

# Points, Lines, Rays, and Segments

The basic objects of geometry, how they are named, and how simple length relationships work.

Name \_\_\_\_\_ Date \_\_\_\_\_

32 main 2-up grid 2 pages

### Completion Reward



Shown here as a small pack artifact, not a preview destination.

1. How many endpoints does a segment have?

- A. 1
- B. 0
- C. 4
- D. 2

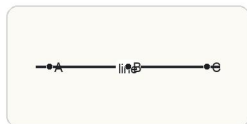
2. Which statement describes parallel lines?

- A. They always cross at a right angle
- B. They share all the same points
- C. They must be vertical
- D. They stay the same distance apart and never meet

3. Perpendicular lines intersect to form what kind of angle?

- A. An acute angle
- B. An obtuse angle
- C. A straight angle
- D. A right angle

4. Which object extends forever in both directions?



Unlike a segment or ray, a line has no endpoints and continues without end in both directions.

- A. A ray
- B. A segment
- C. A line
- D. A midpoint

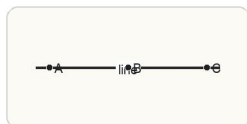
5. Which object has one endpoint and continues forever in one direction?

- A. A line
- B. A ray
- C. A segment
- D. A polygon

6. In ray AB, which point is the endpoint?

- A. B
- B. Both A and B
- C. Neither A nor B
- D. A

7. What does collinear mean?



Points are collinear when a single straight line passes through all of them.

- A. Points are the same distance from zero
- B. Points form a right angle
- C. Points always have equal coordinates
- D. Points lie on the same line

8. What is true when two lines intersect?

- A. They can never cross
- B. They share at least one point
- C. They must be parallel
- D. They must have endpoints

9. What does it mean if two segments are congruent?

- A. They have the same length
- B. They are on the same line
- C. They point in the same direction
- D. They share an endpoint

10. Opposite rays share an endpoint and do what?

- A. Form a right angle
- B. Create a triangle
- C. Form a straight line
- D. Create parallel lines

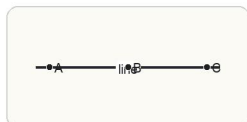
11. What is always true about perpendicular lines?

- A. They never intersect
- B. They have the same slope in every case
- C. They are always horizontal
- D. They intersect to form a right angle

12. What is true about parallel lines in a plane?

- A. They always form right angles
- B. They never meet
- C. They must be the same line
- D. They share all points

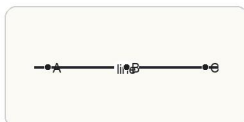
13. In the diagram, which name matches the segment with endpoints A and B?



A segment is the finite part of a line bounded by its two endpoints.

- A. ray AB
- B. line AB
- C. segment AB
- D. angle AB

14. Which statement is true about points A, B, and C in the diagram?



Use the drawing to decide whether the labeled points lie on one line and which named objects they determine.

- A. They form a triangle
- B. Only A and C are on the line
- C. They are collinear
- D. Point B is off the line

15. Which object has exactly one endpoint?

- A. A ray
- B. A line
- C. A segment
- D. An angle

16. If  $AB = 4$ ,  $BC = 7$ , and  $B$  is between  $A$  and  $C$ , what is the best next step to find  $AC$ ?
- A. Add  $AB$  and  $BC$
  - B. Subtract  $BC$  from  $AB$
  - C. Multiply  $AB$  and  $BC$
  - D. Divide  $BC$  by  $AB$
17. If  $B$  is the midpoint of  $AC$  and  $AC = 26$ , what is the best next step to find  $AB$ ?
- A. Divide 26 by 2
  - B. Multiply 26 by 2
  - C. Add 26 and 2
  - D. Subtract 2 from 26
18. A student says a line segment goes on forever in both directions. What is the mistake?
- A. That describes a ray, not a segment
  - B. That describes a line, not a segment
  - C. A segment has one endpoint only
  - D. A segment is always curved
19. A student says a segment extends forever in both directions. What is wrong?
- A. That describes a ray, not a segment
  - B. That describes a line, not a segment
  - C. Segments have one endpoint
  - D. Segments are always vertical
20. A student says if  $M$  is the midpoint of  $AB$ , then  $AM = AB$ . What is the mistake?
- A. A midpoint is always an endpoint
  - B. Midpoints only exist on horizontal segments
  - C. A midpoint gives half the whole segment, not the entire segment
  - D.  $AB$  must be 0
21. If  $AB = 3$  and  $BC = 5$  with  $B$  between  $A$  and  $C$ , find  $AC$ . Answer with a number.
22. If  $AC = 12$  and  $AB = 5$  with  $B$  between  $A$  and  $C$ , find  $BC$ . Answer with a number.
23. If  $AD = 6$  and  $DB = 4$  with  $D$  between  $A$  and  $B$ , find  $AB$ . Answer with a number.
24. Point  $M$  is the midpoint of  $CD$ . If  $CD = 18$ , find  $CM$ . Answer with a number.
25. If  $QP = 8$  and  $PR = 6$  with  $P$  between  $Q$  and  $R$ , find  $QR$ . Answer with a number.
26. If  $AB = 7$  and  $BC = 7$  with  $B$  between  $A$  and  $C$ , find  $AC$ . Answer with a number.
27. If  $AC = 25$  and  $DC = 11$  with  $D$  between  $A$  and  $C$ , find  $AD$ . Answer with a number.
28. What is always true if  $M$  is the midpoint of  $AB$ ?
- A.  $AM = MB$
  - B.  $AM > MB$
  - C.  $AB = MB$
  - D.  $M$  is an endpoint
29. If  $M$  is the midpoint of  $AB$ ,  $AM = 2x + 1$ , and  $MB = 9$ , what is the best next step?
- A. Add  $2x + 1$  and 9
  - B. Set  $2x + 1$  equal to 9
  - C. Subtract 9 from  $AB$
  - D. Multiply both lengths by 2
30. Point  $M$  is the midpoint of  $AB$ . If  $AB = 14$ , what is  $AM$ ? Answer with a number.
31. If  $AB = 3x + 1$ ,  $BC = 4$ , and  $AC = 14$  with  $B$  between  $A$  and  $C$ , find  $x$ . Answer with a number.
32. If  $M$  is the midpoint of  $AB$ ,  $AM = 2x + 1$ , and  $MB = 9$ , find  $x$ . Answer with a number.