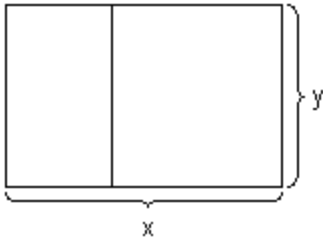


- 1) Jason has 600 feet of fencing with which to enclose two adjacent lots as shown in the figure below. Write the function to express the total area of the lots as a function of x .



- 2) A rectangular box with square base and no top is to have a volume of exactly 1000 cm^3 . Write the function to express the surface area as a function of one side of the base.
- 3) A rectangular sheet of thin metal is 5 m wide and 8 m long. Four small equal squares are cut from its corners and the projections of the resulting cross-shaped piece of metal are bent upward and welded to make an open-topped box with a rectangular base. Write a function to find the volume of the box as a function of the side of the square that is cut from the metal.

Answer Key

Testname: WORKSHEET 1-5 FUNCTION MODELS

$$1) A = xy \quad 2x + 3y = 600 \text{ so } y = \frac{600 - 2x}{3} = 200 - \frac{2}{3}x$$

$$\text{Thus } A(x) = x \left(200 - \frac{2}{3}x \right) = 200x - \frac{2}{3}x^2$$

$$2) S.A. = x^2 + 4xy \quad \text{and} \quad V = x^2h = 1000 \text{ so } h = \frac{1000}{x^2}$$

$$\text{Thus } S(x) = x^2 + 4x \left(\frac{1000}{x^2} \right) = x^2 + \frac{4000}{x}$$

$$3) V = l*w*h = (8 - 2x)(5 - 2x)x = 40x - 26x^2 + 4x^3$$