Unit 1

Name Key

Period _____

Unit 1
Review Sheet

1. Define point of concurrency.

the point of intersection of three or more lines

2. Complete the chart.

Point of Concurrency	**Type of construction that needs to be done to find the point of concurrency**	**Is the point of concurrency located inside or outside of the triangle?**
Circumcenter C	*Perpendicular Bisectors* P	*Both; depends on the type of triangle*
Incenter I	Angle Bisectors A	Inside
Centroid C	Medians M	Inside
Orthocenter O	Altitudes A	both, depends

a) Which two points of concurrency are located on the outside of an ***obtuse*** triangle?

Circumcenter and orthocenter

b) Which two points of concurrency are always located on the inside of ***any*** triangle?

Incenter and Centroid

3. What does **Peanut Butter Cookies Are Best In Milk Chocolate And Ovaltine** mean?

Perpendicular Bisector → Circumcenter
Angle Bisectors → Incenter
Medians → Centroid
Altitudes → Orthocenter

4. In an **acute** triangle, where is the location of the:

a) circumcenter inside
b) incenter inside
c) centroid inside
d) orthocenter inside

5. In a **right** triangle, where is the location of the :

a) circumcenter on the triangle
b) incenter inside
c) centroid inside
d) orthocenter on the triangle (on the right ∠)

6. In an **obtuse** triangle where is the location of the :

a) circumcenter outside
b) incenter inside
c) centroid inside
d) orthocenter outside

7. If perpendicular bisectors of the sides of a triangle are drawn, which point of concurrency would be shown?

A. orthocenter (B. circumcenter) C. incenter D. centroid

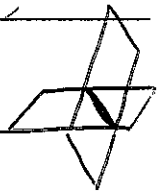
8. How many points determine a line? 2

9. How many points determine a plane? 3

What must be true about the points? they must be non-collinear

10. Two non-parallel lines intersect how many times? once

11. If two planes intersect, what is formed? a line

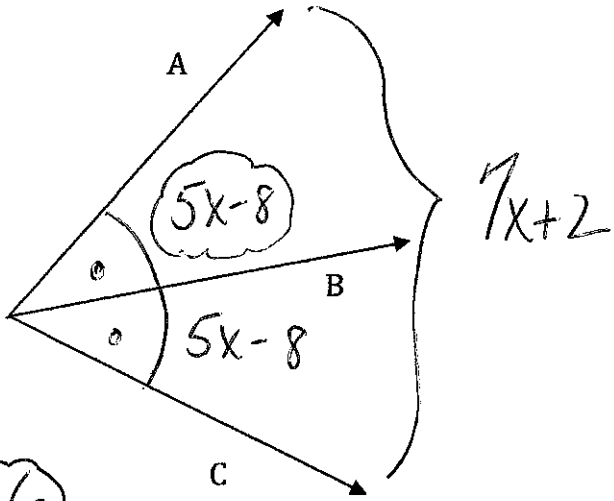


12. How many endpoints are on a ray? 1

13. How many endpoints are on a segment? 2

14. How many endpoints are on a line? 0

15. In the diagram below, $\overrightarrow{OB}$ bisects <AOC. The measure of <AOC is 7x + 2, and the measure of <COB is 5x - 8. Find:



A) The value of x.

$5x-8+5x-8=7x+2$

$10x-16=7x+2$

$-7x \quad -7x$

$3x-16=2$

$+16 \quad +16$

$\frac{3x}{3}=\frac{18}{3}$

$x=6$

B) The measure of <AOB.

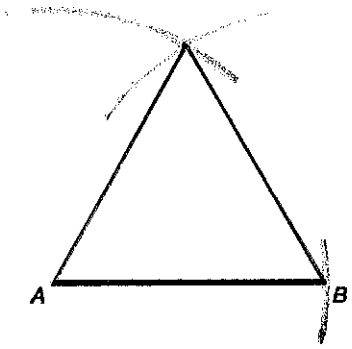
$m\angle AOB = 5x-8$

$= 5(6)-8$

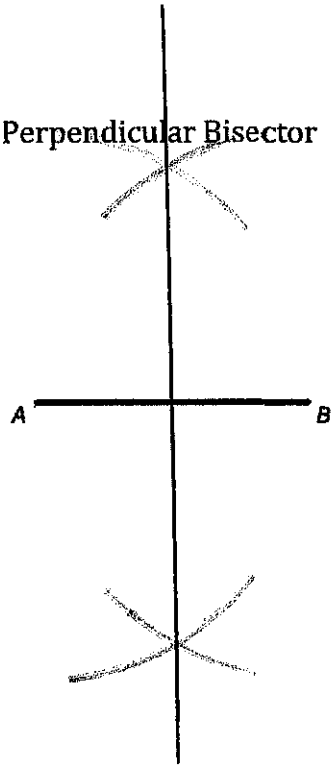
$m\angle AOB = 22$

16. Using a compass and straightedge, construct the following:

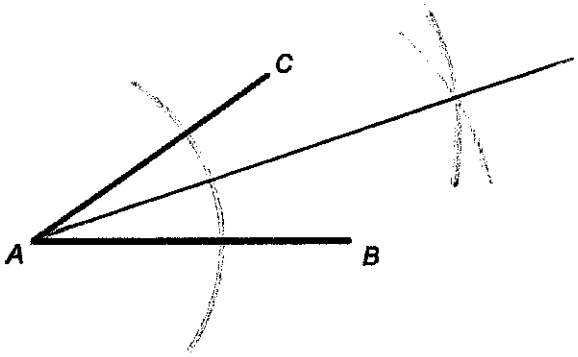
a. Equilateral Triangle



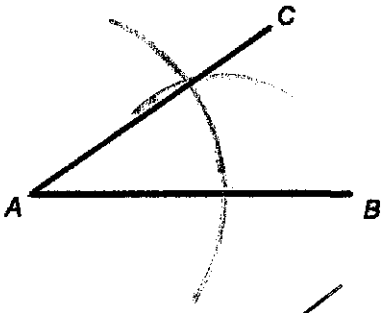
b. Perpendicular Bisector

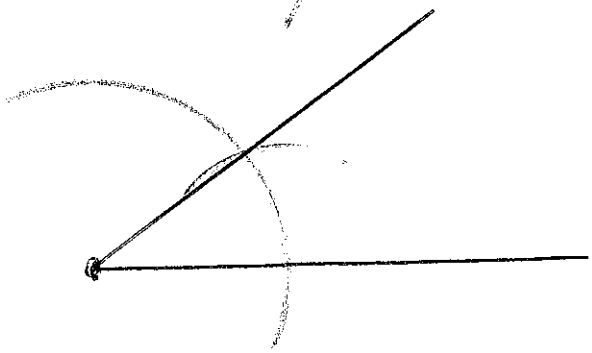


c. Angle Bisector

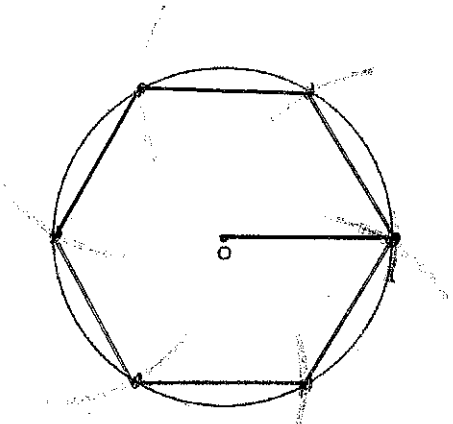


d. Copy the given angle

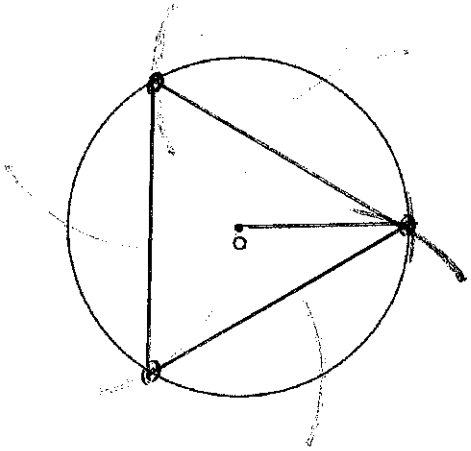




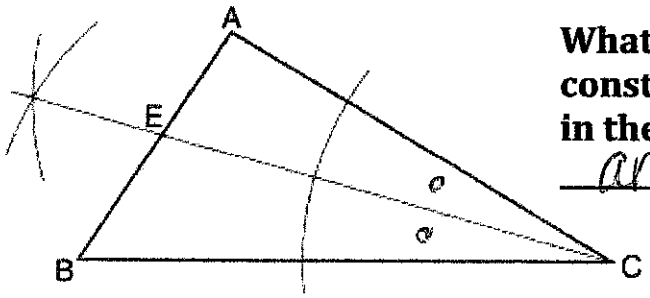
17. Construct a regular hexagon in the circle provided. Leave all construction marks.



18. Construct an equilateral triangle in the circle provided.



19. A student used a compass and a straightedge to construct $\overline{CE}$ in $\triangle ABC$ as shown below.



What type of construction is shown in the diagram? angle bisector

Which statement must always be true for this construction?

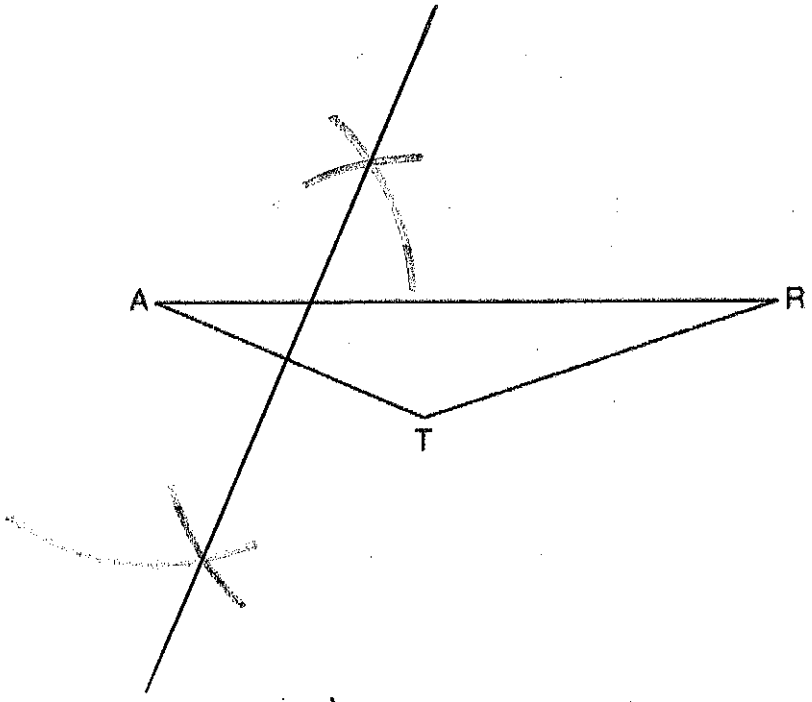
A. $\angle CEA \cong \angle CEB$ NO

(B.) $\angle ACE \cong \angle BCE$ Yes

C. $\overline{AE} \cong \overline{BE}$ NO

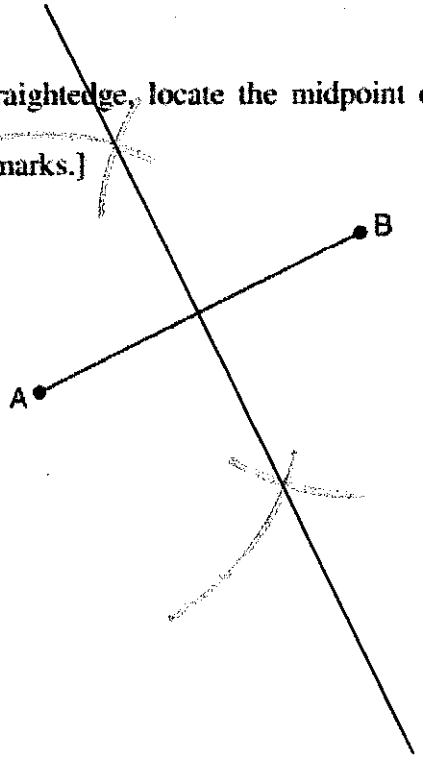
D. $\overline{EC} \cong \overline{AC}$ NO

20. Using a compass and straightedge, construct the perpendicular bisector of side $\overline{AT}$ in ΔART shown below. Leave all construction marks.

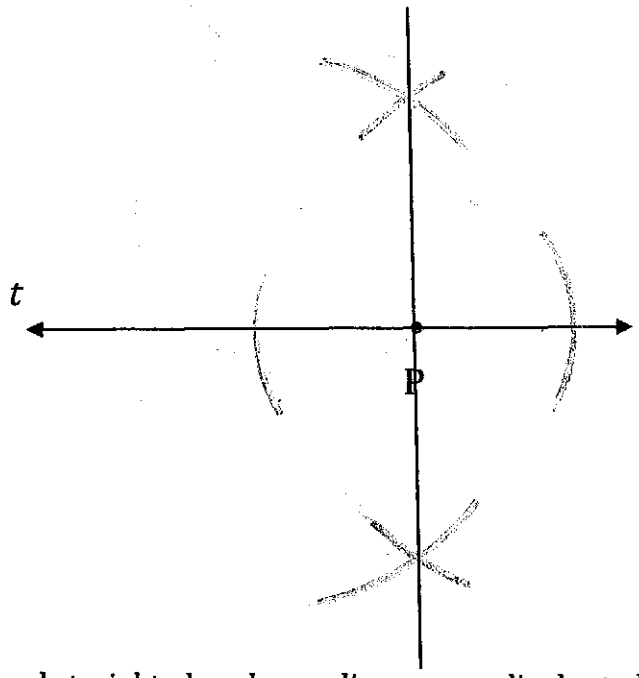


21. Using a compass and straightedge, locate the midpoint of $\overline{AB}$ by construction.

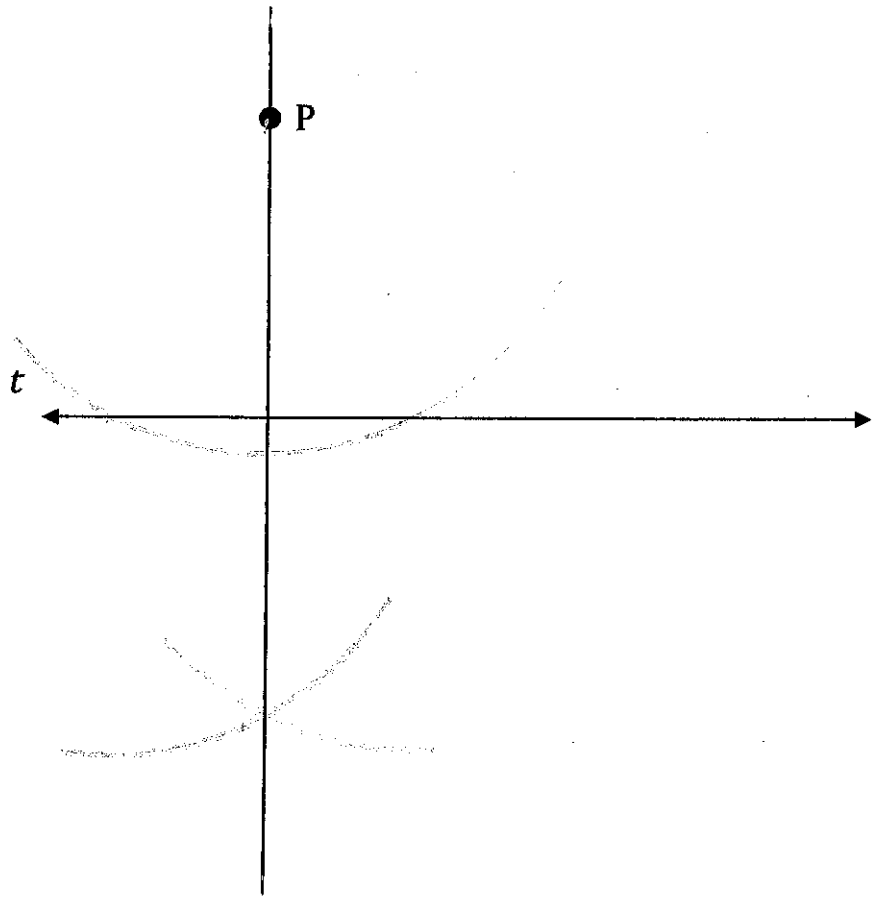
[Leave all construction marks.]



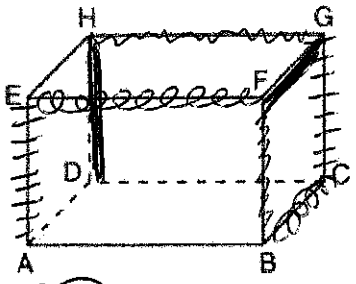
22. Using a compass and straightedge, draw a line perpendicular to line *t* that passes thru point P.



23. Using a compass and straightedge, draw a line perpendicular to line *t* that passes thru point P.



24. A right rectangular prism is shown in the diagram below.



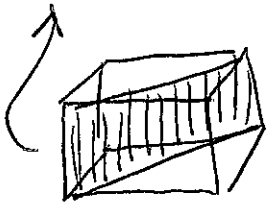
Which line segments are coplanar? — on the same plane

A. $\overline{GH}$ and $\overline{FB}$ No

B. $\overline{EA}$ and $\overline{GC}$ Yes

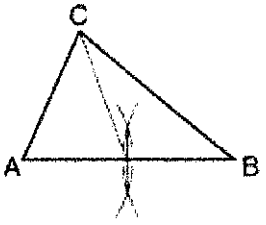
C. $\overline{EF}$ and $\overline{BC}$ No

D. $\overline{HD}$ and $\overline{FG}$ No

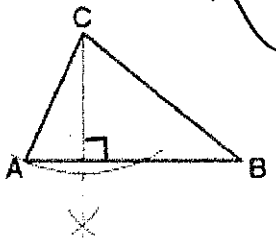


25. Which diagram illustrates a correct construction of an altitude of $\triangle ABC$?

A. NO

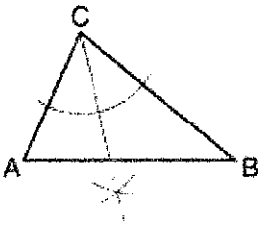


B.

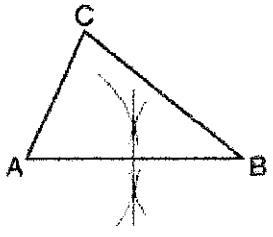


makes a 90° angle with the side opposite the vertex

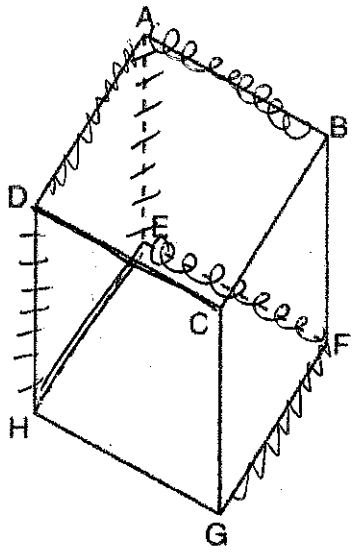
C. NO



D.



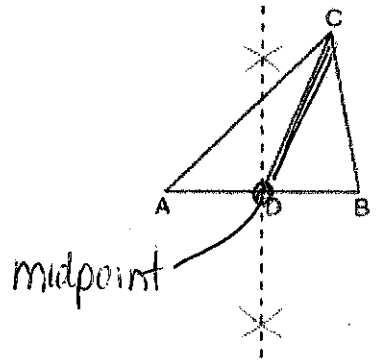
26. Which pair of edges is *not* coplanar in the cube shown below?



(A.) $\overline{EH}$ and $\overline{CD}$ B. $\overline{AD}$ and $\overline{FG}$ C. $\overline{DH}$ and $\overline{AE}$ D. $\overline{AB}$ and $\overline{EF}$

not coplanar Coplanar Coplanar Coplanar

27. In the construction shown below, $\overline{CD}$ is drawn.

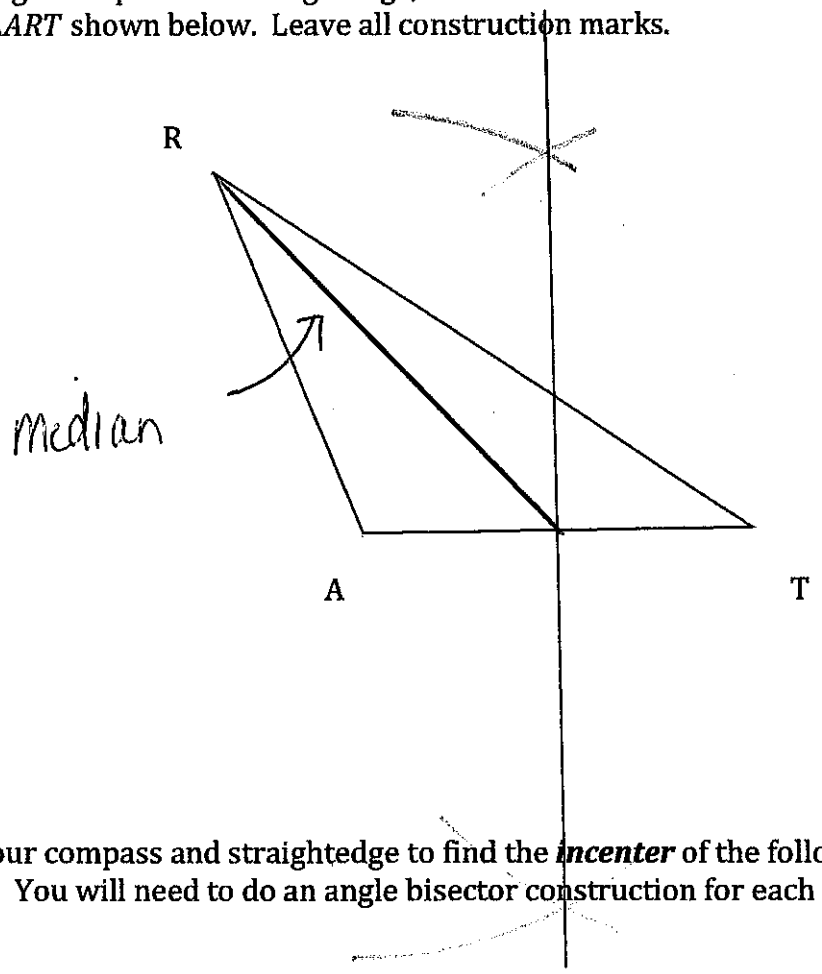


In $\triangle ABC$, $\overline{CD}$ is the

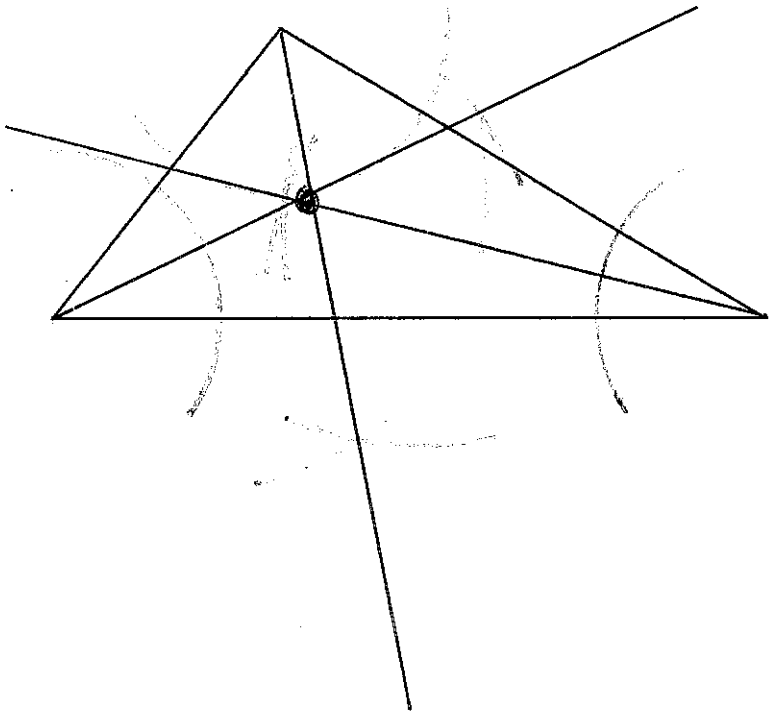
A. perpendicular bisector of side $\overline{AB}$ (B.) median to side $\overline{AB}$

C. altitude to side $\overline{AB}$ D. bisector of $\angle ACB$

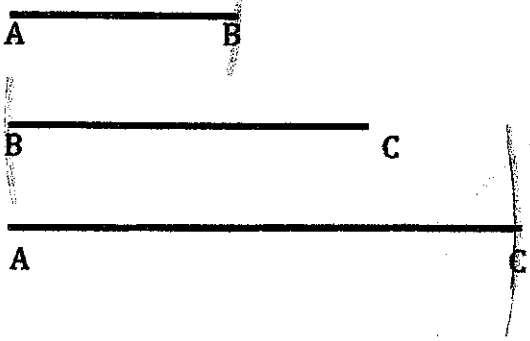
28. Using a compass and straightedge, construct the ***median*** to side $\overline{AT}$ in ΔART shown below. Leave all construction marks.

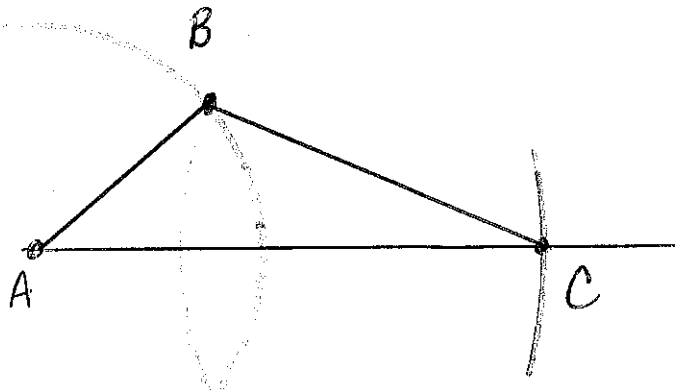


29. Use your compass and straightedge to find the ***incenter*** of the following triangle.
HINT: You will need to do an angle bisector construction for each angle.



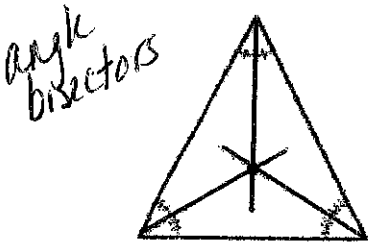
30. With a compass and straightedge, construct scalene triangle ABC with sides the lengths of the three segments below.



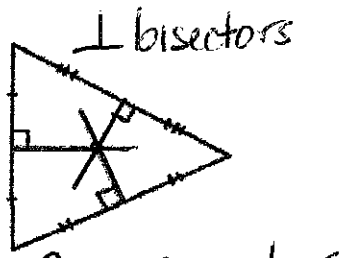


31. Each of the following words is a description of one of the constructions shown below. Match the term to the correct construction and write it on the line below:

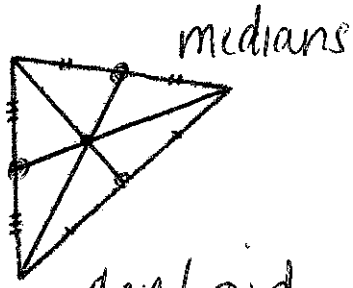
ALTITUDE	CENTROID	CIRCUMCENTER
EQUILATERAL TRIANGLE	INCENTER	MEDIAN



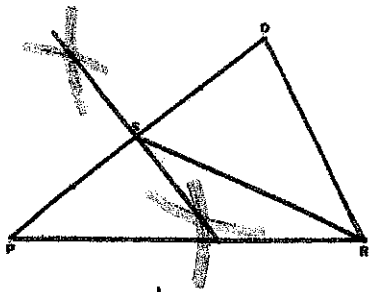
incenter



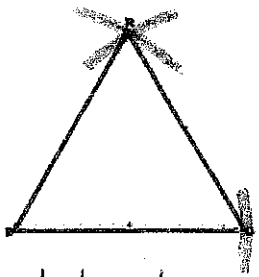
circumcenter



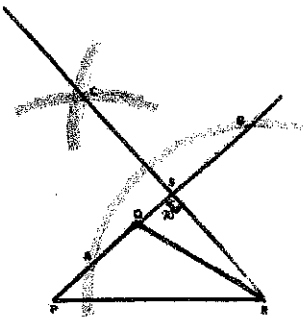
centroid



median



equilateral Δ



altitude