

1.  $O, A, B, C \in \{OA, OB, OC\}$   
 A.  $O, A, B, C$  B.  $O, A, B, C$   
 C.  $O, A, B, C$  D.  $O, A, B, C$

2.  $l \perp a$  ( $2, 5, 7$ )  $u$  ( $1, 1, 1$ ) ( )  
 A.  $l \subset a$  B.  $l \perp a$  C.  $l \subset a$  D.  $l \perp a$

3.  $OABC$   $E \in OA$   $\overline{CF} = \frac{1}{3}\overline{CB}$   $\overline{OA} = \vec{a}$   $\overline{OB} = \vec{b}$   $\overline{OC} = \vec{c}$   $\overline{EF}$   
 A.  $\frac{1}{2}\vec{a} + \frac{1}{3}\vec{b} + \frac{2}{3}\vec{c}$  B.  $\frac{1}{2}\vec{a} + \frac{1}{3}\vec{b} + \frac{4}{3}\vec{c}$  C.  $\frac{1}{2}\vec{a} + \frac{2}{3}\vec{b} + \frac{1}{3}\vec{c}$  D.  $\frac{1}{2}\vec{a} + \frac{1}{3}\vec{b} + \frac{2}{3}\vec{c}$

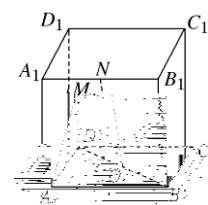
4.  $ABCD$   $A_1B_1C_1D_1$   $AB \perp BC$   $a$   $AA_1 = 2a$   $D_1$   $AC$  ( )  
 A.  $\sqrt{3}a$  B.  $\frac{\sqrt{3}a}{2}$  C.  $\frac{2\sqrt{2}a}{3}$  D.  $\frac{3\sqrt{2}a}{2}$

5.  $x, y \in R$   $\vec{a} = (x, 1, 1)$ ,  $\vec{b} = (1, y, 1)$ ,  $\vec{c} = (2, 4, 2)$ ,  $\vec{a} \perp \vec{c}$ ,  $\vec{b} \parallel \vec{c}$   $|\vec{a} - \vec{b}|$

A.  $2\sqrt{2}$  B.  $\sqrt{10}$  C. 3 D. 4

6.  $ABCD$   $A_1B_1C_1D_1$   $O$   $ABCD$   
 M  $D_1D$  N  $A_1B_1$   $NO \perp AM$  ( )

A. B  
 C. D

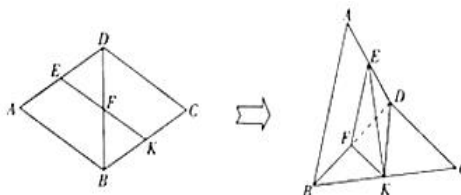


7.  $ABC$   $A_1B_1C_1$   $AA_1 \perp A_1B_1$   $2A_1B_1 = 2B_1C_1$   $AB \perp BC$  M  $A_1C_1$   $MB$   
 $AA_1$  ( )

A.  $\frac{1}{3}$  B.  $\frac{2\sqrt{2}}{3}$  C.  $\frac{3\sqrt{2}}{4}$  D.  $\frac{1}{2}$

8.  $ABCD$   $\angle BAD = 60^\circ$   $AD \perp BD$   $BC$   $E \in FK$   $EF \perp FK$   
 $ABD$   $BD$  A  $BD \perp C$

A. B  
 C. D



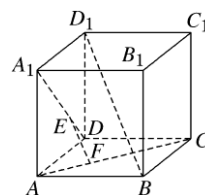
9. A.  $p \perp xa$   $y \perp b$   $p \perp a$   $b$  B.  $p \perp a$   $b$   $p \perp xa$   $y \perp b$   
 C.  $MP \perp xMA$   $y \perp MB$  P M A B D. P M A B  $MP \perp xMA$   $y \perp MB$

10  $ABCD A_1B_1C_1D_1$   $E F$   $A_1D AC$

$A_1E \frac{2}{3}A_1D$   $AF \frac{1}{3}AC$  ( )

A  $EF$   $A_1D AC$  B  $EF A_1D EF AC$

C  $EF BD_1$  D  $EF BD_1$

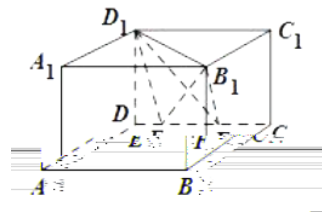


11  $E F$   $ABCD A_1B_1C_1D_1$   $DC$   $AB$   $2 EF$   $1$

A  $D_1 B_1EF$

B  $D_1B_1 EF$  45

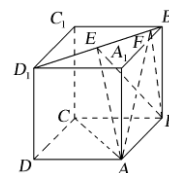
C  $D_1B_1 B_1EF$  D  $D_1B_1 B_1EF$   $30^\circ$



12.  $ABCD A_1B_1C_1D_1$  1  $B_1D_1$   $E F EF \frac{\sqrt{2}}{2}$  ( )

A  $AC BE$  B  $EF ABCD$

C  $A BEF$  D  $AE BF$



13.  $PA PB PC$  1 2 3  $60^\circ$  G  $ABC$

$PG xPA yPB zPC$   $x y z R$   $x y z$  \_\_\_\_\_  $|PG|$  \_\_\_\_\_.

14.  $a (5 3 1) b 2 t \frac{2}{5} a b t$

15.  $l a (1 1 2) m b 2 1 \frac{1}{2} l m$

$l a (0 1 1) a n (1 1 1) l a a$

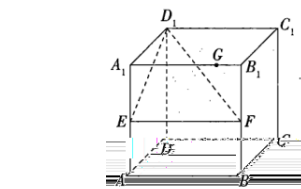
$\beta n_1 (0 1 3) n_2 (1 0 2) a \beta a A(1 0 1) B(0 1$

$0) C( 1 2 0) n (1 u t) a u t 1.$

( )

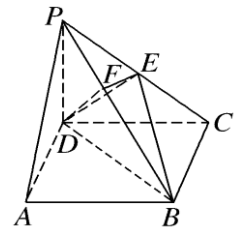
16 2  $ABCD A_1B_1C_1D_1$   $E F$   $AA_1, BB_1$

G  $A_1B_1$   $A_1G (0 2) G D_1EF$



17.  $ABC - A_1B_1C_1$  中,  $D$  为  $BC$  的中点,  $AA_1 \perp AB$ . 求证:
- (1)  $A_1C \perp AB_1D$ .
- (2)  $C_1 \perp AB_1D$ .

18. 如图, 四棱锥  $P-ABCD$  中,  $ABCD$  为平行四边形,  $PD \perp DC$ ,  $E$  为  $PC$  的中点,  $EF \perp BP$  于  $F$ .
- (1) 证明  $PA \perp EDB$ .
- (2) 证明  $PB \perp EFD$ .



19.  $\overline{ABCD} \quad \overline{A_1B_1C_1D_1}$        $\overline{2 \quad ABC} \quad \overline{A_1AC} \quad 60^\circ$