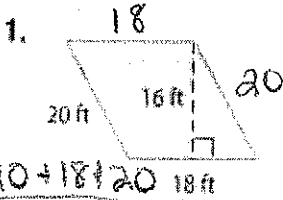


April 15, 2015

11.2 Warm-Up

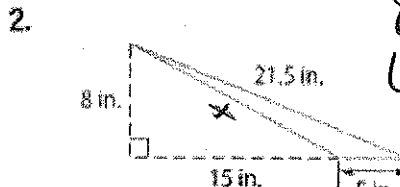
Find the perimeter and area of each parallelogram or triangle. Round to the nearest tenth if necessary.



$$P = 18 + 20 + 18 + 20$$

$$P = 76 \text{ ft}$$

$$A = 16(18) = 288 \text{ ft}^2$$



$$8^2 + 15^2 = x^2$$

$$64 + 225 = x^2$$

$$289 = x^2$$

$$x = 17$$

$$P = 21.5 + 5 + 17 = 43.5 \text{ in}$$

$$A = \frac{5(8)}{2} = 20 \text{ in}^2$$

11.2 Areas of Trapezoids, Rhombi, and Kites

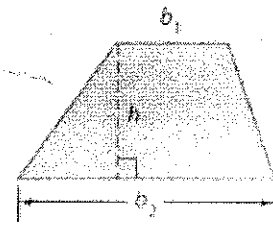
Target: Use properties of trapezoids to find the area

Key Concept Area of a Trapezoid

Words The area A of a trapezoid is one half the product of the height h and the sum of its bases, b_1 and b_2 .

Symbols

$$A = \frac{h(b_1 + b_2)}{2}$$

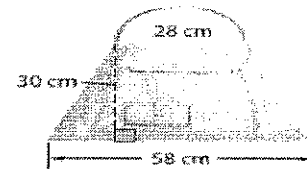


Real-World Application Area of a Trapezoid

CRAFTS One of Brianna's trapezoid-shaped totes is shown. Find the amount of material used to make the side shown.

$$A = \frac{30(28 + 58)}{2} = \frac{30(86)}{2} = \frac{2580}{2}$$

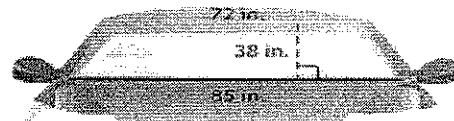
$$A = 1290 \text{ cm}^2$$



Guided Practice

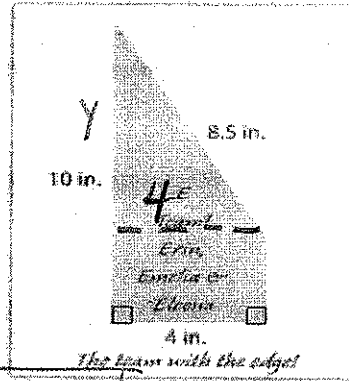
1. **AUTOMOBILES** Find the area of glass used to make the windshield of a van shown at the right.

$$A = \frac{38(72 + 85)}{2} = \frac{38(157)}{2} = \frac{5966}{2} = 2983 \text{ in}^2$$



Standardized Test Example 2 Area of a Trapezoid

SHORT RESPONSE Emelia designed the pennant shown for her team. Find the area of the shaded portion of her team's pennant.



$$y^2 + 4^2 = 8.5^2$$

$$y^2 + 16 = 72.25$$

$$\begin{array}{r} y^2 + 16 = 72.25 \\ -16 \quad -16 \\ \hline y^2 = 56.25 \\ y = 7.5 \end{array}$$

$$A = \frac{4(2.5 + 10)}{2} \quad A = \frac{4(12.5)}{2} \quad \boxed{A = 25 \text{ in}^2}$$

Guided Practice

2. SHORT RESPONSE Owen designed the silver earrings shown that are shaped like isosceles trapezoids.

What is the area of each earring?

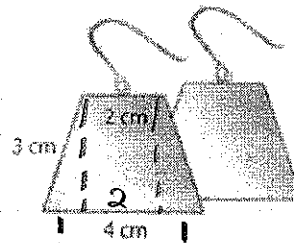
$$1^2 + h^2 = 3^2$$

$$1 + h^2 = 9$$

$$\begin{array}{r} 1 + h^2 = 9 \\ -1 \quad -1 \\ \hline h^2 = 8 \\ h = 2.8 \end{array}$$

$$A = \frac{2.8(2 + 4)}{2} = \frac{16.8}{2}$$

$$\boxed{A = 8.4 \text{ cm}^2}$$



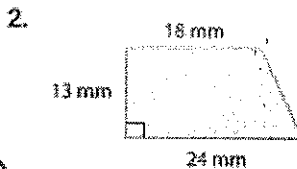
Check Your Understanding

Find the area of each trapezoid, rhombus, or kite.



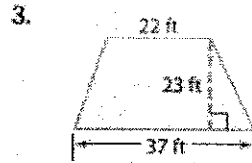
$$A = \frac{12(6 + 16)}{2} \quad A = \frac{12(22)}{2}$$

$$\boxed{A = 132 \text{ ft}^2}$$



$$A = \frac{13(24 + 18)}{2}$$

$$A = \frac{13(42)}{2} \quad A = \frac{546}{2} \quad \boxed{273 \text{ mm}^2}$$



$$A = \frac{23(22 + 37)}{2}$$

$$A = \frac{23(59)}{2} = \frac{1357}{2}$$

$$\boxed{A = 678.5 \text{ ft}^2}$$

4. SHORT RESPONSE Suki is doing fashion design at 4-H Club. Her first project is to make a simple A-line skirt. How much fabric will she need according to the design at the right?

