

# THREE IB QUESTIONS (After Test Assignment)

Name \_\_\_\_\_

The three problems are from miscellaneous topics,  
the topics that should be review.

Algebra

1

The equation of a line  $A_1$  is  $3x = 12 - y$ .

(a) For the line  $A_1$ , calculate

(i) the  $x$ -intercept;

(ii) the gradient.

[2]

A second line,  $A_2$ , intersects the  $x$ -axis at  $(2, 0)$  and is parallel to  $A_1$ .

(b) Write down the equation of  $A_2$  in the form  $y = mx + c$ .

[2]

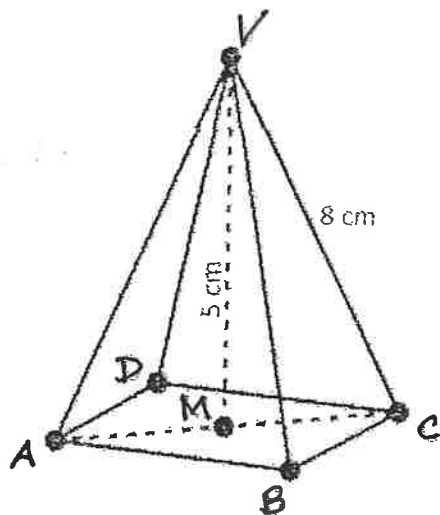
(c) Calculate the  $y$ -intercept of  $A_2$ .

[2]

Working

Geometry/Trig

- 2 A right pyramid has apex  $V$  and square base  $ABCD$ . The vertical height of the pyramid,  $VM$ , is 5 cm. The sloping edges are 8 cm long.



- (a) Calculate the length of  $MC$ . [2]
- (b) Calculate the size of the angle that sloping edge  $VC$  makes with the height of the pyramid. [2]
- (c) Calculate the area of the triangle  $ABC$ . [2]

Working

## Algebra/Functions

- 3 Atmospheric pressure,  $P$ , in kPa, decreases exponentially with increasing height above sea level,  $h$ . The atmospheric pressure can be modelled by the function

$$P(h) = 101 \times \left(\frac{25}{22}\right)^{-h},$$

where  $h$  is the height above sea level in kilometres.

- (a) Write down the exact atmospheric pressure at sea level, in kPa. [1]

Mount Kosciuszko is the highest mountain in Australia with a height of 2228 metres above sea level at the top.

- (b) Calculate the atmospheric pressure at the top of the Mount Kosciuszko. [2]  
(c) Calculate the height where the atmospheric pressure is equal to 10 kPa. [3]

*Working*

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