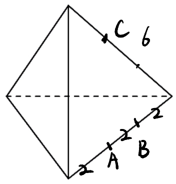
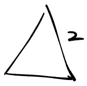
单元检测二（立体几何）

12.

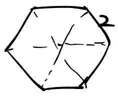


A. 正三角形×4

正六边形×4



⇒ $\frac{\sqrt3}{4}\times2^2$



$=6$个正三角形 ⇒ $\frac{\sqrt3}{4}\times2^2\times6\times4$

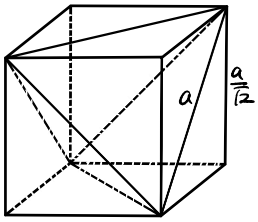
⇒ $28\sqrt3$

B. $V=$ 大正四面体 − 小正四面体 $\times4$
(a=6)　　(a=2)

$$\Rightarrow V=\frac{\cancel{6}\times\cancel{6}\times6}{\cancel{6}\sqrt2}-\frac{\cancel{2}\times2\times2}{3\cancel{6}\sqrt2}\times4$$

$$=3\times\sqrt2\times6-\frac{2\times\sqrt2\times4}{3}$$

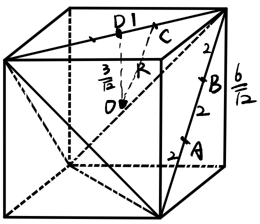
$$=\frac{54\sqrt2-8\sqrt2}{3}=\frac{46\sqrt2}{3}$$



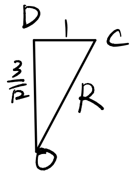
$V_{正四面体}=\frac13V_{正方体}$

$=\frac13\cdot\frac{a\cdot a\cdot a}{\sqrt2\cdot\sqrt2\cdot\sqrt2}=\frac{a^3}{6\sqrt2}$

C.

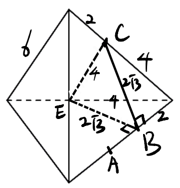


⇒



⇒ $R^2=\frac92+1=\frac{11}{2}$ ⇒ $S=4\pi R^2=4\pi\cdot\frac{11}{2}=22\pi$

D.

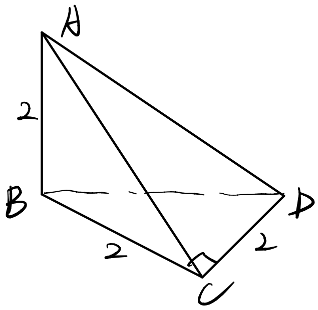


E为后虚线三等分点，易得 $\begin{cases}CB\perp AB\\EB\perp AB\end{cases}$ ⇒ $AB\perp BCE$ ⇒ $AB\perp BCE$内所有直线

⇒ M在CE, EB, BC上运动 ⇒ $AB\perp CM$ ⇒ 运动轨迹 = △BCE周长

⇒ 易得 $BC=BE=2\sqrt3$，$CE=4$ ⇒ 轨迹长度 $=4+4\sqrt3$

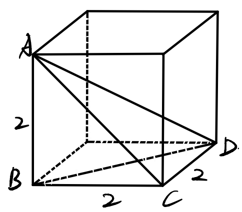
8.



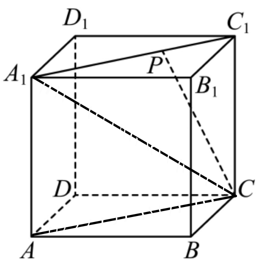
$\sqrt{4+4+4}=2R=2\sqrt3$，$R=\sqrt3$

⇒ $S=4\pi R^2=4\pi\cdot3=12\pi$

⇒



10.



P在面CC_1A_1上运动

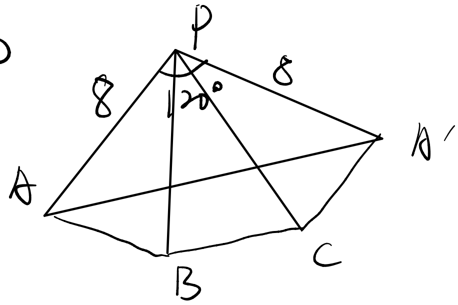
A. $BD\perp ACC_1A_1$ ⇒ $BD\perp PC$

B. $BB_1//CC_1$，CC_1与PC相交 ⇒ BB_1与PC异面

C. $DD_1//CC_1$，DD_1与PC夹角 ⇒ CC_1与PC夹角 ⇒ $0°<\theta<45°$

D. PC与面ABCD ⇒ PC与面$A_1B_1C_1D_1$ ⇒ $\angle CPC_1$ ⇒ $45°<\theta<90°$

15. 展开侧面

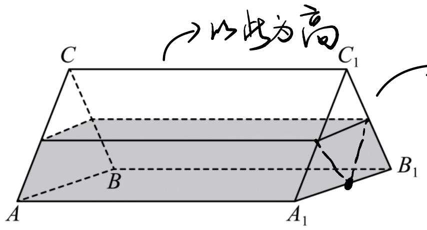


在△PAA'中，用余弦定理

$AA'^2 = 8^2+8^2-2\cdot8\cdot8\cdot\cos120^\circ$

$\Rightarrow AA' = 8\sqrt{3}$

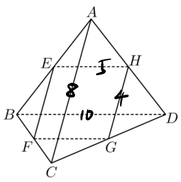
14.



以此为高

以此为底 $\Rightarrow$ 空1份 水3份 $\Rightarrow \frac{\text{水}}{\text{总体积}} = \frac{3}{4} \Rightarrow \frac{3}{4}\text{高} = 12$

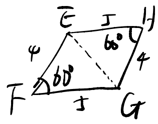
13.



题意：AC与BD夹角为60°

$\Rightarrow$ EH与HG夹角为60°

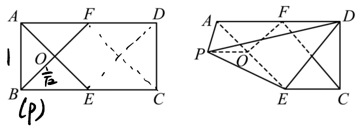
$\Rightarrow$



$\Rightarrow 2\times S_{EHG} = 2\times\frac{1}{2}\cdot4\cdot5\cdot\sin60^\circ$

$= 4\cdot5\cdot\frac{\sqrt{3}}{2} = 10\sqrt{3}$

11.



A. $CF\parallel AG$，$AG\perp PDG \Rightarrow AG\perp DP \Rightarrow CF\parallel DP$

B. $CF \Rightarrow AE$，AE与PE(BE)夹角45°

C. ABE翻折180° $\Rightarrow$ 与AFE重合.

则$\angle PED \Rightarrow$ 从$\angle BED$到$\angle FED$，从135°→45°，存在$\angle PED=90^\circ$

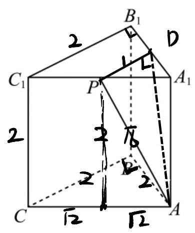
$\Rightarrow PE\perp ED$

D. 当APE⊥下面 $\Rightarrow V_{P-AED}$最大，高为PO，底为AED

$\Rightarrow AB=1, OP=\frac{\sqrt{2}}{2}, AE=\sqrt{2} \Rightarrow V=\frac{1}{3}\cdot1\cdot1\cdot\frac{\sqrt{2}}{2}=\frac{1}{3\sqrt{2}}$

$=\frac{\sqrt{2}}{6}$

6.



设$AB=CC_1=2$，D为中点

$\begin{cases} B_1C_1\perp AB_1 \\ B_1C_1\perp BB_1 \end{cases} \Rightarrow B_1C_1\perp$ 右面 $\Rightarrow DP\perp$ 右面 $\Rightarrow DP\perp AD$

$DP=\frac{1}{2}B_1C_1=1$，$AP=\sqrt{5}$

BC与AP夹角 $\Rightarrow$ DP与AP夹角 $\Rightarrow \angle APD=\theta$，$\cos\theta=\frac{DP}{PA}=\frac{1}{\sqrt{6}}=\frac{\sqrt{6}}{6}$

15. 课本 P119 例4.