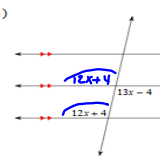


February 11, 2019, Monday

**Solve for x.**

1)  Find the missing length indicated.

$$12x+4 = 13x-4$$

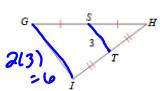
$$-12x \quad -12x$$

$$4 = x - 4$$

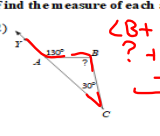
$$+4 \quad +4$$

$$8 = x$$

3) Find  $GF$



2) Find the measure of each angle indicated.



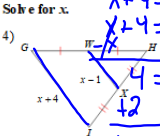
$$\angle B + \angle C = \angle BAC$$

$$? + 30 = 130$$

$$-30 \quad -30$$

$$? = 100$$

Solve for x.



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

$$x+4 = 2x-2$$

$$-x \quad -x$$

$$4 = x-2$$

$$+2 \quad +2$$

$$6 = x$$

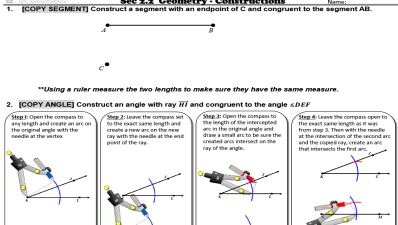
We will be working on geometric constructions (this is not copying what you see, this is using geometric tools to replicate a geometric figure). Be prepared to carefully read and use the instructions!

Feb 6-7:54 AM

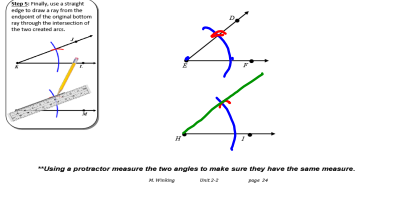
Feb 11-7:49 AM

**Sec 3.3 Geometry - Constructions**

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



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

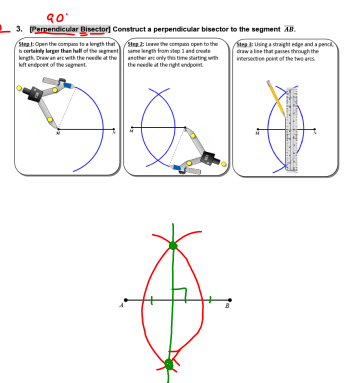


Using a ruler measure the two lengths to make sure they have the same measure.

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

Feb 11-7:44 AM

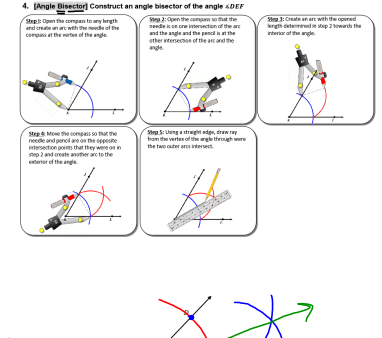
**3. [Perpendicular Bisector]** Construct a perpendicular bisector to the segment  $\overline{AB}$ .



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

Feb 11-7:44 AM

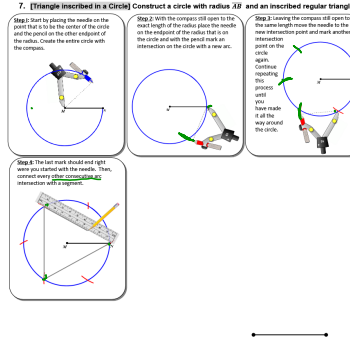
4. [Angle Bisector] Construct an angle bisector of the angle  $\angle DEF$ .



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

Feb 11-7:44 AM

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



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  $A$ . Use the center of the circle and the pencil on the other endpoint of the radius. Create the entire circle with the compass.

**Step 2:** Use your straight edge to draw the radius and extend the radius segment to create a diameter.

**Step 3:** Create a perpendicular bisector of the newly created diameter line segment (construction #1 if needed).

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

K. Winking Unit 2.2 page 28

Feb 11-7:44 AM

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

**Step 1:** Draw a line segment  $\overline{AB}$  and a point  $C$  not on the line.

**Step 2:** Place the compass on the intersection of the horizontal line and the arc that you created on the horizontal line and open the compass to the intersection of the first arc and line  $\overline{AB}$ . Create a small arc to verify the intersection of the arcs mark the correct intersection.

**Step 3:** Place the compass on the intersection of the horizontal line and the arc that you created on the horizontal line and open the compass to the intersection of the first arc and line  $\overline{AB}$ . Create a small arc to verify the intersection of the arcs mark the correct intersection.

**Step 4:** Use the compass on the same angle as the previous step and place the compass needle on the intersection of the horizontal line and the arc that you created. Then, create an arc of the same radius to intersect the second arc as shown below.

**Step 5:** Connect the endpoints of the line segment with the center of the circle.

K. Winking Unit 2.2 page 28

Feb 11-7:45 AM

5G 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 choose the correct answer.

**EOC 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  $V$  and draw an arc inside  $\angle C$ .  
 B. Place the compass point on point  $V$  and draw an arc inside  $\angle A$ .  
 C. Place the compass point on vertex  $V$  and draw an arc that intersects  $\overline{VX}$  and  $\overline{VY}$ .  
 D. Place the compass point on vertex  $V$  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

4)

A student used a compass and a straightedge to bisect  $\triangle ABC$  in this figure.

Which statement BEST describes point  $S$ ?

A. Point  $S$  is located such that  $SC = PQ$ .  
 B. Point  $S$  is located such that  $SA = PQ$ .  
 C. Point  $S$  is located such that  $PS = PQ$ .  
 D. Point  $S$  is located such that  $QS = PS$ .

3) Which geometric principle is used to justify the construction below?

1) A line perpendicular to one of two parallel lines is perpendicular to the other.  
 2) Two lines are perpendicular if they intersect to form congruent adjacent angles.  
 3) When two lines are intersected by a transversal and alternate interior angles are congruent, the lines are parallel.  
 4) 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.

1) **Dilation  $k=2$**

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

3)  $\triangle LUV \sim \triangle XYZ$

Side:  $\frac{25}{69} = .36$   
 $\frac{34}{98} = .35$

Angle  $\angle T \cong \angle T$  Vert. Angles

Find the missing length. The triangles in each pair are similar.

2)  $\frac{16}{?} = \frac{28}{42}$   
 $(16 \times 42) = P(28)$   
 $672 = 28P$   
 $28 = \frac{672}{28}$   
 $24 = ?$

Feb 6-8:00 AM

<https://www.mathopenref.com/tocs/constructiontoc.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  $30^\circ$  angle
- Construct a  $45^\circ$  angle
- Construct a  $60^\circ$  angle
- Construct a  $90^\circ$  angle (right angle)
- Sum of  $n$  angles
- Difference of two angles
- Supplementary angle
- Complementary angle
- Constructing  $75^\circ$ ,  $105^\circ$ ,  $120^\circ$ ,  $135^\circ$ ,  $150^\circ$  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

Unit 2 Study Guide-Part 2

1) Determine the dilation scale factor.  $K = 1.5$

2) Find the missing side.  $x = 40$

Determine if each set of triangles are similar by AA, SAS, or SSS. Otherwise, write Not Possible.

5)  $\triangle ABC \sim \triangle DEF$  (SSS)

6)  $\triangle ABC \sim \triangle DEF$  (SAS)

7)  $\triangle ABC \sim \triangle DEF$  (AA)

8)  $\triangle ABC \sim \triangle DEF$  (SAS)

9)  $\triangle ABC \sim \triangle DEF$  (SSS)

10)  $\triangle ABC \sim \triangle DEF$  (AA)

11)  $\triangle ABC \sim \triangle DEF$  (SAS)

12)  $\triangle ABC \sim \triangle DEF$  (SSS)

13)  $\triangle ABC \sim \triangle DEF$  (AA)

14) Given that M, P, & N are midpoints and the perimeter of  $\triangle MPN = 6$ , what is the perimeter of  $\triangle XYZ$ ?  $24$

15) If  $DE = 3x - 15$  and  $AC = 30$ , find x.  $x = 10$

Feb 6-7:59 AM

For all by hand constructions use a compass and straightedge. DO NOT erase your construction marks.

15) Copy the angle.

16) Construct a regular hexagon inscribed in a circle.

17) Bisect the angle.

18) Construct a perpendicular bisector.

19) Construct a parallel line through the given point.

20) Construct a square inscribed in a circle.

Feb 6-7:59 AM

Constructions Review

Match each construction to its image. Highlight the first step of each construction. If complete, highlight the last step of the construction in another color. If incomplete, complete the construction.

21) Copying an angle

22) Hexagon inscribed in a circle

23) Copying a line segment

24) Bisecting an angle

25) Square inscribed in a circle

26) Parallel line

27) Perpendicular bisector

28) Perpendicular line through a point on the line

29) Perpendicular line through a point NOT on the line

30) Equilateral triangle inscribed in a circle

A.

B.

C.

D.

E.

F.

G.

H.

I.

Feb 6-7:59 AM

February 13, 2019, Wednesday

MC: What are the following constructions?

1)

2)

3)

Copy a given angle

Bisect an angle

Construct an angle twice as large

Construct the sum of two angles

Copy a given angle

Bisect an angle

Construct an angle twice as large

Construct the sum of two angles

Construct the perpendicular bisector of a line segment

Construct the perpendicular bisector of a side of a triangle

Locate the circumcenter of a triangle

Construct all three perpendicular bisectors of a triangle and show they are concurrent

....test

Feb 6-8:04 AM

Match each construction to its image. Highlight the last step of the construction in another color. If it is incomplete, complete the construction.

21) Copying an angle

22) Hexagon inscribed in a circle

23) Copying a line segment

24) Bisecting an angle

25) Square inscribed in a circle

26) Parallel line

27) Perpendicular bisector

28) Perpendicular line through a point on the line

29) Perpendicular line through a point NOT on the line

30) Equilateral triangle inscribed in a circle

A.

B.

C.

D.

E.

F.

G.

H.

I.

Finish....

Feb 13-1:47 PM

Quiz review...

EOC style construction problems

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 choose the correct answer.

15. Ruben carries out a construction using  $\triangle ABC$ . A sequence of diagrams shows a part of his construction.

1.

2.

3.

4.

5.

What will be the result of Ruben's construction?

Ruben constructs a segment perpendicular to  $\overline{AC}$ .

Ruben constructs the bisector of  $\overline{AC}$ .


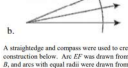
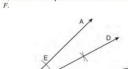
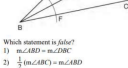
Ruben constructs an angle congruent to  $\angle B$ .

Ruben constructs the bisector of  $\angle B$ .

Feb 13-11:47 AM

EOC style construction problems

1. Which illustration shows the correct construction of an angle bisector?

a.  b.  c.  d. 

78. A straightedge and compass were used to create the construction below. Arc  $EF$  was drawn from point  $E$ , and arcs with equal radii were drawn from  $F$  and  $F'$ .

189. Based on the construction below, which conclusion is not always true?

Which statement is false?

- $m\angle ABD = m\angle DBC$
- $\frac{1}{2}m\angle ABC = m\angle ABD$
- $3m\angle DBC = m\angle ABC$
- $3m\angle DBC = m\angle ABD$

1)  $AB \perp CD$   
2)  $AE = CD$   
3)  $AE = EB$   
4)  $CE = DE$

Feb 13-11:48 AM

EOC style construction problems

77. Line segment  $AB$  is shown in the diagram below.

The diagram below shows the construction of a line through point  $P$  perpendicular to line  $m$ .

Which two sets of construction marks, labeled I, II, III, and IV, are part of the construction of the perpendicular bisector of line segment  $AB$ ?

- I and II
- II and III
- III and IV
- I and IV

Which statement is demonstrated by this construction?

- If a line is parallel to a line that is perpendicular to a third line, then the line is also perpendicular to the third line.
- The set of points equidistant from the endpoints of a line segment is the perpendicular bisector of the segment.
- Two lines are perpendicular if they are equidistant from a given point.
- Two lines are perpendicular if they intersect to form a right angle.

The diagram below illustrates the construction of  $\overline{PS}$  parallel to  $\overline{PQ}$  through point  $P$ .

Which statement justifies this construction?

- $m\angle 1 = m\angle 2$
- $\overline{PS} \parallel \overline{PQ}$
- $\overline{PS} \perp \overline{PQ}$

Which statement is true?

- $\overline{PS} \perp \overline{PQ}$
- $\overline{PS} \parallel \overline{PQ}$

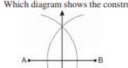



Feb 13-11:48 AM

EOC style construction problems

1. Based on the construction below, which statement must be true?

1)  $m\angle ABD = \frac{1}{2}m\angle CBD$   
2)  $m\angle ABD = m\angle CBD$   
3)  $m\angle ABD = m\angle ABC$   
4)  $m\angle CBD = \frac{1}{2}m\angle ABD$

2. Which diagram shows the construction of the perpendicular bisector of  $\overline{AB}$ ?

1)  2)  3)  4) 

Feb 13-11:48 AM

EOC style construction problems

19. Part A

Consider the points constructed in a line parallel to  $\overline{AB}$  through point  $Q$ . What would be the final step in the construction?

- draw a line through  $Q$  and  $S$
- draw a line through  $Q$  and  $T$
- draw a line through  $Q$  and  $D$
- draw a line through  $Q$  and  $E$

33. Part A

The first step of the construction is to draw an arc centered at point  $A$  that passes through point  $B$  and point  $C$ . What is established by the first step?

- $\overline{AB} \cong \overline{AC}$
- $\overline{AB} \cong \overline{BC}$
- $\overline{AC} \cong \overline{BC}$
- $\overline{AB} \cong \overline{CB}$

Feb 13-11:48 AM

February 14, 2019 Thursday

6)  $\triangle ABD \sim \triangle CED$ . What is the length of  $\overline{CD}$ ?

A. 90 units  
B. 7.5 units  
C. 22.5 units  
D. There is not enough information to determine the length of  $\overline{CD}$ .

9) Which statement would justify  $\triangle ABC \sim \triangle DEF$ ?

A. Angle-Angle (AA) Similarity Statement  
B. Side-Angle-Side (SAS) Similarity Statement  
C. Side-Side-Side (SSS) Similarity Statement  
D. It is not possible to determine if  $\triangle ABC \sim \triangle DEF$ .

22) Given the diagram below, find the unknown length.

$\frac{15}{10} = \frac{15}{10}$   
 $\frac{10}{10} = \frac{60}{10}$   
 $\frac{10}{10} = \frac{6}{10}$

$\frac{30}{24} = \frac{18}{24}$   
 $\frac{24}{24}x = \frac{540}{24}$   
 $x = 22.5$

$\frac{5}{12} = .5$   
 $\frac{6}{12} = .5$   
 $\frac{7}{14} = .5$

Feb 6-8:09 AM

Unit 2 - Dilations & Similarity Review

1) A dilation is a transformation that results in similar shapes. Therefore, the corresponding parts of both shapes share the same properties which are?

- Congruent angles
- Parallel sides
- Co-linear points
- Proportional sides
- Congruent sides

2) Dilate the polygon by a scale factor of 1.2 about the origin and list the pre-image points as decimals.

3) Dilate the triangle by a scale factor of  $\frac{1}{3}$  about the origin and list the pre-image points as decimals.

In the figure at right, determine the following information:

4)  $\overline{AC} \cong \overline{AD}$   
5) Scale Factor:  $\frac{1}{2}$   
Find a pt.  $(0, 2)(\frac{1}{2}) = (0, 1)$   
 $(0, 2)(\frac{2}{2}) = (0, 2)$

Triangle Similarity Proof:

Write the triangle similarity statement and by theorem.

6)  $\triangle ABC \sim \triangle XYZ$  by AA  
7)  $\triangle ABC \sim \triangle XYZ$  by SAS

8)  $\triangle ABC \sim \triangle XYZ$  by SSS

9)  $\triangle PQR \sim \triangle STU$  by SAS

10)  $\triangle ABC \sim \triangle DEF$  by AA

11)  $\triangle ABC \sim \triangle DEF$  by SAS

12)  $\triangle ABC \sim \triangle DEF$  by SSS

13)  $\triangle ABC \sim \triangle DEF$  by AA

14)  $\triangle ABC \sim \triangle DEF$  by SAS

15)  $\triangle ABC \sim \triangle DEF$  by SSS

16)  $\triangle ABC \sim \triangle DEF$  by AA

17)  $\triangle ABC \sim \triangle DEF$  by SAS

18)  $\triangle ABC \sim \triangle DEF$  by SSS

19)  $\triangle ABC \sim \triangle DEF$  by AA

20)  $\triangle ABC \sim \triangle DEF$  by SAS

21)  $\triangle ABC \sim \triangle DEF$  by SSS

22)  $\triangle ABC \sim \triangle DEF$  by AA

23)  $\triangle ABC \sim \triangle DEF$  by SAS

24)  $\triangle ABC \sim \triangle DEF$  by SSS

25)  $\triangle ABC \sim \triangle DEF$  by AA

26)  $\triangle ABC \sim \triangle DEF$  by SAS

27)  $\triangle ABC \sim \triangle DEF$  by SSS

28)  $\triangle ABC \sim \triangle DEF$  by AA

29)  $\triangle ABC \sim \triangle DEF$  by SAS

30)  $\triangle ABC \sim \triangle DEF$  by SSS

31)  $\triangle ABC \sim \triangle DEF$  by AA

32)  $\triangle ABC \sim \triangle DEF$  by SAS

33)  $\triangle ABC \sim \triangle DEF$  by SSS

34)  $\triangle ABC \sim \triangle DEF$  by AA

35)  $\triangle ABC \sim \triangle DEF$  by SAS

36)  $\triangle ABC \sim \triangle DEF$  by SSS

37)  $\triangle ABC \sim \triangle DEF$  by AA

38)  $\triangle ABC \sim \triangle DEF$  by SAS

39)  $\triangle ABC \sim \triangle DEF$  by SSS

40)  $\triangle ABC \sim \triangle DEF$  by AA

41)  $\triangle ABC \sim \triangle DEF$  by SAS

42)  $\triangle ABC \sim \triangle DEF$  by SSS

43)  $\triangle ABC \sim \triangle DEF$  by AA

44)  $\triangle ABC \sim \triangle DEF$  by SAS

45)  $\triangle ABC \sim \triangle DEF$  by SSS

46)  $\triangle ABC \sim \triangle DEF$  by AA

47)  $\triangle ABC \sim \triangle DEF$  by SAS

48)  $\triangle ABC \sim \triangle DEF$  by SSS

49)  $\triangle ABC \sim \triangle DEF$  by AA

50)  $\triangle ABC \sim \triangle DEF$  by SAS

51)  $\triangle ABC \sim \triangle DEF$  by SSS

52)  $\triangle ABC \sim \triangle DEF$  by AA

53)  $\triangle ABC \sim \triangle DEF$  by SAS

54)  $\triangle ABC \sim \triangle DEF$  by SSS

55)  $\triangle ABC \sim \triangle DEF$  by AA

56)  $\triangle ABC \sim \triangle DEF$  by SAS

57)  $\triangle ABC \sim \triangle DEF$  by SSS

58)  $\triangle ABC \sim \triangle DEF$  by AA

59)  $\triangle ABC \sim \triangle DEF$  by SAS

60)  $\triangle ABC \sim \triangle DEF$  by SSS

61)  $\triangle ABC \sim \triangle DEF$  by AA

62)  $\triangle ABC \sim \triangle DEF$  by SAS

63)  $\triangle ABC \sim \triangle DEF$  by SSS

64)  $\triangle ABC \sim \triangle DEF$  by AA

65)  $\triangle ABC \sim \triangle DEF$  by SAS

66)  $\triangle ABC \sim \triangle DEF$  by SSS

67)  $\triangle ABC \sim \triangle DEF$  by AA

68)  $\triangle ABC \sim \triangle DEF$  by SAS

69)  $\triangle ABC \sim \triangle DEF$  by SSS

70)  $\triangle ABC \sim \triangle DEF$  by AA

71)  $\triangle ABC \sim \triangle DEF$  by SAS

72)  $\triangle ABC \sim \triangle DEF$  by SSS

73)  $\triangle ABC \sim \triangle DEF$  by AA

74)  $\triangle ABC \sim \triangle DEF$  by SAS

75)  $\triangle ABC \sim \triangle DEF$  by SSS

76)  $\triangle ABC \sim \triangle DEF$  by AA

77)  $\triangle ABC \sim \triangle DEF$  by SAS

78)  $\triangle ABC \sim \triangle DEF$  by SSS

79)  $\triangle ABC \sim \triangle DEF$  by AA

80)  $\triangle ABC \sim \triangle DEF$  by SAS

81)  $\triangle ABC \sim \triangle DEF$  by SSS

82)  $\triangle ABC \sim \triangle DEF$  by AA

83)  $\triangle ABC \sim \triangle DEF$  by SAS

84)  $\triangle ABC \sim \triangle DEF$  by SSS

85)  $\triangle ABC \sim \triangle DEF$  by AA

86)  $\triangle ABC \sim \triangle DEF$  by SAS

87)  $\triangle ABC \sim \triangle DEF$  by SSS

88)  $\triangle ABC \sim \triangle DEF$  by AA

89)  $\triangle ABC \sim \triangle DEF$  by SAS

90)  $\triangle ABC \sim \triangle DEF$  by SSS

91)  $\triangle ABC \sim \triangle DEF$  by AA

92)  $\triangle ABC \sim \triangle DEF$  by SAS

93)  $\triangle ABC \sim \triangle DEF$  by SSS

94)  $\triangle ABC \sim \triangle DEF$  by AA

95)  $\triangle ABC \sim \triangle DEF$  by SAS

96)  $\triangle ABC \sim \triangle DEF$  by SSS

97)  $\triangle ABC \sim \triangle DEF$  by AA

98)  $\triangle ABC \sim \triangle DEF$  by SAS

99)  $\triangle ABC \sim \triangle DEF$  by SSS

100)  $\triangle ABC \sim \triangle DEF$  by AA

Feb 13-11:45 AM

**Triangle Proportionality & Midsegment Theorem**

10) Find  $x$ .

$\frac{x}{2} = \frac{15}{12}$   
 $12x = 30$   
 $x = 2.5$

11) If  $AB = 12$ ,  $CD = 32$  and  $DE = 14$ , find the perimeter of each triangle listed below.

Perimeter of  $\triangle ABE = 14 + 18 + 16 = 48$   
 Perimeter of  $\triangle ACD = 14 + 18 + 16 = 48$

Applications of Similarity - Solve each word problem as you do usual!

12) In the diagram at right, a man looks down in a mirror from an eye level of 6 ft. His feet are 3.5 feet from the mirror's corner which is 10.5 ft from a vertical line down from the top of the signal to the ground. If he can see the eye-line of the signal, how high is it?

The signal is 14.2 ft high

$\frac{6.4}{x} = \frac{3.5}{10.5}$

13) If a tree casts a 29-foot shadow while a yardstick casts a 2-foot shadow, find the length of the tree.

$\frac{2}{29} = \frac{3}{x}$   
 $2x = 87$   
 $x = 43.5$

GSE GEOMETRY 2 | Page 6

Feb 13-1:52 PM

Geometry - Day 1, 4/10/2017

Name \_\_\_\_\_

**Distance, Parallel & Perpendicular Lines**

Find the distance between each pair of points.

1)  $(5, -1)$ ,  $(6, -2)$       2)  $(2, 2)$ ,  $(-2, -6)$   
 3)  $(-8, 1)$ ,  $(-8, 2)$       4)  $(1, -8)$ ,  $(4, 1)$   
 5)  $(8, -7)$ ,  $(-5, 8)$       6)  $(6, -2)$ ,  $(-7, 4)$

7)

8)

9)

10)

11)

12)

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Feb 6-8:22 AM

February 15, 2019, Friday

In the diagram at right,  $\overline{DE}$  is a midsegment. What is the value of  $x$ ?

A. 4  
 B. 6  
 C. 8  
 D. 14

Given that  $\overline{AB} \parallel \overline{ED}$ , what theorem can be used to  $\triangle ABC \sim \triangle EDC$ ?

A. Side-Side-Side Similarity Theorem (SSS  $\sim$ )  
 B. Side-Angle-Side Similarity Theorem (SAS  $\sim$ )  
 C. Angle-Angle Similarity Theorem (AA  $\sim$ )  
 D. It is not possible to determine if  $\triangle ABC \sim \triangle EDC$ .

...test (buddy or notes?)

$2x - 2 = 2(7)$   
 $2x - 2 = 14$   
 $2x = 16$   
 $x = 8$

Feb 15-7:45 AM

Desmos

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

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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)  $x - y = -4$

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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  $y = \frac{1}{3}x - 3$

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Feb 6-8:29 AM

February 15, 2019, Friday

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

- $y = x - 5$
- $-3y = -x$
- $3x + 2y = -2$

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

<https://www.khanacademy.org/math/geometry/the-geo-analytic-geometry/the-geo-dividing-segments/a/ratio-of-distances-between-collinear-points>

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

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

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**Lesson 3: Partitioning a Line Segment**

Standard: 6.GP.A. Use coordinates to prove properties of geometric objects. Standard: 6.GP.A. 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  $\overline{PB}$ ?

Find the coordinate of point P that lies along the directed line segment from A (1, 4) to B (6, 10) and partitions the segment in the ratio of 3 to 1.

A directed line segment means the line segments has a direction associated with it, usually specified by moving from one endpoint to the other. 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 ( $x_2, y_2$ )
2. Convert the ratio into percent (keep as a fraction)  $a:b$
3. Find the numerator and denominator (order does matter)
4. To find the partitioning point:
  - $x = x_1 + \frac{a}{a+b}(x_2 - x_1)$
  - $y = y_1 + \frac{a}{a+b}(y_2 - y_1)$

How can you use the distance formula to check that P partitions  $\overline{AB}$  in the ratio of 3 to 1?

**Example 1:** Find the coordinates of the point P that lies along the directed segment from A (1, 2) 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  $B(x_2, y_2)$

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

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

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Feb 6-8:38 AM

**Notes**

1. Label your points ( $x_1, y_1$ ) and ( $x_2, y_2$ )
2. Convert the ratio to a fraction. Ratio:  $a:b$  Percent:  $\frac{a}{a+b}$
3. Find the  $x$  and the  $y$ .  $x = x_1 + \frac{a}{a+b}(x_2 - x_1)$
4. To find the partitioning point:
  - $x = x_1 + \frac{a}{a+b}(x_2 - x_1)$
  - $y = y_1 + \frac{a}{a+b}(y_2 - y_1)$
5. Write final values as an ( $x, y$ ) ordered pair.

**HOMEWORK**

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

**Practice Quiz Unit 5: Partitioning a Line Segment**

Standard: 6.GP.A. Use coordinates to prove properties of geometric objects. 6.GP.A. 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  $B(x_2, y_2)$

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

1. Find the coordinates of the points that divide  $\overline{AB}$  into three equal parts.
2. What point along the directed segment from A to B partitions the segment in the ratio 3 to 2?
3. Find the coordinate of point P, that lies  $\frac{2}{3}$  of the way on the directed line segment  $\overline{AB}$ , where A (2, 5), B (6, 9).
4. Find the coordinates of point P that lies on the line segment  $\overline{MN}$ , M (4, -5), N (2, 5), and partitions the segment at a ratio of 3 to 5.
5. Find the coordinates of point P that lies along the directed segment from T (-4, 6) to U (-6, -4) and partitions the segment in the ratio of 3 to 4.
6. Find the coordinates of point P that is two thirds of the way from point A (-6, 6) to point B (-4, 4).
7. Given the points A (3, -4) and B (5, 4), find the coordinates of the point P on directed line segment  $\overline{AB}$  that partitions  $\overline{AB}$  in the ratio 2:5.

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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 partitions  $AB$  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  $B(8, 10)$ .

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

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