0$$

**Example**

Find the equation of the plane that passes through the point  $A(2, -1, 0)$  and is perpendicular to the line of intersection of the planes  $4x + y - 3z + 1 = 0$  and  $x - 2y + z - 5 = 0$ .