1 Find the value of x.

1)

30

x

$x =$ **15**

2) show work!

2x + 1

18

$2(2x+1)=18$

$x =$ **4**

3.

6x

36

$2(6x)=36$

$x = 3$

4.

Y

x + 9

Q

2x − 3

W   R   x

$2(2x-3)=x+9$

$x = 15$

5.

2x + 1

18

$2(2x+1)=18$

$x = 4$

6.

21

3x

$2(3x)=21$

$x = 3.5$

✓ Solve for x.

x^2

$-7x + 30$

$2x^2 = -7x + 30$

$2x^2 + 7x - 30 = 0$

$(2x-5)(x+6)=0$

$x = -6, 5/2$
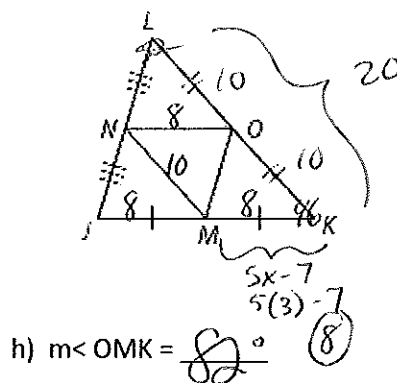
⇒ Use the diagram to the right and the following information...
   LK = 12x − 16 cm, NM = 3x + 1, MK = 5x − 7 , NO = 2y,   m∠L = 52°, m∠K = 46°

a) X = **3**

$2(3x+1)=12x-16$
$(6x+2=12x-16$
$18 = 6x$
$x = 3$

b) OK = **10**

c) MK = **8**

d) y = **4**
$2y = 8$

e) JK = **16**

L

10   20

N   8   O

10   10

J   8   M   8   K

5x−7
5(3)−7
(8)

f) m∠ J = **82°**

g) m∠ LNO = **82°**

h) m∠ OMK = **82°** **(8)**

5.2

7) Solve for x.
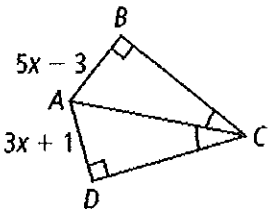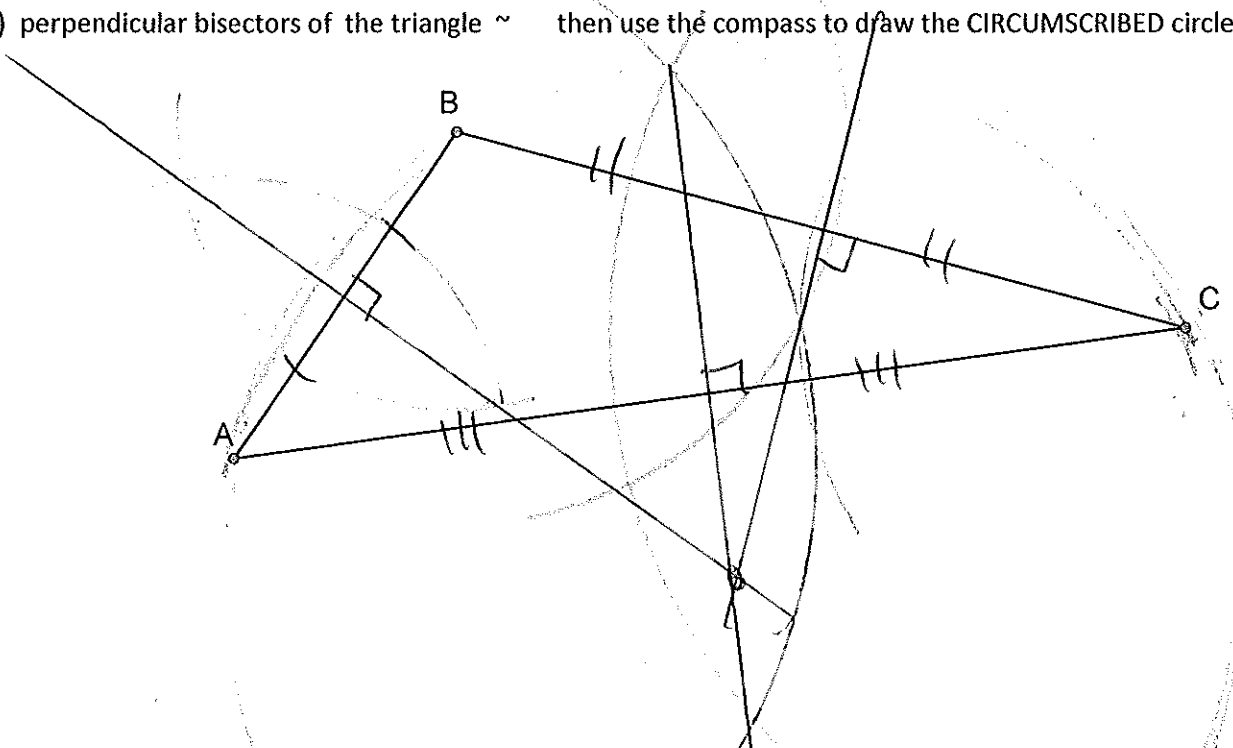

$5x - 3 = 3x + 1$

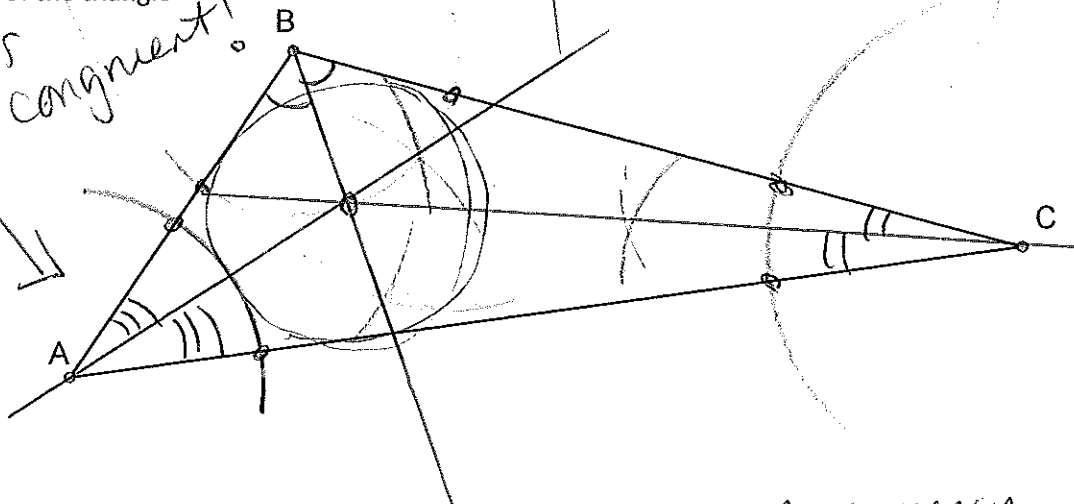$2x = 4$

$x = 2$

$x = \underline{2}$

5.3 Use a compass to **construct** and **label** the following; *LABEL diagrams with appropriate congruent markings and/or perpendicular markings.*

8) perpendicular bisectors of the triangle ~ then use the compass to draw the CIRCUMSCRIBED circle of ABC
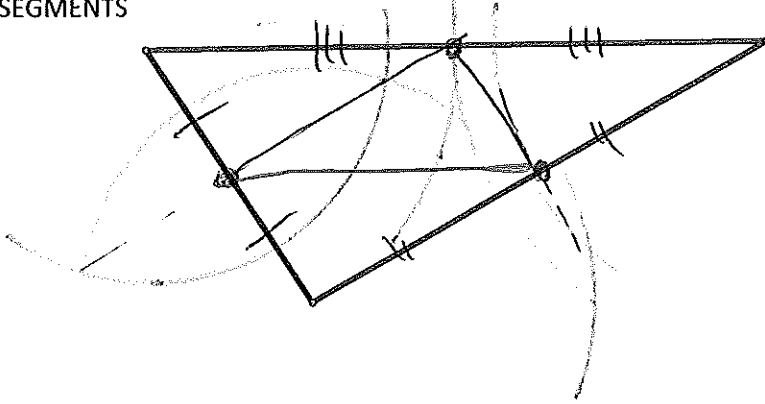

9) angle bisectors of the triangle

mark ∡'s congruent!

10. When the 3 bisectors all intersect at one point, that point is called a point of ___Concurrency___.

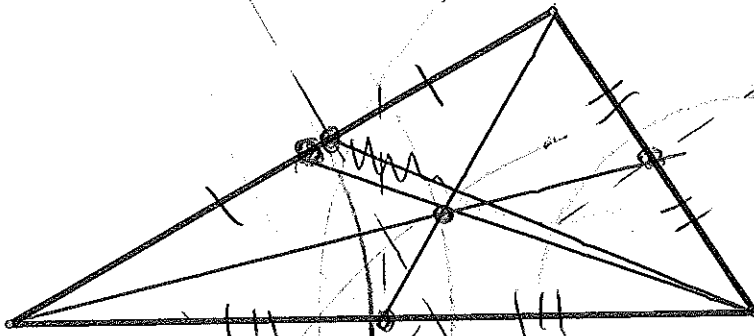(still using a compass...)
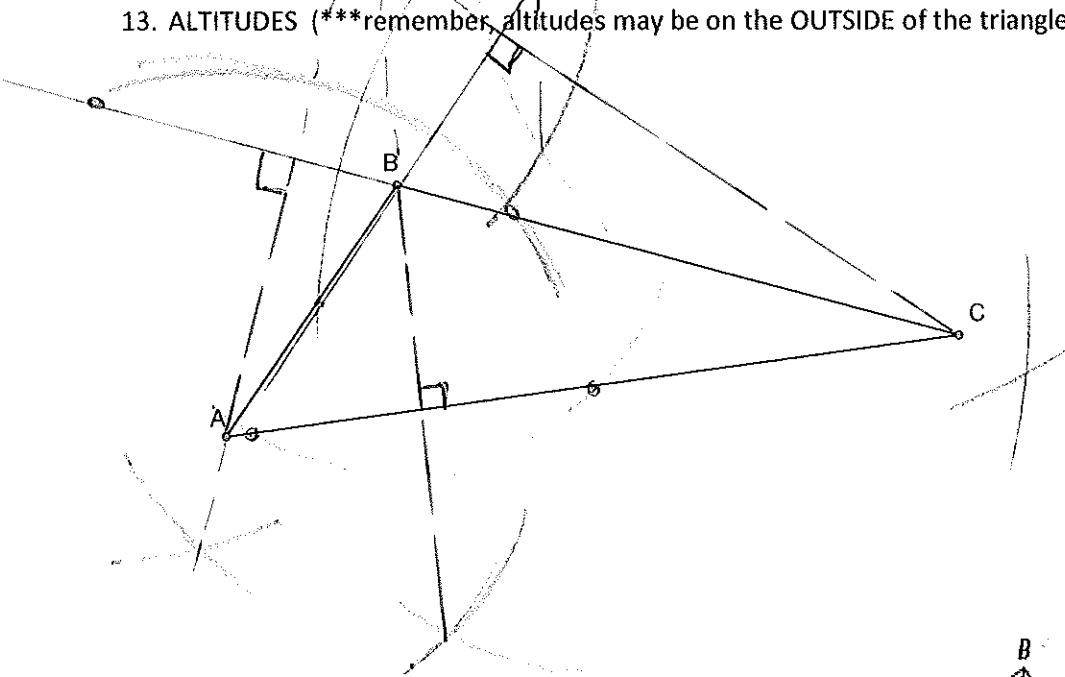
11. MIDSEGMENTS

* Find midpoint
of each side
first

for
both

12. MEDIANS
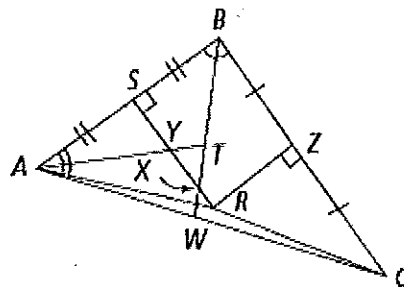

connect vertex to midpt

13. ALTITUDES (***remember, altitudes may be on the OUTSIDE of the triangle!)

Use the diagram to the right...

14) Name a perpendicular bisector ___RZ or YS___
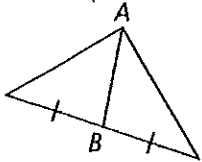
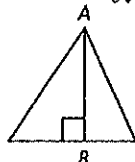15) Name an angle bisector ___WB or TA___

16) To find the point that is equidistant from the 3 vertices of the triangle, you would find the point where the 3 _perpendicular_ bisectors intersect.

Is $\overline{AB}$ a median, an altitude, a perpendicular bisector, angle bisector or none of these? How do you know?
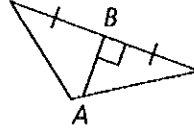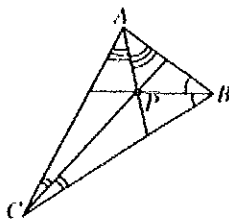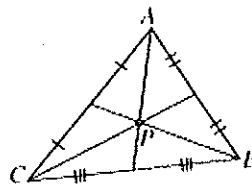
17. median

18. altitude

19. perp. bisector

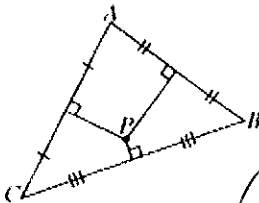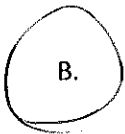20. Which diagram shows a point P an equal distance from points A, B, and C?

A.
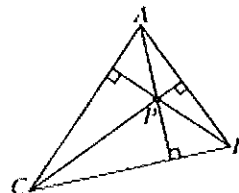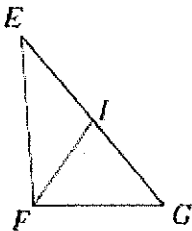
C.

B.

D.

Ⓑ
⊥ bisectors
?

21) **In each diagram, the segments drawn are MEDIANS of the triangle.**

a) If GE = 3x + 5, and GI = 2x − 1

$3x+5 = 2(2x-1)$

x = __7__   GI = __13__ GE = __26__

b) QV = 32x − 12, and RV = 21x + 10
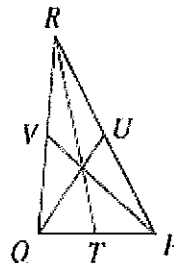
$32x-12 = 21x+10$

x = __2__   QV = __52__ RV = __52__

22) Explain the similarities and differences between an triangle's altitude and median.

Altitudes are ⊥ to oppos. side, while medians go through midpt. of oppos. side,
But both start at a vertex of the △.

Kuta Software - Infinite Geometry

Name___*ANSWERS*___

Midsegment of a Triangle

Date_____ Period____

In each triangle, M, N, and P are the midpoints of the sides. Name a segment parallel to the one given.
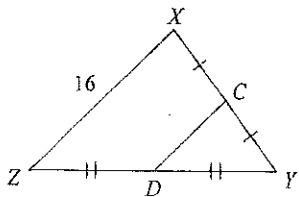
1)

$\overline{CD} \parallel \overline{PN}$

2)
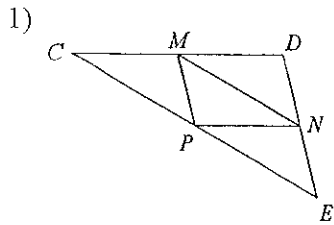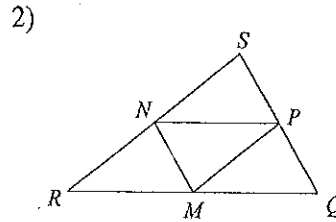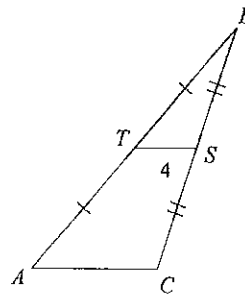

$\overline{MN} \parallel \overline{QS}$
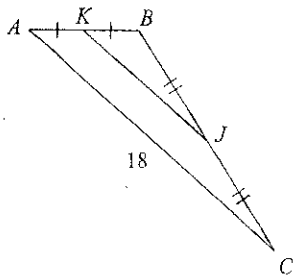
Find the missing length indicated.

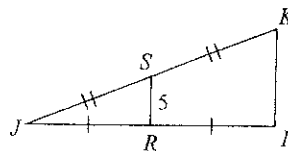3) Find CD

$CD = 8$

4) Find AC
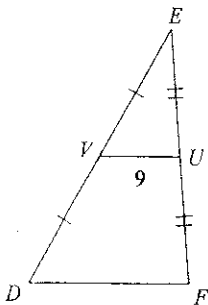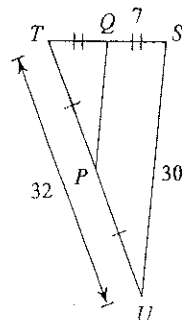

$AC = 8$

5) Find KJ

$KJ = 9$

6) Find IK

$IK = 10$

7) Find DF

$DF = 18$

8) Find PQ

$PQ = 15$

-1-

Solve for x.

9)
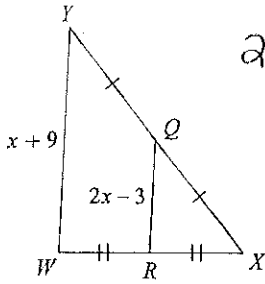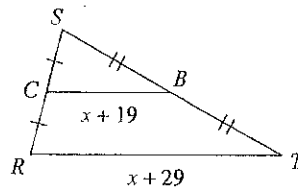

$2(2x-3) = x+9$
$4x-6 = x+9$
$3x = 15$
$\boxed{x=5}$

10)

$2(x+19) = x+29$
$2x+38 = x+29$
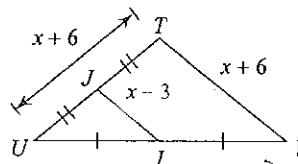$\boxed{x=-9}$

11)
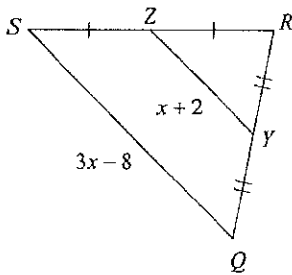
$2(x+2) = 3x-8$
$2x+4 = 3x-8$
$\boxed{12 = x}$

12)

$2(x-3) = x+6$
$2x-6 = x+6$
$\boxed{x=12}$

Find the missing length indicated.

13) Find *LN*
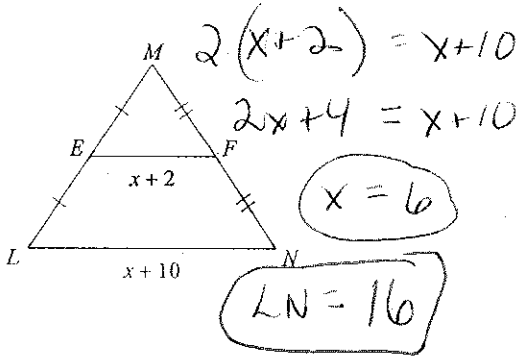
$2(x+2) = x+10$
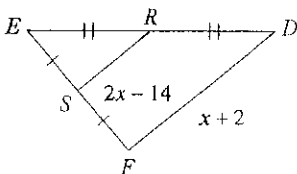$2x+4 = x+10$
$\boxed{x=6}$
$\boxed{LN = 16}$

14) Find *RQ*
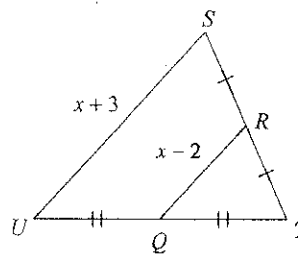
$2(x-2) = x+3$
$2x-4 = x+3$
$x=7$
$RQ = 7-2 = \boxed{5}$

15) Find *SR*

$2(2x-14) = x+2$
$4x-28 = x+2$
$3x = 30$
$\boxed{x=10}$
$SR = 2(10)-14 = \boxed{6}$ 2-

16) Find *VW*
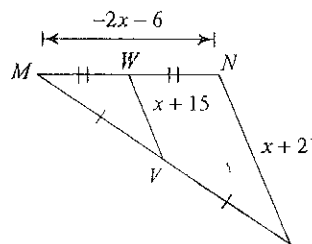
$2(x+15) = x+21$
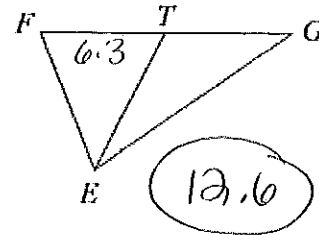$2x+30 = x+21$
$x=-9$
$\boxed{VW = 6}$

Each figure shows a triangle with one or more of its medians.

1) Find *FE* if *TE* = 8

$FE = 16$

2) Find *GF* if *TF* = 6.3

12.6

3) Find *LJ* if *IJ* = 6

3
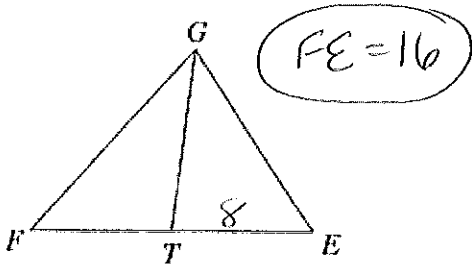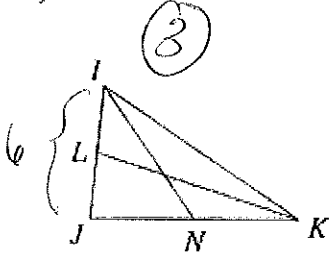
4) Find *NM* if *EM* = 10

20
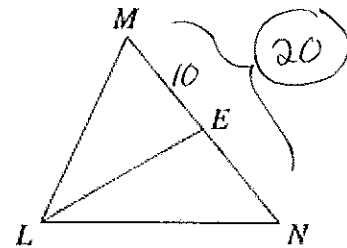
11) Find *x* if *GE* = 3*x* + 5 and *IE* = *x* + 6

$3x + 5$ $2(x+6) = 3x+5$

$2x + 12 = 3x + 5$

$7 = x$
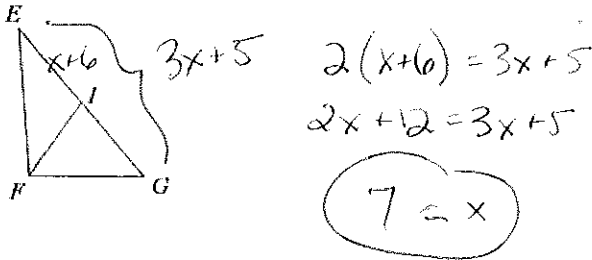
12) Find *x* if *TP* = 2*x* + 1 and *TQ* = 3*x* − 5

$3x - 5 = 2x + 1$

$x = 6$

$3x-5$ $2x+1$
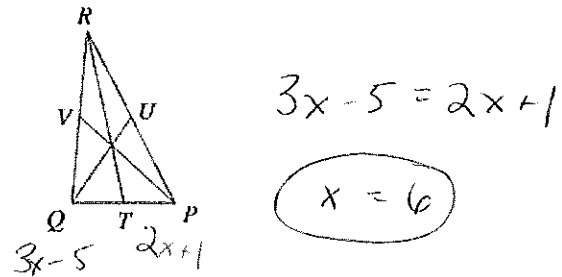
15) Find *CQ* if *CR* = *x* and *CQ* = 2*x* − 6

$x = 2x - 6$

$6 = x$

x

$2x-6$
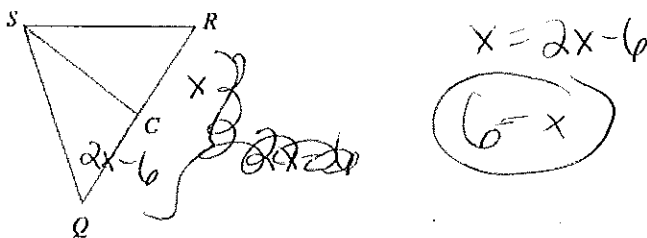
Each figure shows a triangle with one of its angle bisectors.

13) Find x if $m\angle 2 = 4x + 5$ and $m\angle 1 = 5x - 2$.

$4x + 5 = 5x - 2$

$\boxed{7 = x}$

14) Find x if $m\angle 2 = 1 + 28x$ and $m\angle XVW = 59x - 1$.

$2(1 + 28x) = 59x - 1$

$2 + 56x = 59x - 1$

$\boxed{x = 1}$ $3 = 3x$
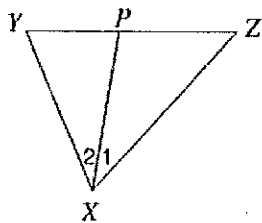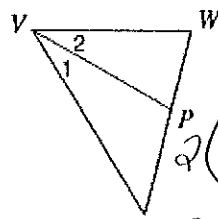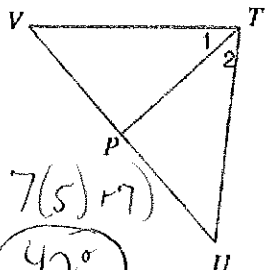
15) $m\angle 1 = 7x + 7$ and $m\angle VTU = 16x + 4$. Find $m\angle 1$.

$m\angle 1 = 7(5) + 7$

$\boxed{42°}$

$2(7x + 7) = 16x + 4$

$14x + 14 = 16x + 4$

$10 = 2x$

$x = 5$

16) Find $m\angle 2$ if $m\angle 2 = 7x + 5$ and $m\angle 1 = 9x - 5$.
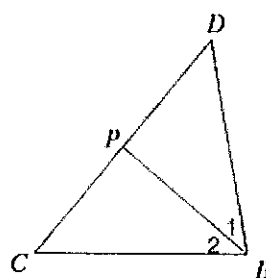
$7x + 5 = 9x - 5$

$10 = 2x$

$x = 5$

$m\angle 2 = 7(5) + 5$

$\boxed{40°}$

17) use a compass and straightedge for the following. If you don't have one, then just sketch and mark your diagram appropriately to show how you found the point that is equidistant from all of the schools.

Warde, Ludlowe, and Staples are playing in a tournament. The one requirement is that the tournament must be at a site that is equidistant from all schools. find the point on the map in which the event should be held. Show all work!

Use the black dots as the school locations...