

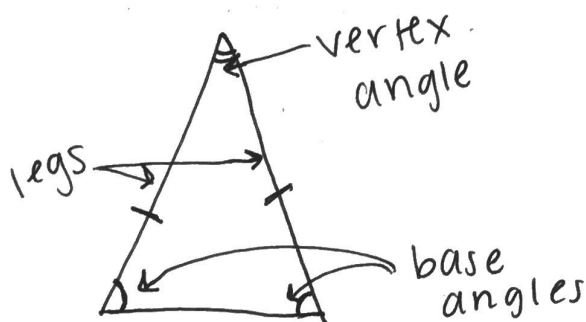
Answer the following.

1. The measures of two angles in a triangle are  $47^\circ$  and  $76^\circ$ . What is the measure of the third angle? *all angles in a  $\Delta$  must add up to  $180^\circ$*   
*so take the 2 angles you're given, add them and subtract from 180.*

$$47 + 76 = 123 \quad \begin{array}{r} 180 \\ -123 \\ \hline 57 \end{array}$$

- Is the above triangle scalene, isosceles, or equilateral?  
*scalene; all angles are different*
- Is the above triangle acute, right, or obtuse? *so all sides are different.*  
*acute; all angles are  $< 90^\circ$*

2. Draw an isosceles triangle and label the vertex angle, base angles, legs, base and include the congruent markings.



3. Can the following segment lengths represent sides of a triangle?

a) 3, 4, 5  
 $3 + 4 > 5 \checkmark$   
 $3 + 5 > 4 \checkmark$   
 $4 + 5 > 3 \checkmark$   
yes

b) 1, 4, 9  
 $1 + 4 > 9 \times$   
 $1 + 9 > 4 \checkmark$   
 $4 + 9 > 1 \checkmark$   
no

c) 5, 8, 13  
 $5 + 8 > 13 \times$   
 $8 + 13 > 5 \checkmark$   
 $13 + 5 > 8 \checkmark$   
no

d) 3, 3, 3  
 $3 + 3 > 3 \checkmark$   
~~no~~ yes

4. Two triangle side lengths are given. What lengths does the third side need to be between in order for the three lengths to be sides of a triangle?

a) 4 and 7  
 $4 + 7 = 11$   
 $7 - 4 = 3$

b) 10 and 16  
 $10 + 16 = 26$   
 $16 - 10 = 6$

c) 5 and 12  
 $5 + 12 = 17$   
 $12 - 5 = 7$

$3 < x < 11$

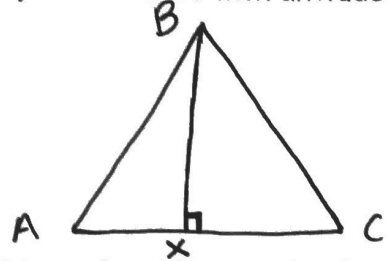
$6 < x < 26$

$7 < x < 17$

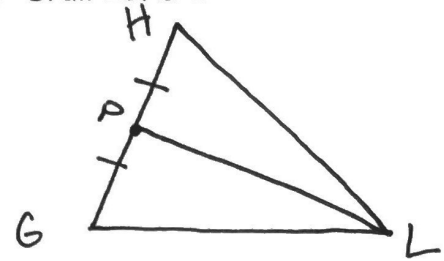
From vertex to opposite side at 90° angle

From vertex to opposite side at midpoint

5. a) Draw  $\triangle ABC$  with altitude  $\overline{BX}$ .

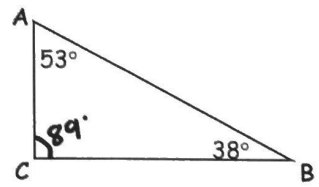


b) Draw  $\triangle GHL$  with median  $\overline{LP}$ .



\* Must show 90° angle / congruent marks \*

6. Name the sides in order from least to greatest.



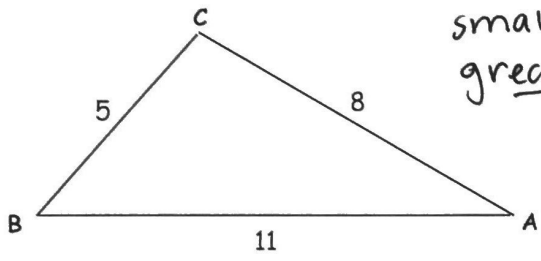
1) Find missing angle

$$\begin{array}{r} 180 \\ - 53 \\ \hline 127 \\ - 38 \\ \hline 89 \end{array}$$

2) smallest angle is across from smallest side

$\overline{AC}, \overline{BC}, \overline{AB}$

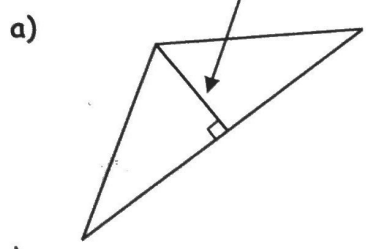
7. Name the angles in order from greatest to least.



smallest angle across from smallest side.  
greatest side - 11 - across from  $\angle C$  ...

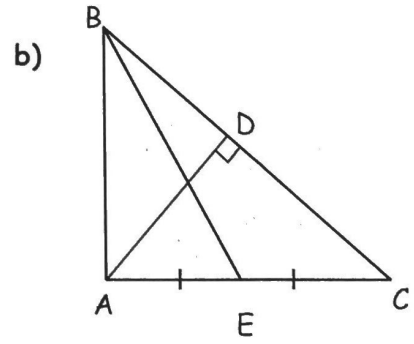
$\angle C, \angle B, \angle A$

8. State whether each indicated segment is a median, altitude, angle bisector, or perpendicular bisector or any combination of each.

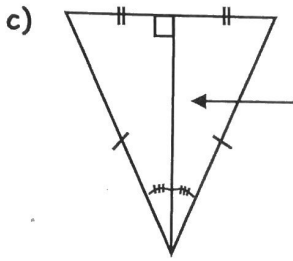


altitude

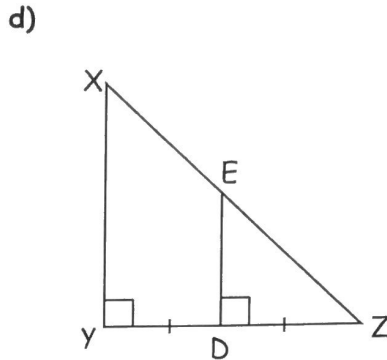
- 90° angle but no congruent marks



AD is a(n) altitude  
BE is a(n) median (congruent marks)



Angle bisector, median, ~~altitude~~ and perpendicular bisector



XY is a(n) altitude  
ED is a(n) perpendicular bisector

9. If the angles of  $\triangle ABC$  have the following measures:  $m\angle A = 3x + 2$ ,  $m\angle B = 5x - 3$ ,  $m\angle C = 6x - 1$ , list the sides of  $\triangle ABC$  from Longest to Shortest.

① Find exact measures of angles by solving for  $x$  + plugging back in.

$$3x + 2 + 5x - 3 + 6x - 1 = 180$$

$$14x - 2 = 180$$

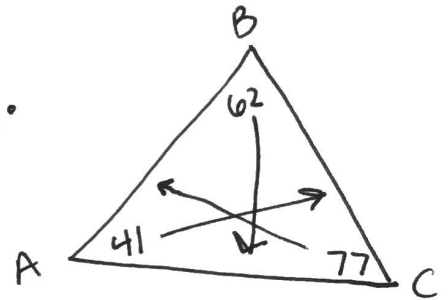
$$14x = 182$$

$$x = 13$$

$$m\angle A = 3(13) + 2 = 41^\circ$$

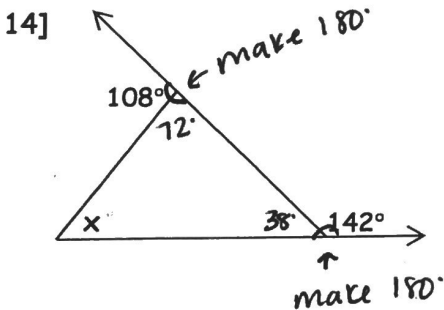
$$m\angle B = 5(13) - 3 = 62^\circ$$

$$m\angle C = 6(13) - 1 = 77^\circ$$



Longest to shortest:  $\overline{AB}$ ,  $\overline{AC}$ ,  $\overline{BC}$

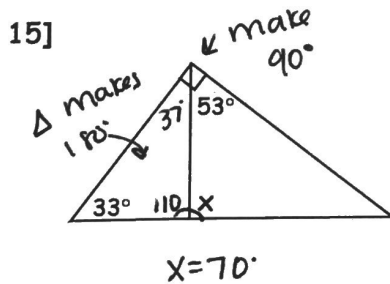
For problems 14 - 25, find the values of the given variables in each of the figures below.



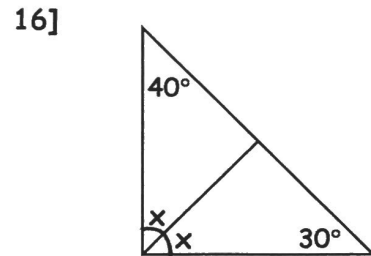
All angles must add up to 180.

$$72 + 38 + x = 180$$

$$x = 70$$



$$x = 70$$



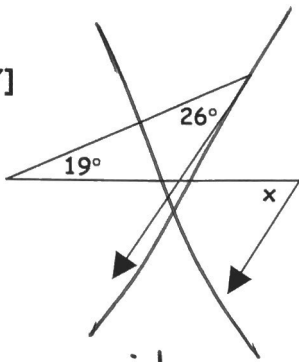
$$40 + 30 + x + x = 180$$

$$70 + 2x = 180$$

$$2x = 110$$

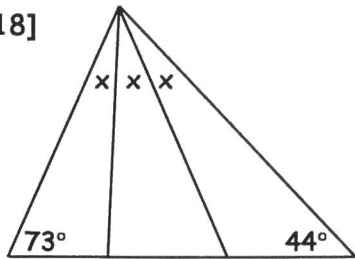
$$x = 55$$

17]



omit

18]



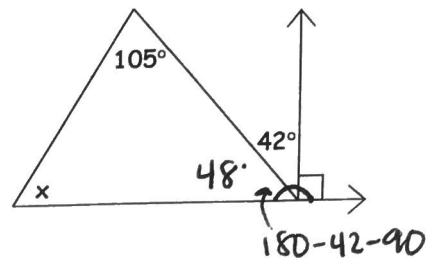
$$73 + 44 + x + x + x = 180$$

$$117 + 3x = 180$$

$$3x = 63$$

$$x = 21$$

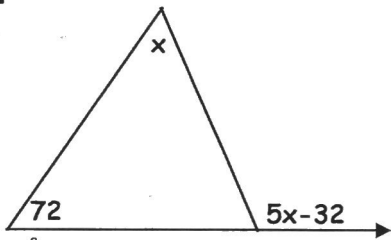
19]



$$105 + 48 + x = 180$$

$$x = 27$$

20]



$$72 + x = 5x - 32$$

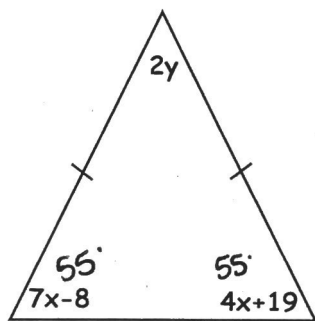
$$+32 \quad +32$$

$$104 + x = 5x$$

$$104 = 4x$$

$$x = 26$$

21]



$$7x - 8 = 4x + 19$$

$$3x = 27$$

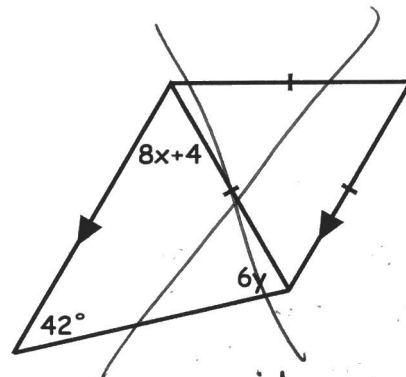
$$x = 9$$

$$180 = 110 + 2y$$

$$70 = 2y$$

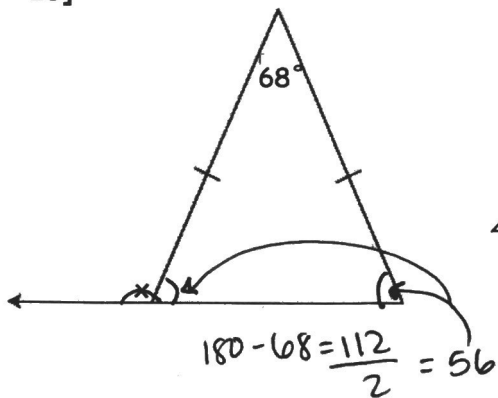
$$35 = y$$

22]



omit

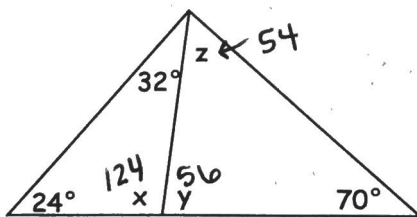
23]



$$x + 56 = 180$$

$$x = 124$$

24]

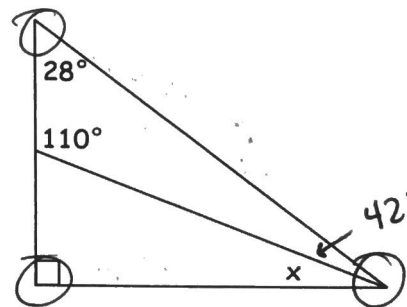


$$x: 180 - 32 - 24$$

$$y: 180 - x$$

$$z: 180 - 70 - y$$

25]



$$180 = 28 + 90 + x + 42$$

$$180 = 160 + x$$

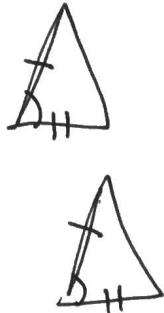
$$20 = x$$

26. List the four methods used to prove that triangles are congruent. Draw pictures representing each method.

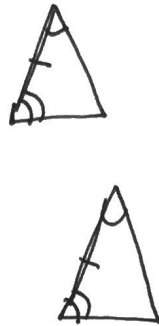
1) SSS



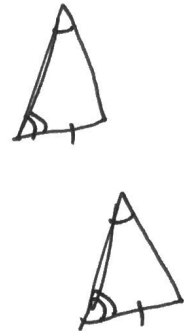
2) SAS



3) ASA

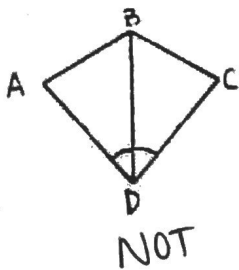


4) AAS

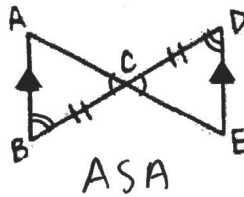


Are the two triangles congruent? If so, name the method (SSS, SAS, AAS, or ASA). If not, write NOT  $\cong$  in the space provided.

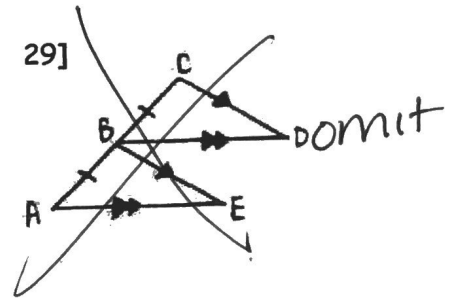
27]



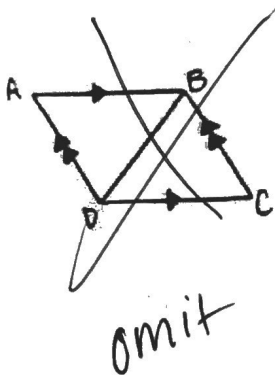
28]



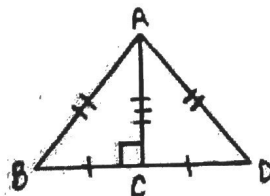
29]



30]

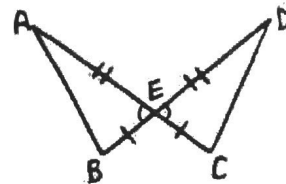


31]



SSS or SAS

32]



SAS