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$$= (1/4)\sqrt{(4+4+4)(4+4-4)(4+4-4)(4+4-4)}$$

$$= 1/4 \cdot \sqrt{(12)(4)(4)(4)} = 1/4 \cdot \sqrt{(4 \cdot 3)(4)(4)(4)}$$

$$= (1/4) \cdot 4 \cdot 4 \sqrt{3} = 4\sqrt{3}$$

CASE - (IV)

ISOSCELES TRIANGLE:

EXAMPLE - Suppose the sides of a isosceles triangle are $AB = c = 4$, $BC = a = 4$ and $CA = b = 6$

Let $CA = b$, taken as the base .

So the height of the isosceles triangle on the base CA is $BE =$

$$(1/2 \text{ base}) \sqrt{(a+b+c)(b+c-a)(c+a-b)(a+b-c)}$$

$$= 1/2b \sqrt{(a+b+c)(b+c-a)(c+a-b)(a+b-c)}$$

$$= 1/2 \cdot 6 \sqrt{(4+6+4)(6+4-4)(4+4-6)(4+6-4)}$$

$$= 1/12 \sqrt{(14)(6)(2)(6)} = (1/12)12\sqrt{7} = \sqrt{7}$$

So $\sqrt{7} = BE =$ height of the isosceles triangle on the side CA as base

Area of the isosceles triangle =

$$(1/4) \sqrt{(a+b+c)(b+c-a)(c+a-b)(a+b-c)}$$

$$= (1/4) \sqrt{(4+6+4)(6+4-4)(4+4-6)(4+6-4)}$$

$$= (1/4) \sqrt{(14)(6)(2)(6)} = (1/4) \cdot 12\sqrt{7} = 3\sqrt{7}$$

CASE - (V)

ACUTE TRIANGLE:

EXAMPLE – The formula of area and height of the ACUTE TRIANGLE is Same as the SCALENE TRIANGLE

Hence Common Height =

$$(1/2 \text{ base}) \sqrt{(a+b+c)(b+c-a)(c+a-b)(a+b-c)}$$

And Common Area =

$$(1/4) \sqrt{(a+b+c)(b+c-a)(c+a-b)(a+b-c)}$$

CASE - (VI)

OBTUSE TRIANGLE:

EXAMPLE – The formula of area and height of the OBTUSE TRIANGLE is Same as the SCALENE TRIANGLE

Hence Common Height =

$$(1/2 \text{ base}) \sqrt{(a+b+c)(b+c-a)(c+a-b)(a+b-c)}$$

And Common Area =

$$(1/4) \sqrt{(a+b+c)(b+c-a)(c+a-b)(a+b-c)}$$

CONCLUSION :

The above common height formula as well as common area formula of all the triangles are very easy as well as very simple. Hence one can memorise it easily.