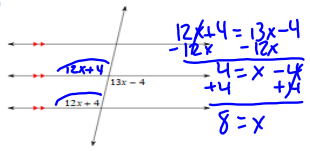
February 11, 2019, Monday

Solve for x.

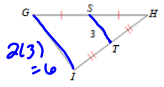
1)



12x+4 = 13x-4
-12x -12x
4 = x - 4
+4 +4
8 = x

Find the missing length indicated.

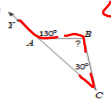
3) Find GI



2(3) = 6

Find the measure of each angle indicated.

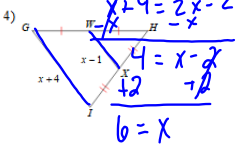
2)



∠B + ∠C = ∠BAY
? + 30 = 130
-30 -30
? = 100°

Solve for x.

4)



x+4 = 2(x-1)
x+4 = 2x-2
-x -x
4 = x-2
+2 +2
6 = x

Feb 6-7:54 AM

We will be working on geometric constructions (this is not copying what you see, this is using geometric tools to replicate a geometric figure). Be prepared to carefully read and use the instructions!

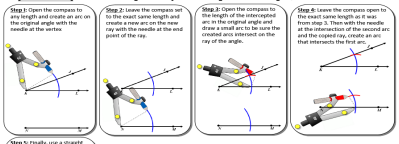
Feb 11-7:49 AM

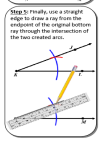
Sec 2-2 Geometry - Constructions Name:

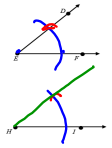
1. [COPY SEGMENT] Construct a segment with an endpoint of C and congruent to the segment AB.

***Using a ruler measure the two lengths to make sure they have the same measure.**

2. [COPY ANGLE] Construct an angle with ray $\overline{HI}$ and congruent to the angle $\angle DEF$







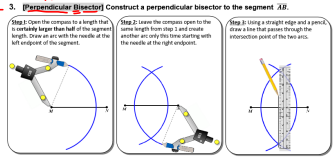
***Using a protractor measure the two angles to make sure they have the same measure.**

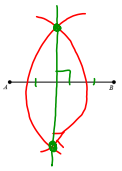
M. Winking Unit 2-2 page 24

Feb 11-7:44 AM

90°

3. [Perpendicular Bisector] Construct a perpendicular bisector to the segment $\overline{AB}$.



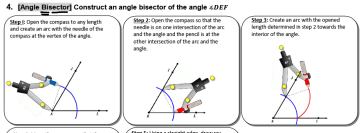


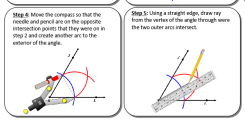
***Using a ruler measure the two halves of the segment to make sure they have the same measure.**

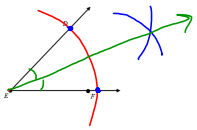
M. Winking Unit 2-2 page 25

Feb 11-7:44 AM

4. [Angle Bisector] Construct an angle bisector of the angle $\angle DEF$





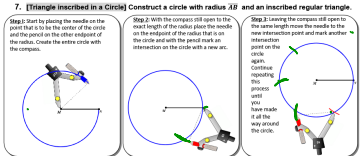


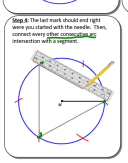
***Using a ruler measure the two halves of the segment to make sure they have the same measure.**

M. Winking Unit 2-2 page 26

Feb 11-7:44 AM

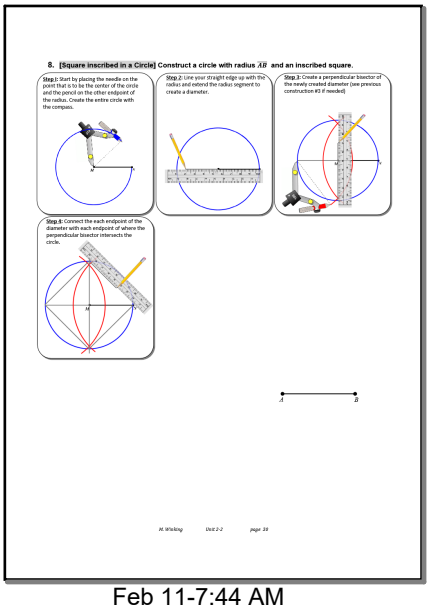
7. [Triangle inscribed in a Circle] Construct a circle with radius $\overline{AB}$ and an inscribed regular triangle.





M. Winking Unit 2-2 page 29

Feb 11-7:44 AM


8. [Square inscribed in a Circle] Construct a circle with radius $\overline{AB}$ and an inscribed square.

Step 1: Start by placing the needle on the point that is to be the center of the circle and the pencil on the other endpoint of the radius. Create the entire circle with the compass.

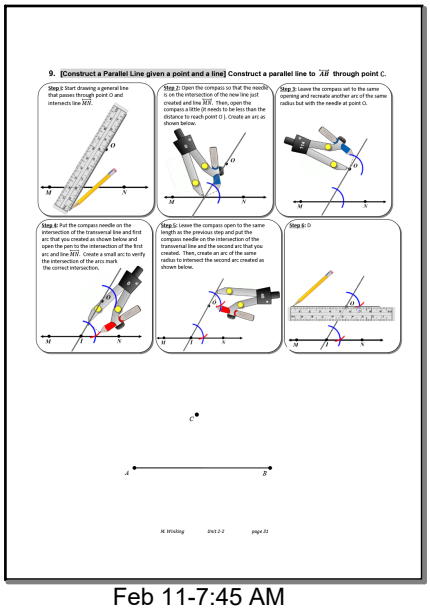
Step 2: Line your straight edge up with the radius and extend the radius segment to create a diameter.

Step 3: Create a perpendicular bisector of the newly created diameter (see previous construction #3 if needed)

Step 4: Connect the each endpoint of the diameter with each endpoint of where the perpendicular bisector intersects the circle.

M. Wicking Unit 2-2 page 30

Feb 11-7:44 AM


9. [Construct a Parallel Line given a point and a line] Construct a parallel line to $\overleftrightarrow{AB}$ through point C.

Step 2: Start drawing a general line that passes through point O and intersects line $\overleftrightarrow{MN}$.

Step 2: Open the compass so that the needle is on the intersection of the new line just created and line $\overleftrightarrow{MN}$. Then, open the compass a little (it needs to be less than the distance to reach point O). Create an arc as shown below.

Step 3: Leave the compass set to the same opening and recreate another arc of the same radius but with the needle at point O.

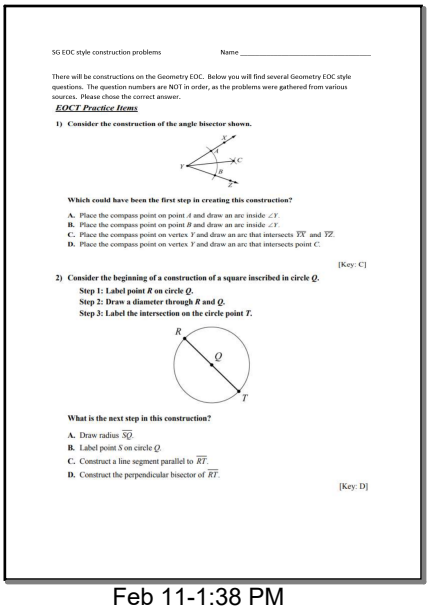
Step 4: Put the compass needle on the intersection of the transversal line and first arc that you created as shown below and open the pen to the intersection of the first arc and line $\overleftrightarrow{MN}$. Create a small arc to verify the intersection of the arcs mark the correct intersection.

Step 5: Leave the compass open to the same length as the previous step and put the compass needle on the intersection of the transversal line and the second arc that you created. Then, create an arc of the same radius to intersect the second arc created as shown below.

Step 6: D

M. Wicking Unit 2-2 page 31

Feb 11-7:45 AM


SG EOC style construction problems Name _____

There will be constructions on the Geometry EOC. Below you will find several Geometry EOC style questions. The question numbers are NOT in order, as the problems were gathered from various sources. Please chose the correct answer.

EOCT Practice Items

1) Consider the construction of the angle bisector shown.

Which could have been the first step in creating this construction?

A. Place the compass point on point A and draw an arc inside $\angle Y$.
B. Place the compass point on point B and draw an arc inside $\angle Y$.
C. Place the compass point on vertex Y and draw an arc that intersects $\overline{YX}$ and $\overline{YZ}$.
D. Place the compass point on vertex Y and draw an arc that intersects point C.

[Key: C]

2) Consider the beginning of a construction of a square inscribed in circle Q.

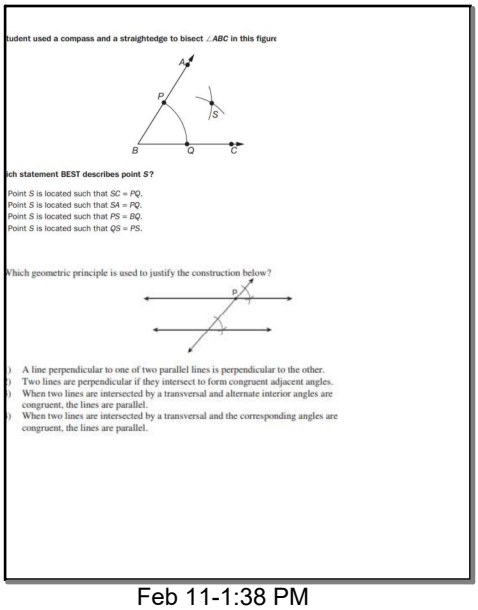
Step 1: Label point R on circle Q.
Step 2: Draw a diameter through R and Q.
Step 3: Label the intersection on the circle point T.

What is the next step in this construction?

A. Draw radius $\overline{SQ}$.
B. Label point S on circle Q.
C. Construct a line segment parallel to $\overline{RT}$.
D. Construct the perpendicular bisector of $\overline{RT}$.

[Key: D]

Feb 11-1:38 PM


tudent used a compass and a straightedge to bisect $\angle ABC$ in this figure

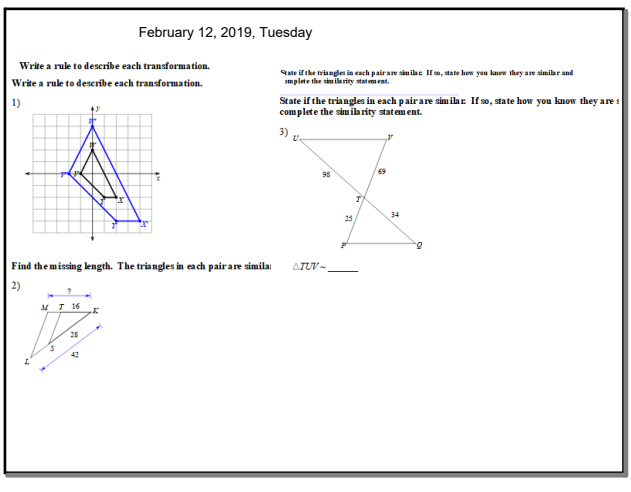
ich statement BEST describes point S?

Point S is located such that $SC = PQ$.
Point S is located such that $SA = PQ$.
Point S is located such that $PS = BQ$.
Point S is located such that $QS = PS$.

Which geometric principle is used to justify the construction below?

) A line perpendicular to one of two parallel lines is perpendicular to the other.
) Two lines are perpendicular if they intersect to form congruent adjacent angles.
) When two lines are intersected by a transversal and alternate interior angles are congruent, the lines are parallel.
) When two lines are intersected by a transversal and the corresponding angles are congruent, the lines are parallel.

Feb 11-1:38 PM


February 12, 2019, Tuesday

Write a rule to describe each transformation.

Write a rule to describe each transformation.

1)

State if the triangles in each pair are similar. If so, state how you know they are similar and complete the similarity statement.

State if the triangles in each pair are similar. If so, state how you know they are s complete the similarity statement.

3)

Find the missing length. The triangles in each pair are similar. $\triangle TUV \sim$ _____

2)

Feb 6-8:00 AM


https://www.mathopenref.com/tocs/constructionstoc.html

Lines

- Copy a line segment
- Sum of line segments
- Difference of two line segments
- Perpendicular bisector of a line segment
- Divide a line segment into n equal segments
- Perpendicular to a line at a point on the line
- Perpendicular to a line from an external point
- Perpendicular to a ray at its endpoint
- A parallel to a line through a point (angle copy method)
- A parallel to a line through a point (rhombus method)
- A parallel to a line through a point (translated triangle method)

Angles

- Copy an angle
- Bisect an angle
- Construct a 30° angle
- Construct a 45° angle
- Construct a 60° angle
- Construct a 90° angle (right angle)
- Sum of n angles
- Difference of two angles
- Supplementary angle
- Complementary angle
- Constructing 75° 105° 120° 135° 150° angles and more

Triangles

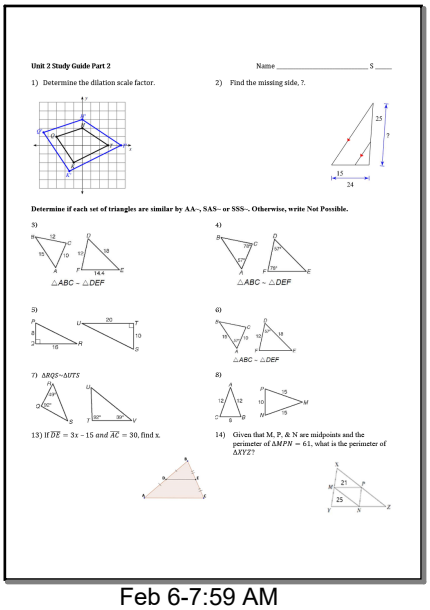
- Copy a triangle
- Triangle, given all 3 sides (SSS)
- Triangle, given one side and adjacent angles (ASA)
- Triangle, given two sides and included angle (SAS)
- Triangle, given two sides and non-included angle (AAS)
- Isosceles Triangle, given base and one side
- Isosceles Triangle, given base and altitude
- Isosceles Triangle, given leg and apex angle
- 30-60-90 right triangle given the hypotenuse
- Equilateral Triangle
- Midsegment of a Triangle

Polygons

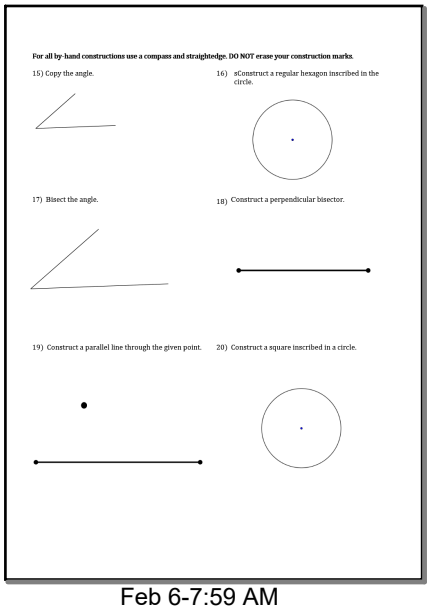
- Square given one side
- Square inscribed in a circle
- Hexagon given one side
- Equilateral triangle inscribed in a circle
- Hexagon inscribed in a circle
- Pentagon inscribed in a circle

...quiz

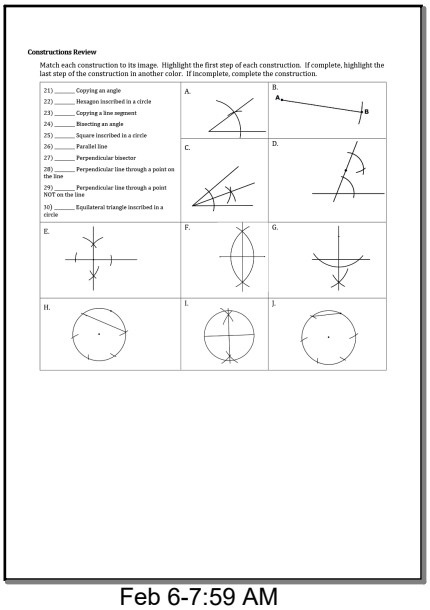
Feb 11-1:53 PM



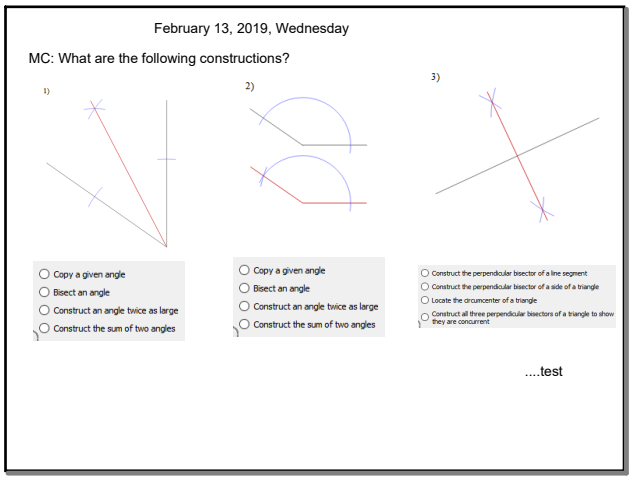
Feb 6-7:59 AM



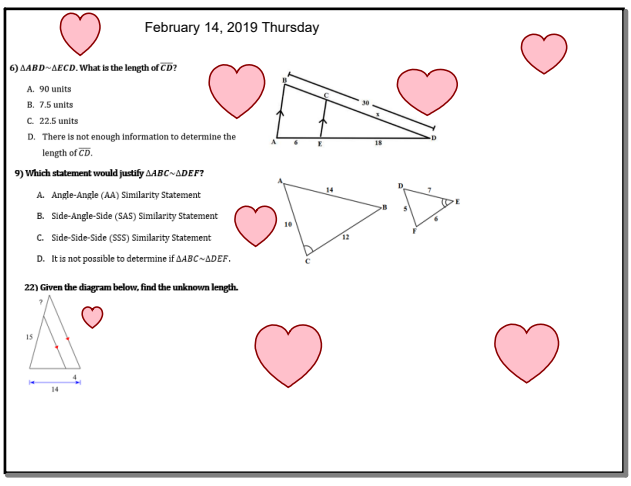
Feb 6-7:59 AM



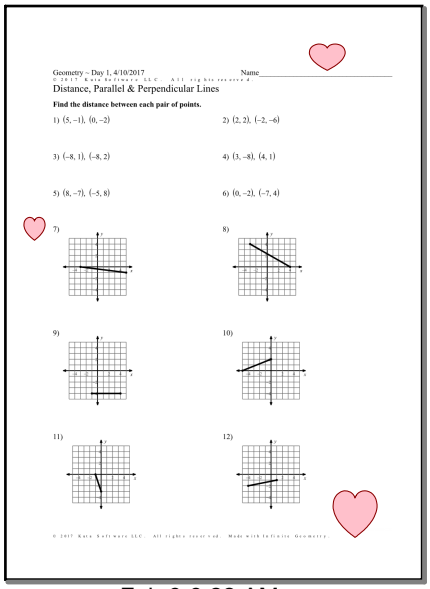
Feb 6-7:59 AM



Feb 6-8:04 AM



Feb 6-8:09 AM



Feb 6-8:22 AM

Desmos

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Write the slope-intercept form of the equation of the line described.

1) through: $(-1, -5)$, parallel to $y = 2x + 5$

2) through: $(1, 1)$, parallel to $y = 3x - 5$

3) through: $(1, -5)$, parallel to $y = -8x - 2$

4) through: $(5, 4)$, parallel to $y = -\frac{1}{5}x + 3$

5) through: $(-3, 0)$, parallel to $y = -x + 2$

6) through: $(-1, 2)$, parallel to $y = -7x + 3$

7) through: $(-1, 4)$, perp. to $y = -x + 4$

8) through: $(-4, -5)$, perp. to $y = -2x + 4$

9) through: $(2, -4)$, perp. to $y = \frac{2}{3}x + 2$

10) through: $(-2, -2)$, perp. to $y = -\frac{2}{3}x - 2$

11) through: $(-1, -2)$, perp. to $y = -\frac{1}{4}x + 5$

12) through: $(1, -5)$, perp. to $y = \frac{1}{7}x + 5$

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Feb 6-8:24 AM

Algebra 1 Name_____ ID: 1

Distance, Parallel Slopes, Perpendicular Slopes Date_____ Period____

Find the distance between each pair of points.

1) $(0, -1)$, $(-5, 6)$

2) $(4, 7)$, $(-1, 5)$

3)

4)

Find the slope of a line parallel to each given line.

5) $y = \frac{1}{3}x + 4$

6) $x - y = -4$

Feb 6-8:29 AM

7) $-15 = 3y - 8x$

Find the slope of a line perpendicular to each given line.

8) $y = -4x + 4$

9) $3x - 5y = 0$

10) $0 = 6 - 4x + 2y$

Write the slope-intercept form of the equation of the line described.

11) through: $(1, -2)$, parallel to $y = 2x - 1$

12) through: $(-3, 3)$, perp. to $y = \frac{1}{5}x - 3$

Feb 6-8:29 AM

February 15, 2019, Friday

Find the parallel slope and perpendicular slope to the following lines:

1) $y = x - 5$

2) $-3y = -x$

3) $3x + 2y = -2$

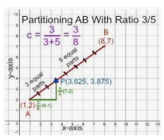
Feb 6-8:29 AM

What is line partitioning? Lets look at Khan...

https://www.khanacademy.org/math/geometry/hs-geo-analytic-geometry/hs-geo-dividing-segments/v/ratios-of-distances-between-collinear-point

Coordinates of point which partitions a directed line segment AB at the ratio of $a:b$ from $A(x_1, y_1)$ to $B(x_2, y_2)$

$$(x, y) = \left(x_1 + \frac{a}{a+b}(x_2 - x_1), y_1 + \frac{a}{a+b}(y_2 - y_1)\right)$$



Feb 6-8:31 AM

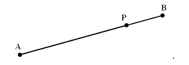
Lesson 3: Partitioning a Line Segment

Standard: G.GPE.6: Use coordinates to prove simple geometric theorems algebraically. **Standard: G.GPE.6:** Find the point on a directed line segment between two given points that partitions the segment in a given ratio.

Essential Question: How can a line be partitioned? How do you find the point of a directed line segment that partitions the segment in a given ratio?

Point P divides $\overline{AB}$ in the ratio 3 to 1.

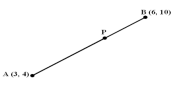
1. What does this mean? Prove it!



2. Do you expect point P to be closer to A or closer to B? Why?

3. How does the slope of $\overline{AP}$ compare with slope of $\overline{AB}$? Why?

Find the coordinate of point *P* that lies along the directed line segment from *A* (3, 4) to *B* (6, 10) and partitions the segment in the ratio of 3 to 2.



A ***directed line segment*** means the line segments has a direction associated with it, usually specified by moving from one endpoint to the other.

Tells the direction in which from which point to start and end. In this case, from Point A to Point B, therefore point A must be labeled A (x_1, y_1) and B (x_2, y_2)

What does that tell you about the distance AP and PB in relation to AB?

1. Label your points (x_1, y_1) and B (x_2, y_2)
   Note: since it is a directed segment, **order does matter.**
2. Convert the ratio into a percent (keep as a fraction) **a:b**
   Percent ratio (%) $= \frac{a}{a+b}$
3. Find the rise and run for the segment **(order does matter)**
   rise: $y_2 - y_1$ run: $x_2 - x_1$
4. To find the partitioning point:
   x – coordinate: $x_1 +$ **run (%** ***in fraction form***)
   y – coordinate: $y_1 +$ **rise (%** ***in fraction form***)

How can you use the distance formula to check that *P* partitions $\overline{AB}$ in the ratio of 3 to 2?

Feb 6-8:37 AM

Example 1:
Find the coordinates of the point P that lies along the directed segment from A (1, 1) to B (7, 3) and partitions the segment in the ratio of 1 to 4

Coordinates of point which partitions a directed line segment AB at the ratio of $a:b$ from $A(x_1, y_1)$ to $B(x_2, y_2)$

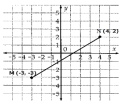
$$(x, y) = \frac{bx_1 + ax_2}{b+a}, \frac{by_1 + ay_2}{b+a}$$

OR

$$(x, y) = \left(x_1 + \frac{a}{a+b}(x_2 - x_1), y_1 + \frac{a}{a+b}(y_2 - y_1)\right)$$

Example 2:
Find the coordinate of the point P that lies along the directed segment from C (-3, -2) to D(6,1) and partitions the segment in the ratio 2 to 1.

Example 3:
Find the coordinates of point P that lies along the directed line segment from M to N and partitions the segment in the ratio of 3 to 2



Feb 6-8:38 AM

Steps:

I. Label you points (x_1, y_1) and (x_2, y_2). **Note: since it is a directed segment, order does matter.**

II. Convert the ratio to a fraction. Ratio: $a:b$ Percent ratio: $\frac{a}{a+b}$

III. Find the Δ x and the Δ y: Δ x (run) $\Rightarrow x_2 - x_1$

Δ y (rise) $\Rightarrow y_2 - y_1$

IV. To find the partitioning point:

x: x_1 + run (percent ratio)

y: y_1 + rise (percent ratio)

V. Write final values as an (x, y) ordered pair.

Coordinates of point which partitions a directed line segment AB at the ratio of $a:b$ from $A(x_1, y_1)$ to $B(x_2, y_2)$

$$(x, y) = \frac{bx_1 + ax_2}{b+a}, \frac{by_1 + ay_2}{b+a}$$

OR

$$(x, y) = \left(x_1 + \frac{a}{a+b}(x_2 - x_1), y_1 + \frac{a}{a+b}(y_2 - y_1)\right)$$

HOMEWORK

1. Find the coordinates of point P that is $\frac{2}{3}$ of the way along the directed line segment from C (6, -5) to D (-3, 4).

2. Find the coordinates of point Q that is $\frac{3}{5}$ of the way along the directed segment from R (-7, -2) to S (2, 4).

3. Find the coordinates of the point R that lies along the directed segment from J (10, -5) to K (-2, -3) and partitions the segment in the ratio of 2 to 7.

4. Find the coordinates of the point P that lies along the directed segment from M (-5, -2) to N (-5, 8) and partitions the segment in the ratio of 4 to 6.

Feb 6-8:38 AM

Practice Quiz 2 Unit 5- Partitioning a Line Segment
Standard: G.GPE.6: Use coordinates to prove simple geometric theorems algebraically. *G.GPE.6:* Find the point on a directed line segment between two given points that partitions the segment in a given ratio.

Coordinates of point which partitions a directed line segment AB at the ratio of $a:b$ from $A(x_1, y_1)$ to $B(x_2, y_2)$

$$(x, y) = \frac{bx_1 + ax_2}{b+a}, \frac{by_1 + ay_2}{b+a}$$

OR

$$(x, y) = \left(x_1 + \frac{a}{a+b}(x_2 - x_1), y_1 + \frac{a}{a+b}(y_2 - y_1)\right)$$

1. Find the coordinates of the points that divides $\overline{AB}$ into three equal parts.

A •

• B

2. What point along the directed segment from A to B partitions the segment in the ratio 1 to 2?

A •

• B

3. Find the coordinates of point P, that lies $\frac{2}{3}$ of the way on the directed line segment $\overline{AB}$, where A(-2, 5), B(4, 9)

4. Find the coordinates of point P that lies on the line segment $\overline{MQ}$, M(-9, -5), Q(3, 5), and partitions the segment at a ratio of 2 to 5

5. Find the coordinates of point P that lies along the directed segment from T(2, -6) to Q (-8, -4) and partitions the segment in the ratio of 3:4

6. Find the coordinates of point P that is two thirds of the way from point A(9, 6) to point B(-9, 6).

7. Given the points A(-3, -6) and B(5, 0), find the coordinates of the point P on directed line segment $\overline{AB}$ that partitions $\overline{AB}$ in the ratio 2:3.

Feb 6-8:38 AM

Geometry ~ Day 2, 4/11/2017 Partitioning Line Segment HW Name _____

Directions: Find the partitioning point for each problem. You must show your work for all steps to receive credit.

1) Given the point A(-3, -2) and B(6, 1), find the coordinates of the point P on directed line segment AB that partition AB in the ratio 2:1.

2) Given the points A(-3, -4) and B(2, 0), find the coordinates of the point P on directed line segment AB that partitions AB in the ratio 2 to 3.

3) Given the points A(- 2, 5) and B(2, 3), find the coordinates of the point P on directed line segment AB that partitions AB in the ratio 4 to 1.

4) Given the points A(5, -1) and B(-5, 3), find the coordinates of the point P on directed line segment AB that partitions AB in the ratio 1:3.

5) Given the points A(-2, 1) and B(4, 5), find the coordinates of the point P on directed line segment AB that partitions AB in the ratio 5:2.

6) Find the coordinates of P so that P partitions the segment AB in the ratio 5:1 if A(2, 4) and B(8, 10).

Feb 6-8:40 AM

7) Find the coordinates of P so that P partitions the segment AB in the ratio 1 to 3 if A(-5, 4) and B(7, -4).

8) Find the coordinates of P so that P partitions the segment AB in the ratio 3:4 if A(-9, -9) and B(5, -2).

9) Find the coordinates of P so that P partitions the segment AB in the ratio 5 to 2 if A(-8, -2) and B(6, 19).

10) Find the coordinates of P so that P partitions the segment AB in the ratio 7 to 2 if A(-5, 4) and B(-8, -2).

Find the point that partitions the segment with the two given endpoints with the given ratio.

11) (-3, 4) (7, 6) 1:1

12) (-9, 3) (1, 8) 2:3

13) (8, -5) (4, 7) 1:3

14) (5, -6) (4, 5) 3:4

Feb 6-8:40 AM