

Geometry Review Rectangular Prism Problems

Name _____

- 1) A closed rectangular box has a square bottom (x by x) and height, h . If the volume of the box is 72 in^3 , write a function for the surface area of the box in terms of x .

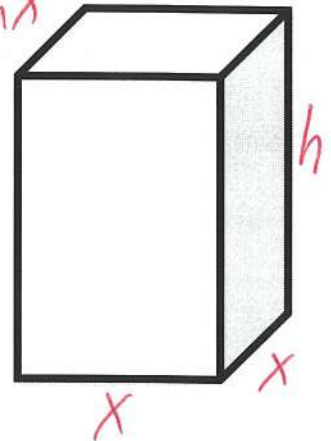
$$72 = x^2 h \quad A = x^2 + x^2 + hx + hx + hx + hx$$

$$\frac{72}{x^2} = h$$

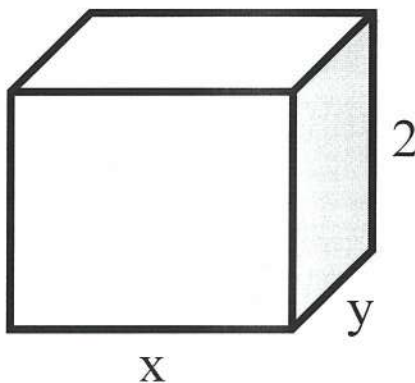
$$A = 2x^2 + 4hx$$

$$A = 2x^2 + 4\left(\frac{72}{x^2}\right)x$$

$$A = 2x^2 + \frac{288}{x}$$



- 2) A closed rectangular box has a height of 2 feet. If the surface area of the box is 100 square feet write a function for the volume of the box in terms of x .



$$100 = 2y + 2y + xy + xy + 2x + 2x$$

$$100 = 4y + 2xy + 4x$$

$$100 - 4x = 4y + 2xy$$

$$100 - 4x = (4 + 2x)y$$

$$y = \frac{100 - 4x}{4 + 2x}$$

$$V = 2xy$$

$$V = 2x \left(\frac{100 - 4x}{4 + 2x} \right)$$

$$V = \frac{100x - 4x^2}{2 + x}$$