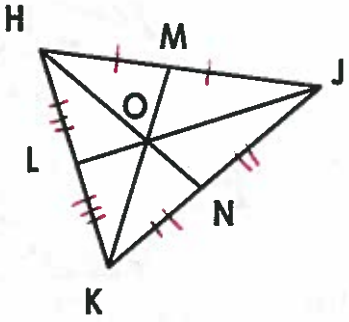
Honors Geometry
5.1-3 Super Review

Name Answer Key Period ____

Review Day Warm-Up:

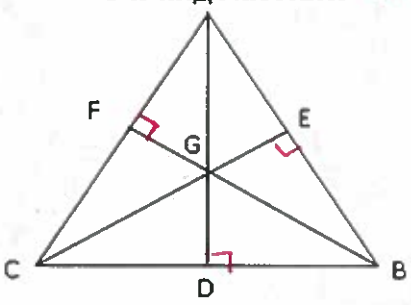
What can you put in the diagram given each point of concurrency?

O is the centroid → medians

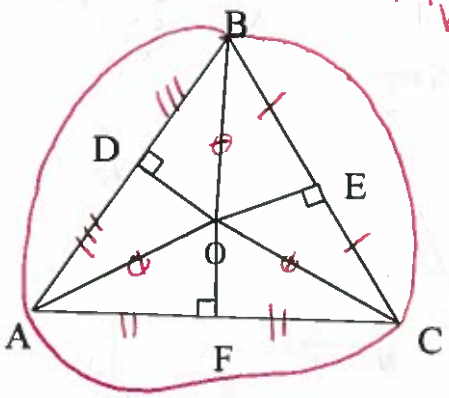


1x 2x 3x ratios

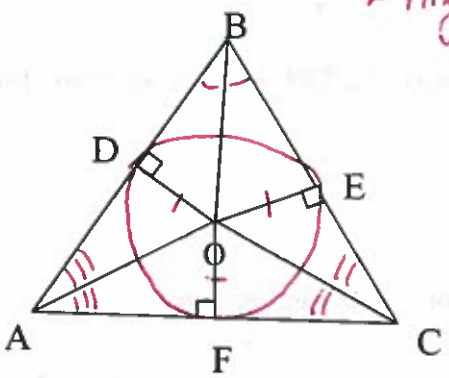
G is the orthocenter → altitudes



O is the circumcenter → perp. bisectors

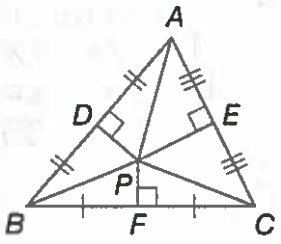


O is the incenter → Angle bisectors

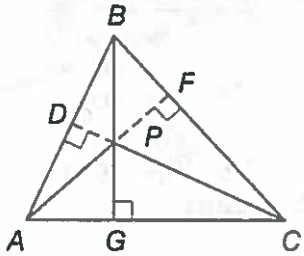


What do we call each point of concurrency?

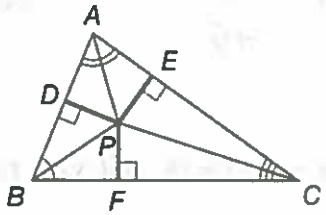
Circumcenter



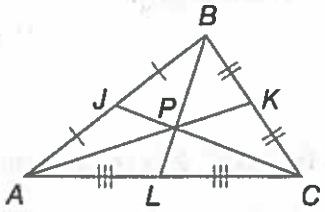
Orthocenter



Incenter



Centroid



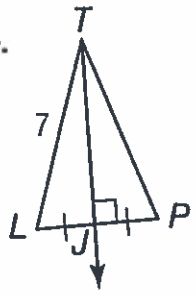
Honors Geometry

Name Answer Key Period _____

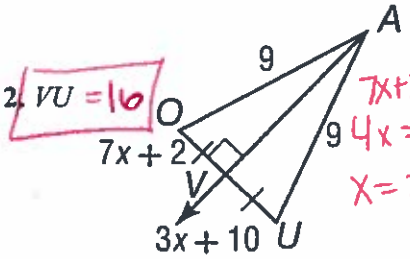
5.1-3 Super Review

Find each measure.

1. $TP = 7$

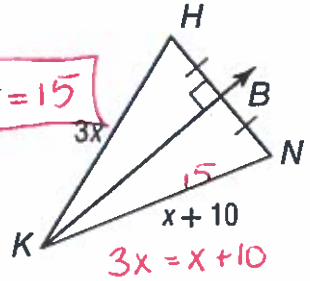


2. $VU = 16$



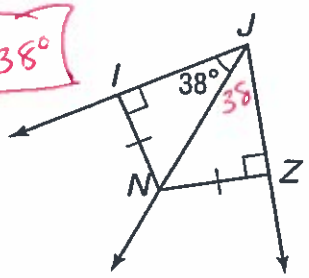
$7x+2 = 3x+10$
$4x = 8$
$x = 2$

3. $KN = 15$

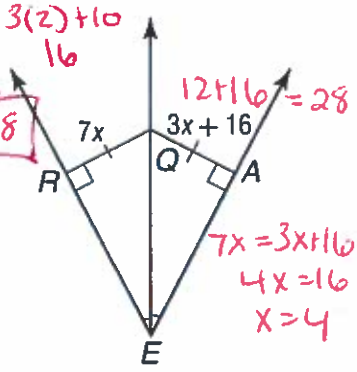


$3x = x + 10$
$2x = 10$
$x = 5$

4. $\angle NJZ = 38°$

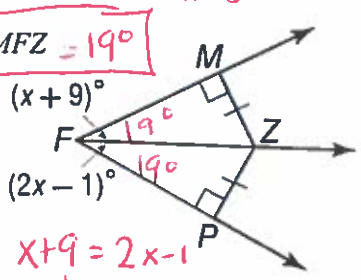


5. $QA = 28$



$3(2)+10$
16
$12+16 = 28$
$7x = 3x+16$
$4x = 16$
$x = 4$

6. $\angle MFZ = 19°$



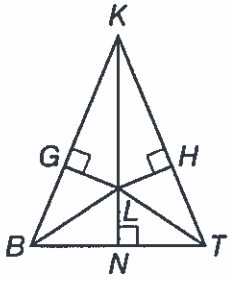
$x+9 = 2x-1$
$10 = x$

FA

Point *L* is the circumcenter of $\triangle KBT$. List any segment(s) congruent to each segment.

7. $\overline{BN} \cong \overline{NT}$

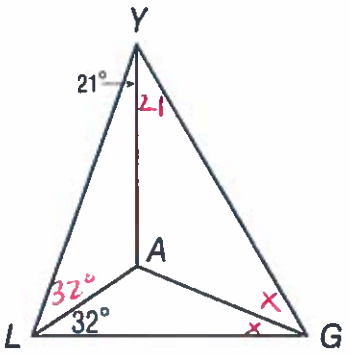
8. $\overline{BL} \cong \overline{KL} \cong \overline{LT}$



Point *A* is the incenter of $\triangle YLG$. Find each measure.

9. $\angle YLA = 32°$

10. $\angle YGA = 37°$



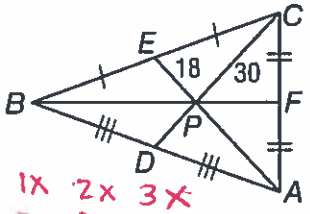
$180 = 21+21+32+32+x+x$
$180 = 106 + 2x$
$74 = 2x$
$x = 37$

In $\triangle ABC$, $CP = 30$, $EP = 18$, and $BF = 39$. Find each measure.

11. $PD = 15$
13. $BP = 26$

1x 2x 3x
DP CP CD
15 30 45

12. $FP = 13$
14. $CD = 45$



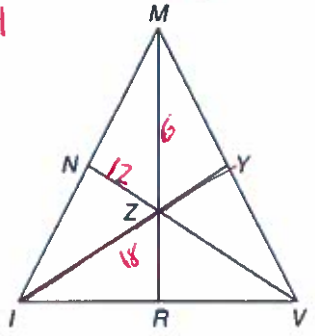
1x 2x 3x
EP PA EA
18 36 54

← P is the centroid

1x 2x 3x
FP BP BF
13 26 39

In $\triangle MIV$, *Z* is the centroid, $MZ = 6$, $YI = 18$, and $NZ = 12$. Find each measure.

15. $ZR = 3$
16. $YZ = 6$
17. $MR = 9$
18. $ZV = 24$



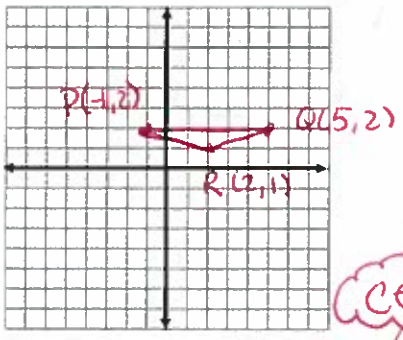
1x 2x 3x
ZR ZM MR
3 6 9

1x 2x 3x
ZY IZ IY
6 12 18

1x 2x 3x
NZ ZV NV
12 24 36

COORDINATE GEOMETRY **Find the coordinates of the orthocenter &centroid of the triangle with the given vertices – use your own graph paper.**

19. $P(-1, 2)$, $Q(5, 2)$, $R(2, 1)$



$P(-1,2)$ $m_{QR} = \frac{1}{3}$

$\perp m = -3$

$y - 2 = -3(x+1)$

$y - 2 = -3x - 3$

$+2 \quad +2$

$y = -3x - 1$

centroid: $\left(2, \frac{5}{3}\right)$

$\left(\frac{-1+5+2}{3}, \frac{2+2+1}{3}\right)$

$Q(5,2)$ $m_{PE} = \frac{1}{-3}$

$\perp m = 3$

$y - 2 = 3(x-5)$

$y - 2 = 3x - 15$

$+2 \quad +2$

$y = 3x - 13$

$y = 3(2) - 13$

$y = 6 - 13$

$y = -7$

Intersection:

$-3x - 1 = 3x - 13$

$+13 \quad +13$

$-3x + 12 = 3x$

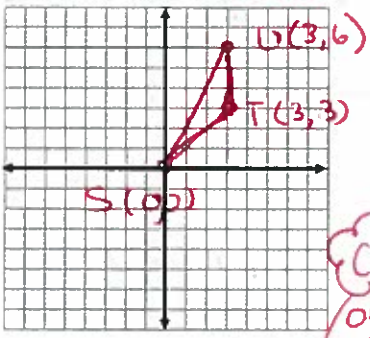
$+3x \quad +3x$

$12 = 6x$

$x = 2$

$(2, -7)$ orthocenter

20. $S(0, 0)$, $T(3, 3)$, $U(3, 6)$



$S(0,0)$ $m_{UT} = \frac{3}{0}$

$\perp m = 0$

$y - 0 = 0(x-0)$

$y = 0$

centroid: $(2, 3)$

$\left(\frac{0+3+3}{3}, \frac{0+3+6}{3}\right)$

$U(3,6)$ $m_{TS} = \frac{3}{3} = 1$

$\perp m = -1$

$y - 6 = -1(x-3)$

$y - 6 = -x + 3$

$+6 \quad +6$

$y = -x + 9$

Intersection:

$0 = -x + 9$

$-9 = -x$

$9 = x$

$(9, 0)$ orthocenter

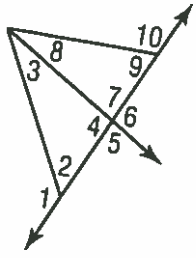
21. MOBILES Nabuko wants to construct a mobile out of flat triangles so that the surfaces of the triangles hang parallel to the floor when the mobile is suspended. How can Nabuko be certain that she hangs the triangles to achieve this effect?

Hang the picture by its centroid (balancing point).

22. SCULPTURE A triangular entranceway has walls with corner angles of 50°, 70°, and 60°. The designer wants to place a tall bronze sculpture on a round pedestal in a central location equidistant from the three walls. How can the designer find where to place the sculpture?

Place the tall bronze sculpture at the incenter (equidistant from the sides of the triangle)

Use the figure at the right to determine which angle has the greatest measure.



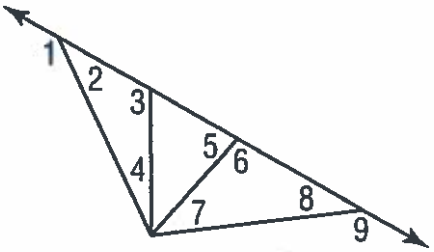
23. $\angle 1$, $\angle 3$, $\angle 4$

24. $\angle 4$, $\angle 8$, $\angle 9$

25. $\angle 2$, $\angle 3$, $\angle 7$

26. $\angle 7$, $\angle 8$, $\angle 10$

Use the Exterior Angle Inequality Theorem to list all angles that satisfy the stated condition.



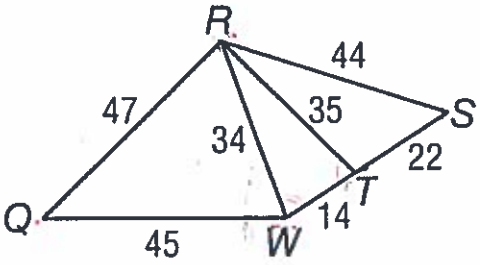
27. measures are less than $m\angle 1$ $\angle 3, \angle 4, \angle 5, \angle 7, \angle 8$

28. measures are less than $m\angle 3$ $\angle 5, \angle 7, \angle 8$

29. measures are greater than $m\angle 7$ $\angle 1, \angle 3, \angle 5, \angle 9$

30. measures are greater than $m\angle 2$ $\angle 6, \angle 9$

Use the figure at the right to determine the relationship between the measures of the given angles.



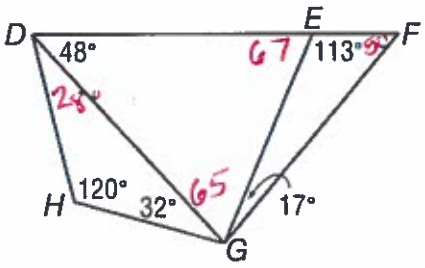
31. $m\angle QRW$ (45) $<$ (47) $m\angle RWQ$

32. $m\angle RTW$ (34) $<$ (35) $m\angle TWR$

33. $m\angle RST$ (35) $>$ (22) $m\angle TRS$

34. $m\angle WQR$ (34) $<$ (45) $m\angle QRW$

Use the figure at the right to determine the relationship between the lengths of the given sides.



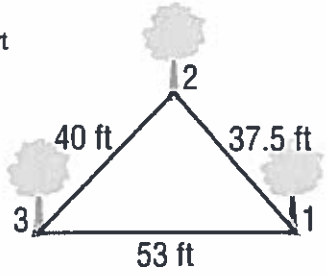
35. $\overline{DH}$ (32) $>$ (28) $\overline{GH}$

36. $\overline{DE}$ (65) $<$ (67) $\overline{DG}$

37. $\overline{EG}$ (50) $<$ (43) $\overline{FG}$

38. $\overline{DE}$ (65) $>$ (46) $\overline{EG}$

39. **SPORTS** The figure shows the position of three trees on one part of a disc golf course. At which tree position is the angle between the trees the greatest?



At angle 2.