Parallel and Perpendicular Lines

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1. Define parallel lines.

2. If the slope of a line is $\frac{2}{3}$, what is the slope of a line parallel to it?

A. $\frac{2}{3}$ B. $-\frac{2}{3}$

C. $-\frac{3}{2}$ D. $\frac{3}{2}$

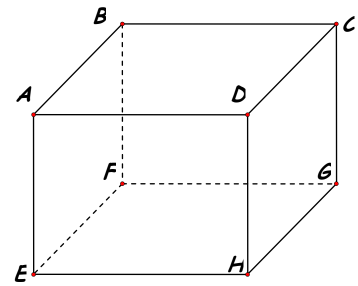
3. Given points $A(7, 5)$ and $B(2, 1)$, find the slope of the line perpendicular to $\overline{AB}$.

4. Given points $A(4, 5)$ and $B(2, 1)$, find the slope of the line perpendicular to $\overline{AB}$.

5. Find the equation of a line parallel to $y = \frac{2}{3}x + 7$ passing through (6, 3).

6. Find the equation of a line perpendicular $y = \frac{2}{3}x + 7$ passing through (6, 3).

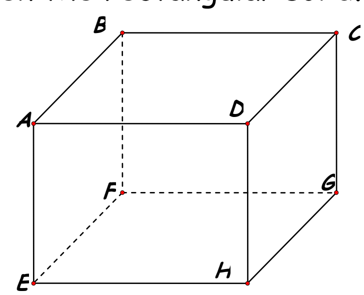
7. Given the rectangular solid.



Identify a pair of parallel lines.

A. $\overleftrightarrow{AB}$ and $\overleftrightarrow{EH}$
B. $\overleftrightarrow{BC}$ and $\overleftrightarrow{EH}$
C. $\overleftrightarrow{DH}$ and $\overleftrightarrow{HG}$
D. $\overleftrightarrow{BF}$ and $\overleftrightarrow{AD}$

8. Given the rectangular solid.



Identify a pair of perpendicular lines.

A. $\overleftrightarrow{AB}$ and $\overleftrightarrow{EH}$
B. $\overleftrightarrow{BC}$ and $\overleftrightarrow{EH}$
C. $\overleftrightarrow{DH}$ and $\overleftrightarrow{HG}$
D. $\overleftrightarrow{BF}$ and $\overleftrightarrow{AD}$

9. $\overleftrightarrow{AB}$ and $\overleftrightarrow{CD}$ are coplanar. Given the coordinates of the points are $A(2, 6)$, $B(6, 2)$, $C(-3, 4)$, $D(4, -3)$, are $\overleftrightarrow{AB}$ and $\overleftrightarrow{CD}$ parallel, perpendicular, skew, or none of these? Explain your answer.

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10. Determine whether the given lines are parallel, perpendicular, or neither.
$-3x+4y=12$ and $4x+3y=12$.

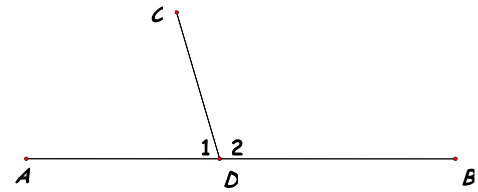
11. Define perpendicular lines.

12. A parallelogram is defined as a quadrilateral with both pair of opposite sides parallel. Determine if a quadrilateral with vertices, $M(8, 4)$, $N(5, 0)$, $O(0, 0)$, and $P(3, 4)$ is a parallelogram. Could it be a rectangle?

13. The rate of vertical change to horizontal change is called___?

A. Slope
B. Intersection
C. Parallel lines
D. Perpendicular

14. **Given**: $\angle 1$ supp. to $\angle 2$; $\angle 1 \cong \angle 2$
Prove: $\overline{AB} \perp \overline{CD}$



15. **Given**: A right triangle has one set of perpendicular lines.
Prove: $\triangle ABC$ is a right triangle.