Warm up

Holt Geometry

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Objectives

Develop and apply the formulas for the areas of triangles and special quadrilaterals.

Solve problems involving perimeters and areas of triangles and special quadrilaterals.

Remember!

The diagonals of a rhombus or kite are perpendicular, and the diagonals of a rhombus bisect each other.



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Example 3A: Finding Measurements of Rhombuses and Kites

- Find d_2 of a kite in which $d_1 = 14$ in. and A = 238 in².
 - $A = \frac{1}{2}d_{1}d_{2}$ Area of a kite $238 = \frac{1}{2}(14)d_{2}$ Substitute 238 for A and 14 for d₁. $34 = d_{2}$ Solve for d₂. $d_{2} = 34$ Sym. Prop. of =

Example 3B: Finding Measurements of Rhombuses and Kites

Find the area of a rhombus.

$$A = \frac{1}{2}d_1d_2$$
 Area of a rhombus

$$A = \frac{1}{2} (8x + 7) (14x - 6)$$

Substitute (8x+7) for d_1 and (14x-6) for d_2 .

 $d_2 = (14x - 6)$ cm

$$A = \frac{1}{2} \left(112x^2 + 50x - 42 \right)$$

Multiply the binomials (FOIL).

$$A = (56x^{2} + 25x - 21) \text{ cm}^{2} \text{ Distrib. Prop.}$$

Example 3C: Finding Measurements of Rhombuses and Kites

Find the area of the kite

Step 1 The diagonals d_1 and d_2 form four right triangles. Use the Pythagorean Theorem to find x and y.



35 in.

$28^2 + y^2 = 35^2$	$21^2 + x^2 = 29^2$
$y^2 = 441$	$x^2 = 400$
<i>y</i> = 21	<i>x</i> = 20

Example 3C Continued

Step 2 Use d_1 and d_2 to find the area. d_1 is equal to x + 28, which is 48. Half of d_2 is equal to 21, so d_2 is equal to 42.

 $A = \frac{1}{2}d_{1}d_{2}$ Area of kite $A = \frac{1}{2}(48)(42)$ Substitute 48 for d_{1} and 42 for d_{2} .

 $A = 1008 \text{ in}^2$ Simplify.

Lesson Quiz: Part II

1. the area of the rhombus



 $A = 1080 \text{ m}^2$

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