Volumes - Lesson 8

Volume of a Pyramid - Calculator

LI

- Calculate the Volume of a Pyramid.

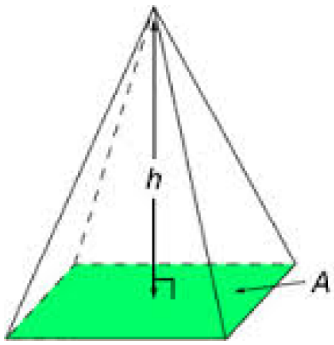
SC

- Pyramid formula.

Jan 10-12:11

Volume of a Pyramid

$$V = \frac{1}{3} A h$$



(A is base area, h is height)

$$V = A \times h \div 3$$

Example 1

Calculate the volume of a pyramid of base area 17 cm^2 and height 6 . 2 cm (1 decimal place).

$$V = A \times h \div 3$$

$$V = 17 \times 6.2 \div 3$$

$$\boxed{V = 35.1\ cm^3}$$

Example 2

Calculate the volume of a pyramid of height 32 . 67 cm and base area 19 . 43 cm^2 (2 decimal places).

$$V = A \times h \div 3$$

$$V = 19.43 \times 32.67 \div 3$$

$$\boxed{V = 211.59\ cm^3}$$

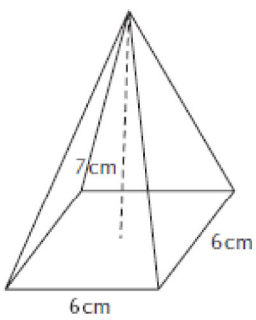
Calculate the volumes of these pyramids (2 decimal places) :

1) $h = 8$ cm, $A = 19$ cm^2	9) $h = 8.3$ cm, $A = 3.7$ cm^2
2) $h = 16$ cm, $A = 10$ cm^2	10) $A = 9.7$ cm^2, $h = 6.5$ cm
3) $A = 22$ cm^2, $h = 5$ cm	11) $A = 0.5$ cm^2, $h = 3.5$ cm
4) $A = 29$ cm^2, $h = 17$ cm	12) $h = 20.6$ cm, $A = 1.7$ cm^2
5) $A = 38$ cm^2, $h = 56$ cm	13) $A = 1.9$ cm^2, $h = 3.8$ cm
6) $h = 46$ cm, $A = 67$ cm^2	14) $A = 12.1$ m^2, $h = 3.2$ m
7) $A = 58$ cm^2, $h = 52$ cm	15) $h = 1.07$ mm, $A = 1.1$ mm^2
8) $h = 97$ cm, $A = 98$ cm^2	16) $A = 37.7$ cm^2, $h = 1.4$ cm

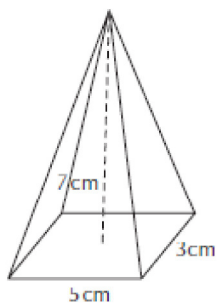
N5 Student Book pg. 79 - 80 Ex. 10B All Q

1 Calculate the volume of each of these pyramids.

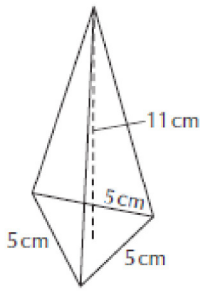
a



b

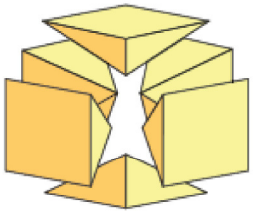


c



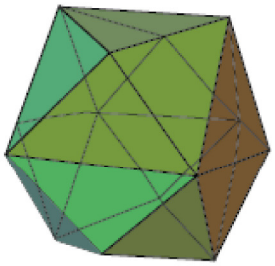
2 Calculate the height of a pyramid with volume $30\,\text{cm}^3$ and base area $8\,\text{cm}^2$. Write your answer correct to 3 significant figures.

3 Six identical square-based pyramids fit together to form a cube of side 12 cm. Calculate the height of one of the pyramids.



4 Attaching a square-based pyramid of height x onto each of the faces of a cube of side $2x$ forms a tetrahexahedron. Calculate the volume of the tetrahexahedron formed when:

a $x = 3\,\text{cm}$ **b** $x = 0.5\,\text{m}$



Answers

1) 50 . 67 cm^3	9) 10 . 24 cm^3
2) 53 . 33 cm^3	10) 21 . 02 cm^3
3) 36 . 67 cm^3	11) 0 . 58 cm^3
4) 164 . 33 cm^3	12) 11 . 67 cm^3
5) 709 . 33 cm^3	13) 2 . 41 cm^3
6) 1 027 . 33 cm^3	14) 12 . 91 m^3
7) 1 005 . 33 cm^3	15) 0 . 39 mm^3
8) 3 168 . 67 cm^3	16) 17 . 59 mm^3

Exercise 10B

1 a $V = 84\,cm^3$

b $V = 35\,cm^3$

c $39.7\ cm^3$

2 $h = 11.3\,cm$

3 $h = 6.0\,cm$

4 a $V = 432.0\,cm^3$

b $V = 2.0\,m^3$