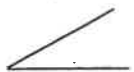
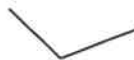


Angle Properties



Acute $\angle$



Obtuse $\angle$



Complementary $\angle$ s add to 90°



Supplementary $\angle$ s add to 180°



Angles on a line add to 180°



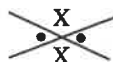
Right $\angle$



Straight $\angle$

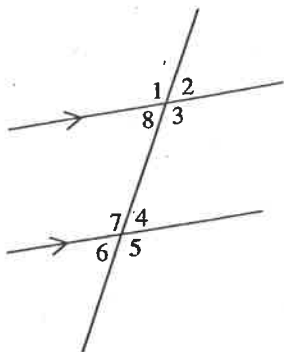


Angles at a point add to 360°



Vertically opposite $\angle$ s are equal

Parallel Lines and Transversal



Corresponding $\angle$ s:

$$\angle 1 = \angle 7, \angle 2 = \angle 8, \\ \angle 3 = \angle 4, \angle 8 = \angle 5.$$

Alternate interior $\angle$ s:

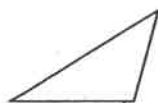
$$\angle 3 = \angle 7, \angle 4 = \angle 8.$$

Interior $\angle$ s on the same side of the transversal:

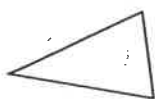
$$\angle 8 + \angle 7 = 180^\circ, \angle 3 + \angle 4 = 180^\circ.$$

Triangle Properties

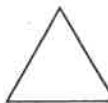
$\angle$ sum of a triangle is 180°



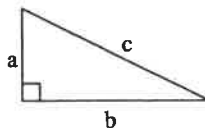
Scalene triangle
— no sides equal
— no $\angle$ s equal



Isosceles triangle
— at least 2 sides equal
— $\angle$ s opposite the equal sides are equal



Equilateral triangle
— 3 sides equal
— 3 $\angle$ s equal (each 60°)



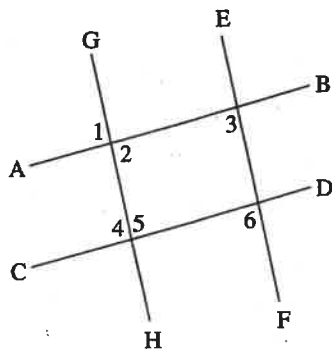
Right triangle
— 1 right angle
— hypotenuse is opposite the right angle
— Property of Pythagoras
 $a^2 + b^2 = c^2$

GEOMETRY YOU SHOULD KNOW FROM MATH 9

Parallel Lines

Lines are parallel if

- alternate interior $\angle$ s are equal
- corresponding $\angle$ s are equal
- interior $\angle$ s on the same side of the transversal are supplementary



If $\angle 5 = \angle 6$,
then $GH \parallel EF$

alternate interior $\angle$ s 5 and 6 are equal

If $\angle 1 = \angle 4$,
then $AB \parallel CD$

corresponding $\angle$ s 1 and 4 are equal

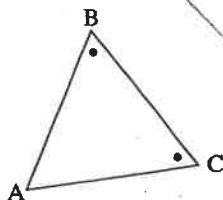
If $\angle 2 + \angle 3 = 180^\circ$,
then $GH \parallel EF$

interior $\angle$ s on the same side of the transversal AB are supplementary

Congruent Sides

2 sides of a triangle are congruent if

- the $\angle$ s opposite the sides are equal



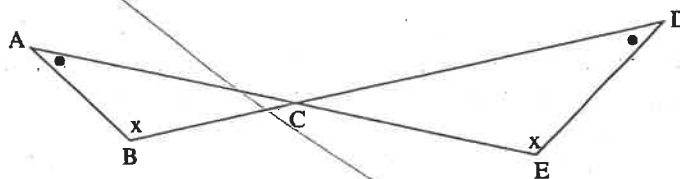
If $\angle B = \angle C$,
then $AB = AC$

sides opposite equal $\angle$ s are equal

Similar Figures

2 figures are similar if

- corresponding $\angle$ s are equal
- corresponding sides are in proportion



$\triangle ABC \sim \triangle DEC$

$$\frac{AB}{DE} = \frac{BC}{EC} = \frac{AC}{DC}$$

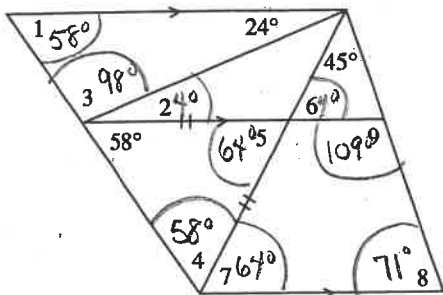
AAA

corresponding sides of similar figures are in proportion

REVIEW

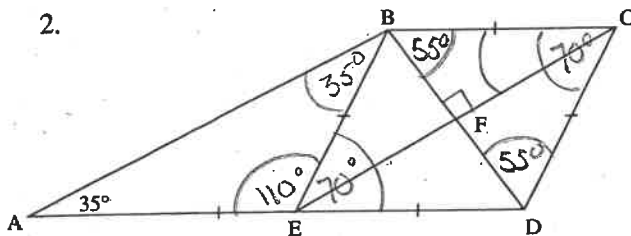
Find the measure of each angle. Write a reason for each answer.

1.



- ⑦ $\angle 1 = 58^\circ$ Δ 's = 180°
- ① $\angle 2 = 24^\circ$ Alt. Int $\angle$'s =
- ⑥ $\angle 3 = 98^\circ$ Suppl. $\angle$'s =
- ② $\angle 4 = 58^\circ$ Isos Δ
- ③ $\angle 5 = 64^\circ$ $\Delta = 180^\circ$
- ④ $\angle 6 = 64^\circ$ Vert. Opp. $\angle$'s =
- ⑤ $\angle 7 = 64^\circ$ Alt. Int $\angle$'s =
- ⑧ $\angle 8 = 71^\circ$ Δ 's = 180°
- ⑨ $\angle 9 = 109^\circ$ Suppl $\angle$'s = 180°

2.

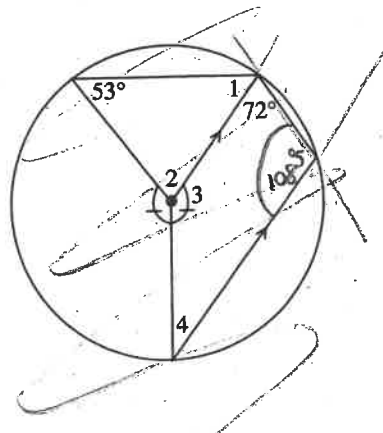


BCDE is a Rhombus

- ① $\angle ABE = 35^\circ$ Isos Δ
- ② $\angle AEB = 110^\circ$ Δ 's = 180°
- ③ $\angle BED = 70^\circ$ Suppl $\angle$'s = 180°
- ④ $\angle BCD = 70^\circ$ Opp. $\angle$'s in a rhombus are =

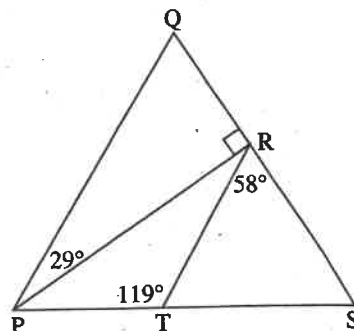
- ⑦ $\angle BCF = 35^\circ$ Δ 's = 180°
- ⑤ $\angle BFC = 90^\circ$ diagonals of a rhomb = 90°
- ⑥ $\angle CBF = 55^\circ$ Isos. Δ

3.



- $\angle 1 =$
- $\angle 2 =$
- $\angle 3 =$
- $\angle 4 =$
- $\angle 5 = 108^\circ$

4. Find the measure of each angle in the diagram. Then identify any pairs of equal segments. Give a reason for each answer.

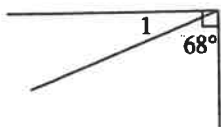


- _____
- _____
- _____

INTERSECTING LINES

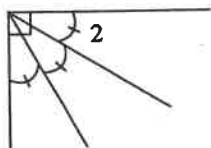
Find the measure of each required angle and give a reason for your answer.

1.



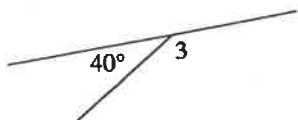
$$\angle 1 = 22^\circ \text{ Complimentary } \angle\text{'s} = 90^\circ$$

2.



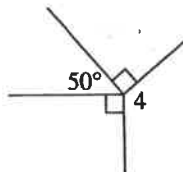
$$\angle 2 = 30^\circ \text{ Algebra } (90 \div 3)$$

3.



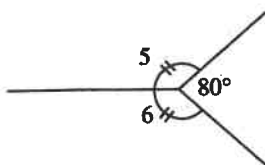
$$\angle 3 = 140^\circ \text{ Suppl } \angle\text{'s} = 180^\circ$$

4.



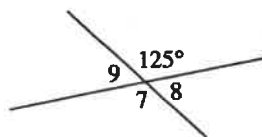
$$\angle 4 = 130^\circ \text{ } \angle\text{'s around pt.} = 360^\circ$$

5.



$$\begin{aligned} \angle 5 + \angle 6 &= 280^\circ \\ \angle 6 &= 140^\circ \end{aligned} \left. \begin{array}{l} \text{Angles around a} \\ \text{point} = 360^\circ \end{array} \right\}$$

6.

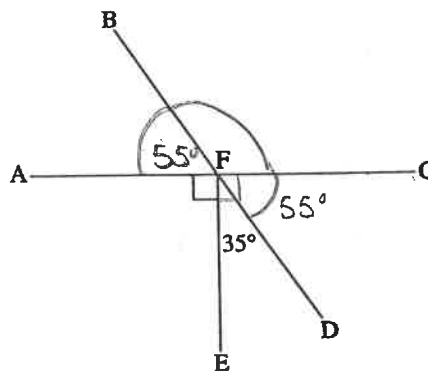


$$\angle 7 = 125^\circ \text{ Vert. Opp. } \angle\text{'s} =$$

$$\angle 8 = 55^\circ \text{ Suppl } \angle\text{'s} = 180^\circ$$

$$\angle 9 = 55^\circ \text{ Vert. Opp } \angle\text{'s} =$$

7.



$$\angle CFE = 90^\circ \text{ Suppl } \angle\text{'s} = 180^\circ$$

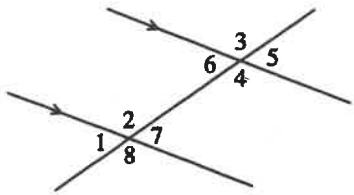
$$\angle CFD = 55^\circ \text{ Compl. } \angle\text{'s} = 90^\circ$$

$$\angle BFA = 55^\circ \text{ Vert. Opp } \angle\text{'s} =$$

$$\angle BFC = 125^\circ \text{ Suppl } \angle\text{'s} = 180^\circ$$

$$\angle BFD = 180^\circ \text{ } \angle\text{'s on a line} = 180^\circ$$

8.

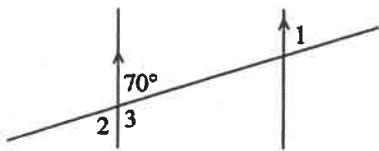


Identify an angle that is:

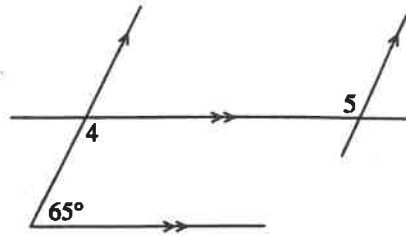
a) alternate interior to $\angle 7$ $\angle 6$ b) corresponding to $\angle 2$ $\angle 3$ c) interior and on the same side of the transversal to $\angle 4$ $\angle 7$ d) corresponding to $\angle 4$ $\angle 8$ e) vertically opposite to $\angle 6$ $\angle 5$ f) supplementary to $\angle 3$ $\angle 6$ or $\angle 5$ g) congruent to $\angle 8$
(same) $\angle 3$ or $\angle 2$ or $\angle 4$

Find the measure of each required angle and give a reason for your answer.

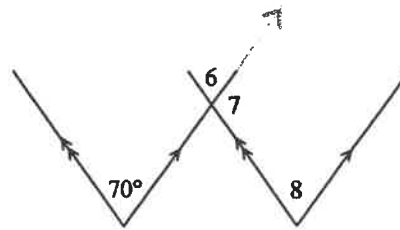
9.

 $\angle 1 = 70^\circ$ Corr $\angle$'s = $\angle 2 = 70^\circ$ Vert Opp $\angle$'s = $\angle 3 = 110^\circ$ Suppl

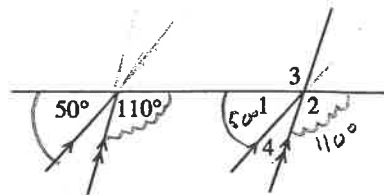
10.

 $\angle 4 = 115^\circ$ Suppl $\angle 5 = 115^\circ$ Alt Int

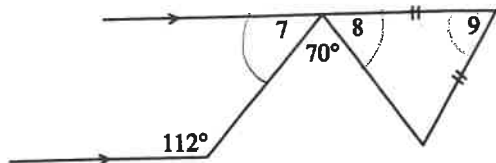
11.

 $\angle 6 = 70^\circ$ Corr $\angle 7 = 110^\circ$ Suppl $\angle 8 = 70^\circ$ Suppl

12.

 $\angle 1 = 50^\circ$ Corr $\angle 2 = 110^\circ$ Corr $\angle 3 = 110^\circ$ Vert Opp $\angle 4 = 20^\circ$ Suppl

8.

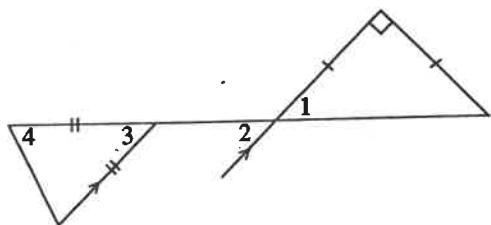


$\angle 7 = \underline{\hspace{2cm}}$

$\angle 8 = \underline{\hspace{2cm}}$

$\angle 9 = \underline{\hspace{2cm}}$

9.



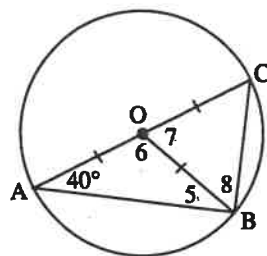
$\angle 1 = \underline{\hspace{2cm}}$

$\angle 2 = \underline{\hspace{2cm}}$

$\angle 3 = \underline{\hspace{2cm}}$

$\angle 4 = \underline{\hspace{2cm}}$

10.



$\angle 5 = \underline{\hspace{2cm}}$

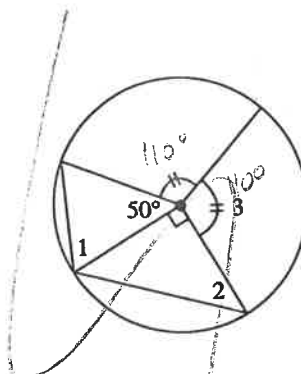
$\angle 6 = \underline{\hspace{2cm}}$

$\angle 7 = \underline{\hspace{2cm}}$

$\angle 8 = \underline{\hspace{2cm}}$

$\angle ABC = \underline{\hspace{2cm}}$

11.

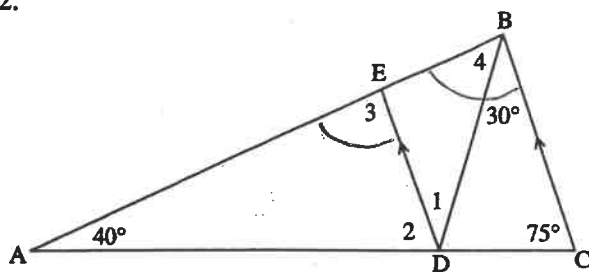


$\angle 1 = \underline{\hspace{2cm}}$

$\angle 2 = \underline{\hspace{2cm}}$

$\textcircled{1} \angle 3 = \underline{110^\circ} \quad \text{L's around pt}$

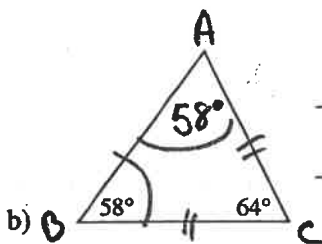
12.



$$\begin{aligned} \angle 1 &= 30^\circ \text{ Alt. Int } \angle\text{'s} = \\ \angle 2 &= 75^\circ \text{ Corr } \angle\text{'s} = \\ \angle 3 &= 65^\circ \Delta\text{'s} = 180^\circ \\ \angle ABC &= 65^\circ \text{ Corr } \angle\text{'s} = \\ \angle 4 &= 35^\circ \text{ Algebra} \end{aligned}$$

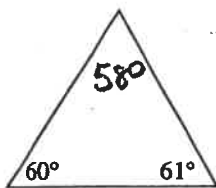
13. Which is the best description of each triangle — scalene, isosceles, or equilateral? Give a reason for your answer.

a)



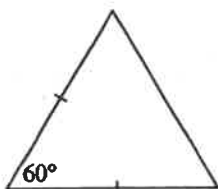
Isoc
 $\angle A = \angle B$

b)



Scalene
all 3 $\angle\text{'s}$ dif

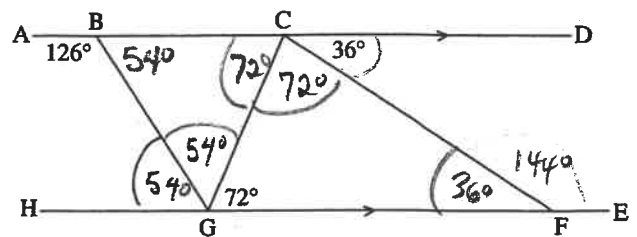
c)



Equil
all $\angle\text{'s} = 60^\circ$

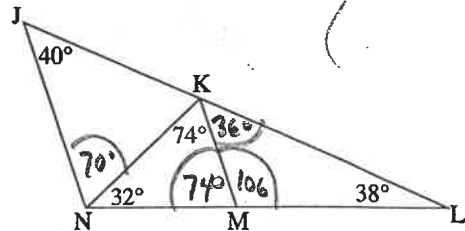
14. Fill in the measures of all the angles in the diagram. Then identify all pairs of congruent segments. Give a reason for each answer.

a)

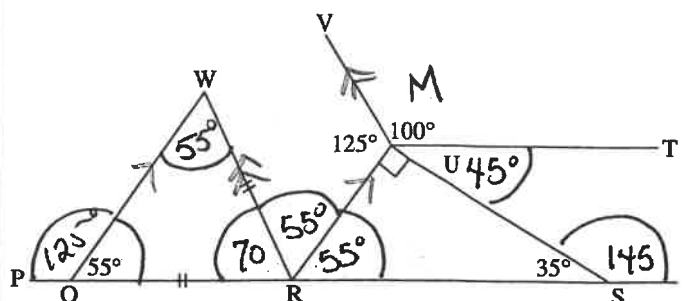


$$\begin{aligned} \angle ABC &= 54^\circ \text{ Supp} & \angle GCF &= 72^\circ - \text{Su} \\ \angle BGC &= 54^\circ \text{ Alt Int} & \angle CFG &= 36^\circ \text{ Alt} \\ \angle GCB &= 72^\circ \text{ Suppl.} & \angle CFE &= 144^\circ \text{ Suppl.} \end{aligned}$$

b)

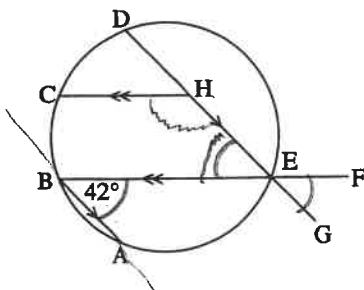


15. Fill in the measures of all the angles in the diagram. Then identify all pairs of parallel segments. Give a reason for each answer.



$$\begin{aligned} QW \parallel RM & \angle RQW = \angle SRM \text{ Corr } \angle\text{'s} = \\ RW \parallel MV & \angle WRM + \angle RMV = 180^\circ \text{ Suppl } \angle\text{'s} \end{aligned}$$

13.



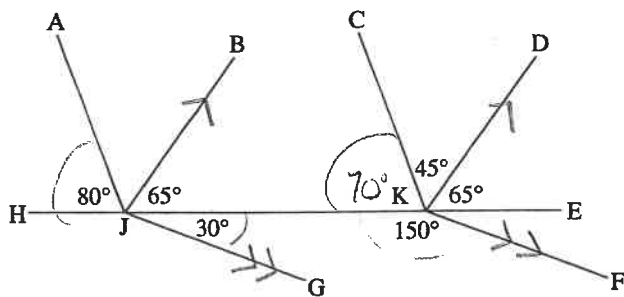
$$\angle BEH = 42^\circ \text{ Alt Int}$$

$$\angle EHC = 130^\circ \text{ Suppl}$$

$$\angle GEF = 42^\circ \text{ Vert Opp}$$

Identify all pairs of segments that look parallel in the diagram. Write a reason why they are or are not parallel.

14.



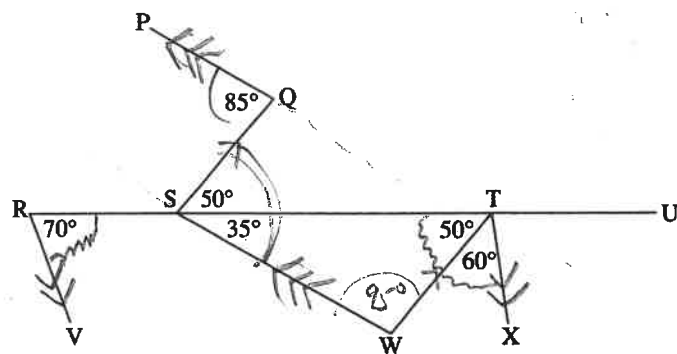
$$JB \parallel KD \quad \angle 65^\circ \text{ Corr}$$

$$JG \parallel KF \quad \angle 30^\circ + \angle 150^\circ \text{ Suppl}$$

$$AJ \text{ isn't } \parallel CK \quad \text{not corr } \angle \text{'s}$$

$$\angle AJH \neq \angle CKJ$$

15.

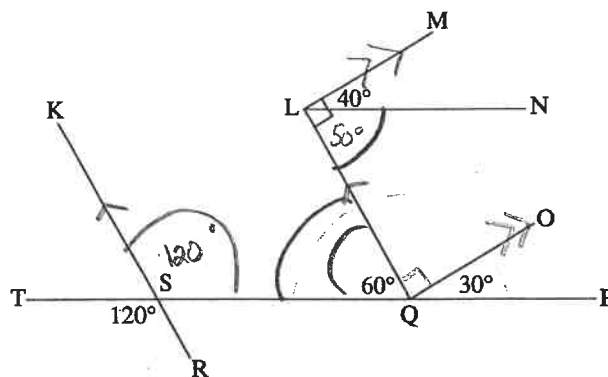


$$QS \parallel WT \quad \text{Suppl } \angle TWS + \angle QSW = 180^\circ$$

$$RV \parallel TX \quad \text{Suppl } \angle VRS + \angle RTX = 180^\circ$$

$$PO \parallel SW \quad \angle PQS = \angle QSW \text{ Alt Int } \angle \text{'s}$$

16.



$$KR \parallel LQ \quad \angle KLS + \angle LQS = 180^\circ \text{ Suppl}$$

$$ML \parallel OQ \quad \angle MLQ + \angle OQL = 180^\circ \text{ Suppl}$$

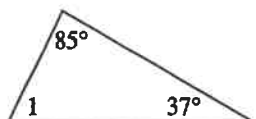
$$LN \text{ isn't } \parallel TP \quad \text{b/c } \angle NLQ \neq \angle LQS$$

not alt. int

TRIANGLES

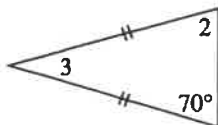
Find the measure of each required angle and give a reason for your answer.

1.



$\angle 1 =$ _____

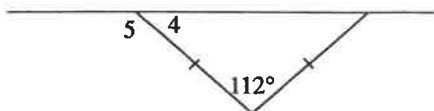
2.



$\angle 2 =$ _____

$\angle 3 =$ _____

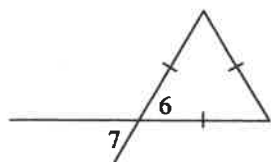
3.



$\angle 4 =$ _____

$\angle 5 =$ _____

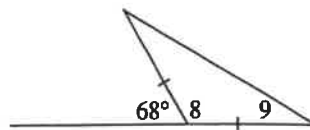
4.



$\angle 6 =$ _____

$\angle 7 =$ _____

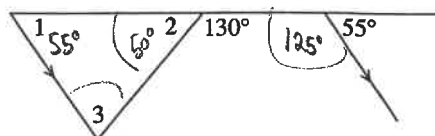
5.



$\angle 8 =$ _____

$\angle 9 =$ _____

6.

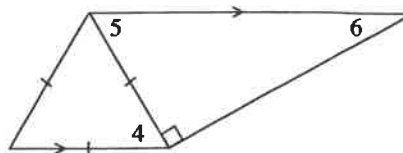


$\angle 1 =$ _____

$\angle 2 =$ _____

$\angle 3 =$ _____

7.



$\angle 4 =$ _____

$\angle 5 =$ _____

$\angle 6 =$ _____

