Points, Lines, Rays, and Angles

Explore ideas and representations

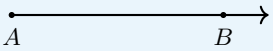
Name _____ **Date** _____ **Score** _____ / 6

QUICK REVIEW

A point names a location. A line extends in both directions (0 endpoints); a ray extends in one direction (1 endpoint); a segment stops at both ends (2 endpoints). Parallel lines never meet; perpendicular lines meet at $90°$. $\overrightarrow{AB}$ starts at A and passes through B.

Worked example

Identify and name this object; state its number of endpoints.



1. The filled point A is the single endpoint; the arrow shows extension past B.

2. This object has 1 endpoints, which identifies a ray.

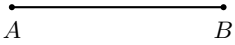
3. Name the endpoint first: $\overrightarrow{AB}$.

Answer: Ray $\overrightarrow{AB}$; 1 endpoints.

Practice Problems

Show your thinking.

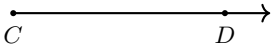
1. Name the object with two endpoints.



2. Identify the object with arrows in both directions.



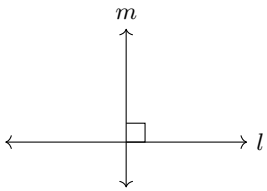
3. Name the endpoint of $\overrightarrow{CD}$. Is D another endpoint?



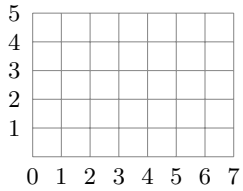
4. Are lines l and m parallel or perpendicular?



5. A child calls this line pair parallel. Correct the name.



6. On the grid, draw segment AB five grid units long. Then draw a ray from A that is perpendicular to it.



Answer Key

1. Line segment $\overline{AB}$; 2 endpoints.
2. Line $\overleftrightarrow{PQ}$; 0 endpoints.
3. Endpoint C only; D is a point on the ray.
4. Parallel.
5. Perpendicular.
6. Example: A at column 1, row 1; B at column 6, row 1; upward ray from A.

Step-by-Step Solutions

Follow each calculation, then check your own work.

Problem 1

1. The drawing stops at the two endpoints A and B.

2. This object has 2 endpoints, which identifies a line segment.

3. The two labeled points give the name $\overline{AB}$.

Problem 2

1. Two arrowheads show extension in both directions.

2. This object has 0 endpoints, which identifies a line.

3. The two labeled points give the name $\overleftrightarrow{PQ}$.

Problem 3

1. The first letter of a ray name is its endpoint, so it starts at C.

2. The ray continues through D in the arrow direction.

3. There is only 1 endpoint; D is not a stopping point.

Problem 4

1. The lines run in the same direction and stay equally spaced.

2. Extending both lines does not make them meet.

3. They make no intersection angle, so they are not perpendicular.

Problem 5

1. The two lines meet, so they are not parallel.

2. The square corner mark shows a $90°$ angle.

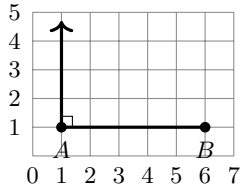
3. Intersecting at $90°$ makes the lines perpendicular.

Problem 6

1. Place A at column 1, row 1. Move $6 - 1 = 5$ horizontal intervals to B at column 6 on the same row.

2. Draw AB with no arrowheads. Both marked points are endpoints.

3. Start the upward ray at A. Its single arrow shows continuation, and the marked corner is $90°$.



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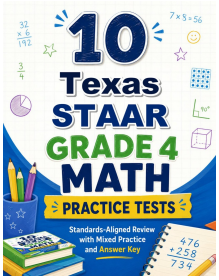

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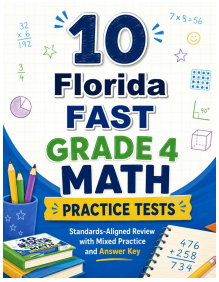

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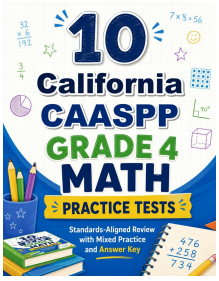

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