Name: Key Date: ____________

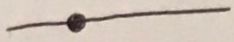
UNIT 1A **REVIEW**

1. When constructing a line, through a point, parallel to a given line, you will be

   A) Copying an angle.
   B) Copying a segment.
   C) Bisecting a segment.
   D) Constructing a perpendicular.

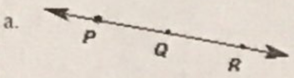
SKIP

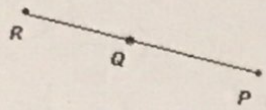
2. The task of constructing a perpendicular to a given line at a point on the line is based upon which other construction?

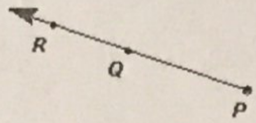


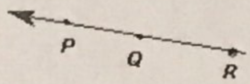
   A) The bisector of a segment.
   B) A perpendicular from a point off the line.
   C) The copy of a segment.
   D) The copy of an angle.

3. $\overrightarrow{PR}$ is represented by which sketch?

a. 

b. 

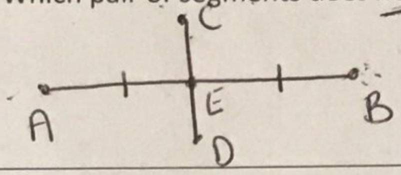
c. 

d. 

4. Segment $\overline{CD}$ is the perpendicular bisector of $\overline{AB}$ at E. Which pair of segments does *not* have to be equal?

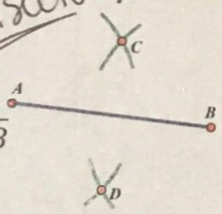
→FIX! $\overline{AD}, \overline{BD}$

   a) $\overline{AB}, \overline{BD}$ b) $\overline{AE}, \overline{BE}$
   c) $\overline{AC}, \overline{BC}$ d) $\overline{DE}, \overline{CE}$



5. A teacher finds a paper on the ground in the classroom. When she looks at it carefully she realizes it is from her geometry class because it has a construction on it. Which of the following constructions is **NOT FOUND** directly from this student's work?

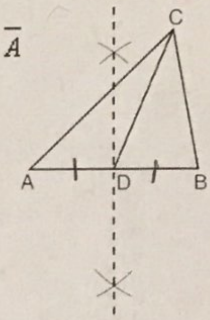
⊥ Bisector?



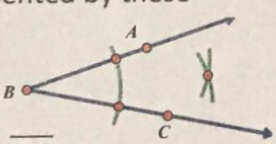
   A) The midpoint of $\overline{AB}$
   B) The perpendicular bisector of $\overline{AB}$
   C) A perpendicular line to $\overline{AB}$
   D) The angle bisector of ∠CAB

6. In the construction shown below, $\overline{CD}$ is drawn. In $\triangle ABC$, $\overline{CD}$ is the

   a) perpendicular bisector of side $\overline{A}$
   b) median to side $\overline{AB}$
   c) altitude to side $\overline{AB}$
   d) bisector of $\angle ACB$

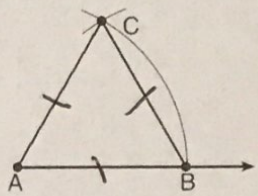


7. Which construction is represented by these construction marks?



   A) Copying ∠ABC
   B) The perpendicular bisector of $\overline{BC}$
   C) The angle bisector of ∠ABC
   D) A perpendicular line $\overline{AC}$

8. The diagram below shows the construction of an equilateral triangle. Which statement justifies this construction?

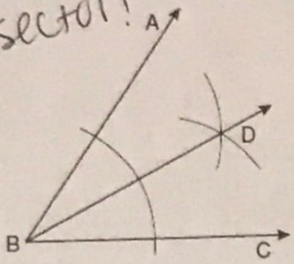


   a) $\angle A + \angle B + \angle C = 180$
   b) $m\angle A = m\angle B = m\angle C$
   c) $AB = AC = BC$
   d) $AB + BC > AC$

~~THIS IS true~~ BUT the construction does not prove the ∡'s are ≅

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

∡ Bisector!



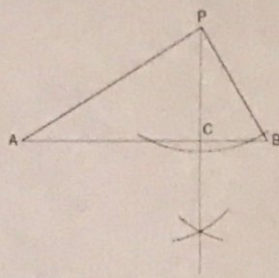
a) $m\angle ABD = \frac{1}{2} m\angle CBD$

b) $m\angle ABD = m\angle CBD$

c) $m\angle ABD = m\angle ABC$

d) $m\angle CBD = \frac{1}{2} m\angle ABD$

10. In the accompanying diagram of a construction, what does $\overline{PC}$ represent?



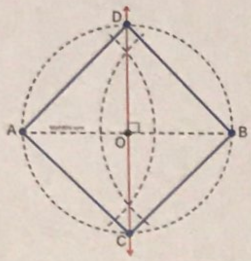
a) an altitude drawn to $\overline{AB}$

b) a median drawn to $\overline{AB}$

c) the bisector of $\angle APB$

d) the perpendicular bisector of $\overline{AB}$

11. When inscribing a square in a circle, you are relying on which fact about squares?



a) They contain four right angles.

b) They have opposite angles $\cong$.

c) The diagonals are $\cong$ and $\perp$.

d) The diagonals bisect the angles

12. Given the diagram, determine the description, which is *false*.

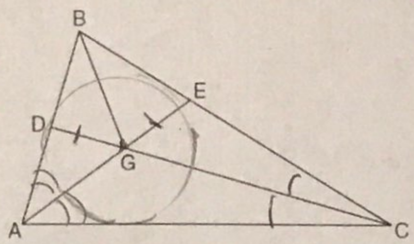
A) The circle circumscribes the hexagon.

B) The hexagon circumscribes the triangle.

C) The hexagon is inscribed in the circle.

D) The triangle is inscribed in the ~~circle~~. hexagon

13. In the diagram below of $\triangle ABC$, $\overline{CD}$ is the bisector of $\angle BCA$, $\overline{AE}$ is the bisector of $\angle CAB$, and $\overline{BG}$ is drawn. Which statement must be true?



a) $DG = EG$

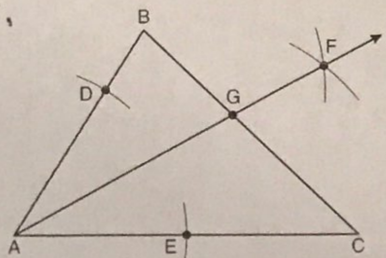
b) $AG = BG$

c) $\angle AEB \cong \angle AEC$

d) $\angle DBG \cong \angle EBG$

14. As shown in the diagram below of $\triangle ABC$, a compass is used to find points *D* and *E*, equidistant from point *A*. Next, the compass is used to find point *F*, equidistant from points *D* and *E*. Finally, a straightedge is used to draw $\overrightarrow{AF}$. Then, point *G*, the intersection of $\overrightarrow{AF}$ and side $\overline{BC}$ of $\triangle ABC$, is labeled. Which statement must be true?

∡ Bisector!



a) $\overrightarrow{AF}$ bisects side $\overline{BC}$

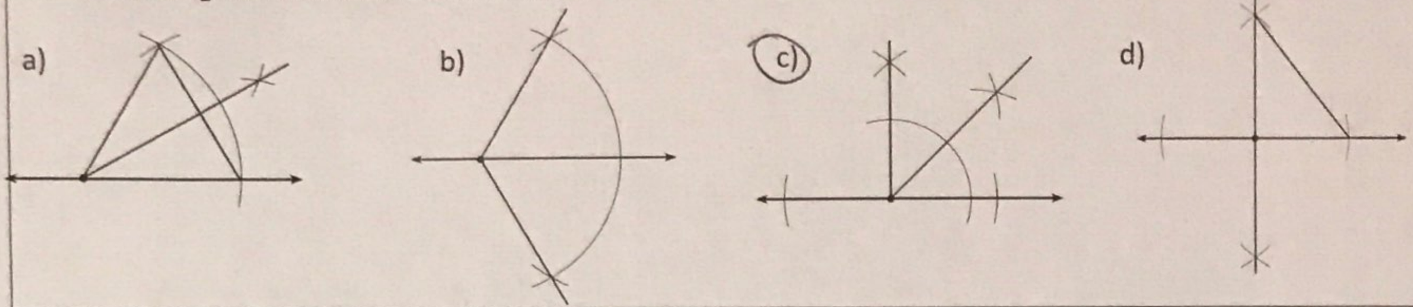
b) $\overrightarrow{AF}$ bisects $\angle BAC$

c) $\overrightarrow{AF} \perp \overline{BC}$

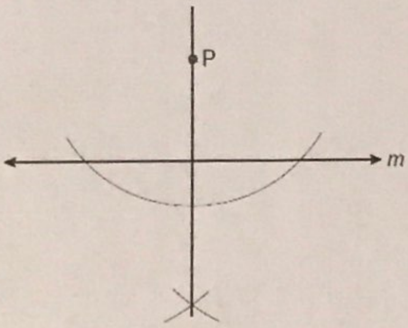
d) $\triangle ABG \sim \triangle ACG$

15. Which diagram shows the construction of a 45° angle?

a) b) c) d)

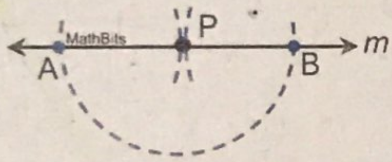


16. The diagram below shows the construction of a line through point *P* perpendicular to line. Which statement is demonstrated by this construction?



a) 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.
b) The set of points equidistant from the endpoints of a line segment is the perpendicular bisector of the segment.
c) Two lines are perpendicular if they are equidistant from a given point.
d) Two lines are perpendicular if they intersect to form a vertical line.

17. Alison is attempting to construct a perpendicular to line *m* at point *P*. She placed her compass point at *P* and drew the arc intersecting the line at two points she labeled *A* and *B*. She then placed her compass at point *A* and made an arc, and at point *B* and made an arc. Unfortunately, her arcs are tangent to one another at point *P*. She does not have two points to connect to form the perpendicular. What did she do wrong?



a) Alison needed to place her compass point at P to draw two intersecting arcs.
b) Alison needed to make one of the arcs larger so they will intersect.
c) Alison needed to increase the span on her compass ~~after~~ before drawing the first arc.
d) Alison is not wrong - she just needed to eyeball the line through point *P*

18. When preparing the construction of a regular hexagon inscribed in a circle, which of the following statements is **NOT** true?

SKIP

a) The length of the radius of the circle becomes the length of each side of the hexagon.
b) The interior angles of the hexagon each contain 60º.
c) A series of 6 congruent equilateral triangles can be formed in the interior of the hexagon.
d) The perimeter of the hexagon is equal in length to the length of three diameters of the circle.

* see back for explanation →

For question #18:

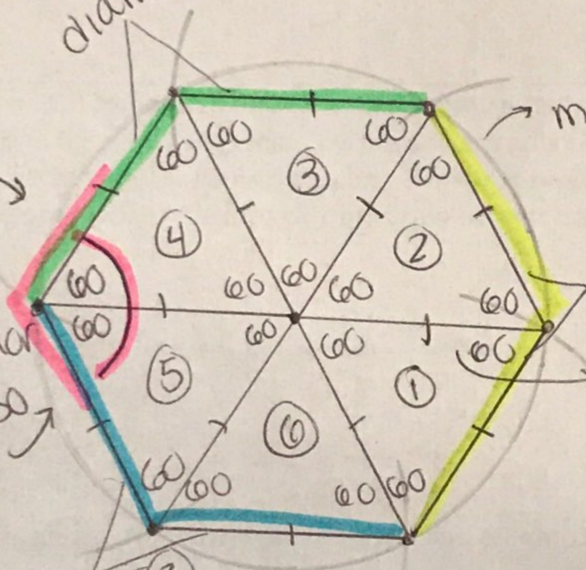
2 radii = 1 diameter

diameter ①

measure w/ compass, same length as radius

why B is wrong:

- All equilateral Δ's have 60° ∡'s
- need 2 for one interior ∡ of a hexagon so
$60+60=\boxed{120°}$



diameter ②

radius

all radii are ≅

diameter ③

⑥ equilateral Δ's

19. Which geometric principle is used in the construction shown below?

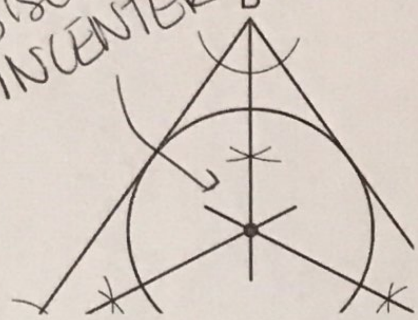
a) The intersection of the angle bisectors of a triangle is the center of the inscribed circle.

b) The intersection of the angle bisectors of a triangle is the center of the circumscribed circle.

c) The intersection of the perpendicular bisectors of the sides of a triangle is the center of the inscribed circle.

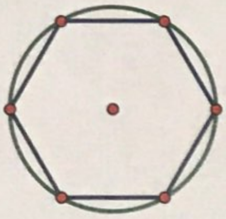
d) The intersection of the perpendicular bisectors of the sides of a triangle is the center of the circumscribed circle.

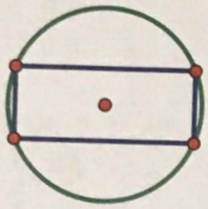
∡ Bisectors = INCENTER

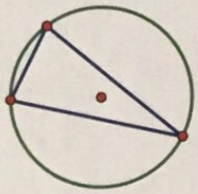


20. Determine whether the relationships is INSCRIBED or CIRCUMSCRIBED.

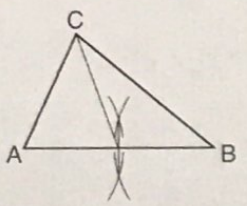
The hexagon is Inscribed The circle is Circumscribed The triangle is Inscribed

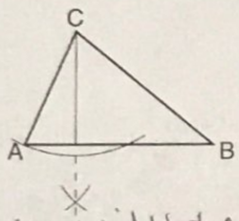


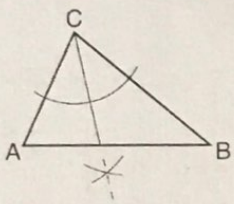


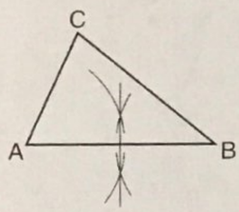


21. Identify each construction below





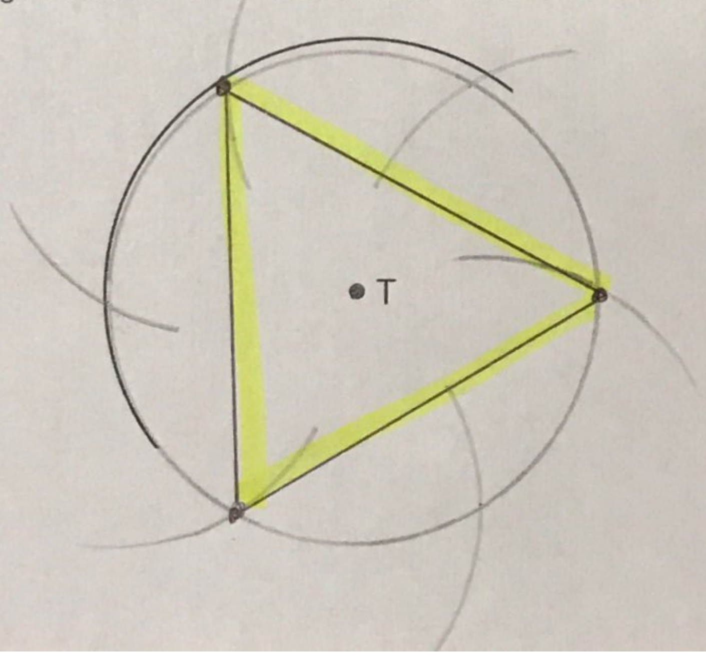




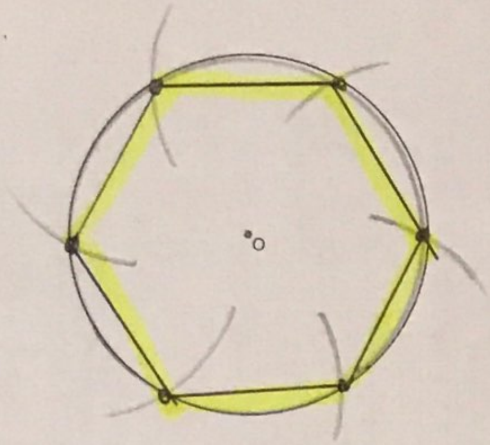
median altitude ∡ Bisector ⊥ Bisector

CONSTRUCTION PRACTICE!

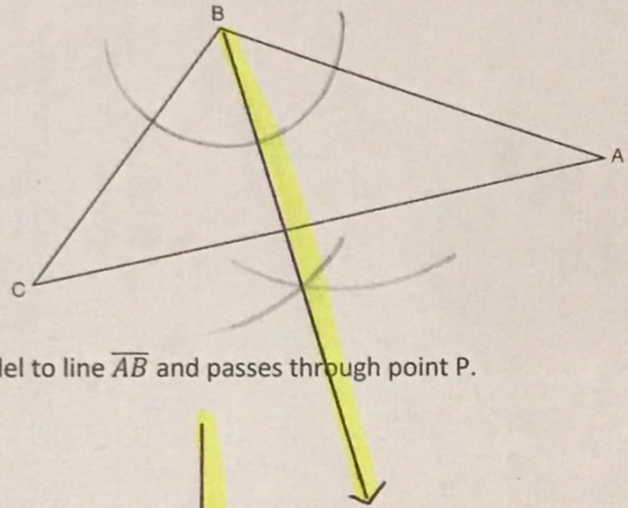
1. Construct an equilateral triangle inscribed in circle *T* shown below. [Leave all construction marks.]



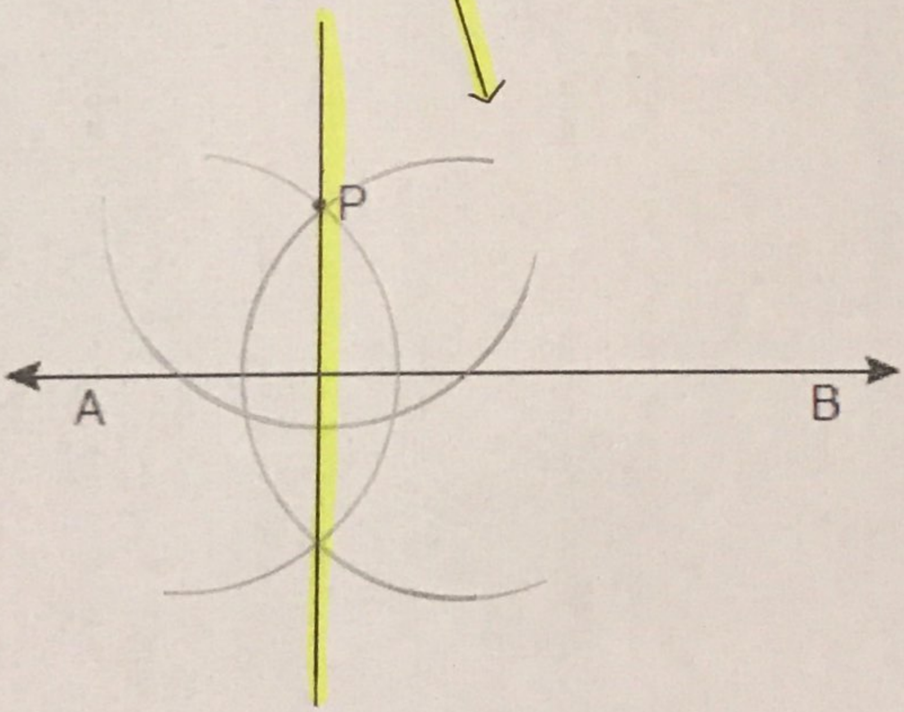
2. Using a compass and straightedge, construct a regular hexagon inscribed in circle O. [Leave all construction marks.]



3. Using a compass and straightedge, construct the bisector of $\angle CBA$. [Leave all construction marks.]

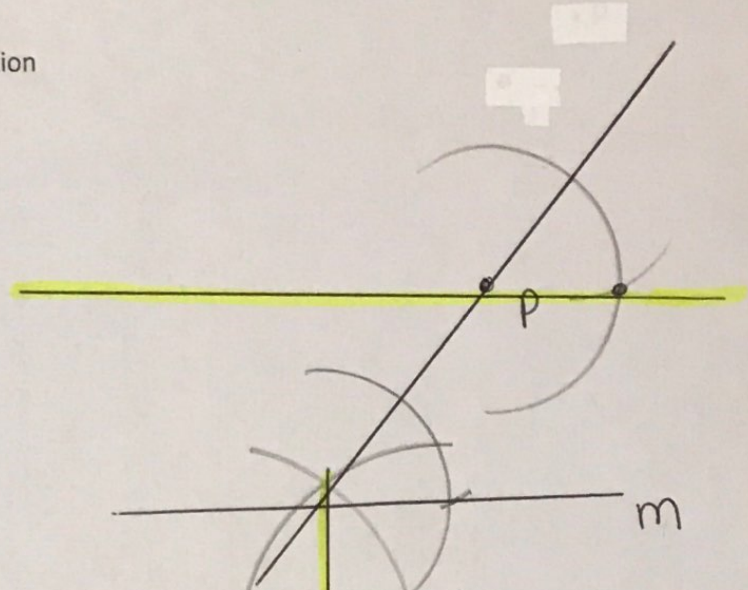


4. Construct the line that is parallel to line $\overline{AB}$ and passes through point P.

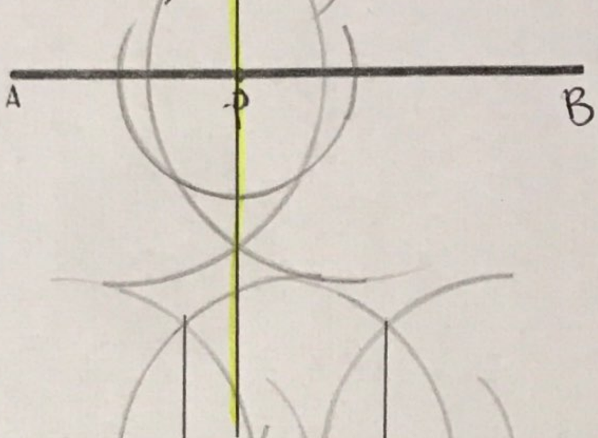


5. Using a compass and straightedge, construct a line ~~perpendicular~~ to m through point P. [Leave all construction marks.]

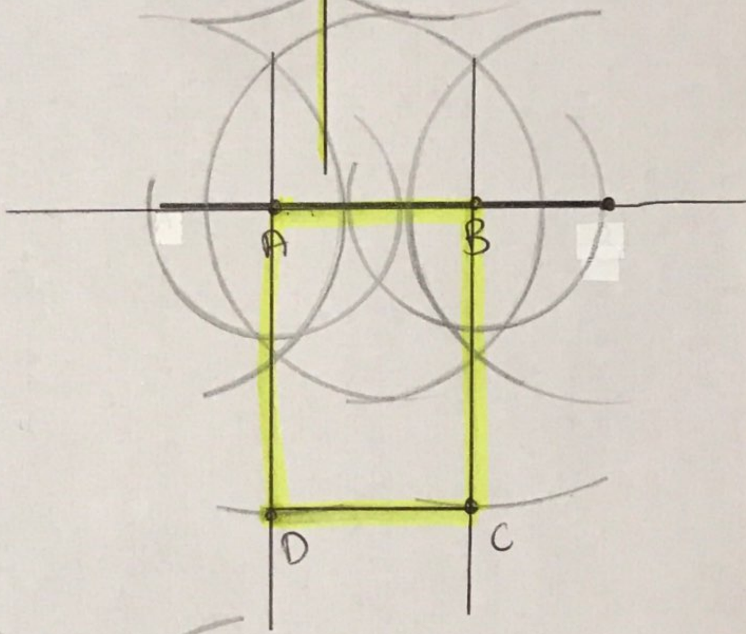
parallel



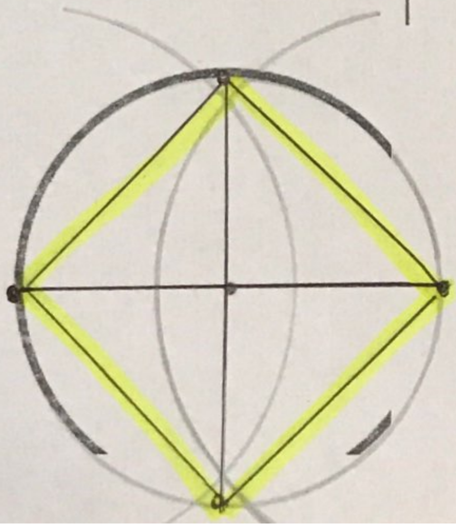
6. Using a compass and straightedge, construct a line perpendicular to $\overline{AB}$ through point P. [Leave all construction marks.]



7. Construct a *retangle* given the segment below.



8. Construct a *square* inscribed in a circle



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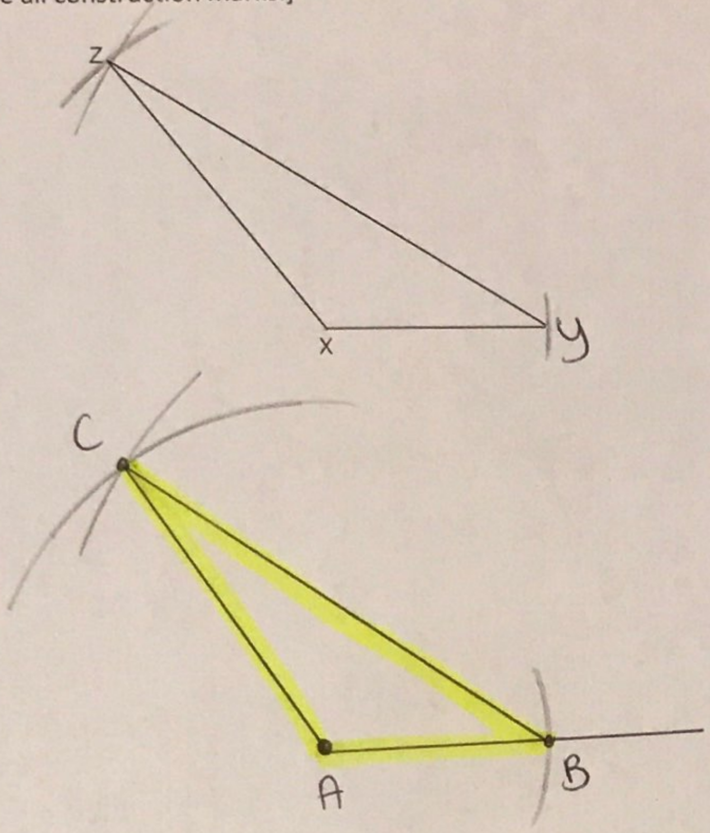
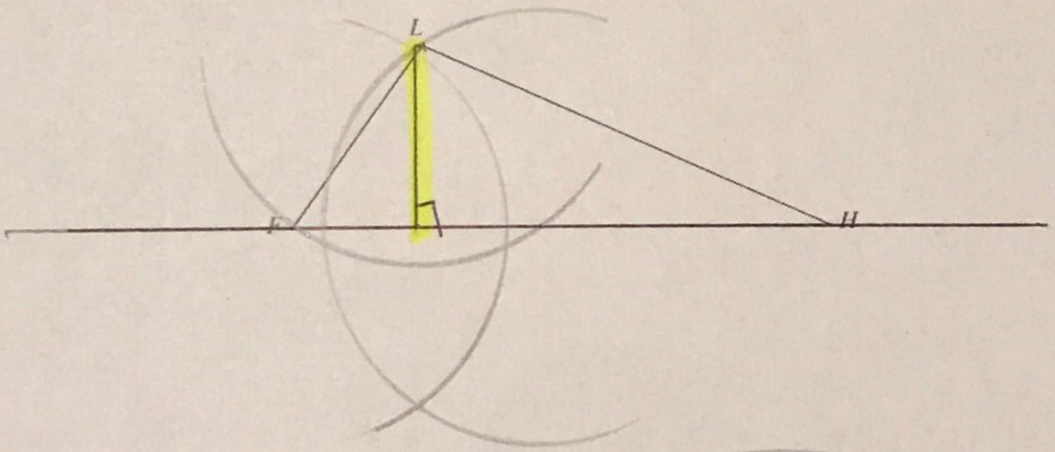
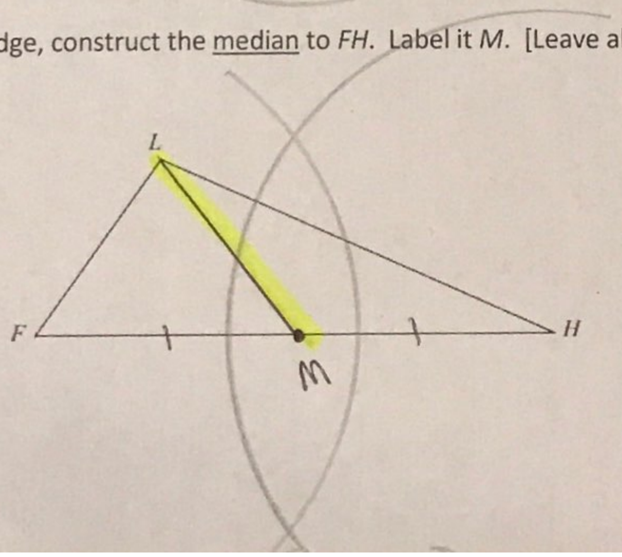
9. Triangle *XYZ* is shown below. Using a compass and straightedge, on the line below, construct and label $\triangle ABC$, such that $\triangle ABC \cong \triangle XYZ$. [Leave all construction marks.]



10. Using a compass and straightedge, construct the altitude to *FH*. Label it *A*. [Leave all construction marks.]



11. Using a compass and straightedge, construct the median to *FH*. Label it *M*. [Leave all construction marks.]



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