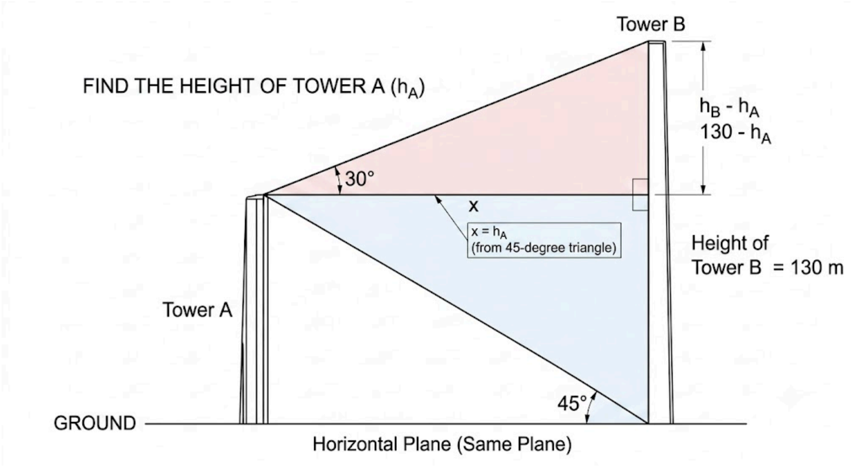
To solve this problem, we must model the scenario geometrically. Let the two vertical towers stand on a flat, horizontal plane.



Let:

- h_A be the height of Tower A.
- h_B = 130 m be the height of Tower B.
- x be the horizontal distance separating the bases of Tower A and Tower B on the ground.

<u>Step 1:</u> Translating the Angles of Elevation

The problem presents two distinct angles of elevation:

1. **From the base of Tower B to the top of Tower A:** This angle is given as 45°. Looking up from the ground level at Tower B's location, the line of sight to the top of Tower A forms a right-angled triangle. The height of Tower A (h_A) is the side opposite this angle, and the horizontal distance between them (x) is the adjacent side. Using the primary trigonometric ratio for tangent:

   $$\tan 45^\circ = \frac{Opposite}{Adjacent} = \frac{h_A}{x}$$

   Since tan 45° = 1, this simplifies to: $1 = \frac{h_A}{x}$

   This is a critical geometric simplification: the horizontal distance separating the two towers is exactly equal to the height of Tower A.

2. **From the top of Tower A to the top of Tower B:** This angle is given as 30°. By drawing a horizontal line of sight from the top of Tower A to Tower B, we form another right-angled triangle.

   - The horizontal base of this upper triangle is still equal to the separation distance x between the towers.
   - The vertical height of this triangle is the difference in height between the two towers: $h_B - h_A = 130 - h_A$.

3. Applying the tangent ratio once more:

$$\tan 30^\circ = \frac{Opposite}{Adjacent} = \frac{130 - h_A}{x}$$

<u>Step 2:</u> Setting up and Solving the System of Equations

Since we established in Step 1 that $x = h_A$, we can substitute h_A for x in our second equation:

$$0.57735 = \frac{130 - h_A}{x}$$

$h_A = 82.4168$ m