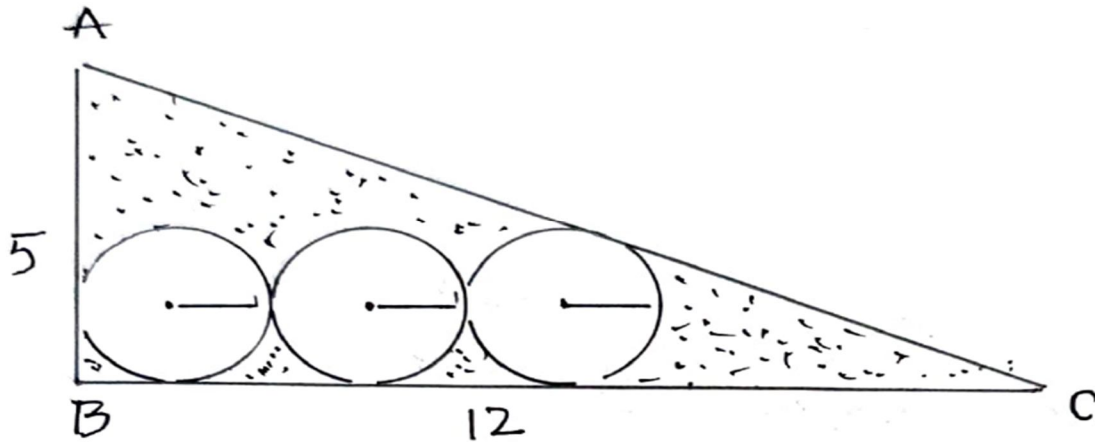


## THREE EQUAL CIRCLES IN A TRIANGLE DERIVE THE TRUE $\pi$ VALUE



1. Triangle:  $AB = 5, BC = 12, Area = \frac{1}{2} \times 5 \times 12 = 30$

2. Circle

$$\text{Radius} = \frac{6}{5}, \text{Area} = \pi r^2 = \pi \times \left(\frac{6}{5}\right)^2$$

$$\text{Sum of area of 3 circles} = \frac{108\pi}{25}$$

3. Let the shaded area is  $= \frac{1488 + 108\sqrt{2}}{100}$

4. Finally,

Area of 3 circles + Shaded area = Area of triangle

$$\frac{108\pi}{25} + \frac{1488 + 108\sqrt{2}}{100} = 30$$

$$\frac{432\pi + 1488 + 108\sqrt{2}}{100} = 30$$

$$432\pi + 1488 + 108\sqrt{2} = 3000$$

$$432\pi = 3000 - 1488 - 108\sqrt{2}$$

$$432\pi = 1512 - 108\sqrt{2}$$

$$\pi = \frac{1512 - 108\sqrt{2}}{432}$$

$$\pi = \frac{14 - \sqrt{2}}{4}$$

**Acknowledgment:**

I am grateful to the youtuber of “**Online Maths Expo**”.

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**26, March, 2026**