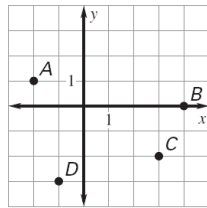## 1.3 Points, Lines and Planes

WARM-UP EXERCISES
Give the coordinate of each point graphed below.

1. Point A
2. Point B
3. Point C
4. Point D

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Vocabulary

1. **Undefined terms** are terms that cannot be mathematically defined using other known words.

2. **point** has no dimension

3. **line** has one dimension It extends in two opposite directions without end

4. **plane** has two dimensions It is a flat surface that extends in all directions without end

5. A **postulate** is a statement that is accepted without further justification.

6. **Collinear points** are points that lie on the same line.

7. **Coplanar points** are points that lie on the same plane.

8. **Coplanar lines** are lines that lie on the same plane.

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9.
The **segment** $\overline{AB}$ consists of the **endpoints** A and B, and all points on $\overleftrightarrow{AB}$ that are between A and B.

10.
The **ray** $\overrightarrow{AB}$ consists of the endpoint A and all points on $\overleftrightarrow{AB}$ that lie on the same side of A as B.

Postulate 1   Two Points Determine a Line
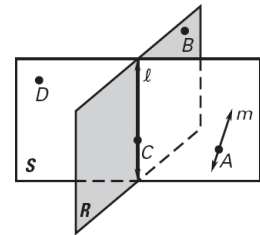
Through any two points there is exactly one line.

Postulate 2   Three Points Determine a Plane

Through any three points not on a line there is exactly one plane.

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Name Points, Lines, and Planes
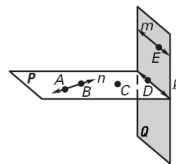
Use the diagram at the right.

a. Name four points.

b. Name two lines.

c. Name two planes.

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Use the figure at the right.

1. Name five points.
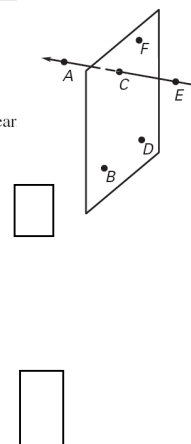2. Name three lines.
3. Name two planes.

Jul 14-9:23 PM

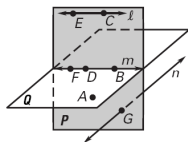### Name Collinear and Coplanar Points

Use the diagram at the right.

a. Name three points that are collinear.

b. Name four points that are coplanar.

c. Name three points that are not collinear

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1

Use the diagram at the right.

4. Name three points that are collinear.

5. Name three points that are not collinear.

6. Name four points that are coplanar.

7. Name four points that are not coplanar.

8. Name two lines that are coplanar.

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Draw Lines, Segments, and Rays

1. Draw $\overrightarrow{AB}$

2. Draw $\overleftrightarrow{CD}$

3. Draw $\overline{AC}$

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9. Draw four points A, B, C, and D, no three of which are collinear. Sketch $\overleftrightarrow{AB}$, $\overleftrightarrow{CD}$, $\overline{AC}$, $\overrightarrow{AD}$, and $\overrightarrow{CB}$.
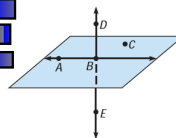
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Vocabulary Check

1. Write in words how you would say each of these symbols aloud: $\overleftrightarrow{PQ}$, $\overline{PQ}$, $\overrightarrow{PQ}$, and $\overrightarrow{QP}$.

2. Explain the difference between $\overrightarrow{PQ}$ and $\overrightarrow{QP}$.

Skill Check   Decide whether the statement is *true* or *false*.

3. Points A, B, and C are collinear.

4. Points A, B, and C are coplanar.

5. Points B, C, and D are coplanar.

6. Point C lies on $\overleftrightarrow{AB}$.

7. $\overleftrightarrow{AB}$ lies on plane ABC.

8. $\overleftrightarrow{DE}$ lies on plane ABC.

Sketch a line that contains point S between points R and T. Decide whether the statement is *true* or *false*.

9. $\overleftrightarrow{RS}$ is the same as $\overleftrightarrow{RT}$.   10. $\overrightarrow{ST}$ is the same as $\overrightarrow{TS}$.

11. $\overrightarrow{ST}$ is the same as $\overrightarrow{RT}$.   12. $\overline{RS}$ is the same as $\overline{RT}$.

13. $\overline{RS}$ is the same as $\overline{ST}$.   14. $\overline{ST}$ is the same as $\overline{TS}$.

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