

**2D and 3D Area, Volume and Surface Area - Guided Lesson Explanation****Explanation#1**

The area of each face of the cube is equal. Cubes have 6 sides. The first task is to find the length of a side of the cube.

$$\text{Surface area of a cube} = 6 a^2$$

$$84 = 6 a^2$$

$$14 = a^2$$

$$\sqrt{14.00} = a$$

$$a = 3.74$$

The volume of a cube is  $s^3$ .

$$3.74 \times 3.74 \times 3.74 = 52.38$$

So the answer is  $52.38 \text{ in}^3$

**Explanation#2**

The surface area can be found by using the dimensions of each face to find the area and multiplying by 2:

$$\text{Front: } 5 \text{ in.} \times 7 \text{ in.} = 35 \text{ in}^2 \times 2 = 70 \text{ in}^2$$

$$\text{Top: } 3 \text{ in.} \times 5 \text{ in.} = 15 \text{ in}^2 \times 2 = 30 \text{ in}^2$$

$$\text{Side: } 3 \text{ in.} \times 7 \text{ in.} = 21 \text{ in}^2 \times 2 = 42 \text{ in}^2$$

The surface area is the sum of these areas, or  $142 \text{ in}^2$ .

If each square inch of paper cost \$0.03, the cost would be: \$4.26.

You have \$20. So we subtract \$4.26 from \$20 to find the change you would receive. The change would be \$15.74 ( $20 - 4.26$ ).

**Explanation#3**

One possible solution is to use the formula for the area of a triangle and substitute in the known values, then solve for the missing dimension.

$$A = \frac{1}{2} \times h \times b$$



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$$8 = \frac{1}{2} \times 4 \times b$$

$$8 = 2 \times b$$

$$\frac{8}{2} = 4$$

$$\text{Base} = 4$$

The length of the base would be 4 feet.

