

Elementary Engineering Mathematics

Geometry: Some Useful Definitions and Concepts

Figure 1: Two Parallel and Two Perpendicular Lines

- **Parallel** lines do not intersect. Lines L_1 and L_2 are parallel.
- **Perpendicular** lines intersect at a 90° angle. Lines L_3 and L_4 are perpendicular.
- **Angles on opposite sides** of two intersecting lines are equal.
($A = A^*$, $B = B^*$, $C = C^*$, ..., $H = H^*$)
- **Acute angles** are angles that are less than 90° . ($A, B, C, D, A^*, B^*, C^*, D^*$)
- **Obtuse angles** are angles that are greater than 90° and less than 180° .
($E, F, G, H, E^*, F^*, G^*, H^*$)
- **Alternate interior angles** are equal. ($A = C, B = D$)
- **Alternate exterior angles** are equal. ($A^* = C^*, E^* = D^*, F^* = H^*, B^* = D^*$)
- **Supplementary angles** are any two angles that add to 180° .
(A^* and E^* , E^* and A , A and E , E and A^* , etc.)
- **Complementary angles** are any two angles that add to 90° . Because the **sum** of the angles in any **triangle** is 180° , A and B are complementary angles. C and D are also complementary angles.
- Triangles having one angle equal to 90° are called **right triangles**.
- **Similar triangles** are two triangles whose angles are the same, but whose size is not. One is simply a **magnified version** of the other. The two right triangles formed between the two parallel lines are similar.

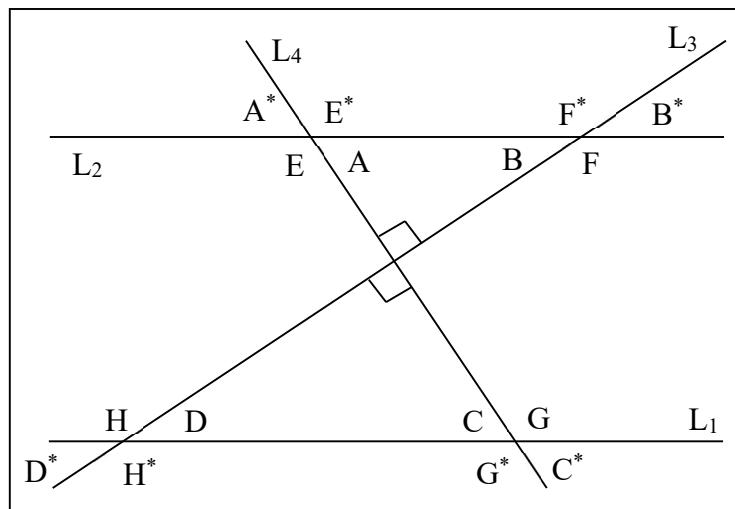


Figure 1. Two Parallel and Two Perpendicular Lines

Figure 2: Two Sets of Perpendicular Axes

- X and Y are two perpendicular axes. x and y are also perpendicular axes.
- The angle between Y and y is the same as the angle between X and x (A) (because Y is perpendicular to X , and y is perpendicular to x).
- The acute angle between X and y is the same as the angle between Y and x (B) (because X is perpendicular to Y , and y is perpendicular to x).
- A and B are **complementary** angles.

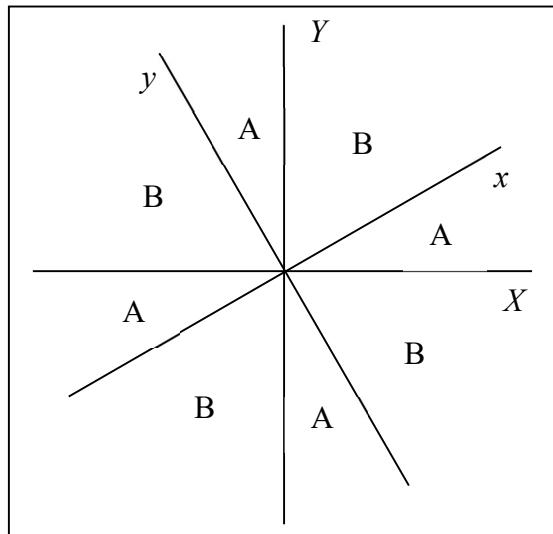


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