

# Unit 6

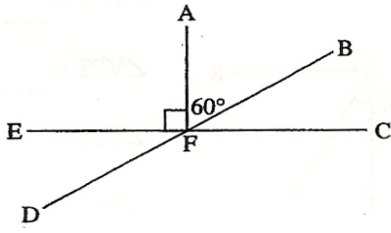
# Geometry

## 6-1 Angles

A series of horizontal dotted lines for writing.

# 6-1 ANGLES

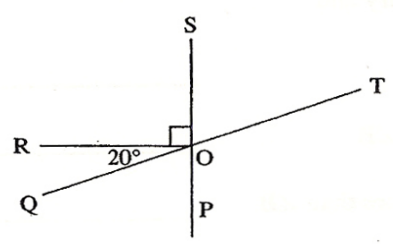
1.



Name: \_\_\_\_\_

- a) 3 acute  $\angle$ s \_\_\_\_\_
- b) 3 obtuse  $\angle$ s \_\_\_\_\_
- c) 2 right  $\angle$ s \_\_\_\_\_
- d) 2 straight  $\angle$ s \_\_\_\_\_
- e) an  $\angle$  of  $30^\circ$  \_\_\_\_\_
- f) an  $\angle$  of  $150^\circ$  \_\_\_\_\_
- g) an  $\angle$  of  $120^\circ$  \_\_\_\_\_
- h) an  $\angle$  vertically opposite to  $\angle EFD$  \_\_\_\_\_
- i) an  $\angle$  congruent to  $\angle AFC$  \_\_\_\_\_

2.

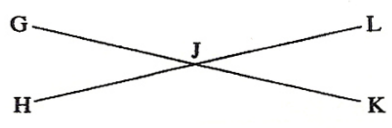


Name: \_\_\_\_\_

- a) an  $\angle$  complementary to  $\angle POQ$  \_\_\_\_\_
- b) an  $\angle$  supplementary to  $\angle QOR$  \_\_\_\_\_
- c) an  $\angle$  supplementary to  $\angle SOT$  \_\_\_\_\_
- d) an  $\angle$  supplementary to  $\angle ROS$  \_\_\_\_\_

- e) an  $\angle$  vertically opposite to  $\angle SOQ$  \_\_\_\_\_
- f) an  $\angle$  vertically opposite to  $\angle QOP$  \_\_\_\_\_
- g) an  $\angle$  congruent to  $\angle ROS$  \_\_\_\_\_
- h) an  $\angle$  of  $110^\circ$  \_\_\_\_\_
- i) an  $\angle$  of  $70^\circ$  \_\_\_\_\_
- j) an  $\angle$  of  $160^\circ$  \_\_\_\_\_

3.



Name: \_\_\_\_\_

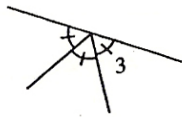
- a) 2 pairs of vertically opposite  $\angle$ s \_\_\_\_\_
- b) 2  $\angle$ s supplementary to  $\angle LJK$  \_\_\_\_\_
- c) 2 straight  $\angle$ s \_\_\_\_\_
- d) an  $\angle$  congruent to  $\angle GJL$  \_\_\_\_\_

4. Find the measure of each required angle.

a)  $\angle 1 =$  \_\_\_\_\_

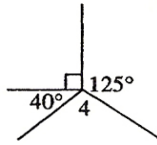
b)  $\angle 2 =$  \_\_\_\_\_

c)



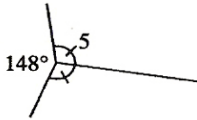
$\angle 3 =$  \_\_\_\_\_

d)



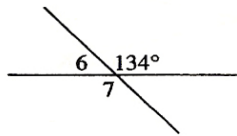
$\angle 4 =$  \_\_\_\_\_

e)



$\angle 5 =$  \_\_\_\_\_

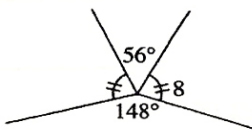
f)



$\angle 6 =$  \_\_\_\_\_

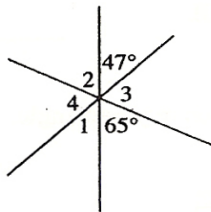
$\angle 7 =$  \_\_\_\_\_

g)



$\angle 8 =$  \_\_\_\_\_

h)



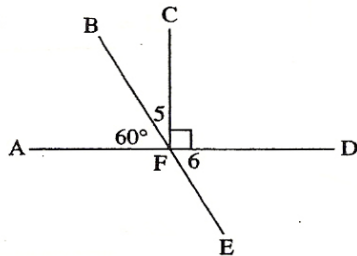
$\angle 1 =$  \_\_\_\_\_

$\angle 2 =$  \_\_\_\_\_

$\angle 3 =$  \_\_\_\_\_

$\angle 4 =$  \_\_\_\_\_

i)

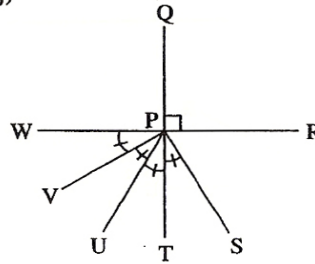


$\angle 5 =$  \_\_\_\_\_

$\angle 6 =$  \_\_\_\_\_

$\angle BFD =$  \_\_\_\_\_

j)



$\angle WPT =$  \_\_\_\_\_

$\angle WPV =$  \_\_\_\_\_

$\angle VPT =$  \_\_\_\_\_

$\angle VPS =$  \_\_\_\_\_

$\angle RPS =$  \_\_\_\_\_

$\angle WPS =$  \_\_\_\_\_

$\angle QPS =$  \_\_\_\_\_

5. True or false?

a) Vertically opposite angles can be right angles. \_\_\_\_\_

b) Two acute angles can be complementary. \_\_\_\_\_

c) Two obtuse angles can be supplementary. \_\_\_\_\_

d) Two congruent angles can be complementary. \_\_\_\_\_

6. Find the measures of  $\angle A$  and  $\angle B$  if  $\angle A$  and  $\angle B$  are complementary and

a)  $\angle A = \angle B$  \_\_\_\_\_

b)  $\angle A$  is twice  $\angle B$  \_\_\_\_\_

c)  $\angle A$  is  $20^\circ$  more than  $\angle B$  \_\_\_\_\_

d)  $\angle A$  is  $10^\circ$  less than  $\angle B$  \_\_\_\_\_

7. Find the measures of  $\angle P$  and  $\angle Q$  if  $\angle P$  and  $\angle Q$  are supplementary and

a)  $\angle P = \angle Q$  \_\_\_\_\_

b)  $\angle P$  is twice  $\angle Q$  \_\_\_\_\_

c)  $\angle P$  is four times  $\angle Q$  \_\_\_\_\_

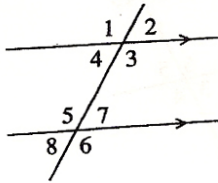
d)  $\angle P$  is  $46^\circ$  less than  $\angle Q$  \_\_\_\_\_

## 6-2 Parallel Lines and Transversals

A series of horizontal dotted lines spanning the width of the page, providing a guide for handwriting practice.

## 6-2 PARALLEL LINES AND TRANSVERSALS

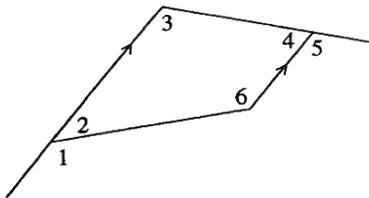
1.



Name an angle that is:

- a) vertically opposite to  $\angle 3$  \_\_\_\_\_
- b) corresponding to  $\angle 5$  \_\_\_\_\_
- c) alternate interior to  $\angle 4$  \_\_\_\_\_
- d) interior on the same side of the transversal to  $\angle 7$  \_\_\_\_\_
- e) corresponding to  $\angle 6$  \_\_\_\_\_
- f) alternate interior to  $\angle 5$  \_\_\_\_\_
- g) interior on the same side of the transversal to  $\angle 4$  \_\_\_\_\_

2.



Name an angle that is:

- a) alternate interior to  $\angle 1$  \_\_\_\_\_
- b) corresponding to  $\angle 3$  \_\_\_\_\_
- c) supplementary to  $\angle 1$  \_\_\_\_\_
- d) supplementary to  $\angle 6$  \_\_\_\_\_
- e) interior on the same side of the transversal to  $\angle 3$  \_\_\_\_\_

3. Find the measure of each required angle.

a)  $\angle 1 =$  \_\_\_\_\_  
 $\angle 2 =$  \_\_\_\_\_  
 $\angle 3 =$  \_\_\_\_\_

b)  $\angle 4 =$  \_\_\_\_\_  
 $\angle 5 =$  \_\_\_\_\_

c)  $\angle 6 =$  \_\_\_\_\_

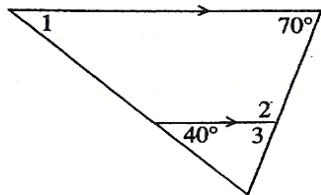
d)  $\angle 7 =$  \_\_\_\_\_

e)  $\angle 1 =$  \_\_\_\_\_  
 $\angle 2 =$  \_\_\_\_\_  
 $\angle 3 =$  \_\_\_\_\_  
 $\angle 4 =$  \_\_\_\_\_

f)  $\angle 5 =$  \_\_\_\_\_  
 $\angle 6 =$  \_\_\_\_\_  
 $\angle 7 =$  \_\_\_\_\_  
 $\angle 8 =$  \_\_\_\_\_



g)

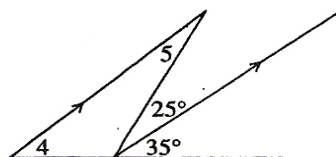


$\angle 1 =$  \_\_\_\_\_

$\angle 2 =$  \_\_\_\_\_

$\angle 3 =$  \_\_\_\_\_

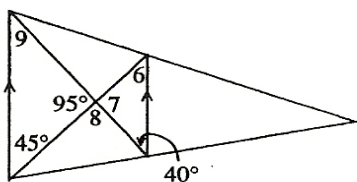
h)



$\angle 4 =$  \_\_\_\_\_

$\angle 5 =$  \_\_\_\_\_

i)



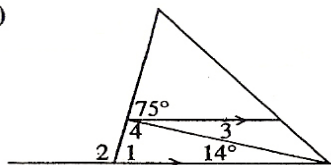
$\angle 6 =$  \_\_\_\_\_

$\angle 7 =$  \_\_\_\_\_

$\angle 8 =$  \_\_\_\_\_

$\angle 9 =$  \_\_\_\_\_

j)



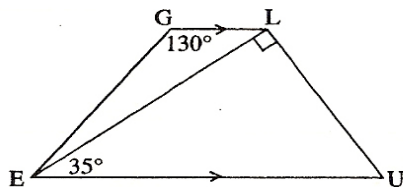
$\angle 1 =$  \_\_\_\_\_

$\angle 2 =$  \_\_\_\_\_

$\angle 3 =$  \_\_\_\_\_

$\angle 4 =$  \_\_\_\_\_

k)



$\angle GLE =$  \_\_\_\_\_

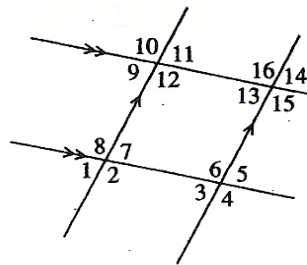
$\angle GLU =$  \_\_\_\_\_

$\angle LUE =$  \_\_\_\_\_

$\angle GEU =$  \_\_\_\_\_

$\angle GEL =$  \_\_\_\_\_

4.



Name: \_\_\_\_\_

a) an  $\angle$  vertically opposite to  $\angle 10$  \_\_\_\_\_

b) 2  $\angle$ s alternate interior to  $\angle 13$  \_\_\_\_\_

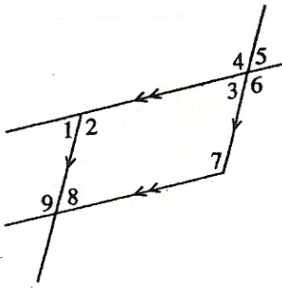
c) 2  $\angle$ s corresponding to  $\angle 1$  \_\_\_\_\_

d) 2 interior  $\angle$ s on the same side of the transversal to  $\angle 6$  \_\_\_\_\_

e) 3  $\angle$ s supplementary to  $\angle 8$  \_\_\_\_\_

f) 3  $\angle$ s congruent to  $\angle 7$  \_\_\_\_\_

5.



Classify each pair of angles below by the most appropriate letter.

S = supplementary  $\angle$ s

V = vertically opposite  $\angle$ s

C = corresponding  $\angle$ s

A = alternate interior  $\angle$ s

I = interior  $\angle$ s on the same side of the transversal

N = none of these

a)  $\angle 1$  and  $\angle 3$  \_\_\_\_\_ f)  $\angle 1$  and  $\angle 6$  \_\_\_\_\_

b)  $\angle 9$  and  $\angle 8$  \_\_\_\_\_ g)  $\angle 2$  and  $\angle 8$  \_\_\_\_\_

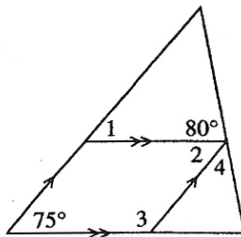
c)  $\angle 4$  and  $\angle 6$  \_\_\_\_\_ h)  $\angle 2$  and  $\angle 4$  \_\_\_\_\_

d)  $\angle 7$  and  $\angle 6$  \_\_\_\_\_ i)  $\angle 7$  and  $\angle 8$  \_\_\_\_\_

e)  $\angle 4$  and  $\angle 7$  \_\_\_\_\_ j)  $\angle 8$  and  $\angle 3$  \_\_\_\_\_

6. Find the measure of each numbered angle.

a)



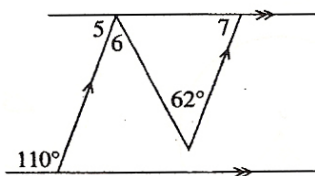
$\angle 1 =$  \_\_\_\_\_

$\angle 2 =$  \_\_\_\_\_

$\angle 3 =$  \_\_\_\_\_

$\angle 4 =$  \_\_\_\_\_

b)

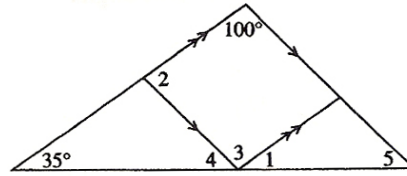


$\angle 5 =$  \_\_\_\_\_

$\angle 6 =$  \_\_\_\_\_

$\angle 7 =$  \_\_\_\_\_

c)



$\angle 1 =$  \_\_\_\_\_

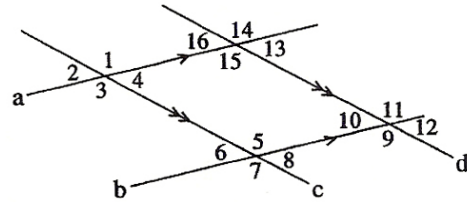
$\angle 2 =$  \_\_\_\_\_

$\angle 3 =$  \_\_\_\_\_

$\angle 4 =$  \_\_\_\_\_

$\angle 5 =$  \_\_\_\_\_

7.



Name the two parallel segments and the transversal that form:

	Segments	Transversal
a) alternate interior $\angle$ s 3 and 5	_____	_____
b) corresponding $\angle$ s 5 and 11	_____	_____
c) interior $\angle$ s 13 and 11 on the same side of the transversal	_____	_____
d) alternate interior $\angle$ s 15 and 1	_____	_____

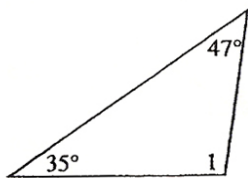
## 6-3 Triangles

Lined writing area consisting of multiple horizontal dotted lines for text entry.

# 6-3 TRIANGLES

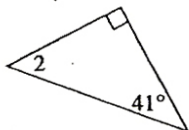
Find the measure of each numbered angle.

1.



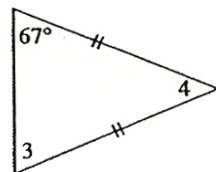
$\angle 1 =$  \_\_\_\_\_

2.



$\angle 2 =$  \_\_\_\_\_

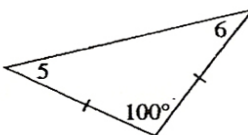
3.



$\angle 3 =$  \_\_\_\_\_

$\angle 4 =$  \_\_\_\_\_

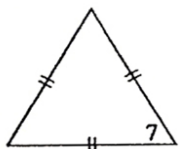
4.



$\angle 5 =$  \_\_\_\_\_

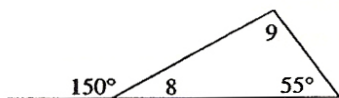
$\angle 6 =$  \_\_\_\_\_

5.



$\angle 7 =$  \_\_\_\_\_

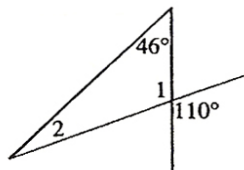
6.



$\angle 8 =$  \_\_\_\_\_

$\angle 9 =$  \_\_\_\_\_

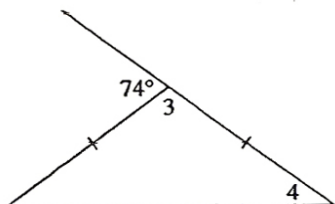
7.



$\angle 1 =$  \_\_\_\_\_

$\angle 2 =$  \_\_\_\_\_

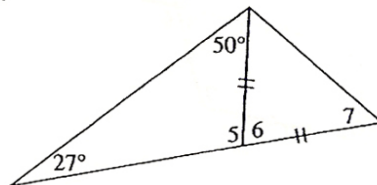
8.



$\angle 3 =$  \_\_\_\_\_

$\angle 4 =$  \_\_\_\_\_

9.

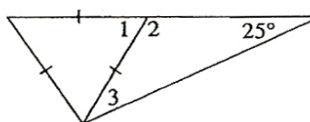


$\angle 5 =$  \_\_\_\_\_

$\angle 6 =$  \_\_\_\_\_

$\angle 7 =$  \_\_\_\_\_

10.

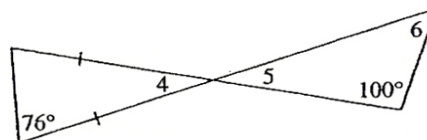


$\angle 1 =$  \_\_\_\_\_

$\angle 2 =$  \_\_\_\_\_

$\angle 3 =$  \_\_\_\_\_

11.

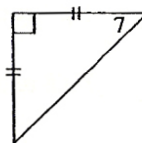


$\angle 4 =$  \_\_\_\_\_

$\angle 5 =$  \_\_\_\_\_

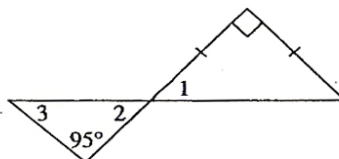
$\angle 6 =$  \_\_\_\_\_

12.



$\angle 7 =$  \_\_\_\_\_

13.

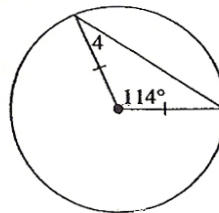


$\angle 1 =$  \_\_\_\_\_

$\angle 2 =$  \_\_\_\_\_

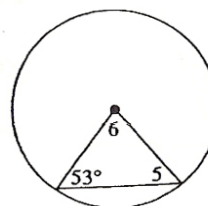
$\angle 3 =$  \_\_\_\_\_

14.



$\angle 4 =$  \_\_\_\_\_

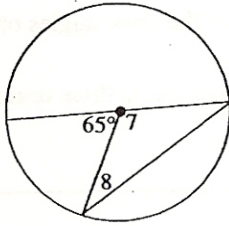
15.



$\angle 5 =$  \_\_\_\_\_

$\angle 6 =$  \_\_\_\_\_

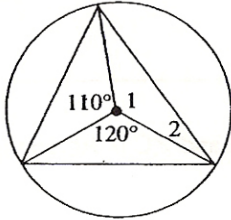
16.



$\angle 7 =$  \_\_\_\_\_

$\angle 8 =$  \_\_\_\_\_

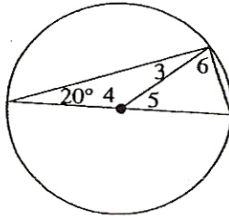
17.



$\angle 1 =$  \_\_\_\_\_

$\angle 2 =$  \_\_\_\_\_

18.



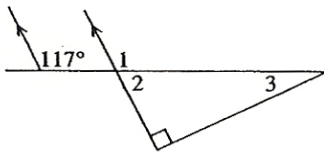
$\angle 3 =$  \_\_\_\_\_

$\angle 4 =$  \_\_\_\_\_

$\angle 5 =$  \_\_\_\_\_

$\angle 6 =$  \_\_\_\_\_

19.

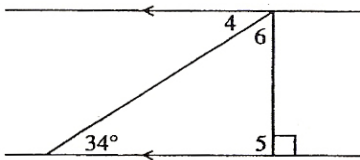


$\angle 1 =$  \_\_\_\_\_

$\angle 2 =$  \_\_\_\_\_

$\angle 3 =$  \_\_\_\_\_

20.

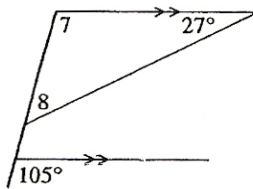


$\angle 4 =$  \_\_\_\_\_

$\angle 5 =$  \_\_\_\_\_

$\angle 6 =$  \_\_\_\_\_

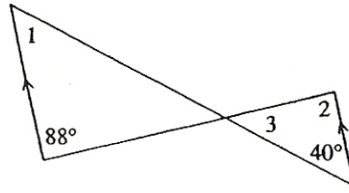
21.



$\angle 7 =$  \_\_\_\_\_

$\angle 8 =$  \_\_\_\_\_

22.

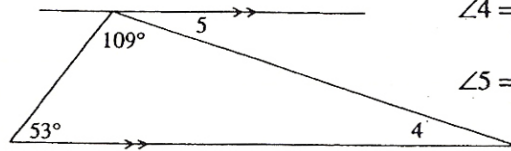


$\angle 1 =$  \_\_\_\_\_

$\angle 2 =$  \_\_\_\_\_

$\angle 3 =$  \_\_\_\_\_

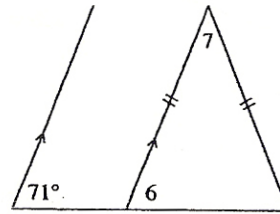
23.



$\angle 4 =$  \_\_\_\_\_

$\angle 5 =$  \_\_\_\_\_

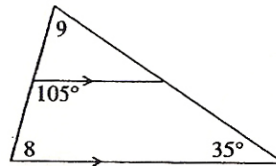
24.



$\angle 6 =$  \_\_\_\_\_

$\angle 7 =$  \_\_\_\_\_

25.



$\angle 8 =$  \_\_\_\_\_

$\angle 9 =$  \_\_\_\_\_

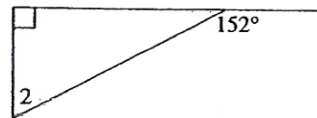
For questions 26 to 35, you may have to find the measures of other angles to determine the size of the numbered angle.

26.



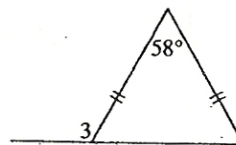
$\angle 1 =$  \_\_\_\_\_

27.

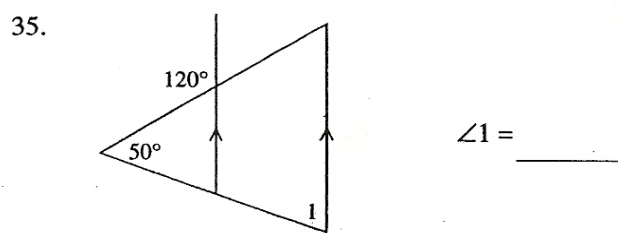
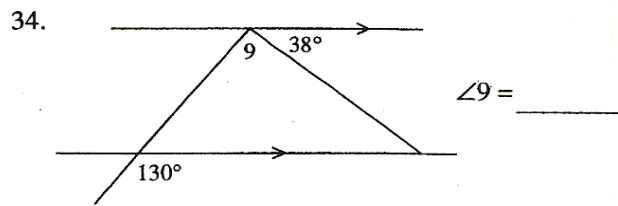
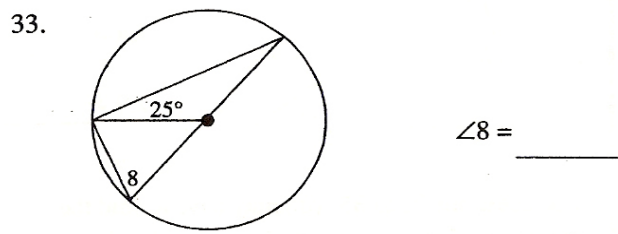
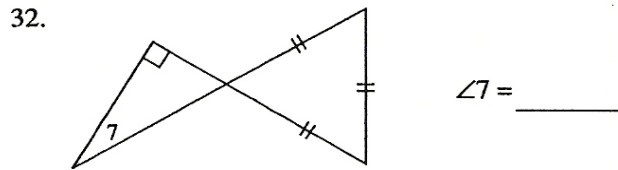
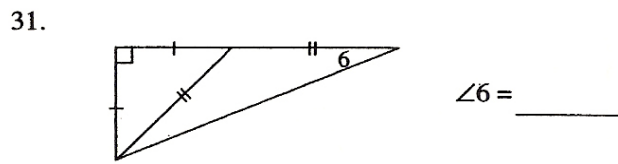
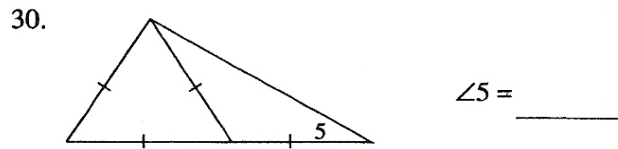
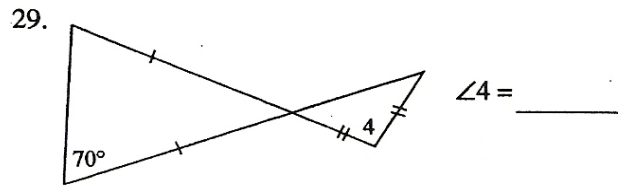


$\angle 2 =$  \_\_\_\_\_

28.



$\angle 3 =$  \_\_\_\_\_



36. Find the measures of the three angles of  $\triangle ABC$  if

a)  $\angle A$  is twice  $\angle B$  and  $\angle C$  is three times  $\angle B$ .

\_\_\_\_\_

b)  $\angle A = \angle B$  and  $\angle C$  is  $36^\circ$  more than  $\angle A$ .

\_\_\_\_\_

c)  $\angle B$  is twice  $\angle A$  and  $\angle C$  is  $10^\circ$  less than  $\angle B$ .

\_\_\_\_\_

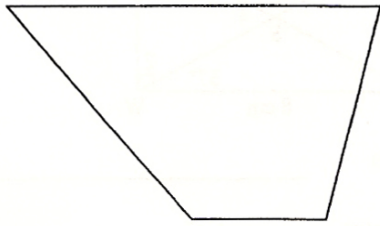
## 6-4 Properties of Quadrilaterals



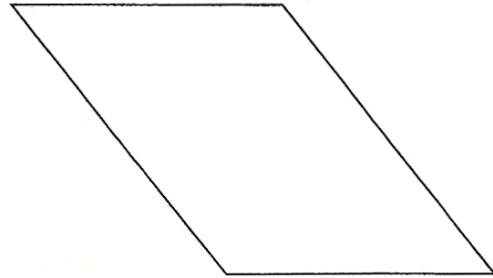
Lined writing area consisting of multiple horizontal lines for text entry.

## 6-4 PROPERTIES OF QUADRILATERALS

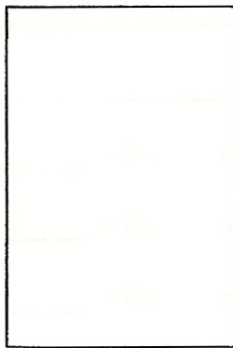
Measure the appropriate angles and lengths of each quadrilateral to complete the table below.  
Put a check in the column if the quadrilateral has that property.



Trapezoid



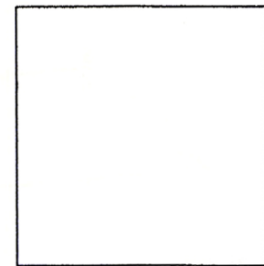
Parallelogram



Rectangle



Rhombus

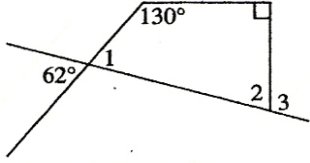


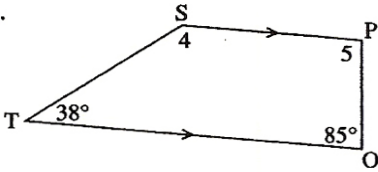
Square

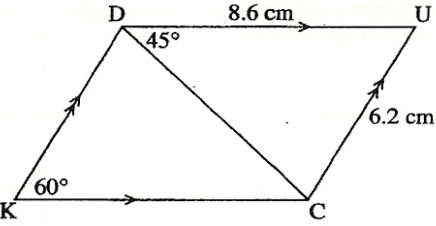
Property	Trapezoid	Parallelogram	Rhombus	Rectangle	Square
Opposite sides are parallel.					
Opposite sides are congruent.					
All sides are congruent.					
Opposite angles are congruent.					
All angles are right angles.					
Consecutive angles are supplementary.					
Diagonals are congruent.					
Diagonals bisect each other.					
Diagonals are perpendicular.					
Each diagonal bisects two angles.					

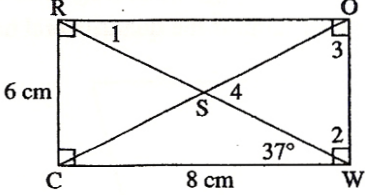
# QUADRILATERALS

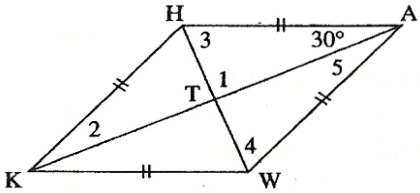
Complete each of the following questions by naming quadrilaterals and segments and calculating angles and lengths.

1.   $\angle 1 =$  \_\_\_\_\_  
 $\angle 2 =$  \_\_\_\_\_  
 $\angle 3 =$  \_\_\_\_\_

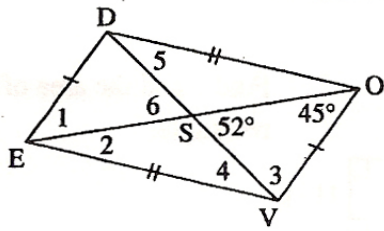
2.   $\angle 4 =$  \_\_\_\_\_  
 $\angle 5 =$  \_\_\_\_\_  
 SP || \_\_\_\_\_  
 SPOT is a \_\_\_\_\_

3.    
 DUCK is a \_\_\_\_\_  
 DK || \_\_\_\_\_  $\angle DUC =$  \_\_\_\_\_  
 KC = \_\_\_\_\_ cm  $\angle DCK =$  \_\_\_\_\_  
 DK = \_\_\_\_\_ cm  $\angle KCU =$  \_\_\_\_\_

4.    
 CROW is a \_\_\_\_\_  
 $\triangle CRW$  is a(n) \_\_\_\_\_  $\Delta$   
 $\triangle SOW$  is a(n) \_\_\_\_\_  $\Delta$   
 $\triangle SOR$  is a(n) \_\_\_\_\_  $\Delta$   
 RW = \_\_\_\_\_ cm  $\angle 1 =$  \_\_\_\_\_  
 CO = \_\_\_\_\_ cm  $\angle 2 =$  \_\_\_\_\_  
 CS = \_\_\_\_\_ cm  $\angle 3 =$  \_\_\_\_\_  
 $\angle 4 =$  \_\_\_\_\_

5.    
 HAWK is a \_\_\_\_\_  
 $\triangle HAK$  is a(n) \_\_\_\_\_  $\Delta$   
 $\triangle HAW$  is a(n) \_\_\_\_\_  $\Delta$   
 $\triangle HAT$  is a(n) \_\_\_\_\_  $\Delta$   
 $\angle 1 =$  \_\_\_\_\_  $\angle 5 =$  \_\_\_\_\_  
 $\angle 2 =$  \_\_\_\_\_  $\angle HAW =$  \_\_\_\_\_  
 $\angle 3 =$  \_\_\_\_\_  $\angle AWK =$  \_\_\_\_\_  
 $\angle 4 =$  \_\_\_\_\_

6.



$\angle ODE = 110^\circ$   
 $DV = 6.18 \text{ cm}$   
 $ES = 2.6 \text{ cm}$

DOVE is a \_\_\_\_\_

$DS =$  \_\_\_\_\_  $\text{cm}$        $\angle 2 =$  \_\_\_\_\_

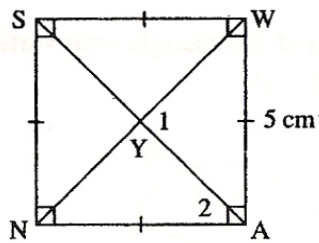
$EO =$  \_\_\_\_\_  $\text{cm}$        $\angle 3 =$  \_\_\_\_\_

$\angle EVO =$  \_\_\_\_\_       $\angle 4 =$  \_\_\_\_\_

$\angle DEV =$  \_\_\_\_\_       $\angle 5 =$  \_\_\_\_\_

$\angle 1 =$  \_\_\_\_\_       $\angle 6 =$  \_\_\_\_\_

7.



SWAN is a \_\_\_\_\_

$WN =$  \_\_\_\_\_  $\text{cm}$

$SA =$  \_\_\_\_\_  $\text{cm}$        $\angle 1 =$  \_\_\_\_\_

$SY =$  \_\_\_\_\_  $\text{cm}$        $\angle 2 =$  \_\_\_\_\_

8. Answer the following questions True or False. If false, explain your reasoning.

a) All rectangles are squares \_\_\_\_\_

b) All squares are rectangles \_\_\_\_\_

c) If a quadrilateral has 4 equal sides then it is a square \_\_\_\_\_

d) If the opposite sides of a quadrilateral are equal it must be a rectangle \_\_\_\_\_

e) If a quadrilateral has diagonals that bisect each other, it must be either a square or a rhombus \_\_\_\_\_

f) If the angles in a polygon add up to  $360^\circ$ , then it must have four sides \_\_\_\_\_

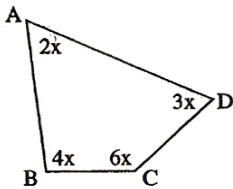
g) If the opposite sides of a quadrilateral are equal and parallel, it cannot be a trapezoid \_\_\_\_\_

## 6-5 Problems

A series of horizontal dotted lines for writing.

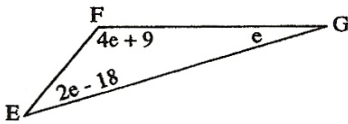
**6-5 PROBLEMS**

1.



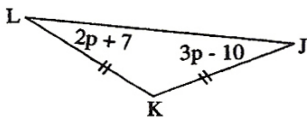
$x =$  \_\_\_\_\_  
 $\angle C =$  \_\_\_\_\_

2.



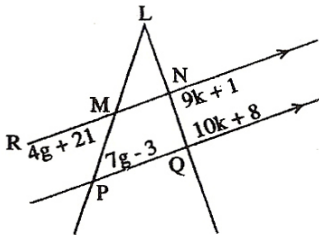
$e =$  \_\_\_\_\_  
 $\angle E =$  \_\_\_\_\_

3.



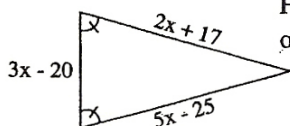
$p =$  \_\_\_\_\_  
 $\angle K =$  \_\_\_\_\_

4.



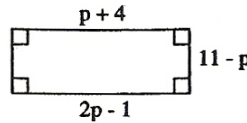
$g =$  \_\_\_\_\_  
 $k =$  \_\_\_\_\_  
 $\angle PMR =$  \_\_\_\_\_  
 $\angle LMN =$  \_\_\_\_\_  
 $\angle QNM =$  \_\_\_\_\_  
 $\angle MNL =$  \_\_\_\_\_  
 $\angle MLN =$  \_\_\_\_\_

5.



Find  $x$  and the perimeter of the triangle.

6.



Find  $p$  and the area of the rectangle.

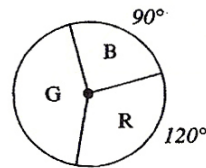
7. The coordinates  $(-5, 4)$ ,  $(1, 4)$ , and  $(-5, -2)$  are three of the vertices of a rectangle. Find the coordinates of the fourth vertex.

8. Coordinates  $(-4, 0)$  and  $(2, 2)$  are two vertices of an isosceles triangle. Which of the following points could be the third vertex:  $(2, -2)$ ,  $(8, 0)$ ,  $(4, -4)$ ?

9.  $(-4, -1)$ ,  $(-2, 2)$ , and  $(2, -1)$  are three vertices of a parallelogram. Find all possible coordinates for the fourth vertex.

10. Find the area of the triangle with vertices  $(0, -2)$ ,  $(2, 4)$ , and  $(8, -2)$ .

11.

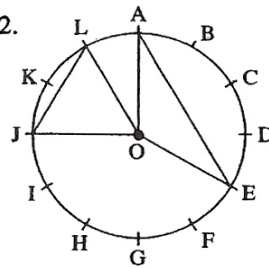


$\frac{1}{4}$  of a circle is blue,  $\frac{1}{3}$  is red, and the rest is green.

a) How many degrees is the angle at the centre of the green sector?

b) If the radius of the circle is 12cm, how long is the curved edge of the red sector?

12.



$\angle AOE =$  \_\_\_\_\_  
 $\angle OAE =$  \_\_\_\_\_  
 $\angle JOL =$  \_\_\_\_\_  
 $\angle OLJ =$  \_\_\_\_\_



13. The ratio of angles in a triangle is 1:5:6. Find the measure of each angle.

14. Angle  $A$  is twice as big as Angle  $B$ , and Angle  $C$  is  $30^\circ$  more than seven times Angle  $B$ . If these three angles are in the same triangle, find the measure of each angle.

15. The ratio of angles in a quadrilateral is 1:4:5:8.

a) Find the measure of each angle.

b) What special quadrilateral could this be? Justify your answer.

16. The three angles in an isosceles triangle are such that the smallest angle is half of each of the two larger angles. Find the measure of each angle.

17. An angle of " $5x + 25$ " degrees is co-interior with an angle of " $8x - 27$ " degrees. Find  $x$ , then give the measure of each angle.

18. If  $5x + 5$ ,  $7x - 9$ , and  $10x + 30$  are the measures of three angles in a triangle, what type of triangle must it be? Justify your answer.