NAME
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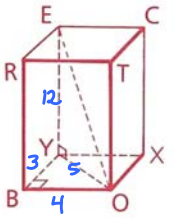
Adv Geo –
Mon 18 Mar 13

9.8: The Pythagorean Theorem and Space Figures

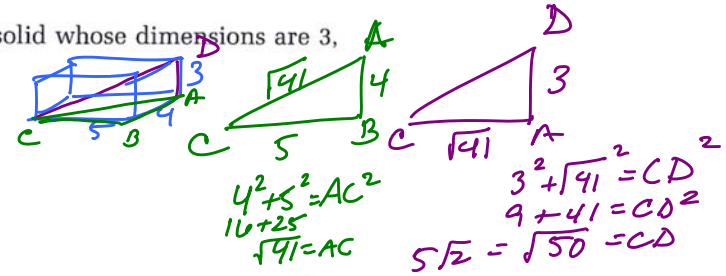
9.8: 413/1-6, 11-15

1 Given: The rectangular solid shown,
BY = 3, OB = 4, EY = 12
Find: **a** YO, a diagonal of face BOXY 5
b EO, a diagonal of the solid 13



2 Find the diagonal of a rectangular solid whose dimensions are 3, 4, and 5.

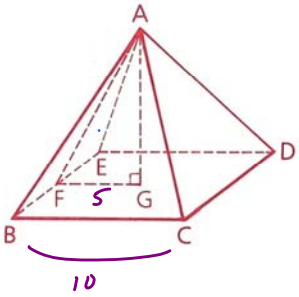
$5\sqrt{2}$



$4^2+5^2=AC^2$
$16+25$
$\sqrt{41}=AC$

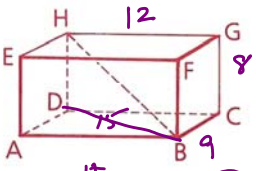
$3^2+\sqrt{41}^2=CD^2$
$9+41=CD^2$
$5\sqrt{2}=\sqrt{50}=CD$

3 Given: Regular square pyramid ABCDE, with slant height $\overline{AF}$, altitude $\overline{AG}$, and base BCDE;
perimeter of BCDE = 40, side = 10
∠AFG = 60°
Find: The altitude and the slant height
$5\sqrt{3}$ 10

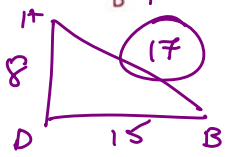


30	60	90
x	$x\sqrt{3}$	2x
5	$5\sqrt{3}$	10

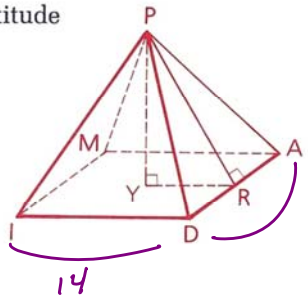
4 Given: The rectangular solid shown,
GC = 8, HG = 12, BC = 9
Find: **a** HB, a diagonal of the solid 17
b AG, another diagonal of the solid 17



$3\cdot3=9$ $3\cdot5=15$ $3\cdot4=12$



5 Given: The regular square pyramid shown, with altitude $\overline{PY}$ and slant height $\overline{PR}$,
ID = 14, PY = 24

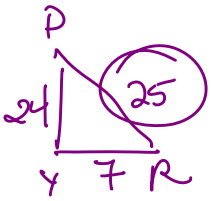


Find: **a** AD $= ID = 14$

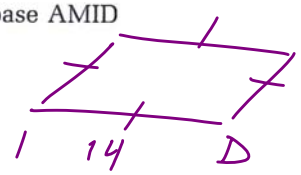
SQ $\rightarrow \cong$ sds

b YR $= \frac{1}{2}10 = 7$

c PR

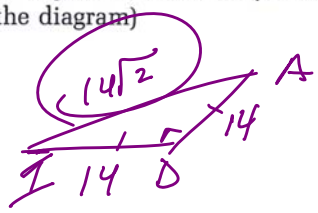


d The perimeter of base AMID



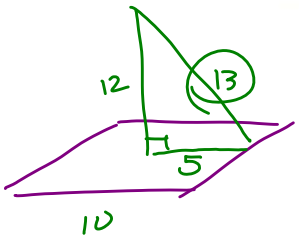
$P = 4(14) = 4(10+4) =$
$40+16 = 56$

e A diagonal of the base (not shown in the diagram)



45 - 45 - 90
$x - x - x\sqrt{2}$
14

6 Find the slant height of a regular square pyramid if the altitude is 12 and one of the sides of the square base is 10.

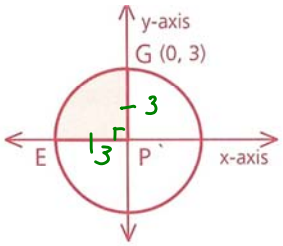


11 Given: ⊙P as shown

Find: **a** The coordinates of point E $(-3,0)$

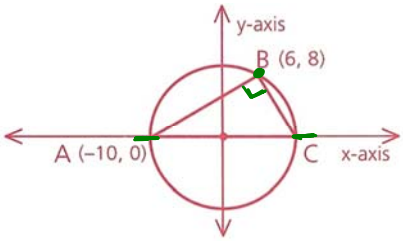
b The area of sector EPG to the nearest tenth $\frac{90}{360} A_0 = \frac{1}{4}\pi 3^2 = \frac{9}{4}\pi$

c The length of $\overset{\frown}{GE}$ to the nearest tenth $\frac{90}{360} P_0 = \frac{1}{4} d\pi = \frac{6}{4}\pi = \frac{3}{2}\pi$



12 Given: Diagram as marked

Find: AB (the length of $\overline{AB}$)



$$\text{Dist} = \sqrt{\Delta x^2 + \Delta y^2}$$

$$\sqrt{(-10-6)^2 + (0-8)^2}$$

$$\sqrt{(-16)^2 + (-8)^2}$$

$$\sqrt{256 + 64}$$

$$\sqrt{320}$$

$$\sqrt{4 \cdot 4 \cdot 2 \cdot 2 \cdot 5} = 8\sqrt{5}$$

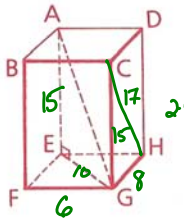
320 → 4, 80 → 4, 20 → 4, 5 → 2, 2

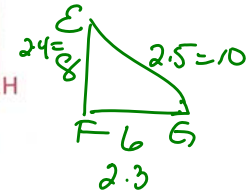
13 ABCDEFGH is a rectangular solid.

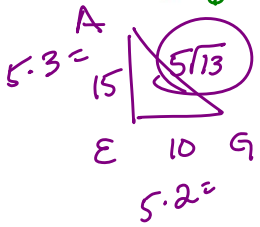
a If face diagonal $\overline{CH}$ measures 17, edge $\overline{GH}$ measures 8, and edge $\overline{FG}$ measures 6, how long is diagonal $\overline{AG}$? $5\sqrt{13}$

b If diagonal $\overline{AG}$ measures 50, edge $\overline{AE}$ measures 40, and edge $\overline{EF}$ measures 3, how long is edge $\overline{FG}$?

$9\sqrt{11}$





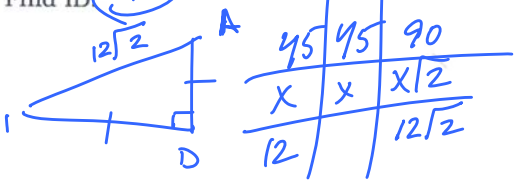


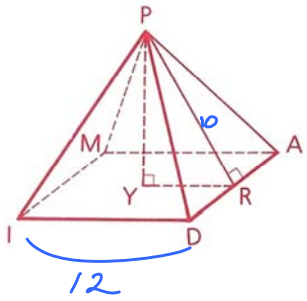
$5(2, 3, \sqrt{13})$

$5(2^2 + 3^2 = 13$

14 PADIM is a regular square pyramid. Slant height $\overline{PR}$ measures 10, and the base diagonals measure $12\sqrt{2}$.

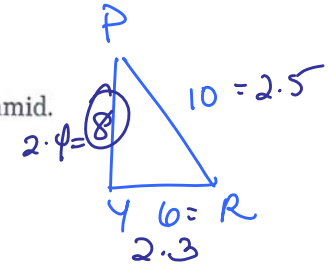
a Find ID. $= 12$





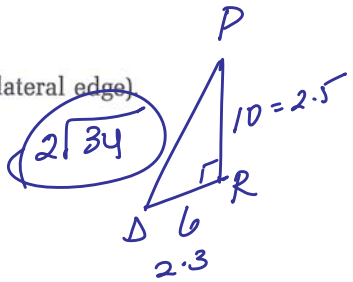
b Find the altitude of the pyramid.

$YR = \frac{1}{2}12 = 6$



c Find RD. $\frac{1}{2}10 = 6$

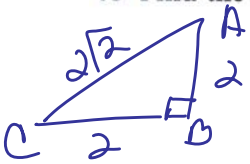
d Find PD (length of a lateral edge).



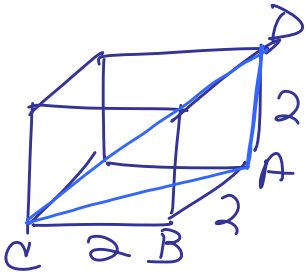
$2(3, 5, \sqrt{34})$

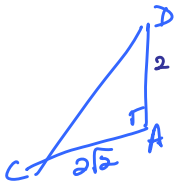
$2(3^2 + 5^2 = 34$

15 Find the diagonal of a cube if each edge is 2.



45, 45, 90





$2(1, \sqrt{2}, \sqrt{3}) \Rightarrow 2\sqrt{3} = DC$

$2(1^2 + \sqrt{2}^2 = 3$