**Problems & Solutions**

The radius of circle N is 3 inches, and the radius of circle O is 4 inches. What is the radius of circle P whose area is the sum of the areas of circles N and O?

The formula for the area of a circle is \( A = \pi r^2 \). So, the area of circle N is \( 3^2 \pi = 9 \pi \) in\(^2\), and the area of circle O is \( 4^2 \pi = 16 \pi \) in\(^2\). The area of circle P is \( 9 \pi + 16 \pi = 25 \pi \) in\(^2\). So, for circle P, we have \( \pi r^2 = 25 \pi \) \( \Rightarrow r^2 = 25 \) \( \Rightarrow r = 5 \) inches.

A small square has side length 7 cm, and a medium square has side length 24 cm. What is the side length of a large square whose area is the sum of the areas of the small and medium squares?

The formula for the area of a square is \( A = s^2 \). So, the area of the small square is \( 7^2 = 49 \) cm\(^2\), and the area of the medium square is \( 24^2 = 576 \) cm\(^2\). The area of the large square is \( 49 + 576 = 625 \) cm\(^2\). So, for the large square, we have \( s^2 = 625 \) and \( s = 25 \) cm.

The side length of a small equilateral triangle is 10 feet, and the side length of a medium equilateral triangle is 24 feet. What is the side length of a large equilateral triangle whose area is the sum of the areas of the small and medium equilateral triangles?

The formula for the area of an equilateral triangle is \( A = s^2 \sqrt{3}/4 \). The area of the small equilateral triangle is \( 10^2 \sqrt{3}/4 = 100 \sqrt{3}/4 = 25 \sqrt{3} \) ft\(^2\), and the area of the medium equilateral triangle is \( 24^2 \sqrt{3}/4 = 576 \sqrt{3}/4 = 144 \sqrt{3} \) ft\(^2\). The area of the large equilateral triangle is \( 25 \sqrt{3} + 144 \sqrt{3} \) ft\(^2\) = \( 169 \sqrt{3} \) ft\(^2\). So, for the large equilateral triangle, we have \( s^2 \sqrt{3}/4 = 169 \sqrt{3} \) \( \Rightarrow s^2 = 169 \times 4 \) \( \Rightarrow s = \sqrt{(169 \times 4)} = \sqrt{169} \times \sqrt{4} = 13 \times 2 = 26 \) cm.
**Problem of the Week Archive**

*Combining Shapes – April 1, 2019*

**Problems**

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