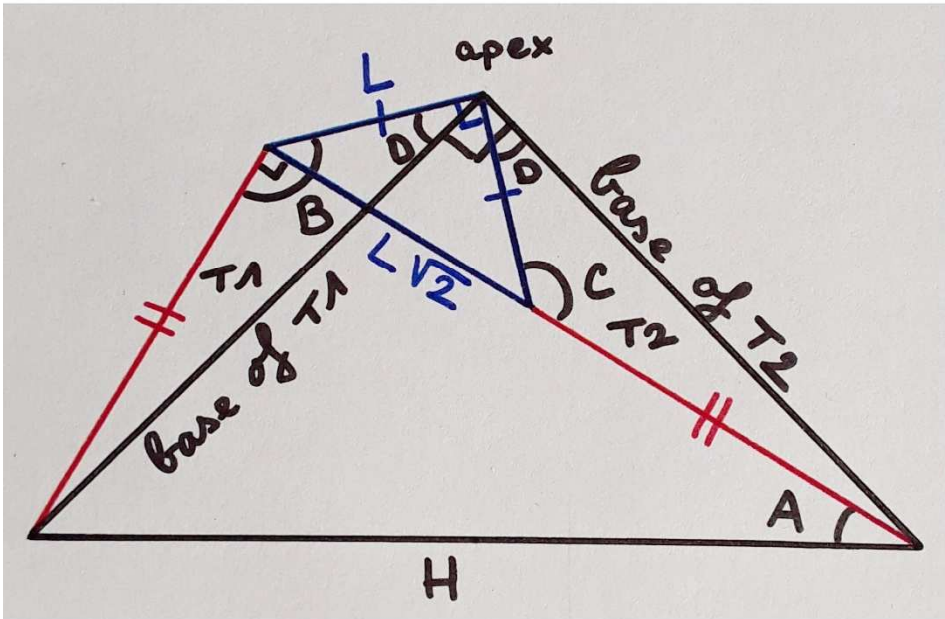
Chord L between a right angled triangle and a right isosceles triangle

In the right triangle of angle A, the length of the opposite side is placed on the adjacent side as on the figure (in red), then we draw a right isosceles triangle of base adjacent - opposite.



angle B = angle C = 135°
The sides in B and C are the same
Triangle 1 = Triangle 2

We place the apex
Base of T1 = base of T2
Angle between these two bases = 90 - D + D = 90°
(D = A)

The triangle formed by the apex and the hypotenuse H is a right isosceles triangle.

Let L be the length of the chord between a right triangle and a right isosceles triangle

$$\text{Adjacent - opposite} = L\sqrt{2}$$

$$\cos A - \sin A = \frac{L\sqrt{2}}{H}$$

Opposite and adjacent sides given separately with chord (not shown)

Adjacent side

$$\text{Adjacent} = \frac{\sqrt{H^2 - L^2} + L}{\sqrt{2}}$$

$$\cos A = \frac{\sqrt{H^2 - L^2} + L}{H\sqrt{2}}$$

Opposite side

$$\text{Opposite} = \frac{\sqrt{H^2 - L^2} - L}{\sqrt{2}}$$

$$\sin A = \frac{\sqrt{H^2 - L^2} - L}{H\sqrt{2}}$$

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