

LESSON 103 Perimeters and Areas of Rhombuses and Kites

8. Use the Pythagorean Theorem or a multiple of the (5, 12, 13) Pythagorean triple to find that each right triangle has legs 10 and 24.

$$\text{perimeter} = 4(26) = 104 \text{ units}$$

$$\text{area} = \frac{1}{2} (10 + 10)(24 + 24) = 480 \text{ square units}$$

9. Use the Pythagorean Theorem or special right triangles to find that the longer portion of the horizontal diagonal is $6\sqrt{3}$ and the short side of the kite is $6\sqrt{2}$.

$$\text{perimeter} = 12 + 12 + 6\sqrt{2} + 6\sqrt{2} = 24 + 12\sqrt{2} \approx 40.97 \text{ units}$$

$$\text{area} = \frac{1}{2} (6 + 6\sqrt{3})(6 + 6) = 36 + 36\sqrt{3} \approx 98.35 \text{ square units}$$

10. Use a 30-60-90 triangle to find that the upper portion of the vertical diagonal is 5 and the shorter portion of the horizontal diagonal is $5\sqrt{3}$.

Use the Pythagorean Theorem to find that the longer portion of the horizontal diagonal is $\sqrt{231}$.

$$\text{perimeter} = 16 + 16 + 10 + 10 = 52 \text{ units}$$

$$\text{area} = \frac{1}{2} (\sqrt{231} + 5\sqrt{3})(5 + 5) = 5\sqrt{231} + 25\sqrt{3} \approx 119.29 \text{ square units}$$

11. Use the Pythagorean Theorem to find that the longer leg of each right triangle is $8\sqrt{5}$.

$$\text{Perimeter} = 4(24) = 96 \text{ units}$$

$$\text{area} = \frac{1}{2} (8\sqrt{5} + 8\sqrt{5})(16 + 16) = 256\sqrt{5} \approx 572.43 \text{ square units}$$