

I- Euclidian postulates: From any point "A" distinct (outside) from a straight line (d_1), we can draw *one and only one* straight line (d_2)

a) Parallel to (d_1).	
b) Perpendicular to (d_1).	

II- Relative positions of straight lines in a plane: Any set of straight lines in a plane can be

	Parallel	Confounded	Intersecting
Analytically	if there is no point of intersection between them	if they admit more than one point of intersection	if they admit one common point only
Graphically			

III- How to prove two straight lines Perpendicular ?

i- If (d_1) & (d_2) are any two parallel lines, then every line (d_3) perpendicular to (d_1) is perpendicular to (d_2).

Thus, a st. line perpendicular to one of two parallel lines is perpendicular to the other.

	If	and	Then
Graphically			
Algebraically	$\left. \begin{array}{l} (d_1) \parallel (d_2) \\ (d_1) \perp (d_3) \end{array} \right\}$		$(d_2) \perp (d_3)$

ii- If (d_1) & (d_2) are any two perpendicular lines, then every line (d_3) parallel to (d_1), is perpendicular to (d_2).

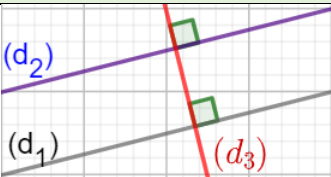
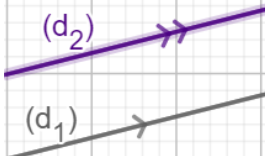
Thus, a st. line parallel to one of two perpendicular lines is perpendicular to the other.

	If	and	Then
Graphically			
Algebraically	$\left. \begin{array}{l} (d_1) \perp (d_2) \\ (d_1) \parallel (d_3) \end{array} \right\}$		$(d_2) \perp (d_3)$

IV- How to prove two straight lines parallel?

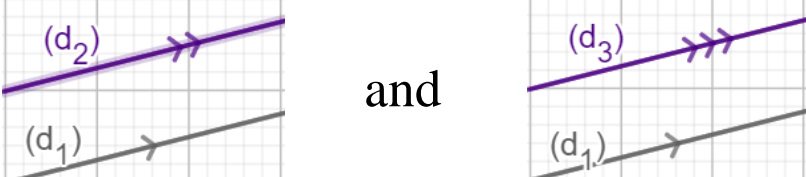
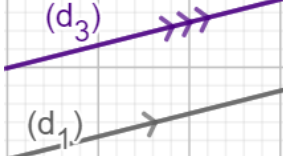
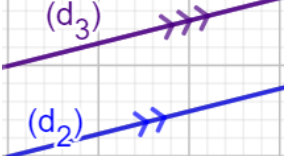
a- If (d_1) & (d_2) are perpendicular to a third line (d_3) , then (d_1) and (d_2) are parallel.

Thus, two st. lines perpendicular to a third line are parallel.

	If	Then
Graphically		
Algebraically	$\left. \begin{array}{l} (d_1) \perp (d_3) \\ (d_2) \perp (d_3) \end{array} \right\}$	$(d_1) \parallel (d_2).$

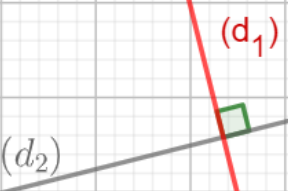
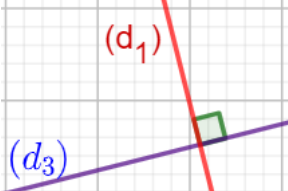
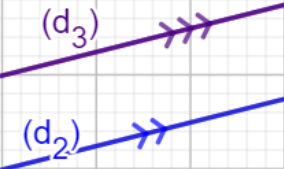
b- If (d_1) & (d_2) are any two parallel lines, then every line (d_3) parallel (d_1) , is parallel to (d_2) .

Thus, a st. line parallel to one of two parallel lines is parallel to the other.

	If	Then
Graphically	 and 	
Algebraically	$\left. \begin{array}{l} (d_1) \parallel (d_2) \\ (d_1) \parallel (d_3) \end{array} \right\}$	$(d_2) \parallel (d_3).$

c- If (d_1) & (d_2) are any two perpendicular lines, then every line (d_3) perpendicular to (d_1) is parallel to (d_2) .

Thus, a st. line perpendicular to one of two perpendicular lines is parallel to the other.

	If	Then
Graphically	 and 	
Algebraically	$\left. \begin{array}{l} (d_1) \perp (d_2) \\ (d_1) \perp (d_3) \end{array} \right\}$	$(d_2) \parallel (d_3).$

V- How to prove two straight lines intersecting?

If (d_1) & (d_2) are any two parallel lines, then every line (d_3) intersects (d_1) , must intersect (d_2) .

Thus, a st. line intersecting one of two parallel lines intersects the other.

