



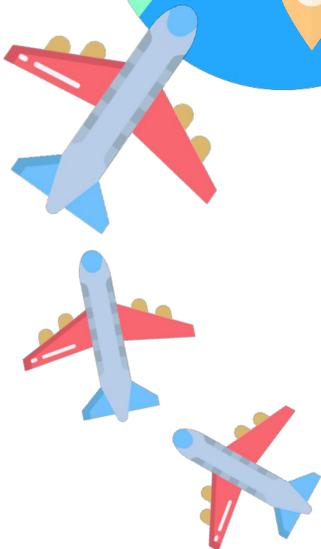
# Helping With Math

## Classifying Shapes by Lines and Angles

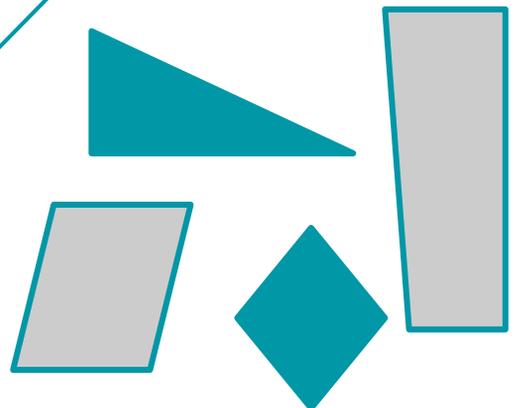
**GRADE 4**



Shapes have unique attributes that make them distinct. We can classify shapes according to the presence of lines and angles.



Come with me as we travel the world to discover the attributes of shapes--- lines and angles that they have! Learning is fun! Learning should be relevant!



# LINES

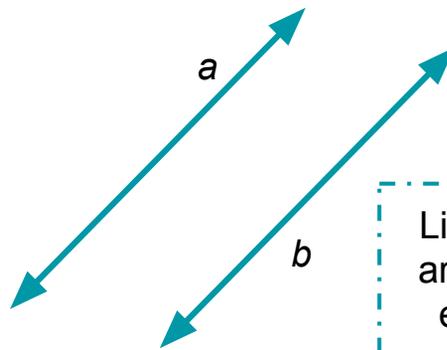
## LINE



A **line** is a one-dimensional figure, which has length but no width. It is composed of two or more points. In geometry, line can be classified into sub-groups. One of which is that lines can be parallel or perpendicular.

### PARALLEL LINES

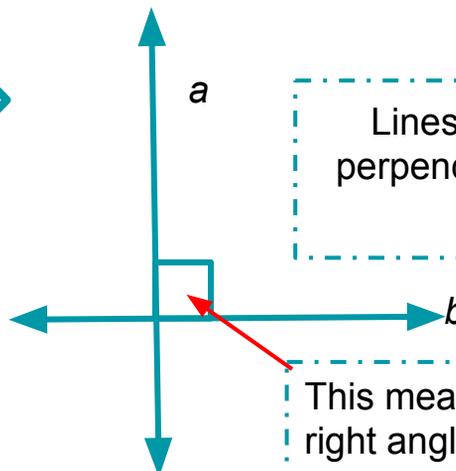
Lines are said to be parallel if they are always the same distance apart (called "equidistant"), and will never meet or intersect.



Lines *a* and *b* are parallel to each other.

### PERPENDICULAR LINES

Lines are perpendicular to each other if their intersection produces a 90-degree angle.



Lines *a* and *b* are perpendicular to each other.

This measures  $90^\circ$ . It is a right angle.



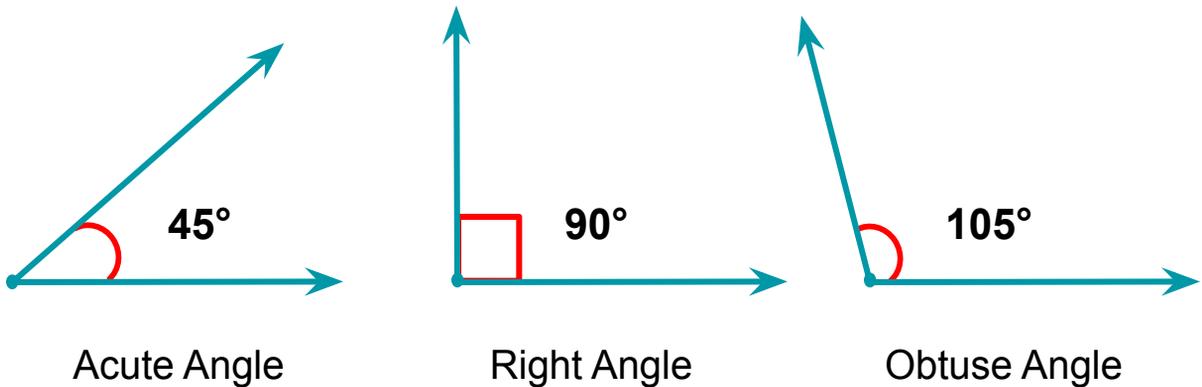
# ANGLES

## ANGLE



An angle is a figure which is formed by two rays or lines that shares a common endpoint.

- ❑ **Acute Angles:** angles that are smaller than  $90^\circ$
- ❑ **Right Angles:** angles that measure exactly  $90^\circ$
- ❑ **Obtuse Angles:** angles that measure more than  $90^\circ$

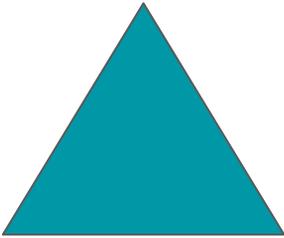


Now that you were able to recall the important concepts about lines and angles. Let's apply these in classifying shapes!



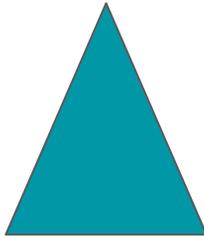
# CLASSIFYING TRIANGLES

## CLASSIFYING TRIANGLES ACCORDING TO THEIR SIDES



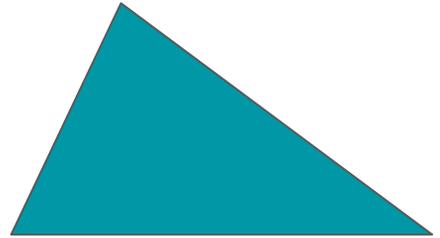
**Equilateral Triangle**

All sides are on the same length.



**Isosceles Triangle**

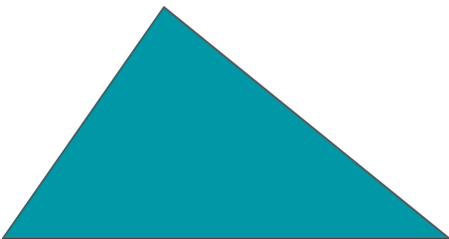
Two sides are on the same length.



**Scalene Triangle**

No sides are on the same length.

## CLASSIFYING TRIANGLES ACCORDING TO THEIR ANGLES

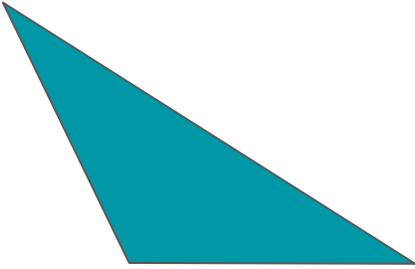


### **Acute Triangle**

- All angles are acute, which means less than 90 degrees.

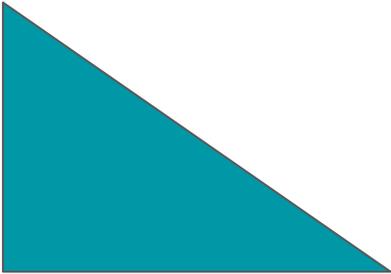


## CLASSIFYING TRIANGLES



### Obtuse Triangle

- A triangle whose one angle measures greater than 90 degrees.

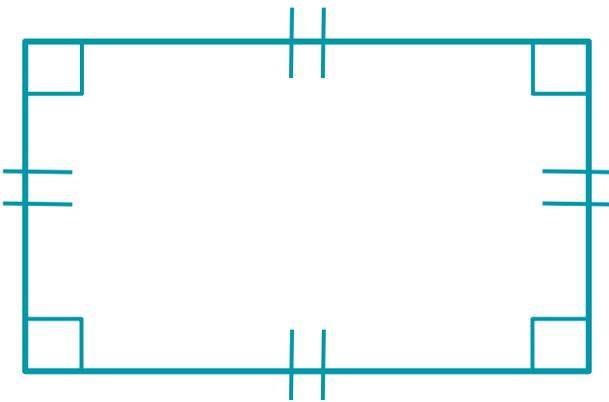


### Right Triangle

- A triangle with a 90-degree angle.

## CLASSIFYING QUADRILATERALS

### RECTANGLE



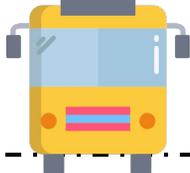
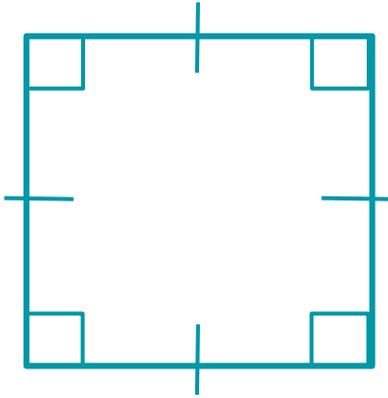
**Rectangle is a quadrilateral with:**

- four right angles, meaning four 90-degree angles
- equal opposite sides



# CLASSIFYING QUADRILATERALS

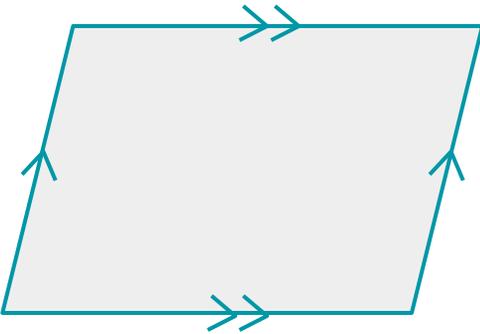
## SQUARE



**Square is a quadrilateral with:**

- four right angles, meaning four 90-degree angles
- four equal sides

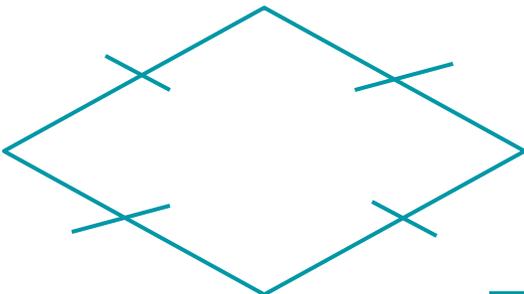
## PARALLELOGRAM



**Parallelogram is a quadrilateral with:**

- two pairs of parallel sides
- equal opposite sides

## RHOMBUS



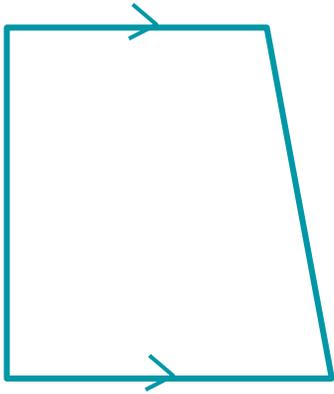
**Rhombus is a parallelogram with:**

- four equal sides
- 



# CLASSIFYING QUADRILATERALS

## TRAPEZOID

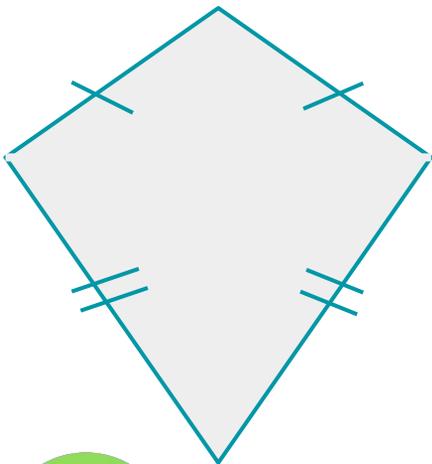


**Trapezoid** is a quadrilateral with:

- one pair of parallel sides

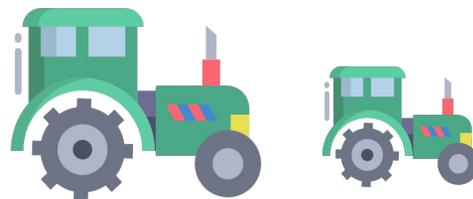


## KITE



**Kite** is a quadrilateral with:

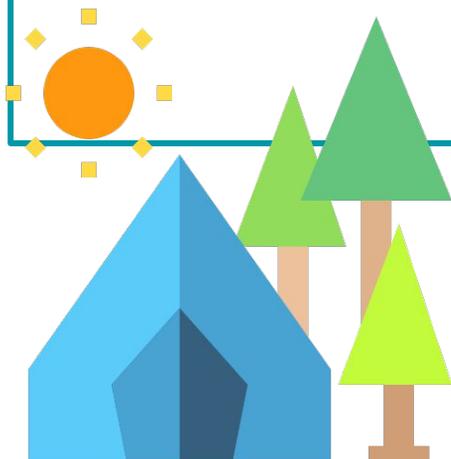
- two pairs of adjacent sides of the same length



## PRACTICE EXERCISES

1. Draw two types of triangles and indicate their distinct attributes.

2. Choose two types of quadrilaterals and indicate their distinct attributes.



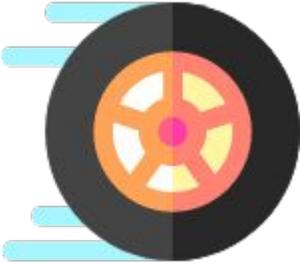
# TABLE OF ACTIVITIES

1. Wheels On
2. Transportation Rules
3. One Place or Another
4. Geometric Helipad
5. Tow Truck Duties
6. Sailboat Go
7. Airplane Tickets
8. Traveler's Dreams
9. Pinning Destination
10. Locating Drop-Off



# WHEELS ON

Grab these wheels to make your weekend escapade possible. Write TRUE if the statement is correct. Otherwise, FALSE.

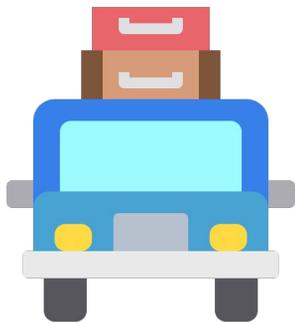


Two lines are parallel if they are equidistant to each other and will never meet.

1.

If an angle measures greater than 90 degrees, then it is considered as acute angle.

2.

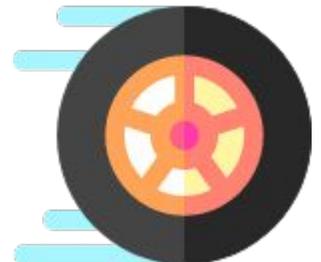


A triangle whose sides are all equal in measurement is called isosceles triangle.

3.

Two lines are parallel to each other if and only if they intersect and form a right angle.

4.



# TRANSPORTATION RULES

Get familiarized with these transportation rules by identifying which word is being described on each item. Write your answer on the space provided.

1. A type of triangle whose a pair of sides are in the same measurement.

\_\_\_\_\_

2. A type of triangle which has no sides that are equal.

\_\_\_\_\_

3. A triangle whose one angle measures 90 degrees.

\_\_\_\_\_



4. A 3-sided polygon that has an angle whose measure is greater than 90.

\_\_\_\_\_

5. A polygon with three vertices whose sides are all equal in length.

\_\_\_\_\_

6. A type of triangle whose angles are less than 90 degrees.

\_\_\_\_\_



## ONE PLACE OR ANOTHER

Travel from one place or another by constructing the following geometric conditions.

1. Draw an equilateral triangle whose side measures 5 cm. Name it as triangle HWM.

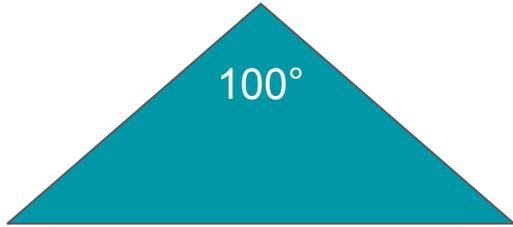


2. Draw an isosceles triangle whose angles measure 50-50-80 degrees respectively.

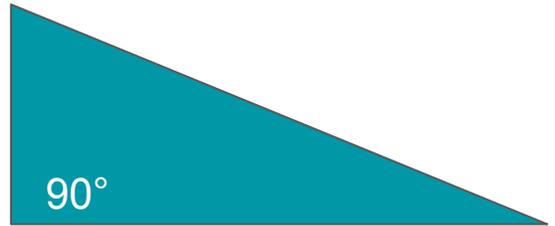


# AIRPLANE TICKETS

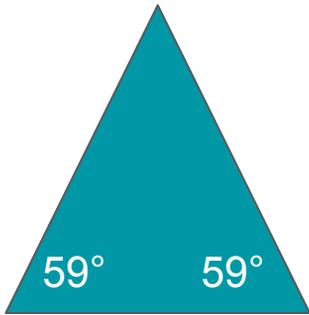
Avail these discounted airline tickets once you manage to classify these triangles as acute, right, or obtuse.



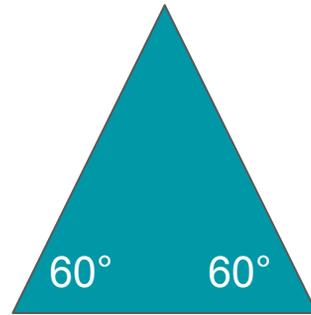
1.



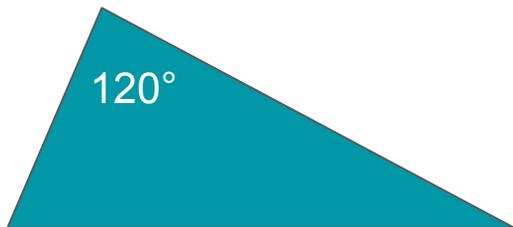
2.



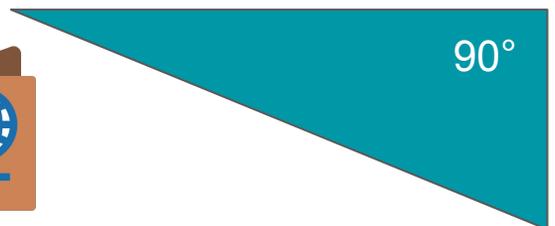
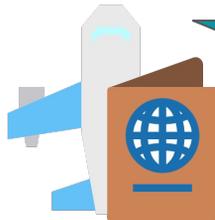
3.



4.



5.

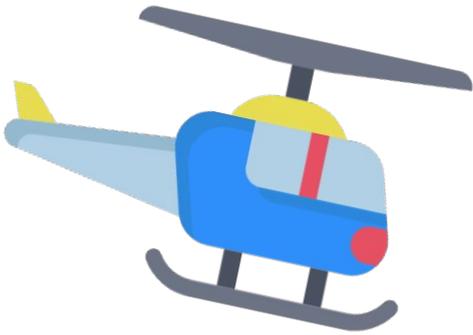


6.



# GEOMETRIC HELIPAD

Make a safe helicopter landing on this helipad by putting a check on the box of a shape/s that have four right angles.



Rectangle ABCD

Parallelogram  
XYZW

Trapezoid IJAK

Trapezoid MNLP

Rhombus  
PQRS

Square  
NTCB

**HWM**



# TOW TRUCK DUTIES

Help the tow truck complete his task by classifying these objects based on the presence of two pairs of parallel sides. Cut and paste the shapes that possess the given attribute.

Paste them here.



Trapezoid MNLP

Square  
NTCB

Rectangle ABCD

Rhombus  
PQRS

Trapezoid IJAK

Parallelogram  
XYZW



# SAILBOAT GO

It's a perfect day for boat sailing! Enjoy it after identifying the shape/s being described on each given.

1.

It is a parallelogram with four equal sides.

2.

This quadrilateral has four right angles and four equal sides.

3.

It has two equal opposite sides and four right angles.

4.

A four-sided polygon with a pair of parallel sides.

5.

It has two pairs of adjacent sides of the same length.



**Bonus question: Name all quadrilaterals which have four right angles**



# TRAVELERS' DREAMS

Make the travelers' dreams come true by classifying these quadrilaterals through lines and angles. Put a check on the column to show your answer.

Quadrilateral	Four right angles	At least one pair of parallel sides	Opposite sides are equal	Four sides are equal
1. Rectangle				
2. Square				
3. Parallelogram				
4. Rhombus				
5. Trapezoid				
6. Kite				



# PINNING DESTINATION

Pin your destination by constructing the following geometric figures based on the given attributes.

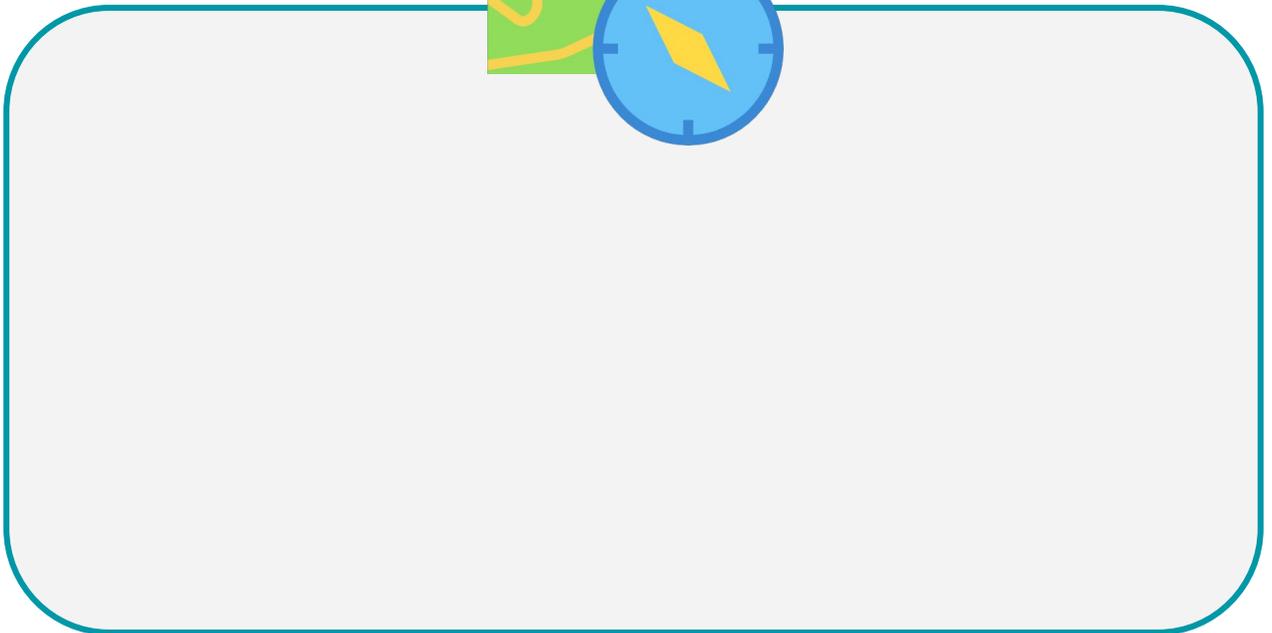
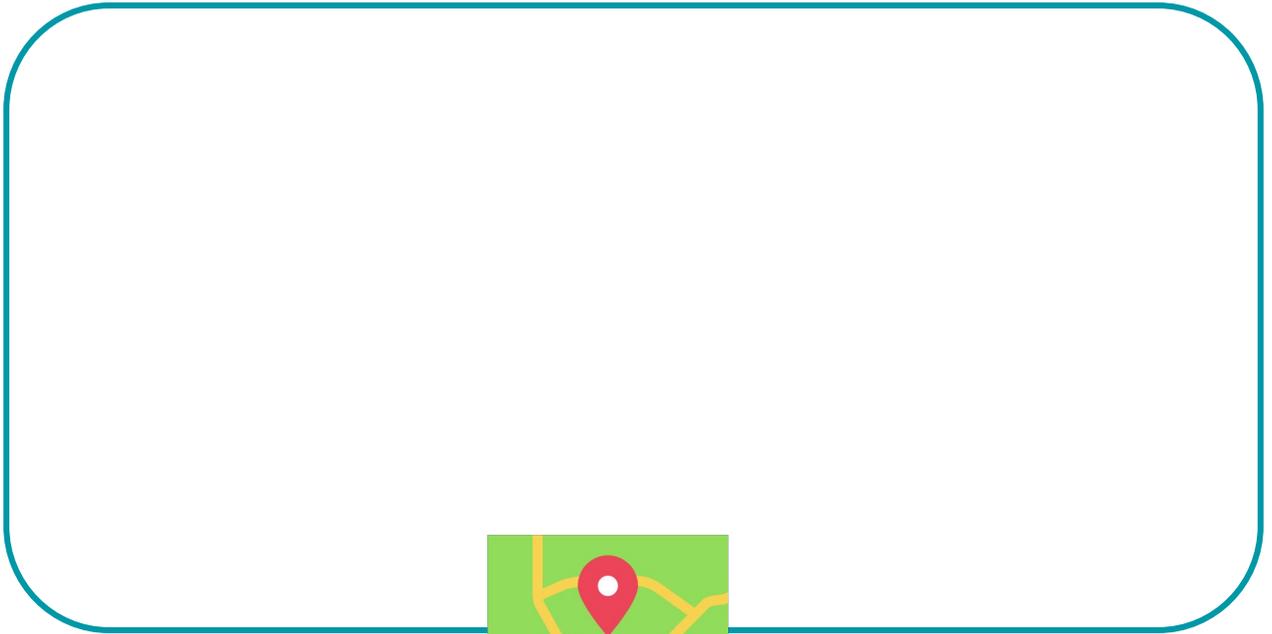
1. Construct a parallelogram whose each side measures 6 cm. Label it as MNPQ. Also, put necessary marks to show its unique property.

2. Create a trapezoid whose shorter base measures 4.5 cm and the longer base measures 6.5 cm. Put necessary marks to show its unique property.



## LOCATING DROP-OFF

Locate the destination point of these travelers by constructing two quadrilaterals and listing down their properties.



# ANSWER GUIDE

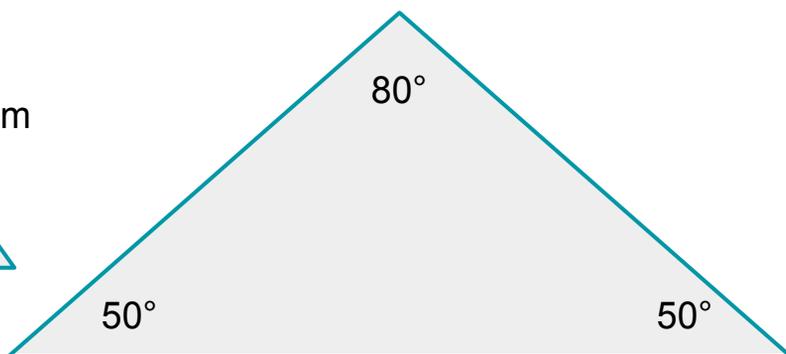
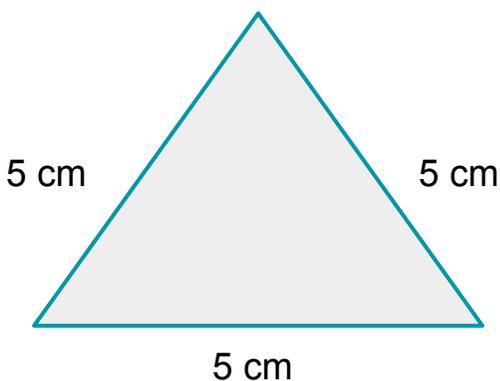
## Activity 1

1. TRUE      2. FALSE      3. FALSE      4. FALSE

## Activity 2

1. Equilateral      2. Scalene      3. Right      4. Obtuse  
5. Equilateral      6. Acute

## Activity 3



## Activity 4

1. Obtuse      2. Right      3. acute      4. Acute  
5. Obtuse      6. Right

## Activity 5

Rectangle ABCD      Square NTCB



# ANSWER GUIDE

## Activity 6

Parallelogram XYZW

Rhombus PQRS

## Activity 7

1. Rhombus  
4. Trapezoid

2. Square  
5. Kite

3. Rectangle  
Bonus: Rectangle and square

## Activity 8

1. Rhombus  
4. Trapezoid

2. Square  
5. Kite

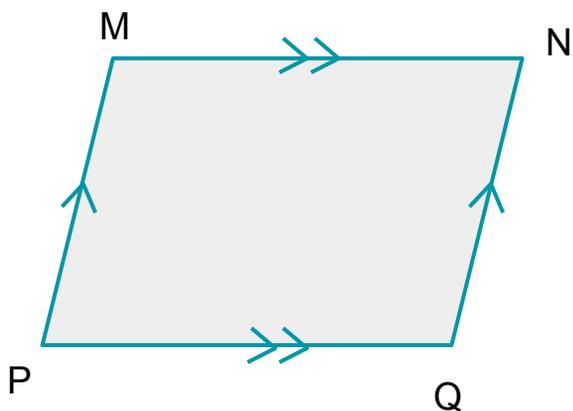
3. Rectangle  
Bonus: Rectangle and square

Quadrilateral	Four right angles	At least one pair of parallel sides	Opposite sides are equal	Four sides are equal
1. Rectangle	✓		✓	
2. Square	✓			✓
3. Parallelogram		✓	✓	
4. Rhombus		✓		✓
5. Trapezoid		✓		
6. Kite			✓	



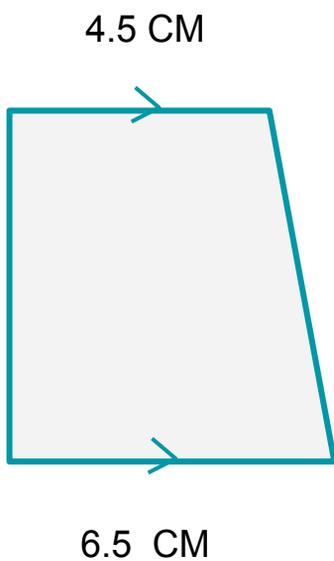
# ANSWER GUIDE

## Activity 9



**Parallelogram is a quadrilateral with:**

- two pairs of parallel sides
- equal opposite sides



**Trapezoid is a quadrilateral with:**

- one pair of parallel sides

## Activity 10

1. Equilateral

2. Scalene

3. Right

4. Obtuse

5. Equilateral

6. Acute



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