

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.**

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

$$? + 30 = 130$$

$$-30 \quad -30$$

$$? = 100$$

4) **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 3.1 Geometry - Constructions

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 \overrightarrow{JK} and congruent to the angle $\angle DEF$.

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

H. Winking Unit 2.2 page 24

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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."

H. Winking Unit 2.2 page 25

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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."

H. Winking Unit 2.2 page 24

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

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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 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

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

Step 1: Use a straight edge to draw the line that passes through point O and intersects line l .

Step 2: Open the compass so that the needle is on the intersection of the new line and line l . Create a small arc to verify the intersection of the two arcs.

Step 3: Place the compass needle on the intersection of the original line and line l and create an arc above and below the line.

Step 4: Open the compass to the same angle as the previous step and place the compass needle on the intersection of the two arcs you created. Then, create an arc of the same radius to intersect the second arc as shown below.

Step 5: Use the straight edge to draw the line through point C and the intersection of the two arcs.

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

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° 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

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...

EDC style construction problems

There will be constructions on the Geometry EDC. Below you will find several Geometry EDC 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

Triangle Proportionality & Adjointment Theorem

10) Find x.

$\frac{x}{15} = \frac{12}{20}$
 $\frac{x}{15} = \frac{3}{5}$
 $5x = 45$
 $x = 9$

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

Perimeter of $\triangle ABE = 14 + 18 + 12 = 44$
 Perimeter of $\triangle ACD = 14 + 32 + 12 = 58$

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

12) In the diagram at right, a man looks down at 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 drawn 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 height 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, -3), (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

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 $y = -\frac{1}{2}x + 3$
 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 $y = -\frac{1}{2}x + 5$ 12) through (1, -5), perp. to $y = \frac{1}{2}x + 5$

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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) (8, -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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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:

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/the-geo-analytic-geometry/the-geo-dividing-segments/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 $B(x_2, y_2)$

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

Partitioning AB With Ratio 3/5

Feb 6-8:31 AM

Lesson 9: Partitioning a Line Segment

Standard 6.GP.A. Use coordinates to prove simple geometric theorems algebraically. 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.

- What does this mean? Prove it!
- Do you expect point P to be closer to A or closer to B? Why?
- How does the slope of \overline{AP} compare with slope of \overline{PB} ? Why?

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 2.

A directed line segment means the line segment has a direction associated with it, usually specified by moving from one endpoint to the other. Take 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 $B(x_2, y_2)$.

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

- Label your points (x_1, y_1) and (x_2, y_2)
- Note since it is a directed segment, order does matter.
- Convert the ratio into a percent (keep it a fraction) $a:b$
- Percent ratio $\frac{a}{a+b} = \frac{3}{3+2} = \frac{3}{5}$
- Find the rise and run for the segment (order does matter)
- rise: $y_2 - y_1$, run: $x_2 - x_1$
- To find the partitioning point:
 - coordinate $x = x_1 + \frac{a}{a+b}(x_2 - x_1)$ (Use the Fraction Form)
 - coordinate $y = y_1 + \frac{a}{a+b}(y_2 - y_1)$ (Use the Fraction Form)

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

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

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

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

Example 2: Find the coordinate of the point P that lies along the directed segment from C(3, -2) to D(8, 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

_____ (2) _____

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Notes:

- Label your points (x_1, y_1) and (x_2, y_2) **Note: since it is a directed segment, order does matter.
- Convert the ratio to a fraction. Ratio: $a:b$ Percent ratio: $\frac{a}{a+b}$
- Find the Δx and the Δy : $\Delta x = (x_2) - (x_1)$

$\Delta y = (y_2) - (y_1)$

To find the partitioning point:

- coordinate $x = x_1 + \text{rise (percent ratio)}$
- coordinate $y = y_1 + \text{run (percent ratio)}$

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 $B(x_2, y_2)$

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

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

- 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(3, 4).
- 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).
- 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 1.
- 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.

_____ (3) _____

Feb 6-8:38 AM

Practice Quiz 2 Unit 5: Partitioning a Line Segment

Standard 6.GP.A. Use coordinates to prove simple geometric theorems algebraically. 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 $B(x_2, y_2)$

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

OR

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

- Find the coordinates of the points that divide \overline{AB} into three equal parts.

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

- 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(4, 9)
- Find the coordinates of point P that lies on the line segment \overline{MN} , M(-5, 5), Q(0, 5), and partitions the segment at a ratio of 2 to 5.
- Find the coordinates of point P that lies along the directed segment from T(-2, 4) to Q(4, -4) and partitions the segment in the ratio of 4 to 3.
- Find the coordinates of point P that is two thirds of the way from point A(8, 6) to point B(4, 8).
- 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.

_____ (4) _____

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.

- Given the points 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.
- 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 2:3.
- 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.
- 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.
- 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.
- 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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