Answer each of the following questions in the space provided. SHOW YOUR WORK!

For questions 1-20, match each of the following with its definition/characteristic. ***The choices may be used more than once or not at all.***	Answers #1-25

For questions 1-20, match each of the following with its definition/characteristic.
The choices may be used more than once or not at all.

1) Drawing tools   2) Perpendicular Lines
3) Construction tools   4) Altitude of a triangle
5) Perpendicular Bisector   6) Parallel Lines
7) Segment Bisector   8) Orthocenter
9) Distance from a point to a line   10) Incenter
11) Concurrent Lines   12) Circumcenter
13) Angle bisector   14) Euler Line
15) Inscribed circle   16) Centroid
17) Point of concurrency   18) Midsegment of a triangle
19) Median of a triangle   20) Circumscribed circle

a. The point of concurrency of the three altitudes of a triangle.
b. A ray which divides an angle into two congruent parts.
c. A segment from a vertex of a triangle perpendicular to the line containing the opposite side.
d. A line, segment, or ray intersecting the midpoint of a segment.
e. A segment whose endpoints are the midpoints of two sides of a triangle
f. The largest possible circle within a triangle.
g. Coplanar, non-intersecting lines.
h. Three or more lines intersecting at one point.
i. The length of the perpendicular segment from a point to a line.
j. A line that contains the centroid, orthocenter and circumcenter of a triangle.
k. The point of a triangle equidistant from the three sides of the triangle.
l. Ruler & protractor
m. A segment joining a vertex of a triangle with the midpoint of the opposite side.
n. The point of concurrency of the three medians of a triangle.
o. A line, segment, or ray intersecting the midpoint of a segment and perpendicular to the segment.
p. The point of concurrency of the three perpendicular bisectors of the sides of a triangle.
q. Lines intersecting to form right angles.
r. The point of intersection of three or more lines.
s. A circle containing the three vertices of a triangle.
t. Compass & straightedge.
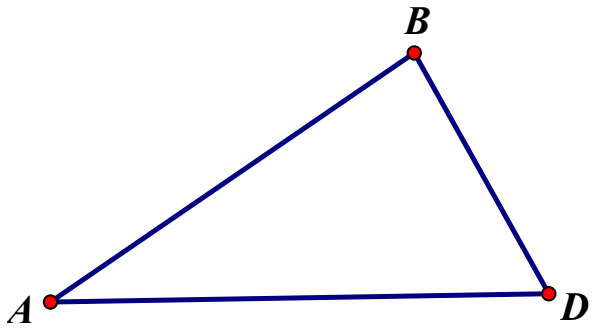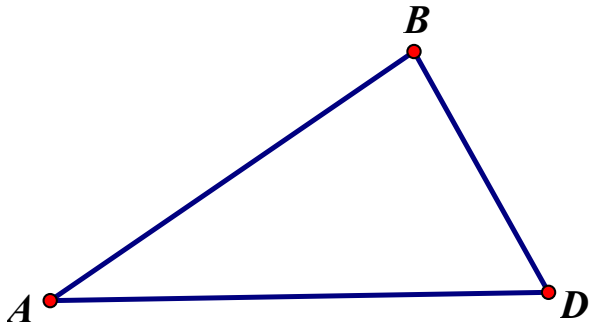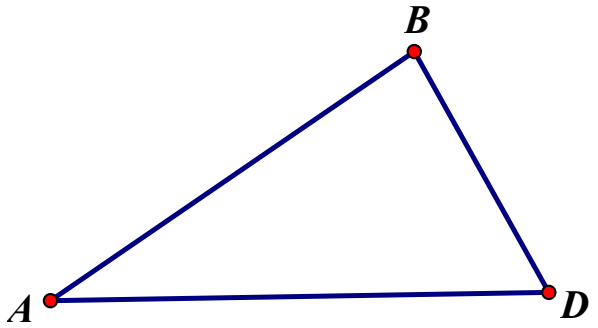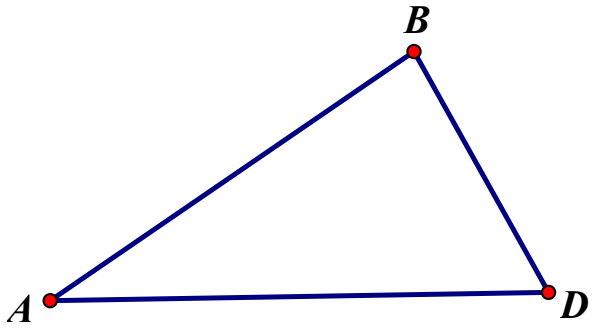
Fill in the blank.
21) The largest side of a triangle is opposite the _____.
22) The _____ of a triangle is also called the "center of mass" of the triangle.
23) The shortest distance from a point to a line is along a _____ line drawn to the line.
24) A midsegment of a triangle is parallel to and _____the length of the third side of the triangle.
25) The three midsegments of a triangle form four _____ .

Answers #1-25
1)
2)
3)
4)
5)
6)
7)
8)
9)
10)
11)
12)
13)
14)
15)
16)
17)
18)
19)
20)
21)
22)
23)
24)
25)

CONSTRUCT the requested items in the allotted spaces for questions 26-29. SHOW YOUR ARCS!

26) The orthocenter.

B

A   D

27) The centroid.

B

A   D

28) The circumcircle.

B

A   D

29) The inscribed circle.

B

A   D

30a) Superintendent Dotres wishes to build a new school on a newly acquired parcel of land. The land is in the form of triangle with three main roads on each side. He wants the new school to be the same distance from each of three main roads. What point of concurrency should he find for the new school's location?

30a)_____

30b) An amusement park owner wants to place a garbage can equidistant from the entrances to three main rides – the Gravitron, the Crazy Mouse roller coaster and the bumper cars. What point of concurrency should the amusement park owner find?
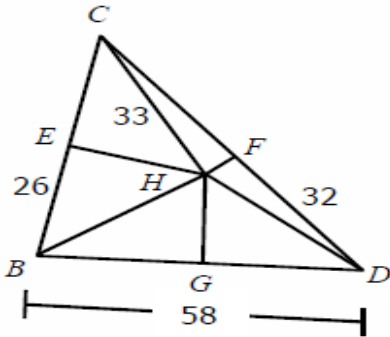
30b)_____

*Point G is the **centroid** of △ ABC, AD = 8, AG = 10, BE = 10 and CD = 18. Find each measure.*
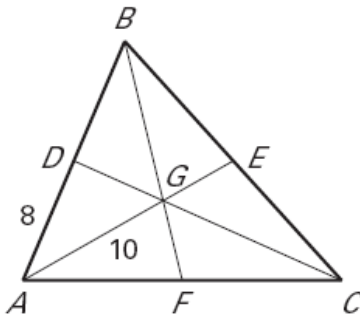
31) BC = _____

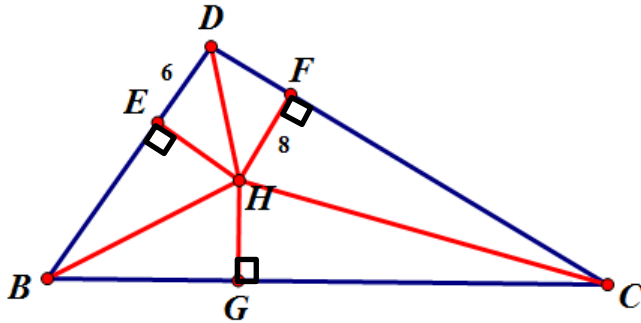32) CG = _____

33) GE = _____

34) EA = _____

35) GD = _____

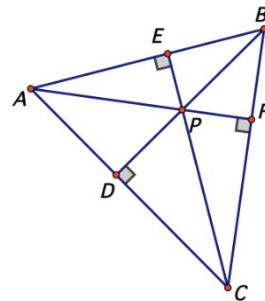*Point H is the **circumcenter** of △BCD. Find each measure. Round any decimal answers to the nearest tenth.*

36) CD = _____

37) CE = _____

38) HD = _____

39) HG = _____

*Point H is the **incenter** of △BCD. Find each measure. Round any decimal answers to the nearest tenth.*

40) EH = _____

41) HG = _____

42) HD = _____

43) DF = _____

44) m∠GBE = 46°. What is m∠BHE? ___

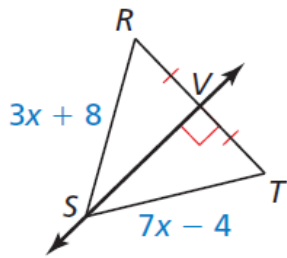46) Point P is the point of concurrency of the three altitudes of △ABC. BP = 61mm, PF = 11mm. Find BF.

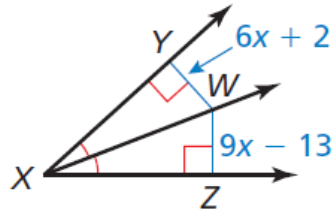Find the indicated measurement/value in each problem below.

47)	48)
ST	WY
R *V* 3x + 8 *S* *T* 7x − 4	*Y* 6x + 2 *W* *X* 9x − 13 *Z*

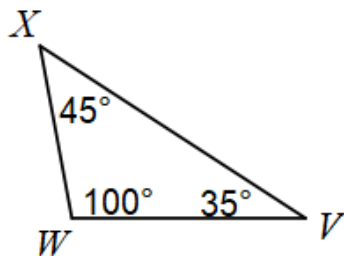| 49)	50) Solve for x.
Find *BC* *Q* 16 *B* *S* *R* *C*	*L* x + 21 *J* 15 + x *X* *W* *K*
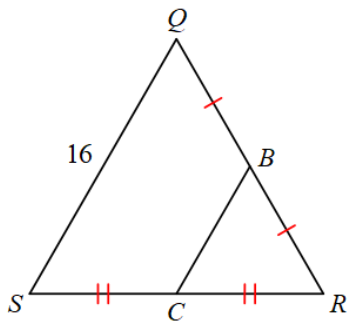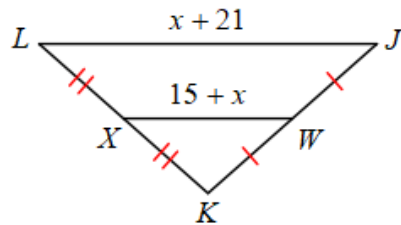
51) Order the sides from shortest to longest.	52) Order the angles from smallest to largest.
X 45° 100° 35° *W* *V*	*E* 23 14 *D* 13 *C*