

FBM#1 - REVIEW

Using a property from algebra, justify the following statements.

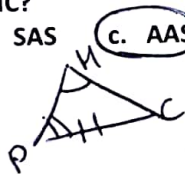
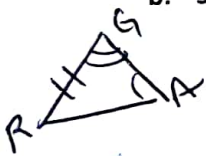
1. $LM = LM$ Reflexive POE
2. If $m < A = \boxed{m < B \text{ and } m < B} = m < C$, then $m < A = m < C$. Transitive POE
3. $2(x + 5) = 2x + 10$ distributive property
4. If $x = 10$ and $3x = y$, then $30 = y$. Substitution
5. If $x = 9$, then $9 = x$. Symmetric
6. If $8x = 80$, then $x = 10$. Division POE
7. If $x = y$, then $x - 3 = y - 3$. Subtraction POE
8. $\angle CAT \cong \angle TAC$ Reflexive POC
9. If $x = 10$, then $x + 5 = 10 + 5$ Addition POE
10. If $6x = 8$, then $12x = 16$ Multiplication POE

11. Given: $\triangle GEO \cong \triangle MTR$. You can conclude that:

- a. ~~$\angle O \cong \angle T$~~ b. $\overline{EG} \cong \overline{TM}$ c. $\angle OGE \cong \angle MRT$ d. $\overline{RM} \cong \overline{OG}$ e. $\overline{GE} \cong \overline{MT}$

12. Given: $\triangle RGA$ and $\triangle PMC$ with $\overline{RG} \cong \overline{PC}$, $\angle A \cong \angle M$, and $\angle G \cong \angle P$. Which method could be used to prove that $\triangle RGA \cong \triangle PMC$?

- b. SSS b. SAS c. **AAS** d. ASA e. Not enough information for a proof.



13. The measures of the angles of a triangle are $2x + 10$, $3x$ and $8x - 25$. Solve for x .

$$2x + 10 + 3x + 8x - 25 = 180$$

$$13x - 15 = 180$$

$$13x = 195$$

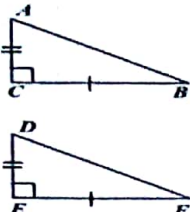
$$\boxed{x = 15}$$

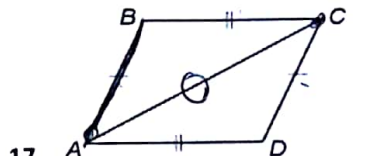
14. If $\triangle TAR \cong \triangle DEW$, the $\angle A \cong \angle E$, $\overline{RT} \cong \overline{WD}$, and $\triangle ART \cong \triangle EWD$


15. Give the image points of the line segment $\triangle ABC$, which of the following would result in similar figures?
A(-3, 7) B(4, 2) C(0, 5)

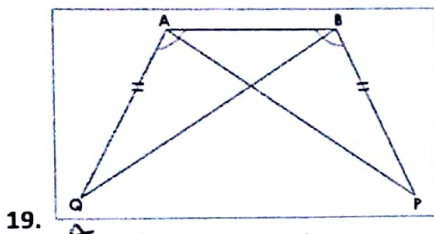
- a. $A'(-3, -7)$ $B'(4, -2)$ $C'(0, -5)$
 b. $A'(7, -3)$ $B'(2, 4)$ $C'(5, 0)$
 c. $A'(-1, 6)$ $B'(6, 1)$ $C'(2, 4)$
 d. $A'(-6, 14)$ $B'(8, 4)$ $C'(0, 10)$

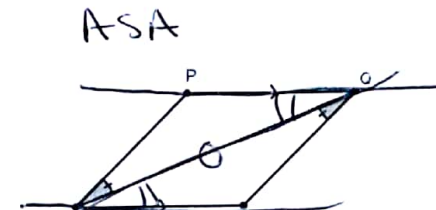
For problems 16 – 21: Determine if the triangles are congruent. MARK your diagrams! If so, write a congruency statement AND state the method of proving them congruent. If not, write "no congruence".

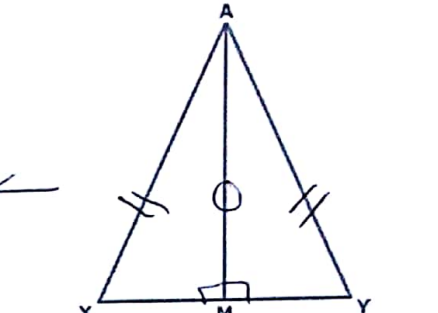
16. 
 SAS
 $\triangle DACB \cong \triangle DEF$

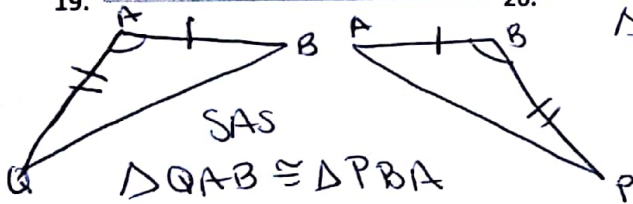
17. 
 SSS
 $\triangle ABC \cong \triangle CDA$

18. 
 AAS
 $\triangle DNKJ \cong \triangle LKM$

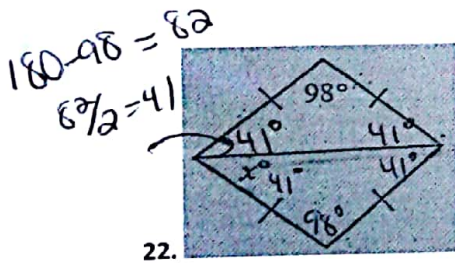
19. 

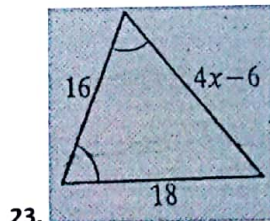
20. 
 ASA
 $\triangle SRPQ \cong \triangle QSR$

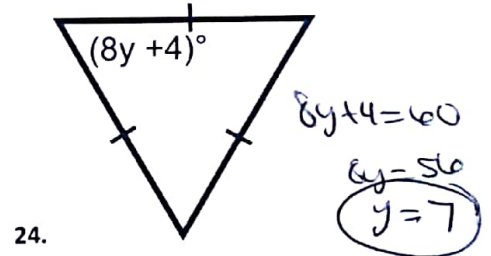
21. 
 Given: $AM \perp XY, AX=AY$
 $\triangle XMA \cong \triangle YMA$
 HL


 SAS
 $\triangle QAB \cong \triangle PBA$

For problems 22-24, find the value of x or y.

22. 
 $180 - 98 = 82$
 $82 / 2 = 41$

23. 
 $4x - 6 = 16$
 $4x = 22$
 $x = 6$

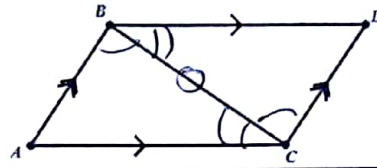
24. 
 $8y + 4 = 60$
 $8y = 56$
 $y = 7$

25. Given: N is the midpoint of \overline{MP} , $\overline{LM} \parallel \overline{OP}$
 Prove: $\triangle LNM \cong \triangle ONP$



Statements	Reasons
① N is the midpoint of \overline{MP}	① Given
② $\overline{MN} \cong \overline{PN}$	② Definition of midpoint
③ $\overline{LM} \parallel \overline{OP}$	③ Given
④ $\angle L \cong \angle O$	④ \parallel lines \rightarrow alt. int. \angle s \cong
⑤ $\angle M \cong \angle P$	⑤ same as 4
⑥ $\triangle LNM \cong \triangle ONP$	⑥ AAS

26. Given: $AB \parallel CD, AC \parallel BD$
 Prove: $\overline{AB} \cong \overline{CD}$



Statements	Reasons
① $\overline{AB} \parallel \overline{CD}$	① Given
② $\overline{AC} \parallel \overline{BD}$	② Given
③ $\angle ECA \cong \angle CED$	③ // lines \rightarrow alt. int. \angle s are \cong
④ $\angle AEC \cong \angle CED$	④ same as 3
⑤ $\overline{EC} \cong \overline{CE}$	⑤ Reflexive Prop
⑥ $\triangle AEC \cong \triangle CED$	⑥ ASA

Stat
 \rightarrow ① $\overline{AB} \cong \overline{CD}$
 Reasons
 ① CPCTC

27. Given that line t is the perpendicular bisector of \overline{JK} and $GK = 9.73$, find $GJ = 9.73$

28. Given that line t is the perpendicular bisector of \overline{JK} , $JG = 2x + 7$ and $KG = 5x - 17$, find KG

$$2x + 7 = 5x - 17$$

$$24 = 3x$$

$$8 = x$$

$$KG = 5(8) - 17 = 40 - 17 = 23$$

29. Given that $GJ = 70.2$, $HK = 17.5$, and $GK = 70.2$, find JK .

$$JK = 2(17.5) = 35$$

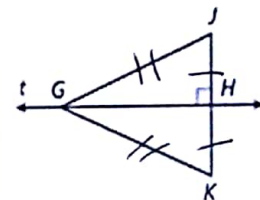
30. Given that line t is the perpendicular bisector of \overline{JK} , if $JH = 2x - 1$ and $GK = 2x + 10$, find JH

$$4x - 2 = 2x + 10$$

$$2x = 12$$

$$x = 6$$

$$JH = 2(6) - 1 = 12 - 1 = 11$$



31. Given that $m\angle RSQ = m\angle TSQ$ and $TQ = 1.3$, find $QR = 1.3$

32. Given that $m\angle RSQ = 58^\circ$, $RQ = 49$ and $TQ = 49$, find $m\angle RST$

$$m\angle RST = (58)(2) = 116^\circ$$

33. Given that $RQ = TQ$, $m\angle QSR = (2a + 48)^\circ$ and $m\angle QST = (6a + 40)^\circ$, find $m\angle RST$

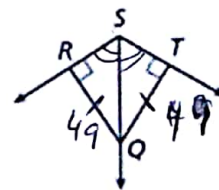
$$2a + 48 = 6a + 40$$

$$8 = 4a$$

$$2 = a$$

$$m\angle QSR = 2(2) + 48 = 4 + 48 = 52$$

$$m\angle RST = (52)(2) = 104^\circ$$



34. HI = ? 9.1

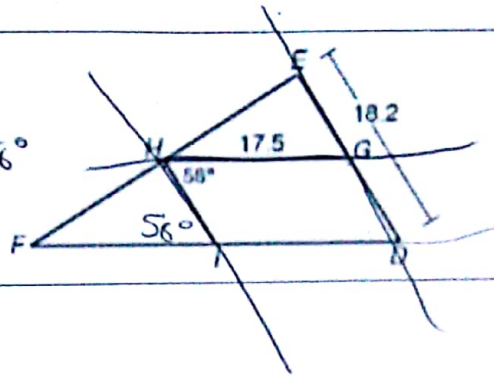
35. GE = ? 9.1

36. $m\angle HGD = ? 122^\circ$

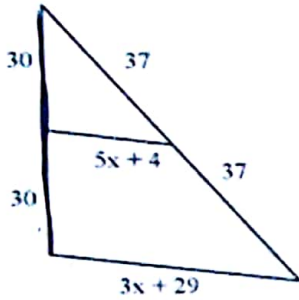
37) DF = ? 35

38) $m\angle HIF = ? 58^\circ$

39) $m\angle D = ? 56^\circ$



40) Solve for x



$$\frac{60}{3x+29} = \frac{30}{5x+4}$$

$$60(5x+4) = 30(3x+29)$$

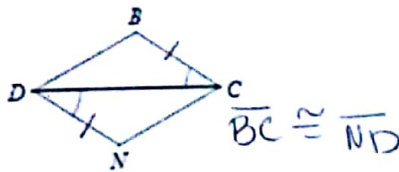
$$300x + 240 = 90x + 870$$

$$210x = 630$$

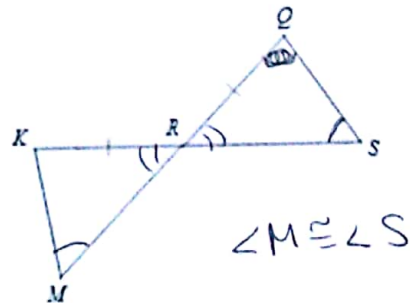
$$x = 3$$

State what additional information is required in order to know that the triangles are congruent for the reason given.

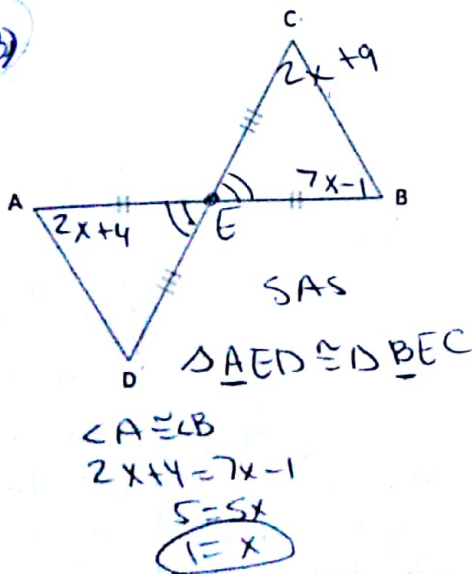
41) SAS



42) AAS



43)



If $m\angle A = 2x + 4$, $m\angle B = 7x - 1$ and $m\angle C = 2x + 9$, find measure of angles A, B, C, and D

$$m\angle A = 2(1) + 4$$

$$= 2 + 4$$

$$m\angle A = 6$$

$$m\angle B = 7(1) - 1$$

$$= 7(1) - 1$$

$$= 7 - 1$$

$$= 6$$

$$m\angle C = 2x + 9$$

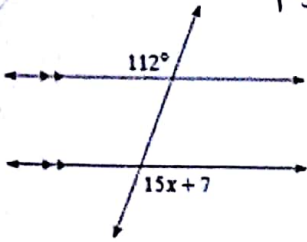
$$= 2(1) + 9$$

$$= 2 + 9$$

$$= 11^\circ$$

Solve for x.

44)

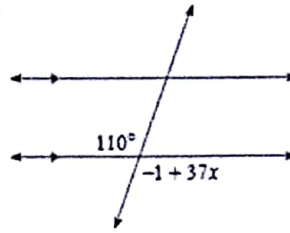


$$15x + 7 = 112$$

$$15x = 105$$

$$x = 7$$

45)

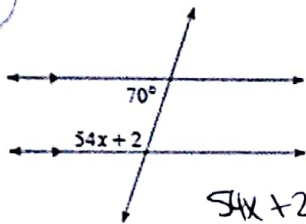


$$-1 + 37x = 110$$

$$37x = 111$$

$$x = 3$$

46)



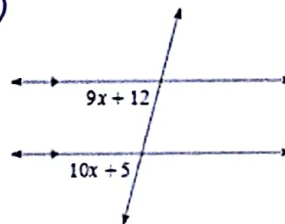
$$54x + 2 + 70 = 180$$

$$54x + 72 = 180$$

$$54x = 108$$

$$x = 2$$

47)

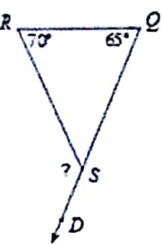


$$9x + 12 = 10x + 5$$

$$7 = x$$

Find the measure of each angle indicated.

48)



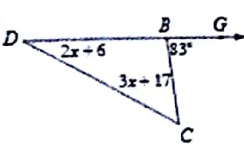
$$\angle DSR = \angle R + \angle Q$$

$$= 70 + 65$$

$$\angle DSR = 135$$

Solve for x.

49)



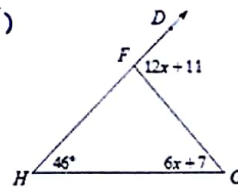
$$2x + 6 + 3x + 17 = 83$$

$$5x + 23 = 83$$

$$5x = 60$$

$$x = 12$$

50)



$$46 + 6x + 7 = 12x + 11$$

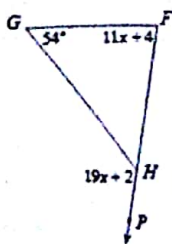
$$6x + 53 = 12x + 11$$

$$42 = 6x$$

$$7 = x$$

Find the measure of the angle indicated.

51) Find $m\angle PHG$.



$$54 + 11x + 4 = 19x + 2$$

$$11x + 58 = 19x + 2$$

$$56 = 8x$$

$$7 = x$$

$$m\angle PHG = 19(7) + 2$$

$$= 135^\circ$$

Solve each proportion.

$$49) \frac{m+5}{3m-10} = -\frac{2}{8}$$

$$-8(m+5) = 2(3m-10)$$

$$-8m - 40 = 6m - 20$$

$$-40 = 14m - 20$$

$$-20 = 14m$$

$$-\frac{20}{14} = m$$

$$-\frac{10}{7} = m$$

$$53) \frac{9}{x+5} = \frac{2}{3x-4}$$

$$9(3x-4) = 2(x+5)$$

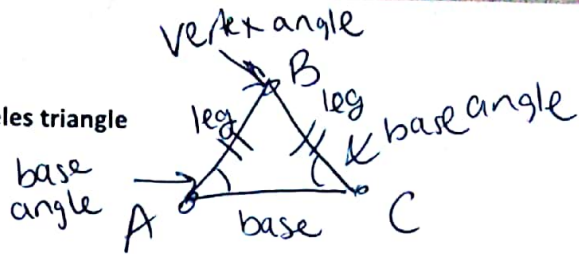
$$27x - 36 = 2x + 10$$

$$25x - 36 = 10$$

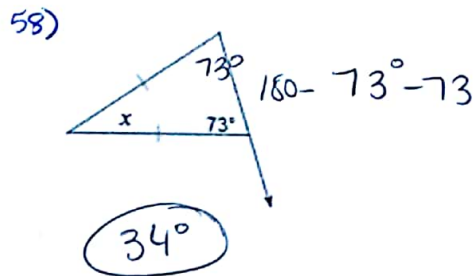
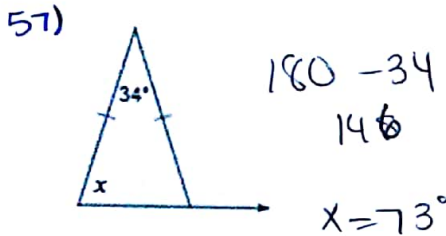
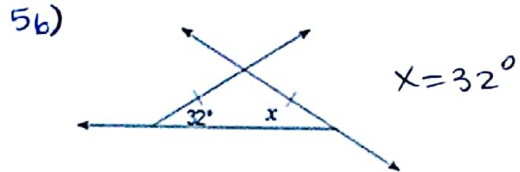
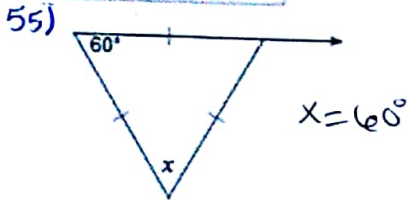
$$25x = 46$$

$$x = \frac{46}{25}$$

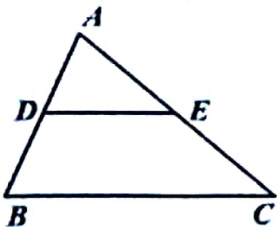
54) Draw and label an isosceles triangle



Find the value of x .



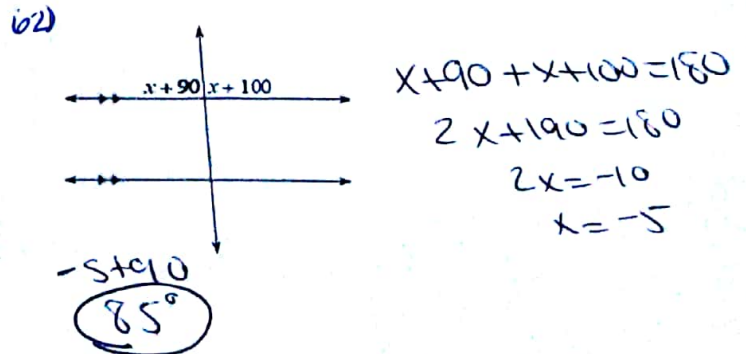
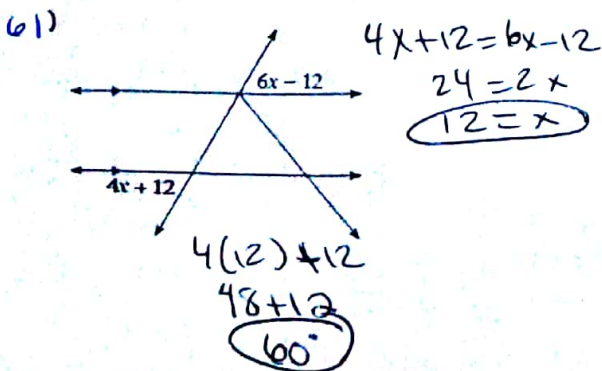
59) If a triangle is equilateral, it is also equiangular. This means that each angle is 60° degrees.



60) IF DE is the midsegment of Triangle ABC, list everything you know about the above diagram.

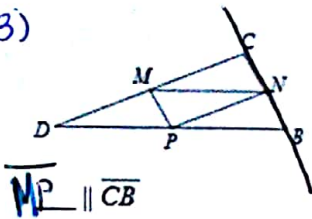
- $2(DE) = BC$
- $\overline{DE} \parallel \overline{BC}$
- $\angle ADE \cong \angle ABC$
- $\angle AED \cong \angle ACB$

Find the measure of the angle indicated in bold.

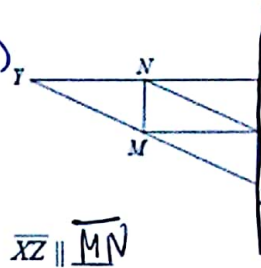


In each triangle, M, N, and P are the midpoints of the sides. Name a segment parallel to the one given.

(63)

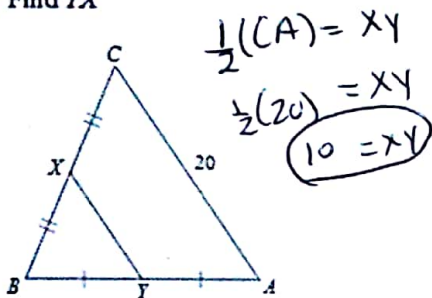


(64)

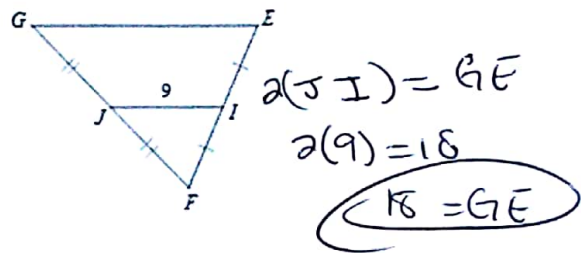


Find the missing length indicated.

(65) Find XY

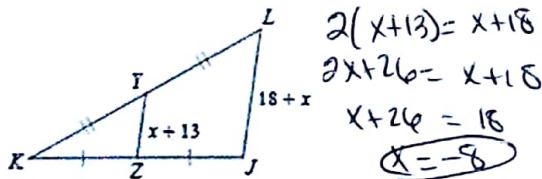


(66) Find EG

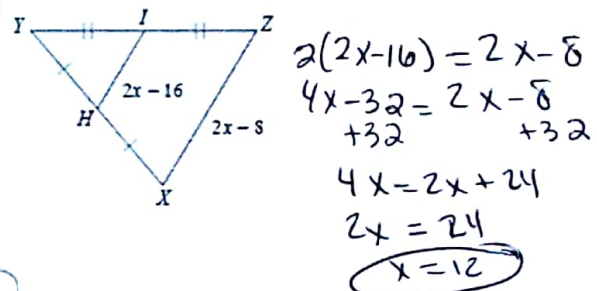


Solve for x .

(67)

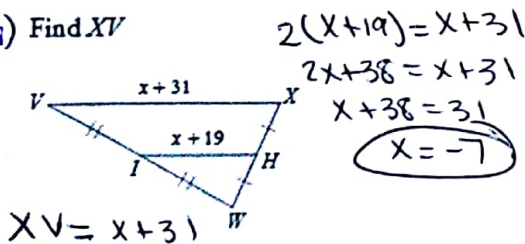


(68)

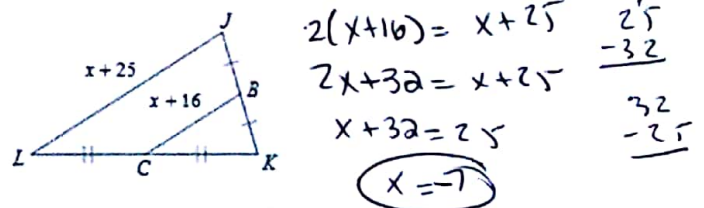


Find the missing length indicated.

(69) Find XV

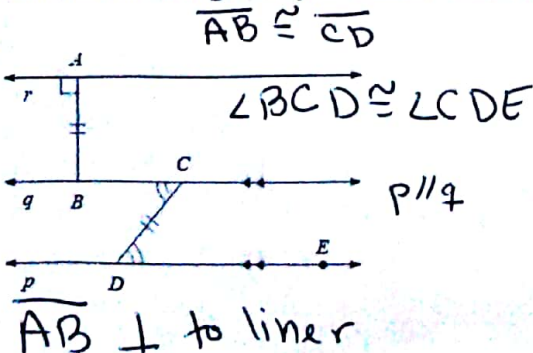


(70) Find JL

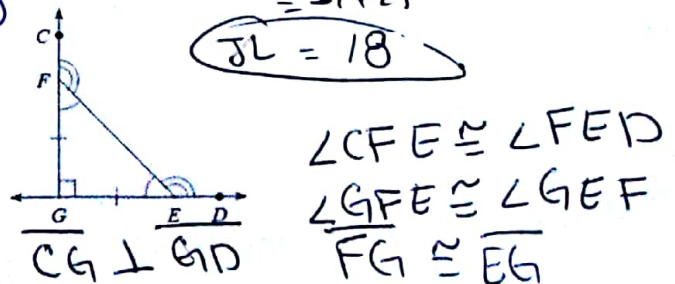


List all information given by the marks on the diagram.

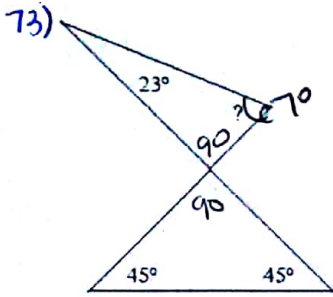
(71)



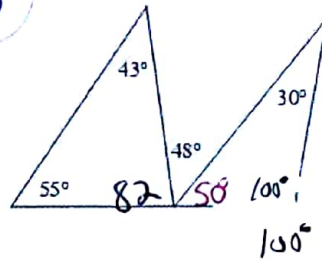
(72)



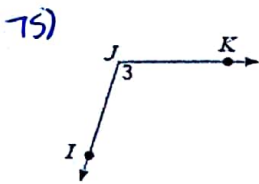
Find the measure of each angle indicated.



74)

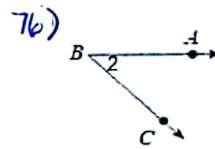


Name each angle in four ways.



Choose the wrong name for this angle:

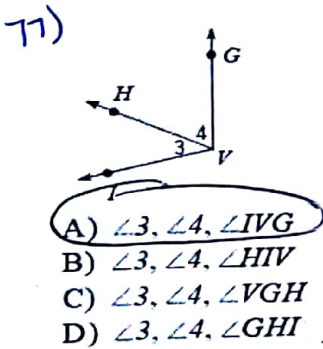
- A) $\angle 3$
- B) $\angle J$
- C) $\angle K$
- D) $\angle KJI$



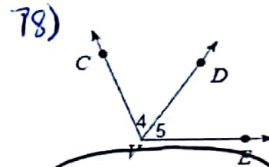
Choose the wrong name for this angle:

- A) $\angle BCA$
- B) $\angle ABC$
- C) $\angle B$
- D) $\angle 2$

Name all the angles that have V as a vertex.

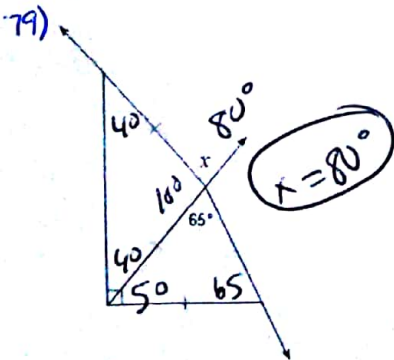


- A) $\angle 3, \angle 4, \angle IVG$
- B) $\angle 3, \angle 4, \angle HIV$
- C) $\angle 3, \angle 4, \angle VGH$
- D) $\angle 3, \angle 4, \angle GHI$

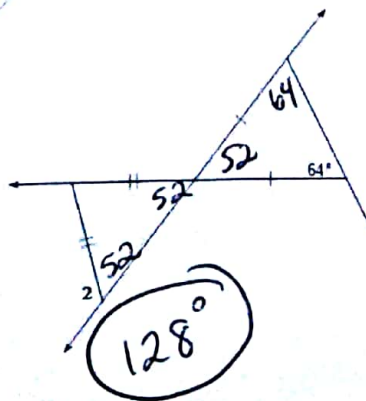


- A) $\angle 4, \angle 5, \angle CVE$
- B) $\angle 4, \angle 5, \angle DCV$
- C) $\angle 4, \angle 5, \angle EDC$
- D) $\angle 4, \angle 5, \angle VED$

Find the value of x.



80) $m\angle 2 = 18x + 2$



$128 = 18x + 2$
 $126 = 18x$
 $7 = x$