ALBERT

Name _____ Date _____

Partitioning a Line Segment Worksheet

Geometry · Common Core HSG-GPE.B.6

> Find the point on a directed line segment between two given points that partitions the segment in a given ratio.

Practice

Builds the skill step by step.

1. What is the midpoint of the segment from (2, 4) to (10, 8)?

2. Point P is on the directed segment from A(0, 0) to B(12, 0) and partitions it in the ratio 1 : 2. What are the coordinates of P?

3. P partitions the directed segment from A(0, 0) to B(6, 9) in the ratio 1 : 2. What are the coordinates of P?

4. P partitions the directed segment from A(1, 1) to B(9, 5) in the ratio 1 : 3. What are the coordinates of P?

5. On a number line, A = 2 and B = 14. Point P partitions AB in the ratio 1 : 3. Where is P?

6. P partitions the directed segment from A(0, 0) to B(10, 5) in the ratio 2 : 3. What are the coordinates of P?

7. Which point partitions a segment in the ratio 1 : 1?

   A. an endpoint

   B. the midpoint

   C. no point

   D. the point $\frac{1}{3}$ of the way

8. P partitions the directed segment from A(3, 2) to B(3, 14) in the ratio 1 : 2. What are the coordinates of P?

9. P partitions the directed segment from A(−4, 0) to B(8, 0) in the ratio 3 : 1. What are the coordinates of P?

10. A point partitions a segment in the ratio 2 : 3. What fraction of the way from the start is it?

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On Level

Grade-level practice.

1. P partitions the directed segment from A(−2, 1) to B(6, 5) in the ratio 3 : 1. What are the coordinates of P?

2. P partitions the directed segment from A(1, −3) to B(7, 6) in the ratio 2 : 1. What are the coordinates of P?

3. P partitions the directed segment from A(4, 7) to B(−2, 1) in the ratio 1 : 2. What are the coordinates of P?

4. P is $\frac{1}{4}$ of the way from A(0, 0) to B(8, 6). What are the coordinates of P?

5. P partitions the directed segment from A(−3, −2) to B(5, 2) in the ratio 3 : 5. What are the coordinates of P?

6. P partitions the directed segment from A to B in the ratio 1 : 3. Where is P?

   A. closer to A

   B. closer to B

   C. at the midpoint

   D. beyond B

7. P partitions the directed segment from A(2, 3) to B(12, 8) in the ratio 2 : 3. What are the coordinates of P?

8. On a number line, A = −5 and B = 15. P partitions AB in the ratio 3 : 2. Where is P?

9. Explain how to find the point that partitions the directed segment from A(0, 0) to B(8, 4) in the ratio 1 : 3.

10. P(3, 5) partitions the directed segment from A(1, 2) to B in the ratio 1 : 2. What are the coordinates of B?

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Challenge

Multi-step and word problems that stretch it.

1. P partitions the directed segment from A(−1, 4) to B(11, −2) in the ratio 5 : 1. What are the coordinates of P?

2. P partitions the directed segment from A(2, −1) to B(−6, 7) in the ratio 1 : 3. What are the coordinates of P?

3. P(4, 6) partitions the directed segment from A(0, 0) to B in the ratio 2 : 3. What are the coordinates of B?

4. Two points split the segment from A(0, 0) to B(9, 12) into three equal parts. What are the coordinates of the one closer to B?

5. P partitions the directed segment from A(1, 1) to B(13, 9) in the ratio 1 : 3. How far is P from A? Give the exact value in simplest form.

6. A trail runs straight from (2, 3) to (14, 19) on a map. A rest stop is $\frac{3}{4}$ of the way along. Where is it?

7. P(6, 4) is on the directed segment from A(0, 0) to B(9, 6). It partitions AB in the ratio $a : 1$. What is a?

8. The centroid divides each median in the ratio 2 : 1 from the vertex. A median runs from vertex (0, 9) to the midpoint (6, 0). What are the coordinates of the centroid?

9. P partitions the directed segment from A$(-6, -2)$ to B(4, 8) in the ratio 3 : 2. What are the coordinates of P?

10. P partitions the directed segment from A to B in the ratio 1 : 3. In what ratio does P partition the directed segment from B to A?

    A. 3 : 1

    B. 1 : 3

    C. 1 : 4

    D. 4 : 1