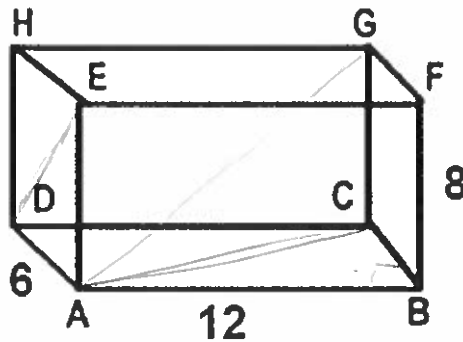


IB Math Studies Year 2

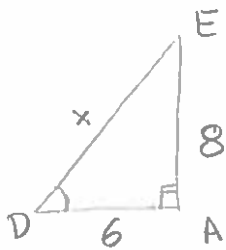
10.2 Distance Between Points In a 3D Solid

Can you re-draw and label the 2D triangles in the cuboid below?
Calculate the sides and angles of each triangle.



Soh Cah Toa

Triangle ADE



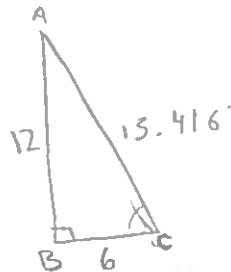
$DE = 10$

$\sin(\hat{D}) = \frac{8}{10}$

$\hat{D} = 53.1^\circ$

$\hat{E} = 36.9^\circ$

Triangle ACB



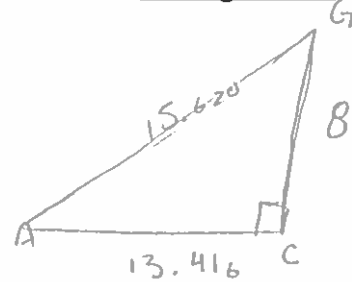
$AC = 13.4$

$\tan(\hat{C}) = \frac{12}{6}$

$\hat{C} = 63.4^\circ$

$\hat{A} = 26.6^\circ$

Triangle ACG



$AG = 15.6$

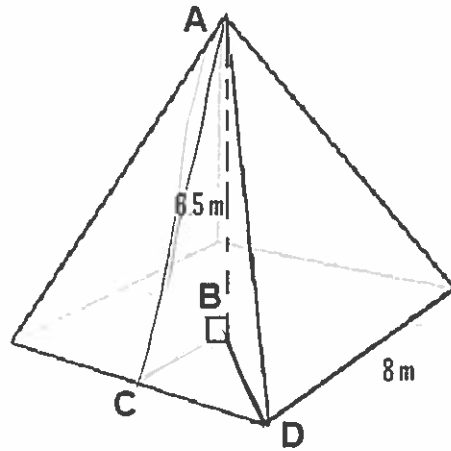
$\tan(\hat{A}) = \frac{8}{13.416}$

$30.8^\circ = \hat{A}$

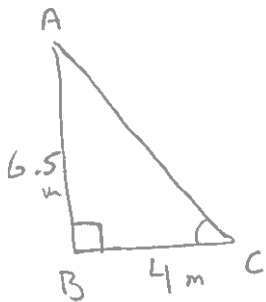
$\tan(\hat{G}) = \frac{13.416}{8}$

$59.2^\circ = \hat{G}$

Can you re-draw and label the 2D triangles in the pyramid below?
 Calculate the sides and angles of each triangle.



Triangle ABC

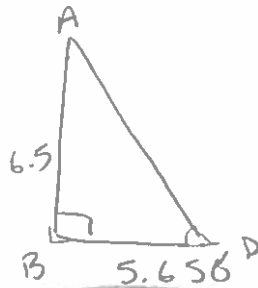


$$\overline{AC} = 7.63 \text{ m}$$

$$C^\circ = 58.4^\circ$$

$$A^\circ = 31.6^\circ$$

Triangle ABD

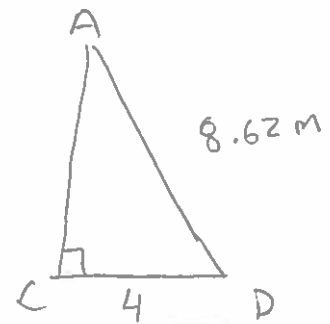


$$\overline{AD} = 8.62 \text{ m}$$

$$D^\circ = 49^\circ$$

$$A^\circ = 41.0^\circ$$

Triangle ACD



$$7.64 = \overline{AC}$$

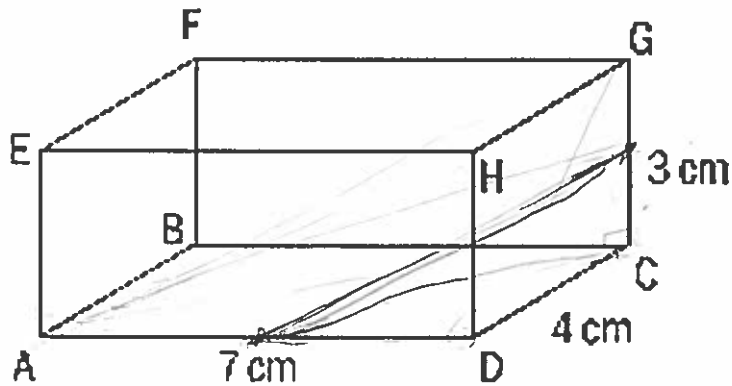
$$62.4^\circ = D$$

$$27.6^\circ = A$$

IB Math Studies Year 2

10.2 IB Practice

1. The diagram shows a cuboid ABCDEFGH, where $AD = 7\text{cm}$, $DC = 4\text{cm}$, and $CG = 3\text{cm}$.



For each problem, RE-DRAW an appropriate triangle in your notebook.

a) Find the length of

i) $AH = 7.62\text{cm}$

ii) $AC = 8.06\text{cm}$

iii) $DG = 5\text{cm}$

iv) $AG = 8.60\text{cm}$

b) Find the distance between

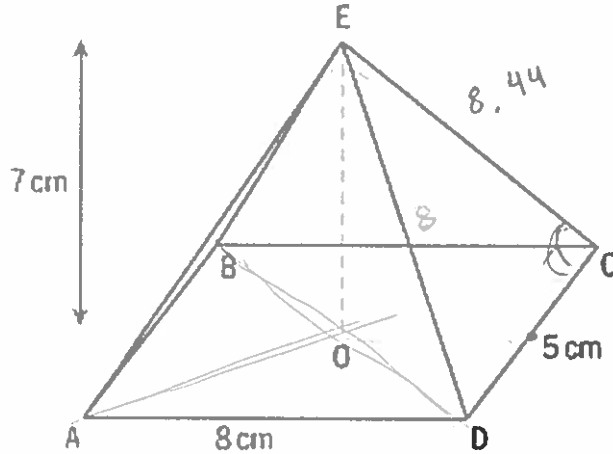
i) the midpoint of CG and A .

8.16cm

ii) the midpoint of AD and the midpoint of CG .

5.52cm

2. In the diagram, ABCD is the rectangular base of a right pyramid with apex E. The sides of the base are 8 cm and 5 cm, and the height OE of the pyramid is 7 cm.



For each problem, RE-DRAW an appropriate triangle in your notebook.

- a) Find the length of
- $AC = 9.43 \text{ cm}$
 - $EC = 8.44 \text{ cm}$
 - EM, where M is the midpoint of CD.

8.06 cm

- b) Find the area of

- i) Triangle BCD $\frac{1}{2} AB \sin(6)$

20 cm^2

- ii) Triangle ECD

$$\cos(\hat{C}) = \frac{8.44^2 + 5^2 - 8.44^2}{2(8.44)(5)}$$

6.25 cm^2

- iii) Triangle EDA

6.25

$64 = EDN$