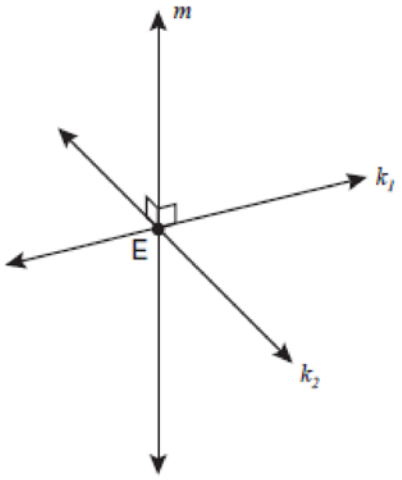
Name: _____

G.G.1: Planes: Know and apply that if a line is perpendicular to each of two intersecting lines at point of intersection, the line is perpendicular to the plane determined by them

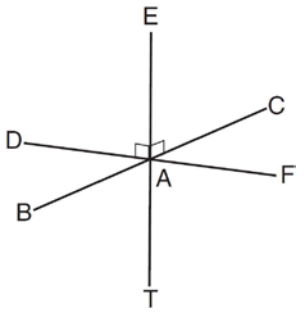
1 Lines k_1 and k_2 intersect at point E. Line m is perpendicular to lines k_1 and k_2 at point E.



Which statement is always true?

1) Lines k_1 and k_2 are perpendicular.
2) Line m is parallel to the plane determined by lines k_1 and k_2.
3) Line m is perpendicular to the plane determined by lines k_1 and k_2.
4) Line m is coplanar with lines k_1 and k_2.

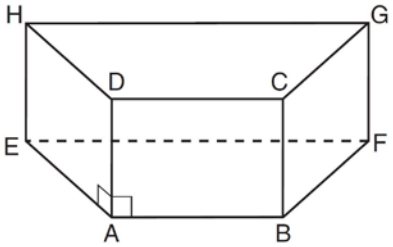
2 As shown in the diagram below, $\overline{FD}$ and $\overline{CB}$ intersect at point A and $\overline{ET}$ is perpendicular to both $\overline{FD}$ and $\overline{CB}$ at A.



Which statement is *not* true?

1) $\overline{ET}$ is perpendicular to plane BAD.
2) $\overline{ET}$ is perpendicular to plane FAB.
3) $\overline{ET}$ is perpendicular to plane CAD.
4) $\overline{ET}$ is perpendicular to plane BAT.

3 In the prism shown below, $\overline{AD} \perp \overline{AE}$ and $\overline{AD} \perp \overline{AB}$.



Which plane is perpendicular to $\overline{AD}$?

1) HEA
2) BAD
3) EAB
4) EHG

4 Lines j and k intersect at point P. Line m is drawn so that it is perpendicular to lines j and k at point P. Which statement is correct?
1) Lines j and k are in perpendicular planes.
2) Line m is in the same plane as lines j and k.
3) Line m is parallel to the plane containing lines j and k.
4) Line m is perpendicular to the plane containing lines j and k.

5 Lines m and n intersect at point A. Line k is perpendicular to both lines m and n at point A. Which statement *must* be true?
1) Lines m, n, and k are in the same plane.
2) Lines m and n are in two different planes.
3) Lines m and n are perpendicular to each other.
4) Line k is perpendicular to the plane containing lines m and n.

6 In plane $\mathcal{P}$, lines m and n intersect at point A. If line k is perpendicular to line m and line n at point A, then line k is
1) contained in plane $\mathcal{P}$
2) parallel to plane $\mathcal{P}$
3) perpendicular to plane $\mathcal{P}$
4) skew to plane $\mathcal{P}$

7 Lines a and b intersect at point P. Line c passes through P and is perpendicular to the plane containing lines a and b. Which statement must be true?
1) Lines a, b, and c are coplanar.
2) Line a is perpendicular to line b.
3) Line c is perpendicular to both line a and line b.
4) Line c is perpendicular to line a or line b, but not both.

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Answer Section

1	ANS: 3	REF: fall0816ge
2	ANS: 4	REF: 011315ge
3	ANS: 3	REF: 061522ge
4	ANS: 4	REF: 011012ge
5	ANS: 4	REF: 061118ge
6	ANS: 3	REF: 061017ge
7	ANS: 3	REF: 081218ge