

FBM#1 - REVIEW

Using a property from algebra, justify the following statements.

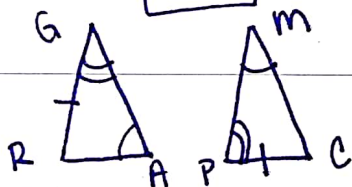
1. $LM = LM$ Reflexive
2. If $m < A = m < B$ and $m < B = m < C$, then $m < A = m < C$. Transitive
3. $2(x + 5) = 2x + 10$ Distributive
4. If $x = 10$ and $3x = y$, then $30 = y$. Substitution
5. If $x = 9$, then $9 = x$. Symmetric
6. If $8x = 80$, then $x = 10$. Division
7. If $x = y$, then $x - 3 = y - 3$. Subtraction
8. $\angle CAT \cong \angle TAC$ reflexive
9. If $x = 10$, then $x + 5 = 10 + 5$ addition
10. If $6x = 8$, then $12x = 16$ multiplication

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 .

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

$$13x - 15 = 180$$

$$13x = 195$$

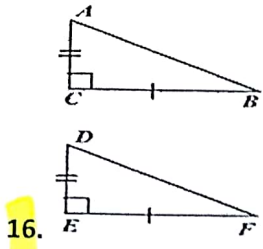
$$x = 15$$

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

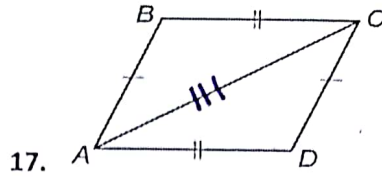
15. Give the image points of the line segment $\triangle ABC$, which of the following would result in similar figures?
 $A(-3, 7)$ $B(4, 2)$ $C(0, 5)$

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

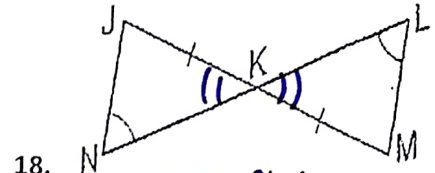
For problems 16 – 21: Determine if the triangles are congruent. MARK your diagrams! If so, write a congruency statement AND state the method of proving them congruent. If not, write "no congruence".



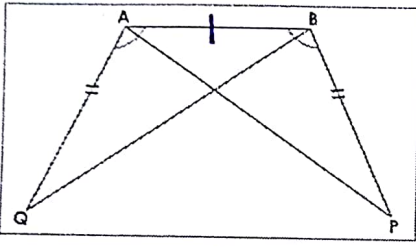
16. $\triangle ABC \cong \triangle DFE$
by SAS



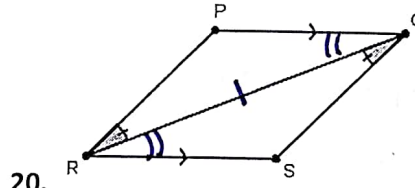
17. $\triangle ABC \cong \triangle CDA$
by SSS



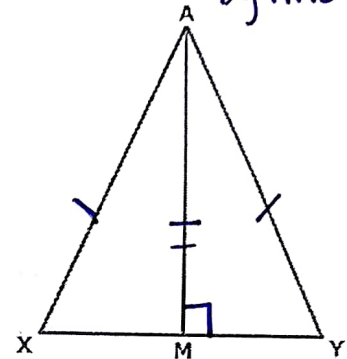
18. $\triangle JNK \cong \triangle LMK$
by AAS



19. $\triangle QAB \cong \triangle PBA$
by SAS

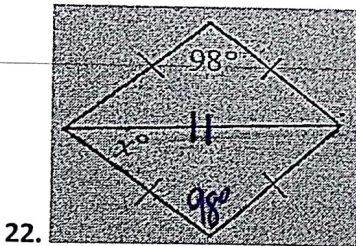


20. $\triangle RPQ \cong \triangle QSR$
by ASA

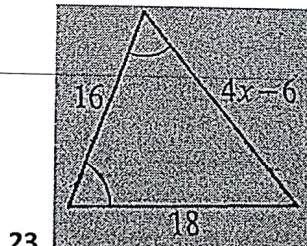


21. Given: $AM \perp XY, AX=AY$
 $\triangle AXM \cong \triangle AYM$
by HL

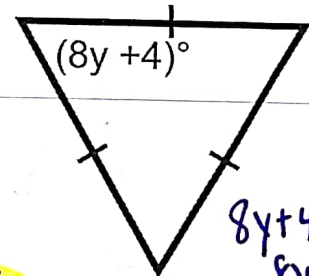
For problems 22-24, find the value of x or y.



22. $180 - 98 = 82$
 $\frac{82}{2} = 41^\circ$



23. $4x - 6 = 18$
 $4x = 24$
 $x = 6$

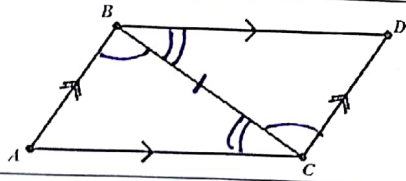


24. $8y + 4 = 60$
 $8y = 56$
 $y = 7$

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 midpt of \overline{MP}	1) Given
2) $\overline{LM} \parallel \overline{OP}$	2) Given
3) $\overline{MN} \cong \overline{PN}$	3) def. of midpt
4) $\angle L \cong \angle O$	4) alt. int. \angle s \cong
5) $\angle M \cong \angle P$	5) alt. int. \angle s \cong
6) $\triangle LNM \cong \triangle ONP$	6) AAS

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



Statements

- 1) $\overline{AB} \parallel \overline{CD}$
- 2) $\overline{AC} \parallel \overline{BD}$
- 3) $\angle ABC \cong \angle DCB$
- 4) $\angle DBC \cong \angle ACB$
- 5) $\overline{BC} \cong \overline{BC}$
- 6) $\triangle ABC \cong \triangle DCB$
- 7) $\overline{AB} \cong \overline{CD}$

Reasons

- 1) Given
- 2) Given
- 3) alt. int. \angle s \cong
- 4) alt. int. \angle s \cong
- 5) reflexive
- 6) ASA
- 7) 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

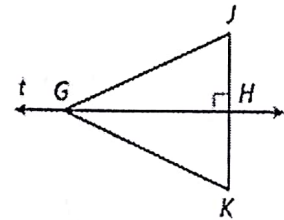
$$2x + 7 = 5x - 17$$

$$24 = 3x$$

$$x = 8$$

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

$$= 23$$



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

$$17.5 \times 2 = 35$$

30. Given that line t is the perpendicular bisector of \overline{JK} , if $JH = 2x - 1$, $GJ = 4x - 2$ and $GK = 2x + 10$, find JH

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

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

$$2x = 12$$

$$x = 6$$

$$= 11$$

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 $m\angle RST$

$$58 \times 2 = 116^\circ$$

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

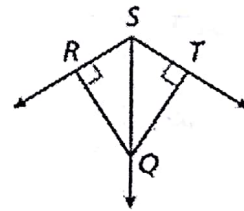
$$2a + 48 = 6a + 40$$

$$8 = 4a$$

$$a = 2$$

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

$$m\angle RST = 52 \cdot 2 = 104^\circ$$



34. HI = ? 9.1

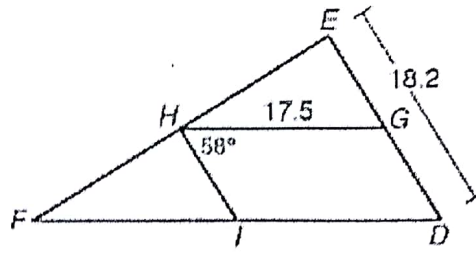
35. GE = ? 9.1

36. $m\angle HGD = ?$
122°

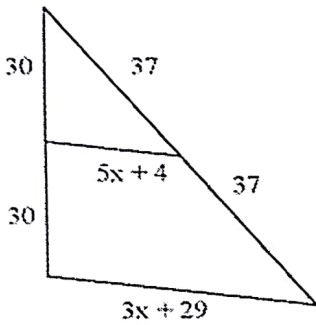
37) DF = ? 35

38) $m\angle HIF = ?$
58°

39) $m\angle D = ?$
58°



40) Solve for x



$$2(5x + 4) = 3x + 29$$

$$10x + 8 = 3x + 29$$

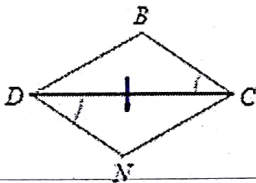
$$7x = 21$$

$$x = 3$$

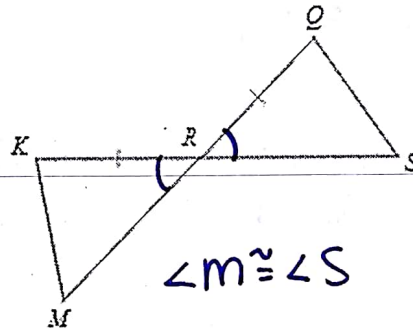
State what additional information is required in order to know that the triangles are congruent for the reason given.

41) SAS

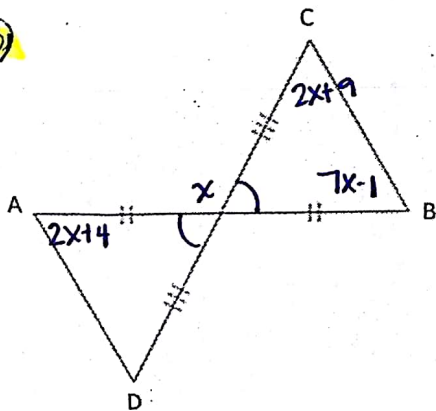
$$\overline{BC} \cong \overline{DN}$$



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

$$2x + 4 = 7x - 1$$

$$5 = 5x$$

$$x = 1$$

$$\angle A = 6^\circ$$

$$\angle B = 6^\circ$$

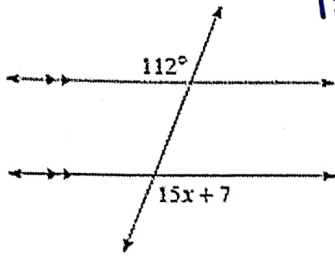
$$\angle C = 11^\circ$$

$$\angle D = 11^\circ$$

$$\triangle AXD \cong \triangle BXC$$

Solve for x.

44)

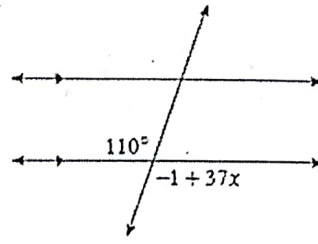


$$15x + 7 = 112$$

$$15x = 105$$

$$x = 7$$

45)

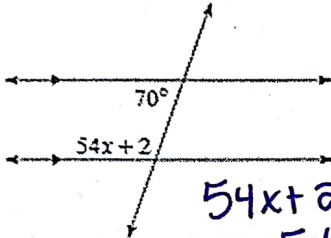


$$110 = -1 + 37x$$

$$111 = 37x$$

$$x = 3$$

46)



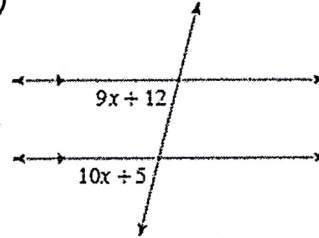
$$54x + 2 + 70 = 180$$

$$54x + 72 = 180$$

$$54x = 108$$

$$x = 2$$

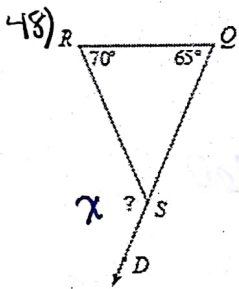
47)



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

$$7 = x$$

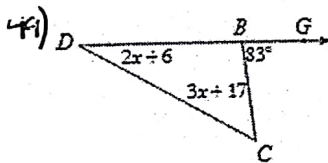
Find the measure of each angle indicated.



$$70 + 65 = x$$

$$x = 135^\circ$$

Solve for x.



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

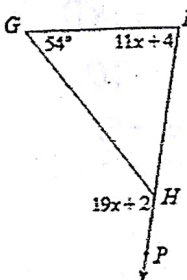
$$5x + 23 = 83$$

$$5x = 60$$

$$x = 12$$

Find the measure of the angle indicated.

51) Find $m\angle PHG$.



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

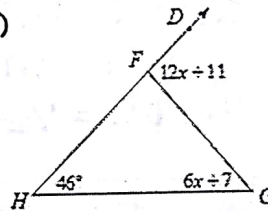
$$11x + 58 = 19x + 2$$

$$56 = 8x$$

$$x = 7$$

$$19(7) + 2 = 133 + 2 = 135^\circ$$

50)



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

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

$$42 = 6x$$

$$x = 7$$

Solve each proportion.

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

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

$$14m = -20$$

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

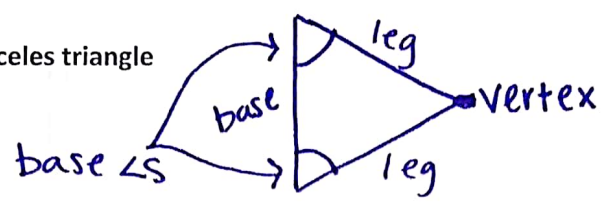
53) $\frac{9}{x+5} = \frac{2}{3x-4}$

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

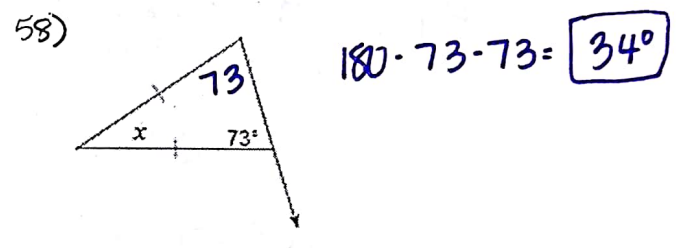
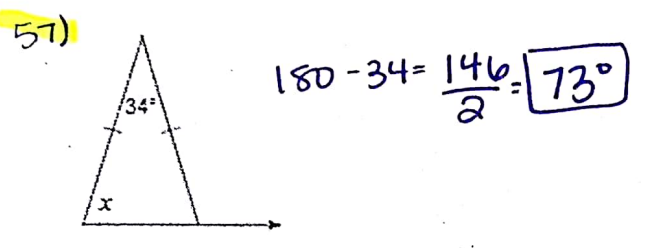
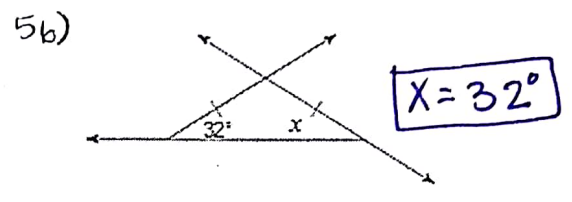
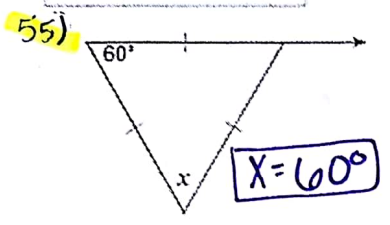
$$25x = 46$$

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

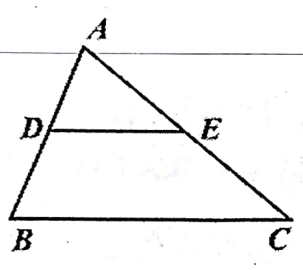
54) Draw and label an isosceles triangle



Find the value of x.



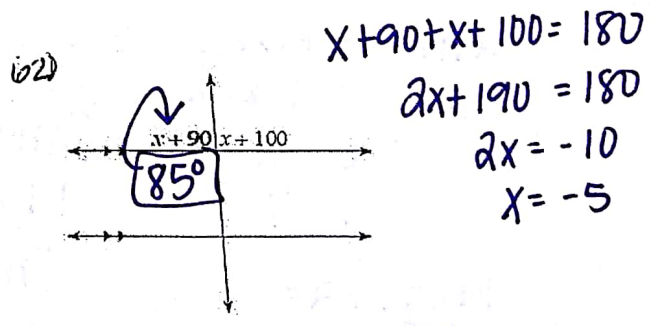
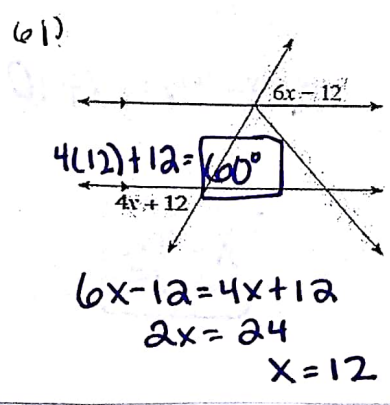
59) If a triangle is equilateral, it is also equiangular. This means that each angle is 60 degrees.



- 1) $\overline{DE} \parallel \overline{BC}$
- 2) D is midpt of AB
- 3) E is midpt of AC
- 4) $DE = \frac{1}{2} BC$

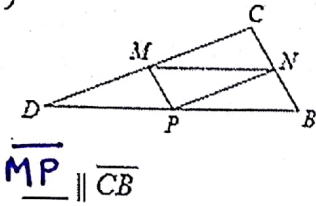
60) IF DE is the midsegment of Triangle ABC, list everything you know about the above diagram.

Find the measure of the angle indicated in bold.



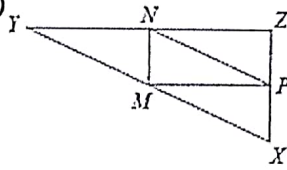
In each triangle, M, N, and P are the midpoints of the sides. Name a segment parallel to the one given.

(63)



$\overline{MP} \parallel \overline{CB}$

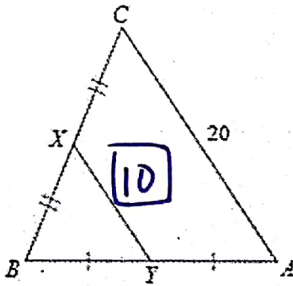
(64)



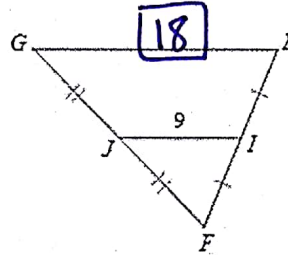
$\overline{XZ} \parallel \overline{MN}$

Find the missing length indicated.

(65) Find YX

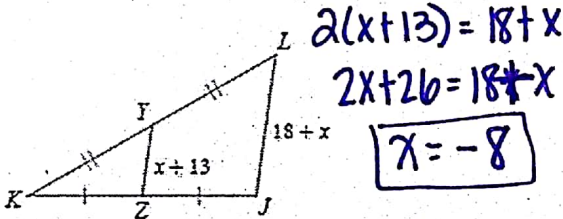


(66) Find EG



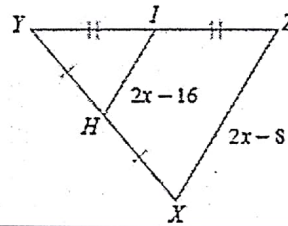
Solve for x.

(67)



$2(x+13) = 18+x$
 $2x+26 = 18+x$
 $x = -8$

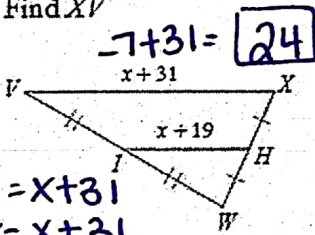
(68)



$2(2x-16) = 2x-8$
 $4x-32 = 2x-8$
 $2x = 24$
 $x = 12$

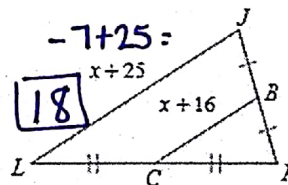
Find the missing length indicated.

(69) Find XV



$2(x+19) = x+31$
 $2x+38 = x+31$
 $x = -7$

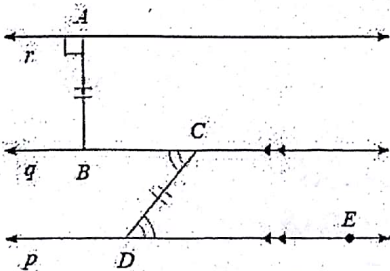
(70) Find JL



$2(x+16) = x+25$
 $2x+32 = x+25$
 $x = -7$

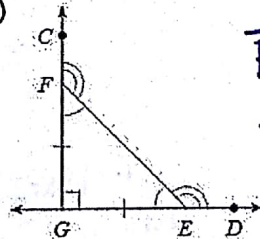
List all information given by the marks on the diagram.

(71)



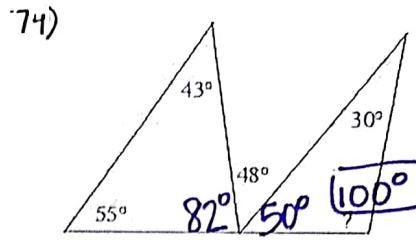
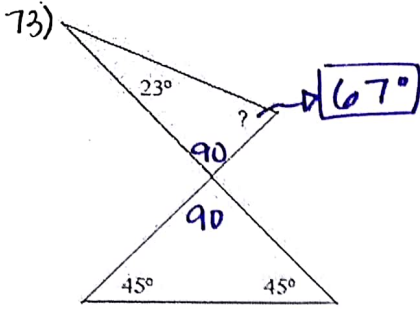
$\overline{AB} \perp$ line r , $\overline{AB} \cong \overline{CD}$, $\angle BCD \cong \angle EDC$
 line q \parallel line p

(72)

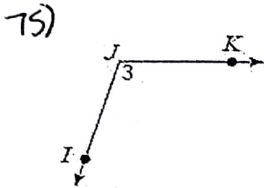


$\overline{FG} \cong \overline{EG}$
 $\angle CFE \cong \angle DEF$
 $\angle GFE \cong \angle GEF$
 $\overline{FG} \perp \overline{GE}$

Find the measure of each angle indicated.

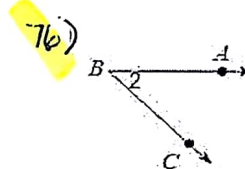


Name each angle in four ways.



Choose the wrong name for this angle:

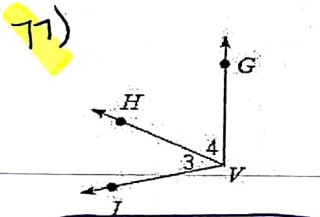
- A) $\angle 3$ B) $\angle J$
 C) $\angle K$ D) $\angle KJI$



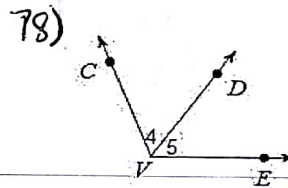
Choose the wrong name for this angle:

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

Name all the angles that have V as a vertex.

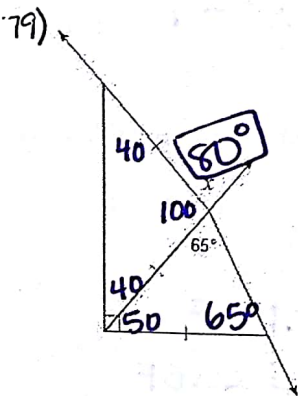


- A) $\angle 3, \angle 4, \angle IVG$
 B) $\angle 3, \angle 4, \angle HIV$
 C) $\angle 3, \angle 4, \angle VGH$
 D) $\angle 3, \angle 4, \angle GHI$



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

