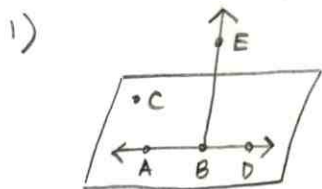


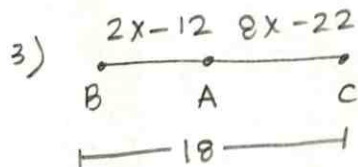
Fall Final Review - Key



- A, B, C, and D are coplanar.
- A, B, and D are collinear

2) Notation for length between A and B?

$$\boxed{AB}$$



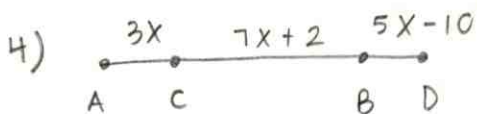
$$AB + AC = BC$$

$$2x - 12 + 8x - 22 = 18$$

$$10x - 34 = 18$$

$$10x = 52$$

$$\boxed{x = 5.2}$$



$$AB = CD$$

$$3x + 7x + 2 = 7x + 2 + 5x - 10$$

$$3x = 5x - 10$$

$$-2x = -10$$

$$x = 5$$

$$BD = 5(5) - 10$$

$$\boxed{BD = 15}$$

5) Distance: $(-8, 6)$ and $(-2, 13)$

$$d = \sqrt{(-2 - -8)^2 + (13 - 6)^2}$$

$$= \sqrt{(6)^2 + (7)^2}$$

$$= \sqrt{36 + 49} = \sqrt{85}$$

$$\boxed{d = \sqrt{85}}$$

6) midpoint of \overline{GH} .

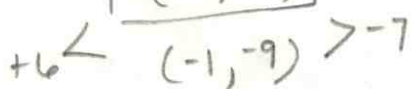
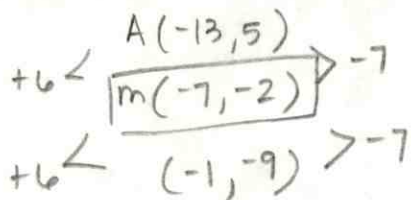
$$G(4, 8), H(-12, -20)$$

$$m\left(\frac{4 + -12}{2}, \frac{8 + -20}{2}\right)$$

$$m\left(\frac{-8}{2}, \frac{-12}{2}\right)$$

$$\boxed{m(-4, -6)}$$

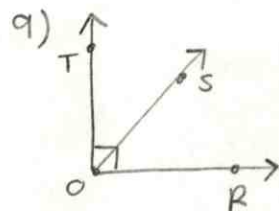
7) Find the other endpoint.



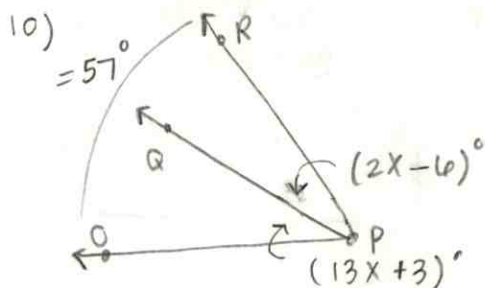
$$\boxed{(-1, -9)}$$

8) m is a mp of \overline{AB} .

- $AM = MB$
- $\overline{AM} \cong \overline{MB}$



- $\angle TOS$ and $\angle SOR$ are complementary and acute angles



$$m\angle RPQ + m\angle QPO = m\angle RPO$$

$$2x - 6 + 13x + 3 = 57$$

$$15x - 3 = 57$$

$$15x = 60$$

$$x = 4$$

$$m\angle RPQ = 2(4) - 6$$

$$\boxed{m\angle RPQ = 2^\circ}$$

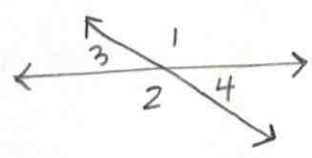
$$m\angle OPQ = 13(4) + 3$$

$$\boxed{m\angle OPQ = 55^\circ}$$

$$\text{or } 57 - 2 = 55$$

11) If the non shared sides of two adjacent angles form a pair of opposite rays, then the angles are a linear pair.

12) $\angle 1$ and $\angle 2$ are vertical angles.
 $\angle 1$ and $\angle 3$ are linear pairs.



13) $\angle A + \angle B = 90^\circ$
 $\angle B = 4(\angle A)$

$$\angle A + 4(\angle A) = 90^\circ$$

$$5(\angle A) = 90^\circ$$

$$\boxed{m\angle A = 18^\circ}$$

14) $m\angle A + m\angle C = 180^\circ$
 $m\angle B + m\angle C = 180^\circ$

$$52 + m\angle C = 180^\circ$$

$$m\angle C = 128^\circ$$

$$m\angle A + 128^\circ = 180^\circ$$

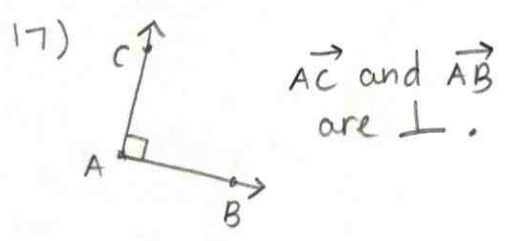
$$\boxed{m\angle A = 52^\circ}$$

or $m\angle A = m\angle B$
 by \cong Supp. Thm.

15) $-\frac{9}{2}, -4, -\frac{7}{2}, -3, \dots$?

$$\boxed{-\frac{5}{2}}$$

16) converse: $Q \rightarrow P$
 if we do not go outside,
 then it is cold.



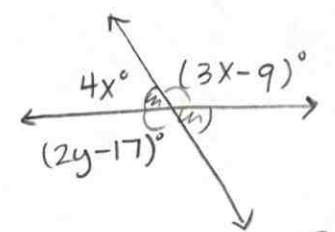
18) substitution

- 19) A. Symmetric
 B. Reflexive
 C. Substitution
 D. Substitution

20) reflexive

21) $m\angle 1 + m\angle 2 = 180^\circ$
 $m\angle 1 + 57^\circ = 180^\circ$
 $\boxed{m\angle 1 = 123^\circ}$

22)



$$4x + 3x - 9 = 180$$

$$7x = 189$$

$$\boxed{x = 27}$$

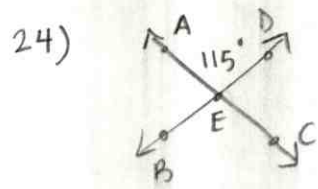
$$2y - 17 = 3(27) - 9$$

$$2y - 17 = 72$$

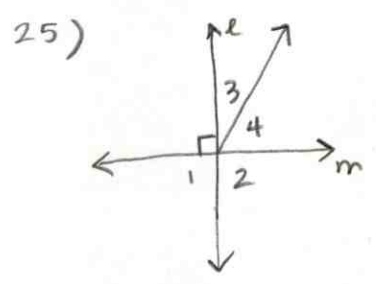
$$2y = 89$$

$$\boxed{y = 44.5}$$

23) $m\angle 1 + m\angle 2 = 180^\circ$
 $m\angle 1 = m\angle 3$
 $m\angle 1 + 74 = 180^\circ$
 $m\angle 1 = 106^\circ$
 $\boxed{m\angle 3 = 106^\circ}$



- $\angle BEC$ and $\angle CED$ are adjacent.
- $m\angle BEC = 115^\circ$
- $m\angle AEB = 65^\circ$
- $\angle AEB$ and $\angle DEC$ are vertical \angle s.

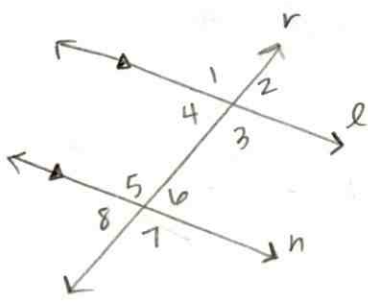


- $\angle 1 \cong \angle 2$
- $m\angle 2 = 90^\circ$
- $m\angle 3 + m\angle 4 = 90^\circ$
- $m\angle 1 = m\angle 3 + m\angle 4$

26) skew

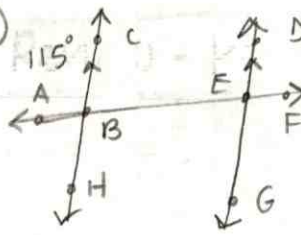
27) 1

28)



- $\angle 8 \cong \angle 2$
- $\angle 2 \cong \angle 6$
- $\angle 5 \cong \angle 3$

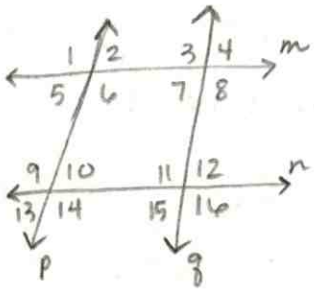
29)



- $\angle ABH$ and $\angle AEG$ are CA
- $\angle HBF$ and $\angle AED$ are AI

30) $9x = 90$

$$\boxed{x = 10}$$

31) $\cong \angle 4$?

- $\angle 4 \cong \angle 12$ CA
- $\angle 4 \cong \angle 15$ AE
- $\angle 4 \cong \angle 7$ VA

34) CAE

38) $(0, 4) m = \frac{1}{2}$

$$y - 4 = \frac{1}{2}(x - 0)$$

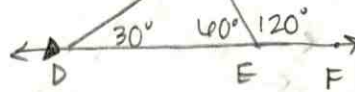
$$y - 4 = \frac{1}{2}x$$

$$\boxed{y = \frac{1}{2}x + 4}$$

41) slope of \perp to $2x + y = 9$

$$y = -2x + 9$$

$$\boxed{m = \frac{1}{2}}$$

32) 

$$\boxed{m \angle ABD = 30^\circ \text{ by AI}}$$

35) $5x + 30 + 80 = 180$

$$5x + 110 = 180$$

$$5x = 70$$

$$\boxed{x = 14}$$

39) parallel: $(0, 1) m = \frac{2}{3}$

$$y - 1 = \frac{2}{3}(x - 0)$$

$$y - 1 = \frac{2}{3}x$$

$$\boxed{y = \frac{2}{3}x + 1}$$

40) parallel: $(-5, -8), m = 7$

$$y - -8 = 7(x - -5)$$

$$y + 8 = 7x + 35$$

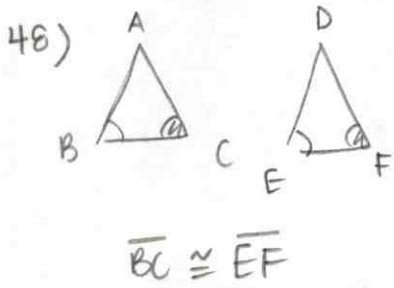
$$\boxed{y = 7x + 27}$$

43) obtuse isosceles

44) $\overline{QR} \cong \overline{YZ}$

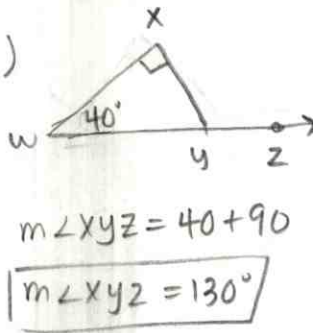
45) $x - 8 = 8$
 $x = 16$ by SSS

46) $\triangle GHJ \cong \triangle IHJ$ by SAS 47) $\angle A \cong \angle E$

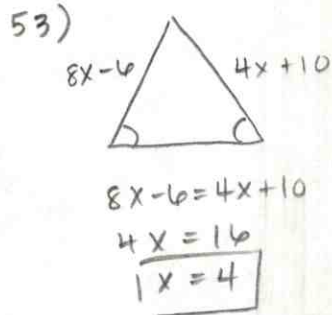
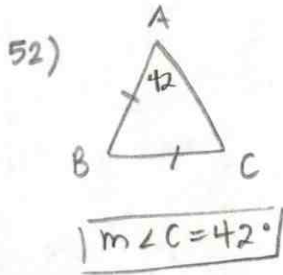
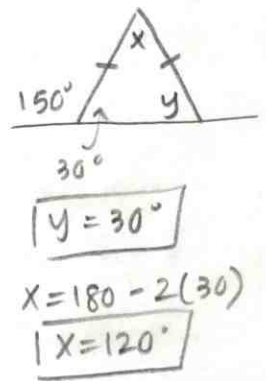


49) SAS

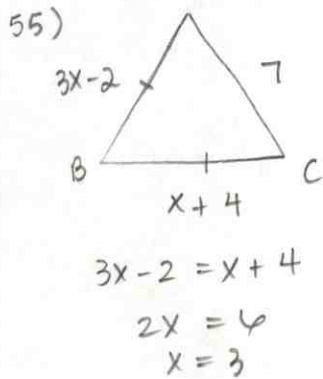
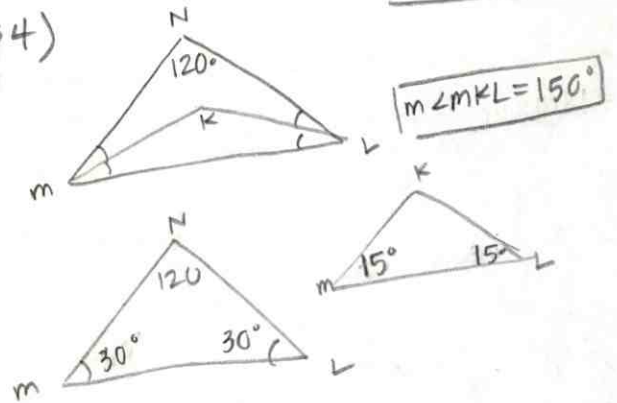
50)



51)



54)

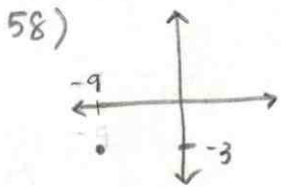


$AB = 3(3) - 2$
 $AB = 7$
 $BC = 3 + 4$
 $BC = 7$

Equilateral

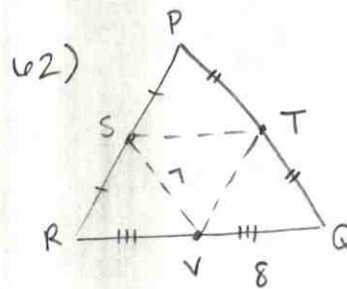
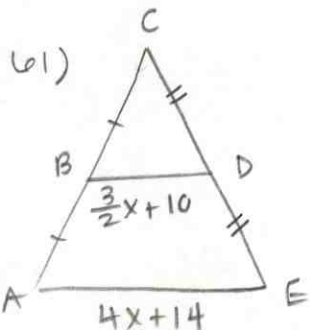
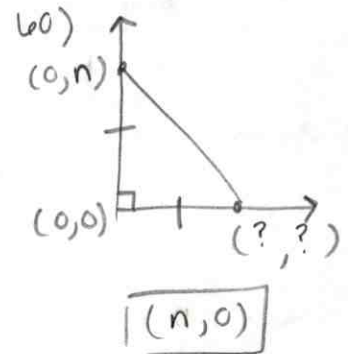
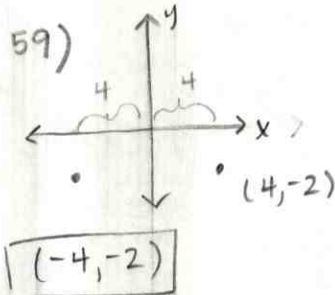
56) Rotation

57) $(10, 7) (x, y) \rightarrow (x-3, y-1)$
 $(x, y) \rightarrow (10-3, 7-1)$
 $(7, 6)$



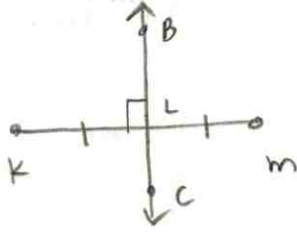
Rotate 90° clockwise -

$(-3, 9)$



$PQ = 2(7)$
 $PQ = 14$

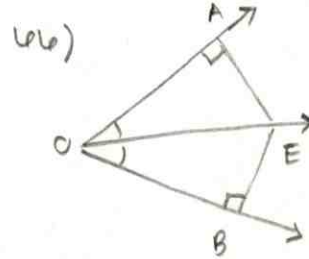
63) \overleftrightarrow{BC} is \perp bisector of \overline{KM} . False?



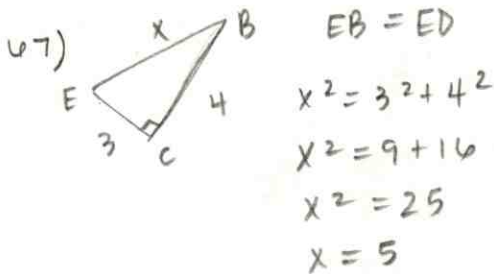
- $CM = MB$
- $\angle KBM$ is a right angle.
- C is the midpoint of \overline{KM}

64) vertices

65) II, III



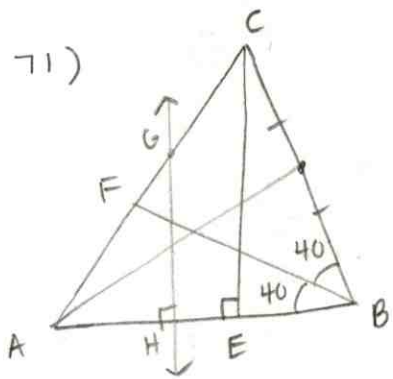
- $\overline{AE} \cong \overline{BE}$
- $\overline{OA} \cong \overline{OB}$
- $\angle AEO \cong \angle BEO$



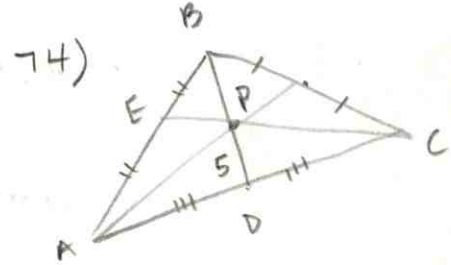
$EB = ED$
 $x^2 = 3^2 + 4^2$
 $x^2 = 9 + 16$
 $x^2 = 25$
 $x = 5$

$\boxed{ED = 5}$

68) centroid 69) right 70) I, III



$m\angle BCE = 90 - 80$
 $\boxed{m\angle BCE = 10^\circ}$



$BD = 3(PD)$
 $BD = 3(5)$
 $\boxed{BD = 15}$

72) median of $\triangle ABC$?
 $\boxed{\overline{AD}}$

73) altitude of $\triangle ABC$?
 $\boxed{\overline{CE}}$