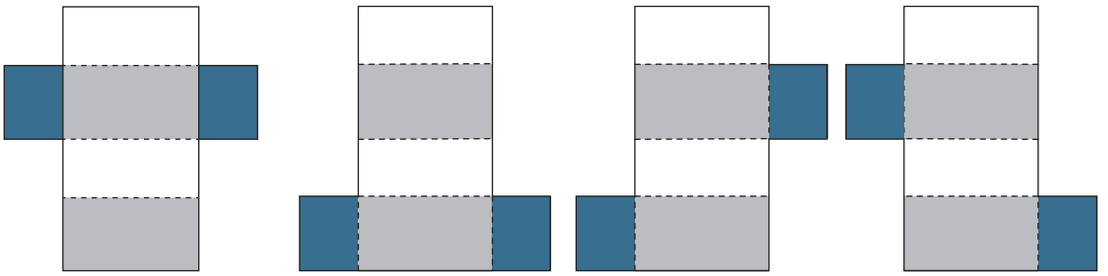
Appendix

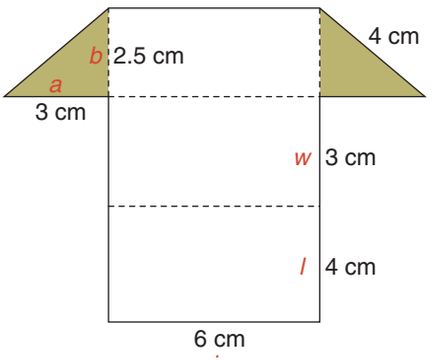
Lesson 2.1: Surface Area of 3-D Objects

Practice – I

1. Below is the net for a rectangular prism. Sketch another net that represents the same rectangular prism when folded along its dotted lines.



2. Determine the surface area, to the nearest tenth, of the following triangular prism.



$SA_{\text{triangular prism}} = bh + lh + wh + ab$

$w = a$

$SA_{\text{triangular prism}} = bh + lh + wh + wb$

$SA_{\text{triangular prism}} = (2.5\text{ cm})(6\text{ cm}) + (4\text{ cm})(6\text{ cm}) + (3\text{ cm})(6\text{ cm}) + (3\text{ cm})(2.5\text{ cm})$

$SA_{\text{triangular prism}} = 15\text{ cm}^2 + 24\text{ cm}^2 + 18\text{ cm}^2 + 7.5\text{ cm}^2$

$SA_{\text{triangular prism}} = 64.5\text{ cm}^2$

3. What is the difference in surface area, to the nearest square foot, between a 45 foot long semi-trailer (trailer only) and a 28 foot long cube van (storage compartment only)?

		Length	Width	Height	
 all images © *Thinkstock*	28 foot Cube Van	28 feet	102 inches	13 feet, 6 inches	
	45 foot Semi-Trailer	45 feet	102 inches	13 feet, 6 inches	

Width: Both cube van and semi-trailer

Let w = width in feet

$$\frac{w}{102 \text{ in}} = \frac{1 \text{ ft}}{12 \text{ in}}$$

$$w = \frac{1 \text{ ft} \cdot 102 \cancel{\text{in}}}{12 \cancel{\text{in}}}$$

$$w = 8.5 \text{ ft}$$

Height: Both cube van and semi-trailer

Let h = height in feet

$$\frac{y}{6 \text{ in}} = \frac{1 \text{ ft}}{12 \text{ in}}$$

$$y = \frac{1 \text{ ft} \cdot 6 \cancel{\text{in}}}{12 \cancel{\text{in}}}$$

$$y = 0.5 \text{ ft}$$

$$h = 13 \text{ ft} + y$$

$$h = 13 \text{ ft} + 0.5 \text{ ft}$$

$$h = 13.5 \text{ ft}$$

$$SA_{28' \text{ cube van}} = 2lw + 2hw + 2lh$$

$$SA_{28' \text{ cube van}} = (2 \cdot 28 \text{ ft} \cdot 8.5 \text{ ft}) + (2 \cdot 13.5 \text{ ft} \cdot 8.5 \text{ ft}) + (2 \cdot 28 \text{ ft} \cdot 13.5 \text{ ft})$$

$$SA_{28' \text{ cube van}} = 476 \text{ ft}^2 + 229.5 \text{ ft}^2 + 756 \text{ ft}^2$$

$$SA_{28' \text{ cube van}} = 1461.5 \text{ ft}^2$$

$$SA_{45' \text{ semi}} = 2lw + 2hw + 2lh$$

$$SA_{45' \text{ semi}} = (2 \cdot 45 \text{ ft} \cdot 8.5 \text{ ft}) + (2 \cdot 13.5 \text{ ft} \cdot 8.5 \text{ ft}) + (2 \cdot 45 \text{ ft} \cdot 13.5 \text{ ft})$$

$$SA_{45' \text{ semi}} = 765 \text{ ft}^2 + 229.5 \text{ ft}^2 + 1215 \text{ ft}^2$$

$$SA_{45' \text{ semi}} = 2209.5 \text{ ft}^2$$

$$d_{\text{difference}} = SA_{45' \text{ semi}} - SA_{28' \text{ cube van}}$$

$$d_{\text{difference}} = 2209.5 \text{ ft}^2 - 1461.5 \text{ ft}^2$$

$$d_{\text{difference}} = 748 \text{ ft}^2$$

The difference in surface area is 748 ft^2.

Please return to *Unit 2: Surface Area and Volume Lesson 2.1* in the *Module* to continue your exploration.