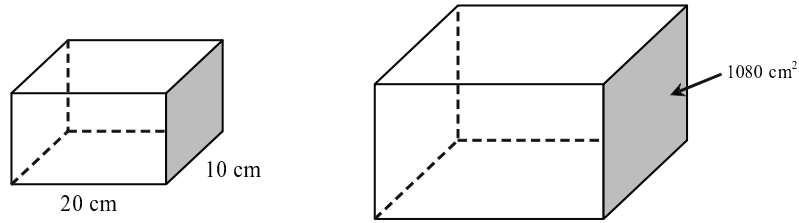


Similar Figures

Mathematics 306/326 REVIEW 3

1

The rectangular prisms below are similar. The dimensions of the base of the smaller prism are 20 cm by 10 cm. Its volume is 2400 cm^3 . The area of the shaded face of the larger prism is 1080 cm^2 .



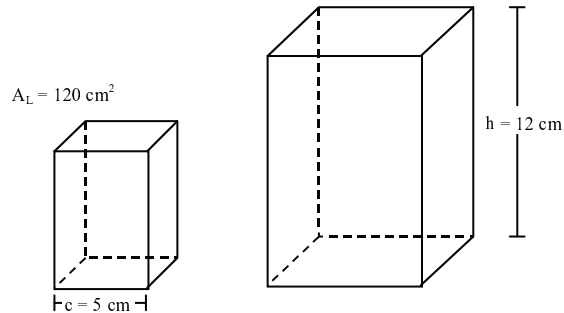
What is the volume of the larger prism?

Show all your work.

Answer: The volume of the larger prism is _____ cm^3 .

2

The two right prisms with square bases represented below are similar.



The lateral area of the smaller prism is 120 cm^2 and one side of its base measures 5 cm. If the height of the larger prism is 12 cm, what is its volume?

Show all your work.

Answer: The volume of the larger prism is _____ cm^3 .

Similar Figures

Mathematics 306/326

REVIEW 3

1- Contents

Question	Item	Objective	Type	Skill
1	2125	GEO.01	Extended answer	Problem solving
2	0019	GEO.01	Extended answer	Problem solving
3	0364	GEO.01	Extended answer	Problem solving
4	0490	GEO.02	Extended answer	Problem solving
5	0234	ALG.02	Extended answer	Problem solving
6	0310	ALG.02	Extended answer	Problem solving
7	0336	ALG.02	Extended answer	Problem solving
8	0359	ALG.02	Extended answer	Problem solving
9	0360	ALG.02	Extended answer	Problem solving
10	2043	ALG.02.07	Extended answer	Problem solving

2- Correction key

1

Example of an appropriate solution

Height of small prism

$$\frac{2400}{20 \times 10} = 12 \text{ cm}$$

Area of face of small prism corresponding to shaded face of large prism

$$10 \times 12 = 120 \text{ cm}^2$$

Ratio of areas

$$\frac{1080 \text{ cm}^2}{120 \text{ cm}^2} = \frac{9}{1}$$

$$= k^2$$

$$k^2 = 9$$

$$k = 3$$

$$k^3 = 27$$

$$V_{\text{small}} = 2400$$

$$V_{\text{small}} \times 27 = V_{\text{large}}$$

$$2400 \times 27 = 64\,800 \text{ cm}^3$$

or

if $k = 3$, dimensions of large prism are

$$20 \times 3 = 60$$

$$10 \times 3 = 30$$

$$12 \times 3 = 36$$

Volume of large prism

$$60 \times 30 \times 36 = 64\,800 \text{ cm}^3$$

Answer: The volume of the larger prism is **64 800** cm³.

Note: Students who have found the ratios of the areas have shown that they have a partial understanding of the problem.

2

Example of an appropriate method

Measure of the height of small prism

$$A_L = 4c \times h$$

$$120 = 4 \times 5 \times h$$

$$h = 6$$

Volume of small prism (V_s)

$$V_s = A_b \times h$$

$$V_s = 5 \times 5 \times 6$$

$$V_s = 150$$

Volume of large prism (V_l)

$$\left(\frac{6}{12}\right)^3 = \frac{150}{V^1}$$

$$\left(\frac{1}{2}\right)^3 = \frac{150}{V^1}$$

$$V_l = 1200$$

Answer The volume of the larger prism is 1200 cm³.