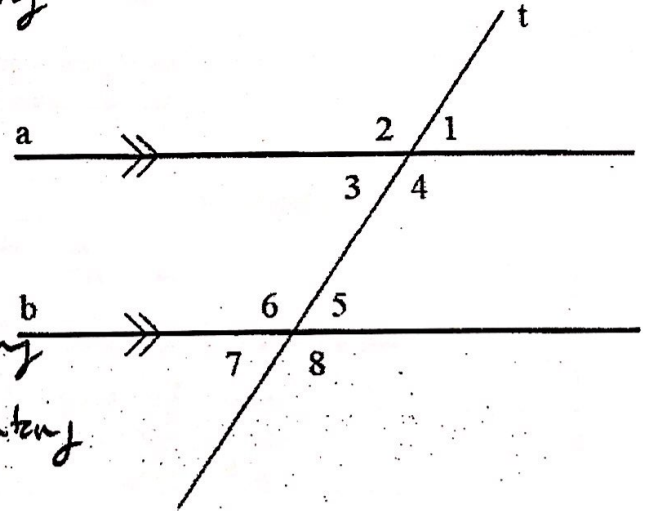


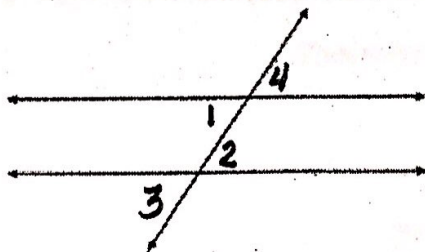
ANGLE RELATIONSHIPS:

1. Name the angle pairs and tell where they are congruent or supplementary.

- a. $\angle 1$ and $\angle 2$ Linear Pair Supplementary
- b. $\angle 1$ and $\angle 3$ Vertical Congruent
- c. $\angle 1$ and $\angle 5$ Corresponding Congruent
- d. $\angle 1$ and $\angle 7$ Alt Ext. Congruent
- e. $\angle 1$ and $\angle 8$ Consecutive Ext. Supplementary
- f. $\angle 3$ and $\angle 6$ Consecutive Int. Supplementary
- g. $\angle 3$ and $\angle 5$ Alt. Int. Congruent

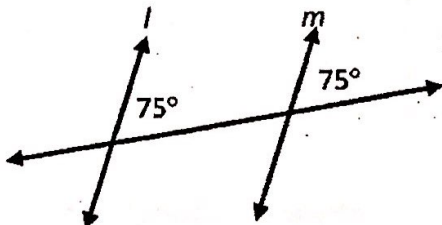


2. For two parallel lines and a transversal, angle 1 and angle 2 are alternate interior angles, angle 2 and 4 are corresponding angles, and angle 3 and angle 4 are alternate exterior angles. Which classification best describes the pair angle 2 and angle 3? Use the blank diagram below to organize your thoughts.

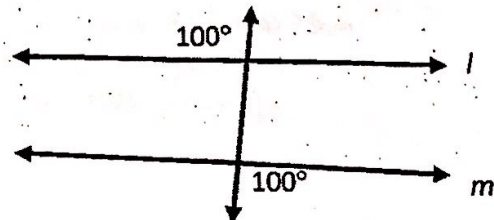


2 + 3 are vertical

3. In the diagram shown at the below, determine whether you can prove that lines l and m are parallel. If you can, state the theorem that you would use. If you can't, explain why.



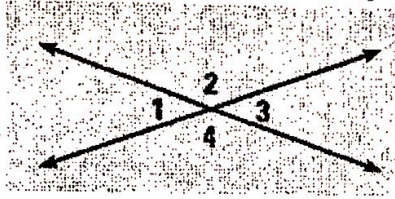
$l \parallel m$ because the corresponding angles shown are congruent



$l \parallel m$ because the alt. ext. angles shown are congruent

4. Fill in the Justifications from the bank below.

Theorem: Vertical Angles are Congruent



Given: $\angle 1$ and $\angle 2$ are a linear pair
 $\angle 3$ and $\angle 4$ are a linear pair

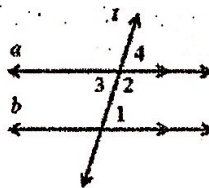
Prove: $\angle 1 \cong \angle 3$

Statement	Justification
1. $\angle 1$ and $\angle 2$ are a linear pair $\angle 3$ and $\angle 4$ are a linear pair	1. Given
2. $\angle 1$ and $\angle 2$ are supplementary $\angle 3$ and $\angle 4$ are supplementary	2. Linear Pair Thm
3. $\angle 1 + \angle 2 = 180^\circ$ and $\angle 2 + \angle 3 = 180^\circ$	3. Def of Supp. angles
4. $\angle 1 + \angle 2 = \angle 2 + \angle 3$	4. Substitution
5. $\angle 1 \cong \angle 3$	5. Subtraction

- Definition of Supplementary Angles ✓
- Given ✓
- Subtraction property of equality ✓
- Linear Pair Theorem ✓
- Substitution property of equality ✓

5. Fill in the Justifications from the bank below.

Theorem: Alternate Interior Angles are Congruent

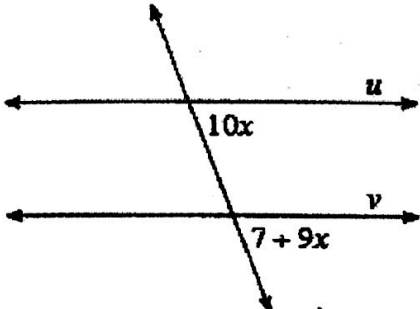


Given: $a \parallel b$
 Prove: $\angle 1 \cong \angle 3$

Statements	Reasons
1. $a \parallel b$	1. given
2. $\angle 1 \cong \angle 2$	2. Corresponding angles Thm
3. $\angle 2 \cong \angle 3$	3. Vertical angles Thm
4. $\angle 1 \cong \angle 3$	4. transitive property

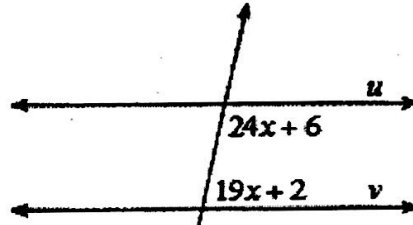
- Transitive Property
- Corresponding Angles Theorem
- Given
- Vertical Angles Theorem

Find x to make the lines parallel



Corresponding Angles are \cong

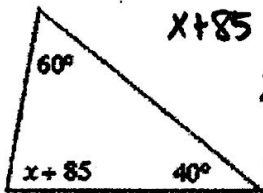
$$\begin{array}{r} 10x = 7 + 9x \\ -9x \quad -9x \\ \hline x = 7 \end{array}$$



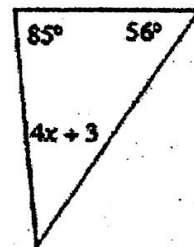
Consecutive Interior Angles are supplementary

$$\begin{array}{r} 24x + 6 + 19x + 2 = 180 \\ \underline{43x + 8} = 180 \\ 43x = 172 \\ \underline{43} \quad \underline{43} \\ x = 4 \end{array}$$

Find the value of x.

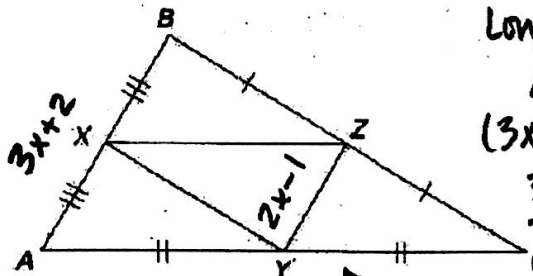


$$\begin{array}{r} x + 85 + 60 + 40 = 180 \\ x + 185 = 180 \\ -185 \quad -185 \\ \hline x = -5 \end{array}$$



$$\begin{array}{r} 4x + 3 + 85 + 56 = 180 \\ 4x + 144 = 180 \\ -144 \quad -144 \\ \hline 4x = 36 \\ \underline{4} \quad \underline{4} \\ x = 9 \end{array}$$

Midsegments: Given $AB = 3x + 2$ and $YZ = 2x - 1$, what is the length of YZ ?



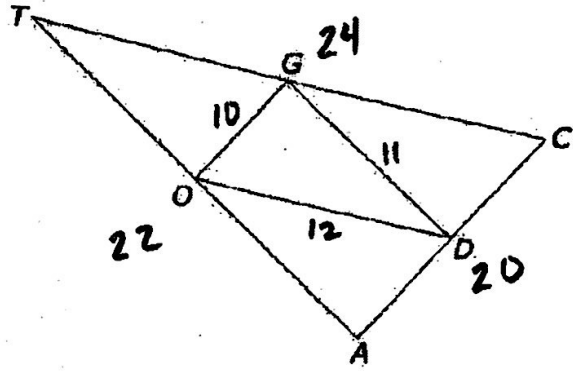
Long = 2 · Short

$$\begin{array}{r} AB = 2 \cdot YZ \\ (3x + 2) = 2(2x - 1) \\ 3x + 2 = 4x - 2 \\ -4x \quad -4x \\ \hline -1x + 2 = -2 \\ -2 \quad -2 \\ \hline -1x = -4 \\ \underline{-1} \quad \underline{-1} \\ x = 4 \end{array}$$

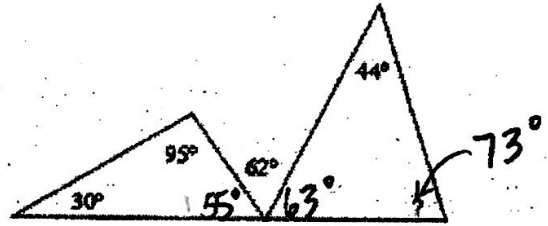
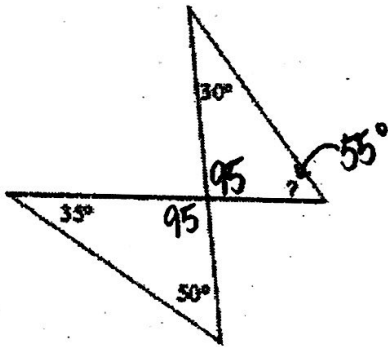
$$\begin{array}{r} YZ = 2(4) - 1 \\ \underline{YZ = 7} \end{array}$$

Midsegments: If $AC = 20$, $AT = 22$ and $CT = 24$, find the perimeter of triangle DOG .

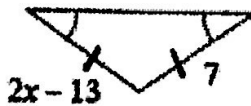
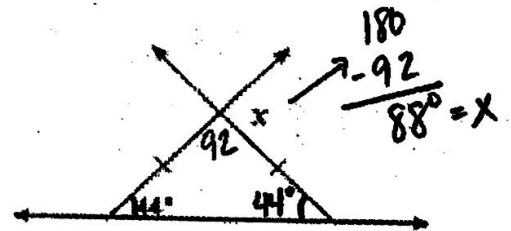
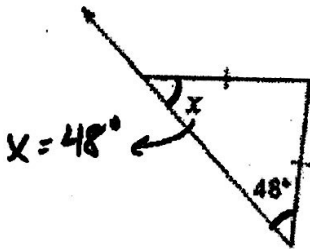
Perimeter of $\triangle DOG$
 $= 10 + 11 + 12 = 33$ units



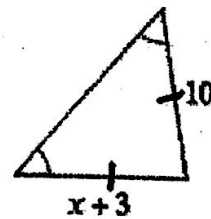
Find the measure of each angle indicated.



Find the value of x .



$$\begin{aligned} 2x - 13 &= 7 \\ +13 &+13 \\ \hline 2x &= 20 \\ \frac{2x}{2} &= \frac{20}{2} \end{aligned}$$

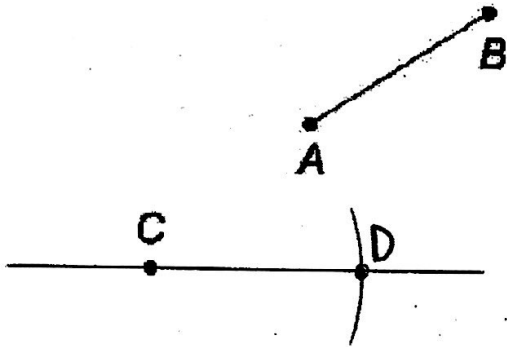


$$\begin{aligned} x + 3 &= 10 \\ -3 &-3 \\ \hline x &= 7 \end{aligned}$$

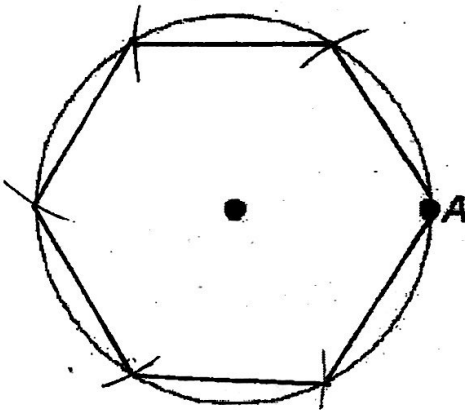
Name _____

CONSTRUCTIONS:

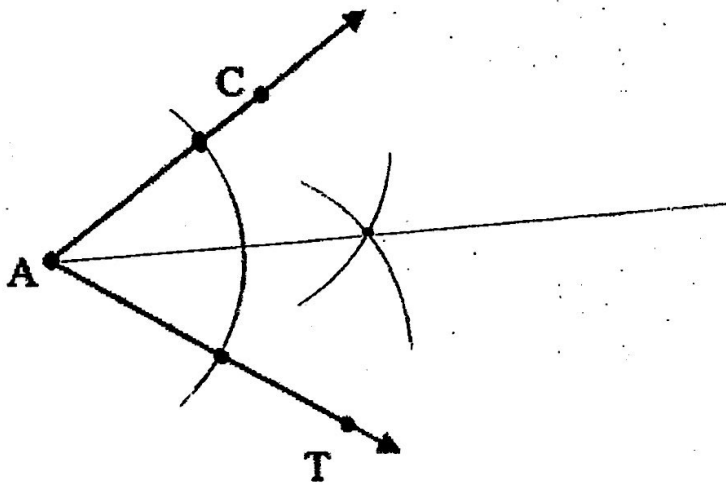
1. Copy segment AB and call the new one CD.



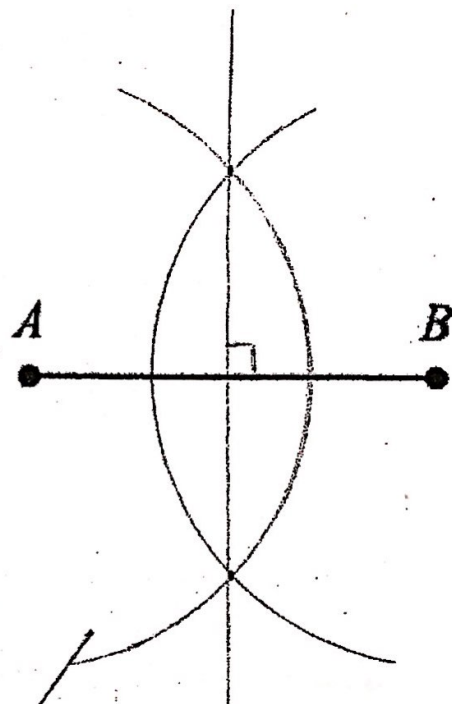
2. Construct an inscribed hexagon.



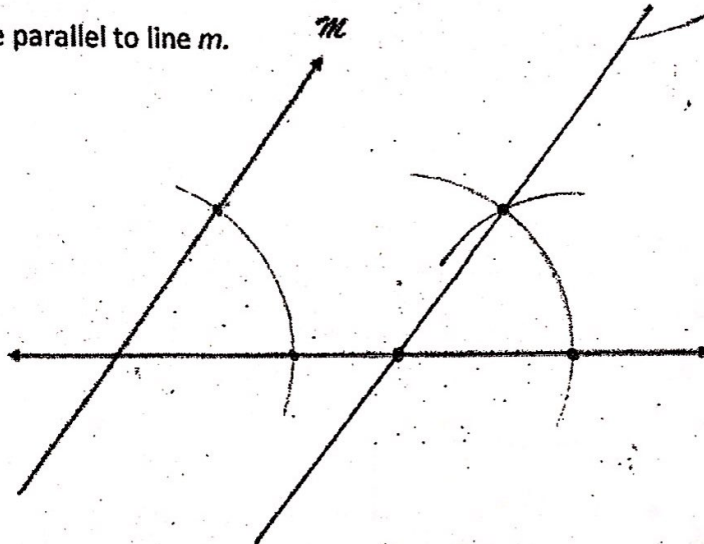
3. Bisect angle CAT.



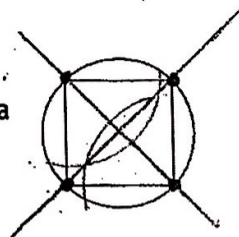
4. Construct a perpendicular bisector of the line \overline{AB} .



5. Construct a line parallel to line m .



6. Given a circle and its center, explain how to construct a square inscribed in the circle using a straightedge and a compass.



Using a straight edge, draw the diameter of the circle. Using a compass, construct the perpendicular bisector of the diameter. Draw the points where the perpendicular bisector intersects the circle. Connect those points to the endpoints of the diameter.