

## *Module 3* *Quadrilaterals*

### *What this module is about*

This module is about Quadrilaterals. As you go over the exercises, you will develop skills in identifying Quadrilaterals and their parts and ability to appreciate their application in daily life. Treat the lesson with fun and take time to go back if you think you are at a loss.

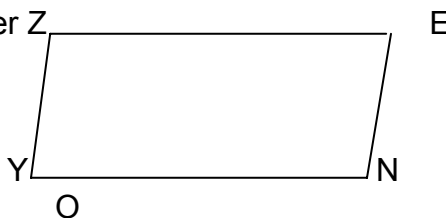
### *What you are expected to learn*

This module is designed for you to learn

1. illustrate a Quadrilateral and its parts
2. illustrate the different kinds of Quadrilaterals

How much do you know?

Write the letter of the correct answer

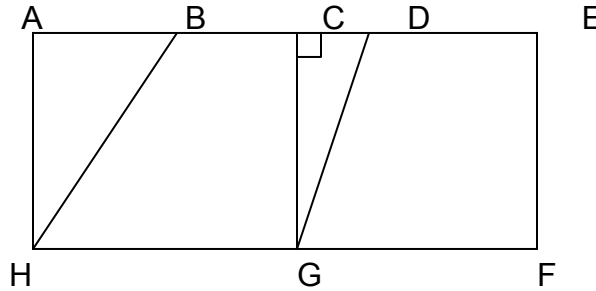


1. Quadrilateral ZENY is a \_\_\_\_\_.  
a. parallelogram    b. trapezoid    c. trapezium    d. rectangle
2. A diagonal of quadrilateral ZENY is \_\_\_\_\_.  
a.  $\overline{ZE}$     b.  $\overline{ZN}$     c.  $\overline{ZO}$     d.  $\overline{ZY}$
3.  $\angle Y$  is opposite angle \_\_\_\_\_.  
a.  $\angle Z$     b.  $\angle E$     c.  $\angle N$     d.  $\angle O$
4.  $\overline{DH}$  &  $\overline{ET}$  are the \_\_\_\_\_ of the Quadrilateral DETH  
a. median    b. altitude    c. bases    d. legs
5. If  $\overline{BH} \cong \overline{ET}$  then BETH is a/an \_\_\_\_\_.  
a. rectangle    b. trapezium  
c. isosceles trapezoid    d. square



6.  $\overline{BH} \cong \overline{ET}$  are the \_\_\_\_\_ of Quadrilateral BETH.  
a. legs    b. bases    c. median    d. altitude

7. which is the median of quadrilateral DETH  
 a.  $\overline{BH}$     b.  $\overline{MP}$     c.  $\overline{EA}$     d.  $\overline{DH}$
8. What kind of parallelogram is quadrilateral DETH?  
 a. rhombus    b. square    c. parallelogram    d. rectangle
9. Using the figure at the right which is a rhombus?  
 a. ACGH    b. CEFG  
 c. BDGH    d. AEFH



10. Which is a rhombus and a rectangle?  
 a. AEFH    b. CEFG    c. ACGH    d. BDGH

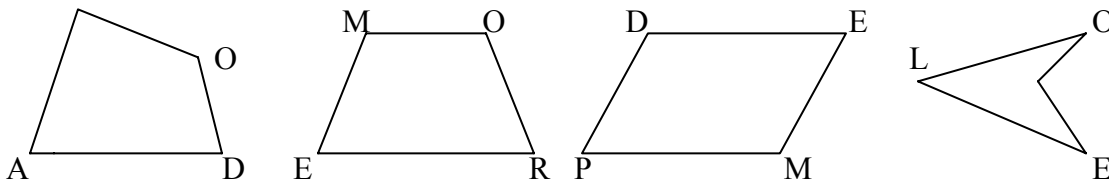
*What you will do*

### Lesson 1

### Identifying and Naming Quadrilaterals.

A quadrilateral is a polygon of four sides

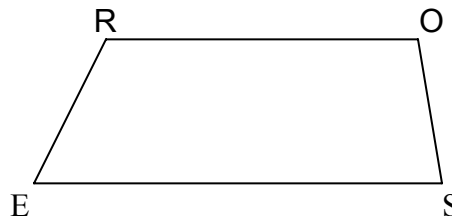
**Example:**



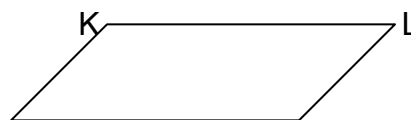
You can name a quadrilateral by its vertices. The order of vertices is very important. You read or write the four letters clockwise or counterclockwise.

Examples:

You can name a quadrilateral at the Right as.  
 ROSE or OSER or SERO or EROS  
 Or RESO or ESOR or SORE



The name of this quadrilateral can be:



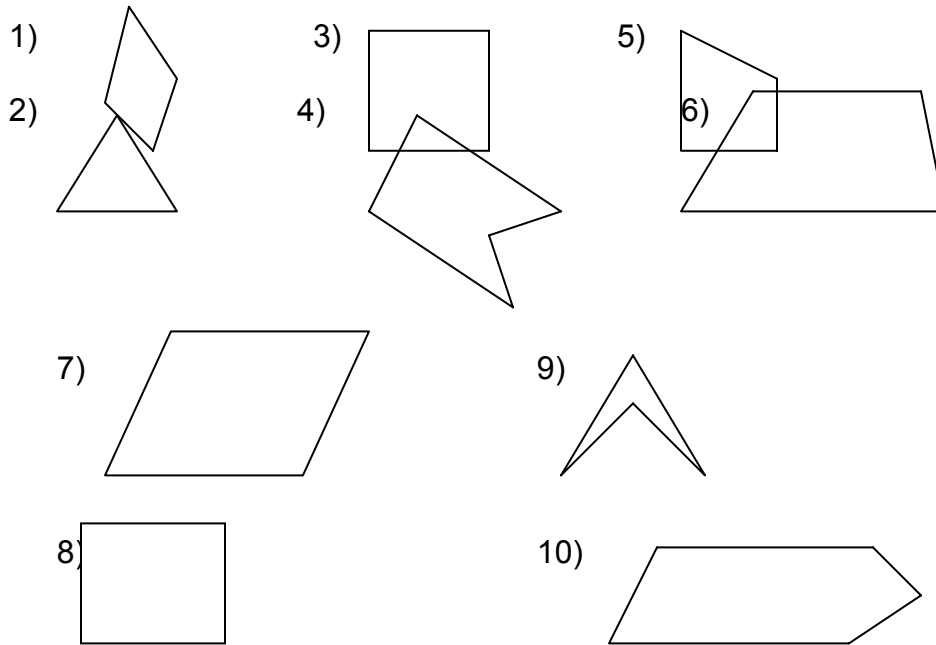
KLMN or LMNK or MNKL or NKLM  
 Or NMLK or MLKN or LKNM or KNML

N

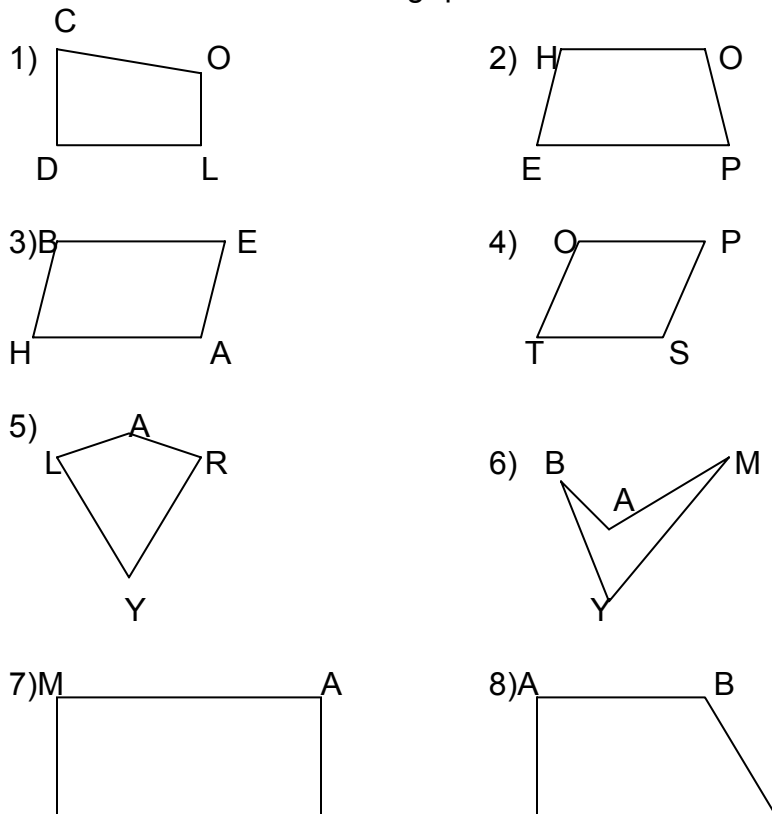
M

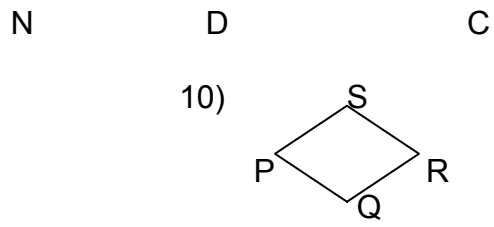
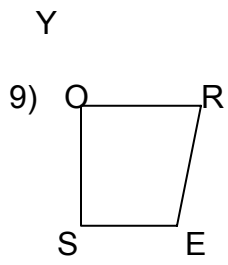
Try this out.

A. Which of the following is a quadrilateral or not.

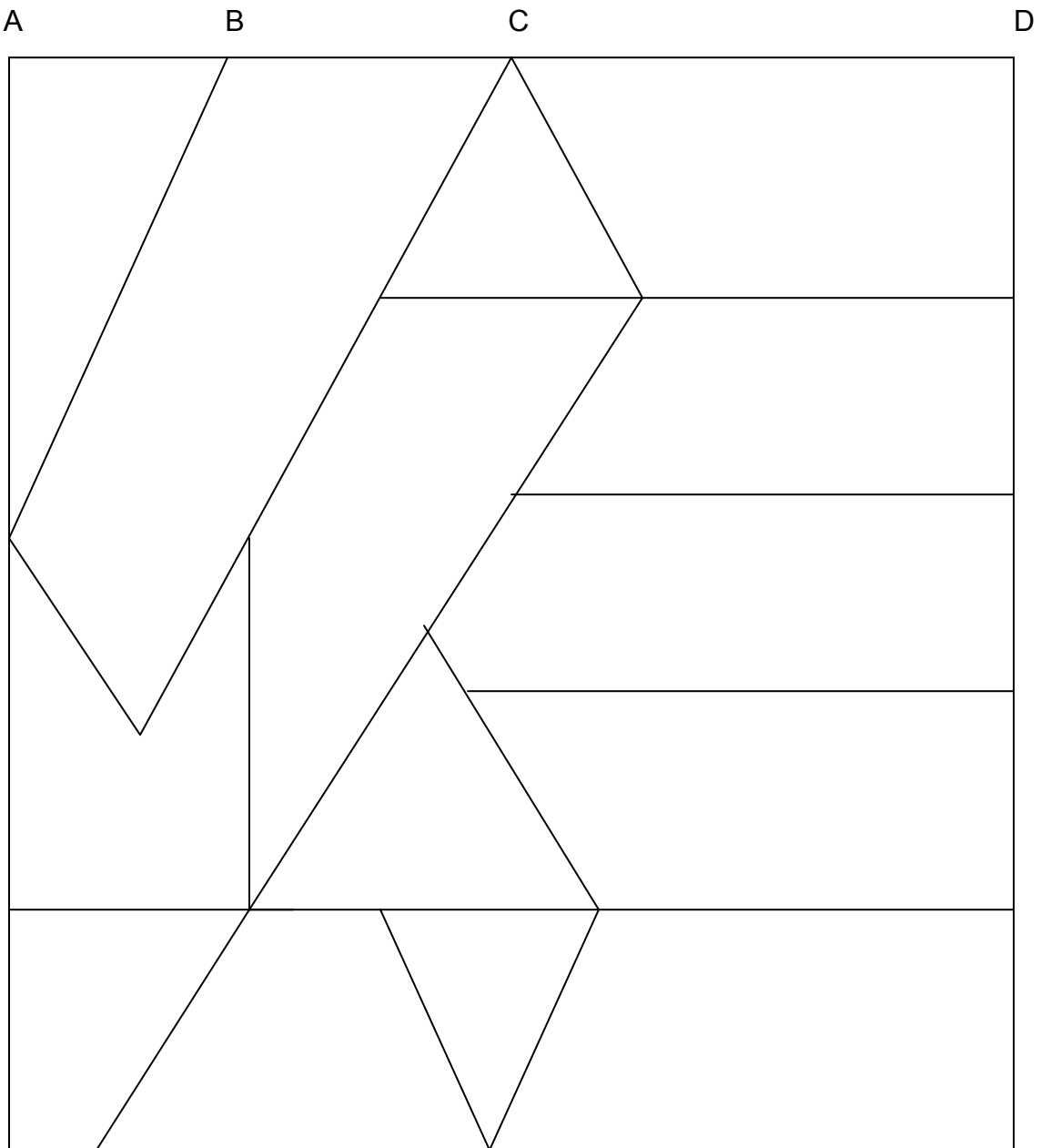


B. Name the following quadrilaterals.





C. Name & Identify the Quadrilaterals in the figure.



## Lesson 2

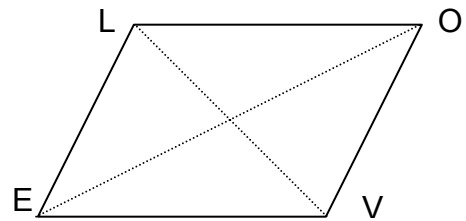
### Parts of a Quadrilateral

A quadrilateral has the following parts:

- 4 sides
- 4 vertices
- 4 angles
- 2 diagonals

You can take a look on quadrilateral LOVE

- the sides are:  $\overline{LO}$ ,  $\overline{OV}$ ,  $\overline{EV}$ ,  $\overline{LE}$
- the vertices are: L, O, V, E
- the angles are  $\angle L$ ,  $\angle O$ ,  $\angle V$ ,  $\angle E$
- the diagonals are  $\overline{LV}$  &  $\overline{OE}$   
diagonals are segments joining opposite vertices.



The vertices E and O; L and V are opposite vertices. Vertices L and O, O and V, V and E, E and L are consecutive vertices.

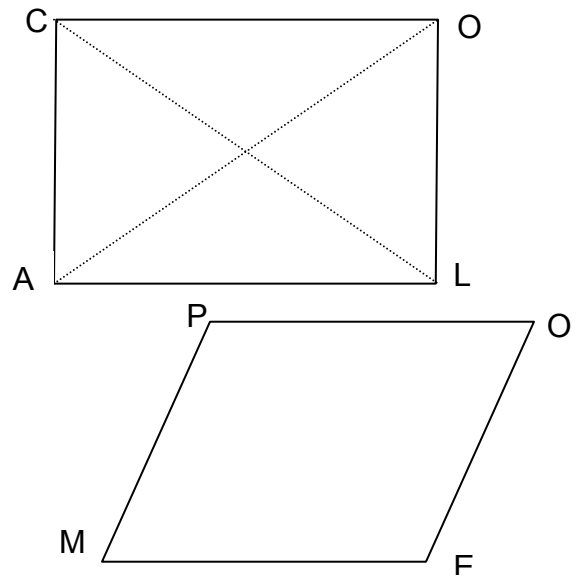
Two sides with a common vertex like  $\overline{LO}$  and  $\overline{OV}$  are consecutive sides. So,  $\overline{OV}$  and  $\overline{VE}$ ,  $\overline{VE}$  and  $\overline{EL}$ ,  $\overline{EL}$  and  $\overline{LO}$  are other pairs of consecutive sides. On the otherhand,  $\overline{LO}$  and  $\overline{EV}$ ,  $\overline{OV}$  and  $\overline{LE}$  are opposite sides.

Two angles with a common side like  $\angle L$  and  $\angle O$  are consecutive angles, the others are  $\angle O$  and  $\angle V$ ,  $\angle V$  and  $\angle E$ ,  $\angle E$  and  $\angle L$ , on the other hand,  $\angle E$  and  $\angle O$ ;  $\angle L$  and  $\angle V$  are opposite angles.

Try this out

A. Using quadrilateral COLA, identify

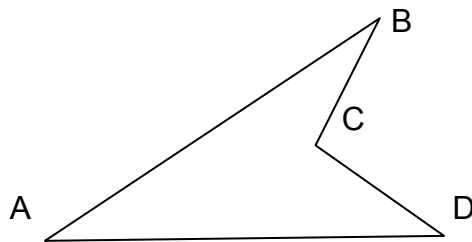
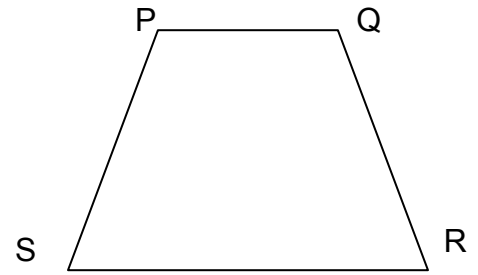
1. two pairs of opposite vertices
2. two pairs of opposite angles
3. two pairs of opposite sides
4. one pair of diagonals
5. four pairs of consecutive vertices
6. four pairs of consecutive angles
7. four pairs of consecutive sides
8. four sides of quadrilateral POEM
9. four angles of quadrilateral POEM



10. two diagonals that can be drawn in quadrilateral POEM

B. Fill the blanks:

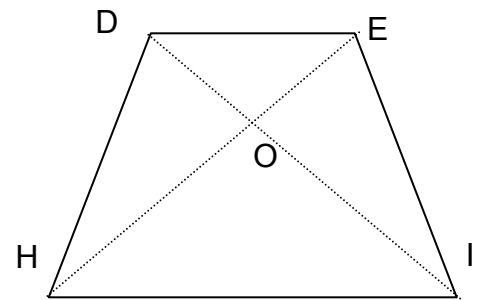
- 1) \_\_\_\_\_ the vertex opposite S
- 2) \_\_\_\_\_ is the opposite side of  $\overline{PS}$
- 3)  $\angle Q$  is opposite \_\_\_\_\_
- 4)  $\overline{PQ}$  and  $\overline{QR}$  are \_\_\_\_\_ sides.
- 5) The diagonals that can be drawn are  $\overline{QS}$  and \_\_\_\_\_



- 6)  $\overline{BC}$  and  $\overline{CD}$  are \_\_\_\_\_ sides.
- 7) B and C are consecutive vertices, B and \_\_\_\_\_ are also consecutive vertices.
- 8)  $\overline{AC}$  and \_\_\_\_\_ are the diagonals of quadrilateral ABCD.
- 9)  $\angle A$  and  $\angle D$  are \_\_\_\_\_ angles.
- 10)  $\angle A$  and \_\_\_\_\_ are opposite angles.

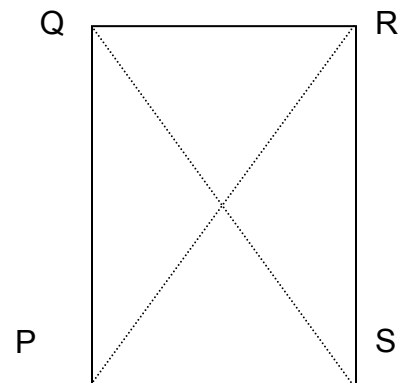
C. Choose the letter of the correct answer. Use quadrilateral DETH

1. How many diagonals has quadrilateral DETH?  
a. one   b. two   c. three   d. four
2. The sides of quadrilateral DETH are  $\overline{DH}$ ,  $\overline{HT}$ ,  $\overline{TE}$  and \_\_\_\_\_  
a.  $\overline{HE}$    b.  $\overline{DT}$    c.  $\overline{DE}$    d.  $\overline{DO}$
3.  $\angle LH$  is opposite of what angle?  
a.  $\angle E$    b.  $\angle D$    c.  $\angle T$    d.  $\angle O$
4. The opposite side of  $\overline{ET}$  is \_\_\_\_\_  
a.  $\overline{DO}$    b.  $\overline{DE}$    c.  $\overline{HT}$    d.  $\overline{DH}$
5. The diagonals of quadrilateral DETH are \_\_\_\_\_  
a.  $\overline{DO}$  &  $\overline{OT}$    b.  $\overline{HE}$  &  $\overline{DT}$    c.  $\overline{DH}$  &  $\overline{ET}$    d.  $\overline{DE}$  &  $\overline{HT}$



Given: quadrilateral PQRS

6. How many vertices are there in Quadrilateral PQRS?

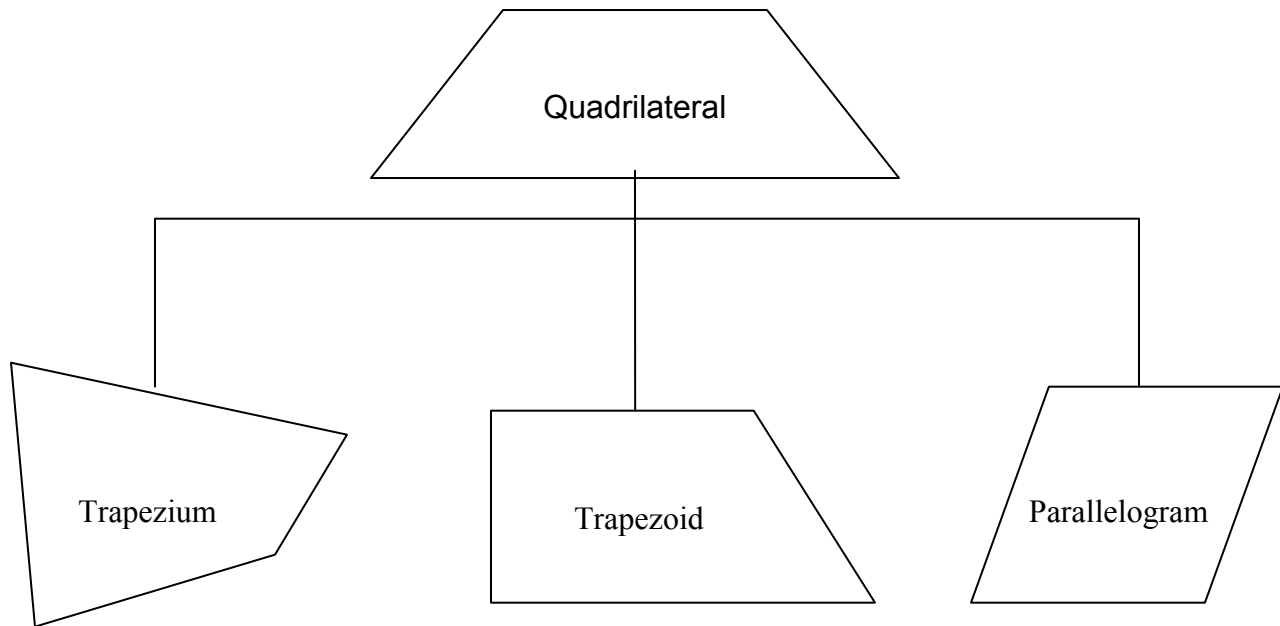


- a. one   b. two   c. three   d. four
7. A pair of consecutive sides is  $\overline{PQ}$  and \_\_\_\_\_  
a.  $\overline{QR}$    b.  $\overline{RS}$    c.  $\overline{PR}$    d.  $\overline{QS}$
8. A pair of opposite vertices is P and \_\_\_\_\_  
a. R   b. Q   c. S   d. M
9. How many pairs of opposite  $\angle$ s has quadrilateral PQRS?  
a. one   b. two   c. three   d. four
10. How many pairs of consecutive sides has quadrilateral PQRS?  
a. one   b. two   c. three   d. four

## *Lesson 3*

### *Parallels & Perpendiculars*

#### *Kinds of Quadrilaterals*



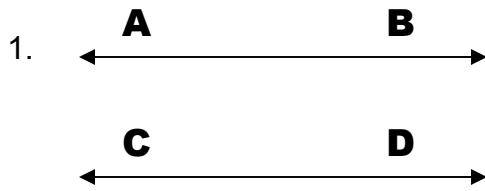
As you can see the diagram of the different kinds of quadrilaterals, you can notice the characteristics of the sides of each quadrilateral.

Before you proceed to the definition of each quadrilateral, you must know first the meaning of the following:

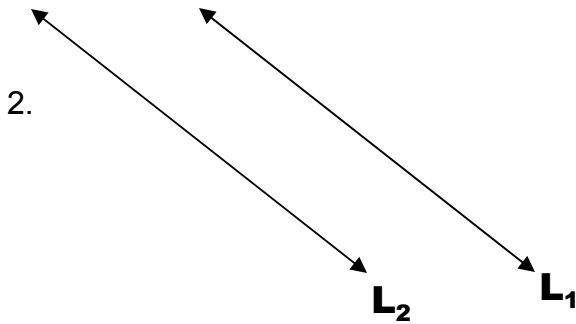
- i. parallel lines                      two lines are parallel if they are coplanar and they do not meet.
- ii. perpendicular lines              two lines are perpendicular if they intersect and form a right angle.

Examples:

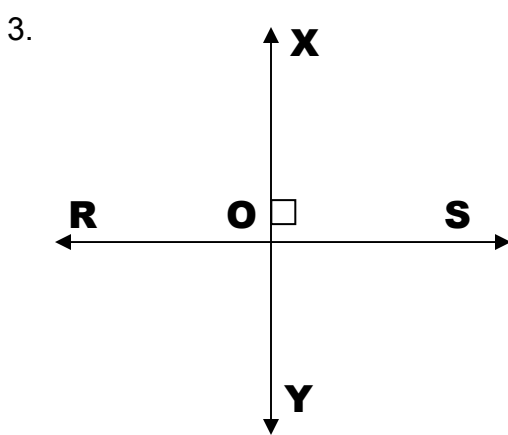




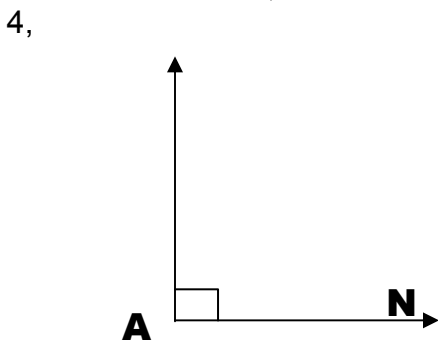
two lines are parallel if they are coplanar and they do not meet.



$l_1$  is parallel to  $l_2$ . In symbol  $l_1 // l_2$



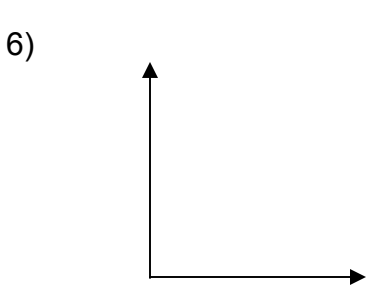
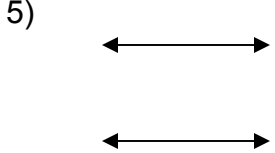
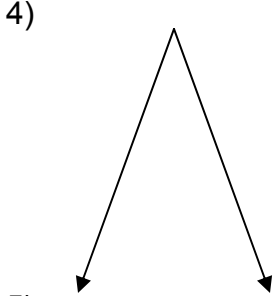
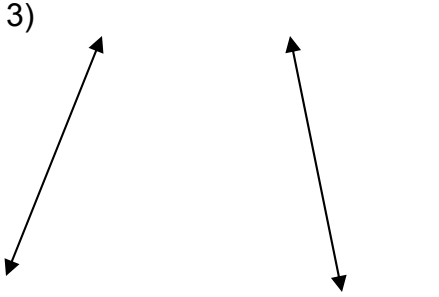
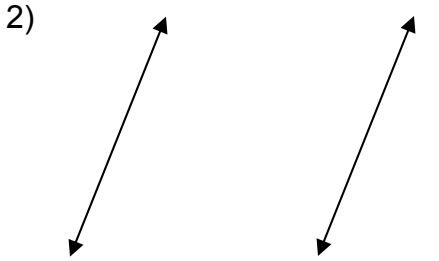
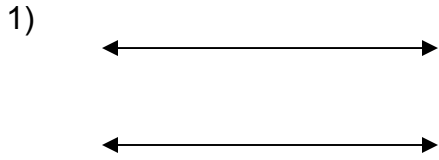
If  $\overleftrightarrow{XY}$  intersects  $\overleftrightarrow{RS}$  at O and  $\angle XOS$  is a right angle, then  $\overleftrightarrow{XY}$  is perpendicular to  $\overleftrightarrow{RS}$ , in symbol:  $\overleftrightarrow{XY} \perp \overleftrightarrow{RS}$



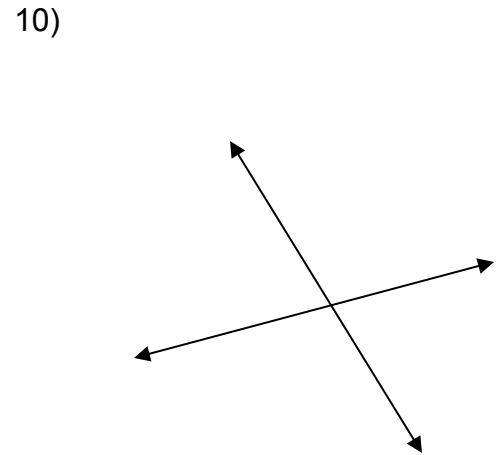
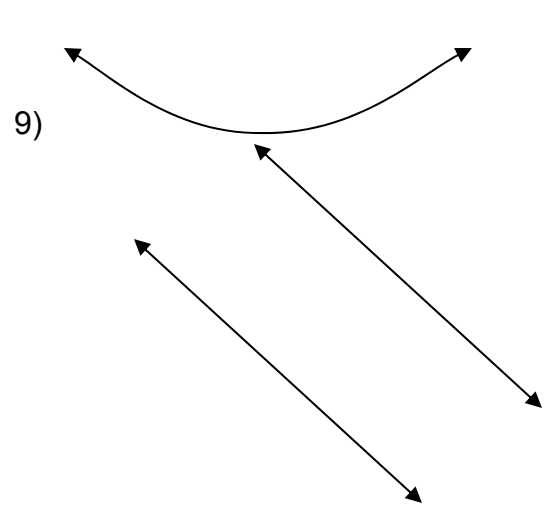
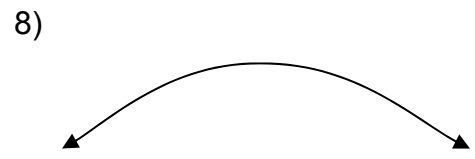
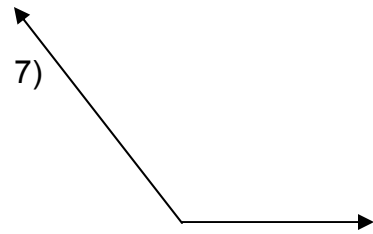
If  $\angle MAN$  is a right angle, then  $\overleftrightarrow{AM} \perp \overleftrightarrow{AN}$

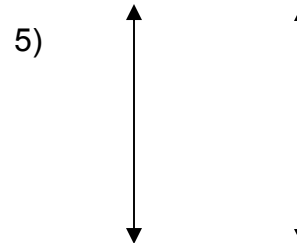
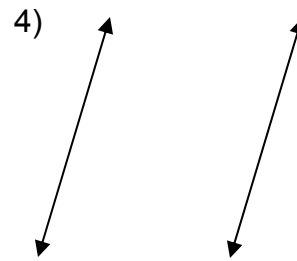
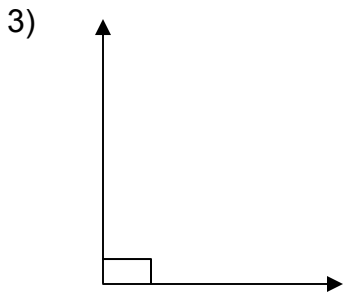
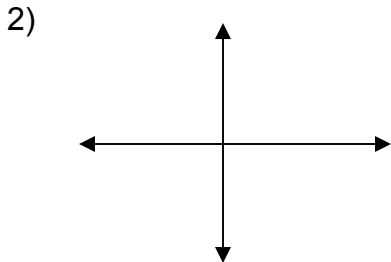
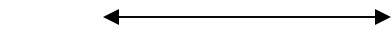
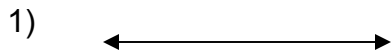
Try this out.

A. Which of the following seem to be parallel?  
Write yes if it is and no if not.



B. Write parallel or perpendicular.

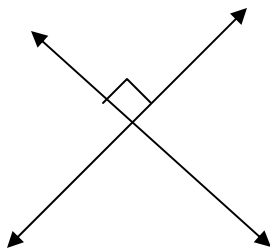




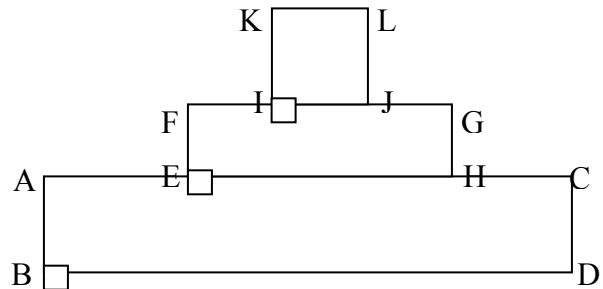
- 6) A pair of lines of your pad paper
- 7) The corner of the blackboard
- 8) Railroad tracks
- 9) The grills
- 10) A pair of consecutive sides of a picture frame

C. Are we parallel or perpendicular?

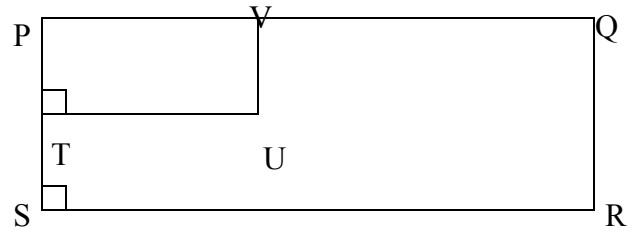
- 1) Two lines on a plane which do not meet.
- 2) Two intersecting lines which form a right angle.
- 3)



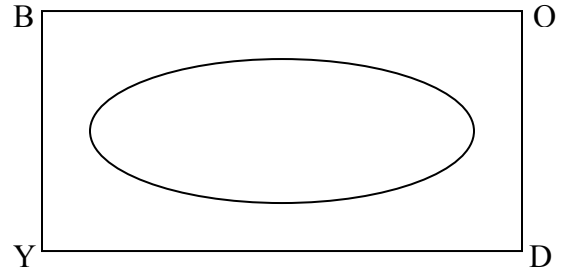
- 4)  $\overline{AB} \text{ \& } \overline{BD}$
- 5)  $\overline{FG} \text{ \& } \overline{EH}$
- 6)  $\overline{KI} \text{ \& } \overline{FG}$



- 7)  $\overline{PT}$  &  $\overline{TU}$
- 8)  $\overline{QR}$  &  $\overline{PS}$
- 9)  $\overline{PV}$  &  $\overline{TU}$



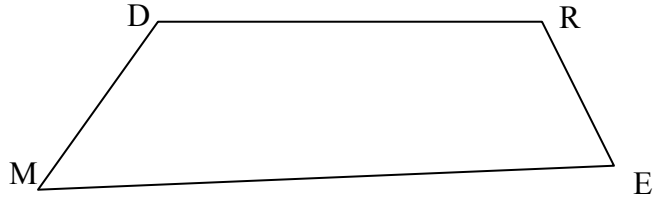
- 10)  $\overline{BY}$  &  $\overline{BO}$



## Lesson 4

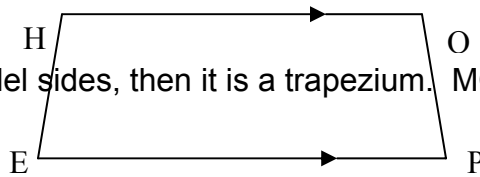
### Kinds of Quadrilaterals

1. Trapezium



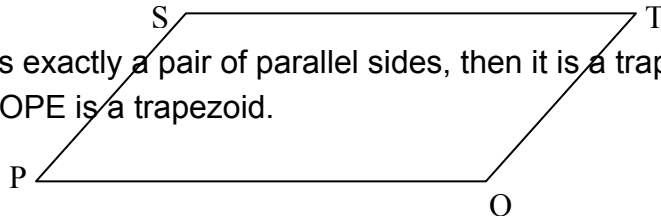
2. Trapezoid

If a quadrilateral has no parallel sides, then it is a trapezium. MORE is a trapezium.



3. Parallelogram

If a quadrilateral has exactly a pair of parallel sides, then it is a trapezoid. If  $\overline{HO} \parallel \overline{EP}$ , then HOPE is a trapezoid.

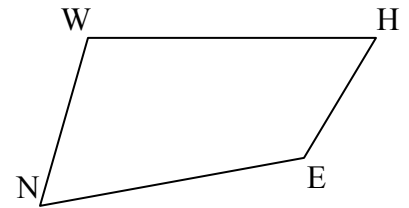


If a quadrilateral has two pairs of parallel sides, then it is a parallelogram.

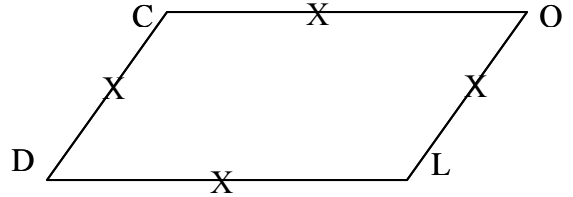
If  $\overline{ST} \parallel \overline{PO}$  and  $\overline{SP} \parallel \overline{TO}$  then STOP is a parallelogram.

A. Identify:

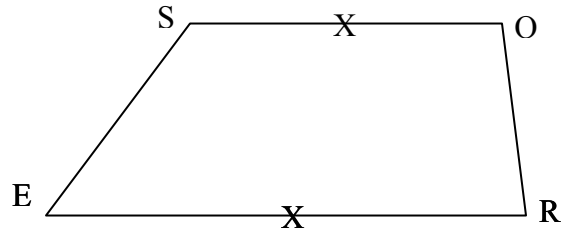
- \_\_\_\_\_ 1. A quadrilateral whose opposite sides are parallel.
- \_\_\_\_\_ 2. A quadrilateral with no parallel sides.
- \_\_\_\_\_ 3. A quadrilateral with a pair of parallel sides.
  
- \_\_\_\_\_ 4. Quadrilateral WHEN.



\_\_\_\_\_ 5. Quadrilateral COLD.



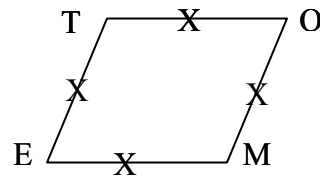
\_\_\_\_\_ 6. Quadrilateral SORE



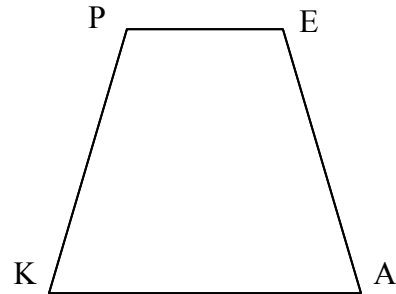
\_\_\_\_\_ 7. Quadrilateral PEAS



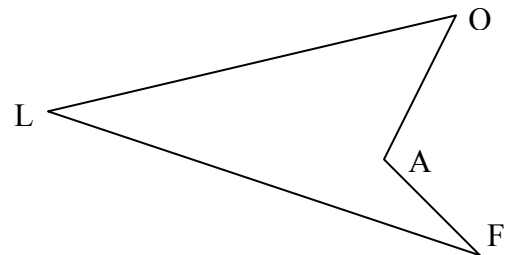
\_\_\_\_\_ 8. Quadrilateral TOME



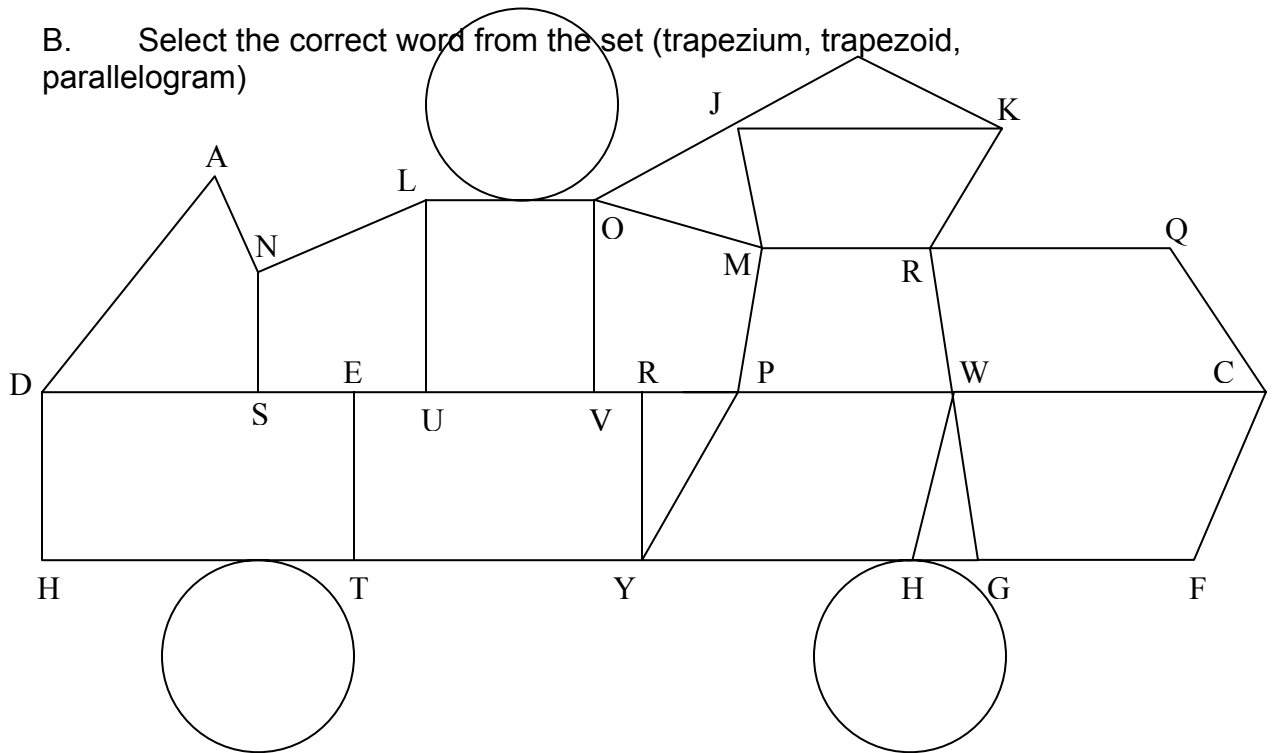
\_\_\_\_\_ 9. Quadrilateral PEAK



\_\_\_\_\_ 10. Quadrilateral LOAF



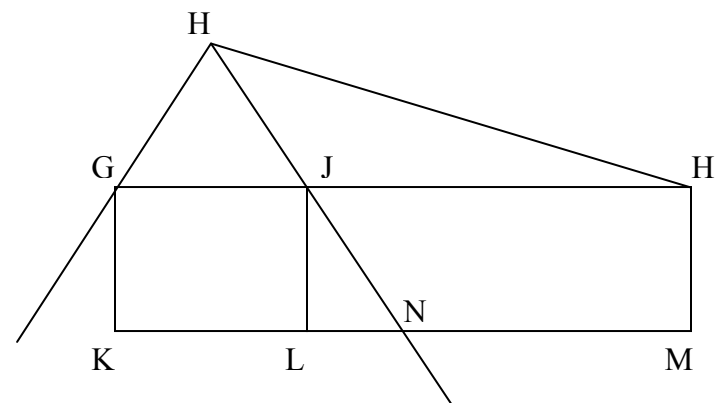
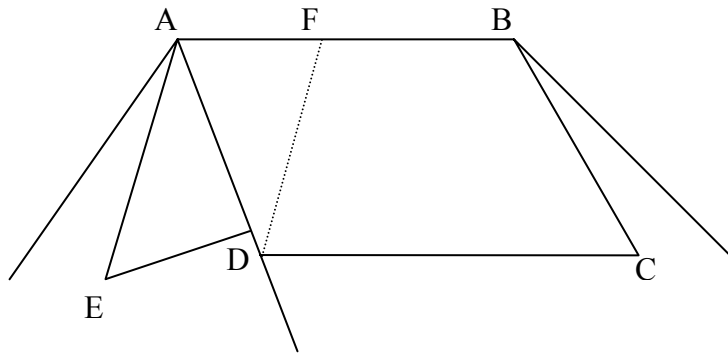
B. Select the correct word from the set (trapezium, trapezoid, parallelogram)



1. quadrilateral DETH
2. quadrilateral DANS
3. quadrilateral SNLU
4. quadrilateral LOVU
5. quadrilateral JMRK
6. quadrilateral OMPV
7. quadrilateral RWCR
8. quadrilateral WGFC
9. quadrilateral PWGY
10. quadrilateral TERY

C. Draw the following figures:

1. trapezium ZENY
2. trapezoid BETH
3. parallelogram LOVE
4. parallelogram with diagonals  $\overline{DL}$  &  $\overline{BW}$
5. trapezoid with diagonals  $\overline{IE}$  &  $\overline{MC}$



Two tents are fixed above. Give me:

- 6. } three parallelograms
- 7. }
- 8. }
- 9. } Two trapezoids
- 10. }