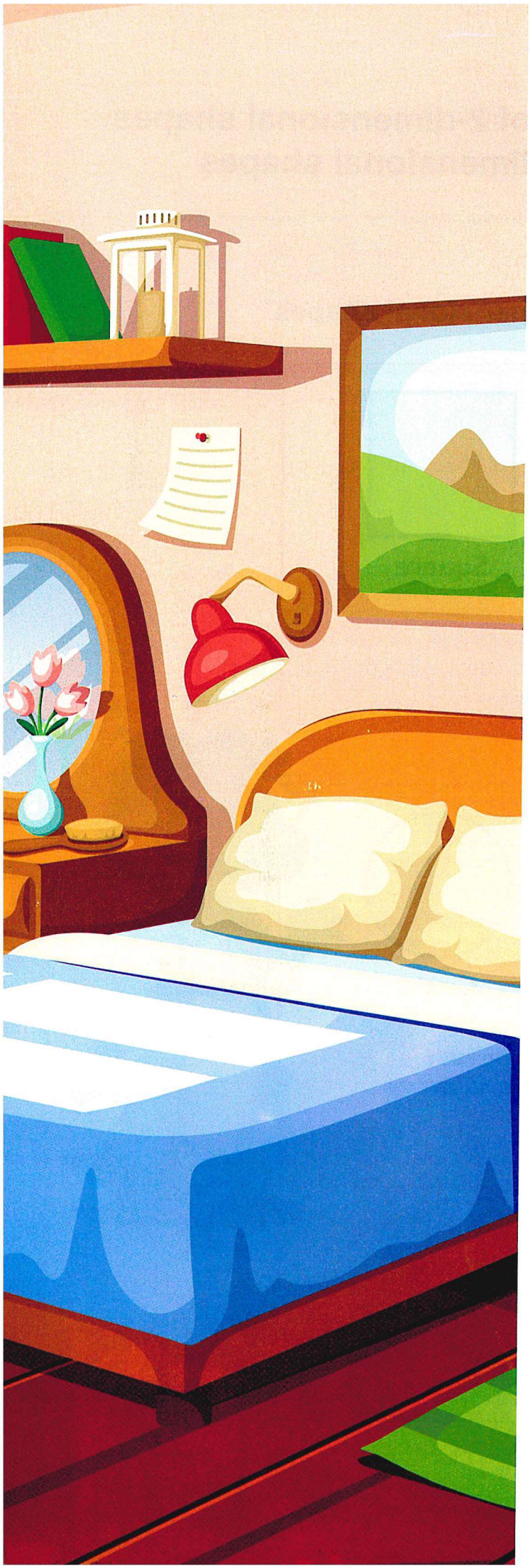
# CHAPTER 5



# Outcomes of chapter five :

**At the end of chapter five, your child will be able to:**

### ▶ Lessons 1 & 2 :

- Participate in calendar math activities.
- Describe the attributes of two-dimensional shapes.
- Sort two-dimensional shapes based on attributes.
- Identify and name two-dimensional shapes.
- Identify shapes that have specified attributes.

### ▶ Lessons 3 & 4 :

- Participate in calendar math activities.
- Identify and draw two-dimensional shapes based on given attributes.
- Describe and identify two-dimensional shapes by their attributes.
- Arrange two-dimensional shapes to create a picture.

### ▶ Lessons 5 to 7 :

- Participate in calendar math activities.
- Measure the lengths of objects in centimeters.
- Describe strategies for accurately measuring the lengths of objects.
- Explain the relationship between centimeters and meters.
- Measure objects to the nearest centimeter.
- Estimate lengths of objects to benchmark lengths of 1, 10, 50 and 100 cm.
- Estimate and confirm the length of an object.
- Measure the sides of two-dimensional shapes.

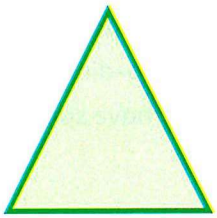
### ▶ Lessons 8 to 10 :

- Participate in calendar math activities.
- Identify and count attributes of three-dimensional shapes.
- Sort three-dimensional shapes based on attributes.
- Describe the attributes of three-dimensional shapes.
- Identify and name three-dimensional shapes.
- Identify three-dimensional shapes based on attributes.
- Build three-dimensional shapes.

Lessons 1 & 2

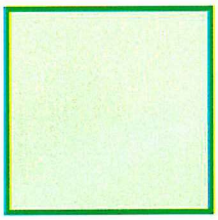
- Attributes of 2-dimensional shapes
- Sorting 2-dimensional shapes

## Learn 1 Attributes of 2-dimensional shapes



**Triangle**

**The triangle has :**
- 3 sides
- 3 vertices

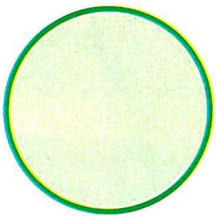


**Square**

**The square has :**
- 4 sides equal in length
- 4 vertices

**Rectangle**

**The rectangle has :**
- 4 sides
  (2 sides are short and
  2 sides are long)
- 4 vertices



**Circle**

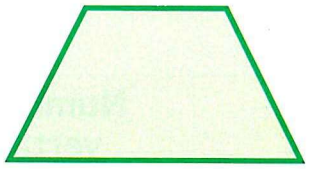
**The circle has :**
no sides, no vertices

### Remember

- Each two sides meet at a vertex.
- A two-dimensional shape is a flat shape.

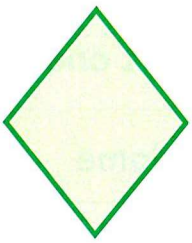


Notes for parents
- Ask your child to show you an example of each shape in your home.



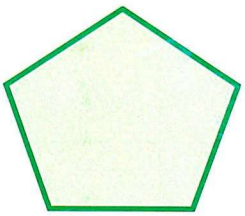
## Trapezoid
(Trapezium)

**The trapezoid has :**
- 4 sides
  (2 sides are parallel and
  2 sides are not parallel)
- 4 vertices



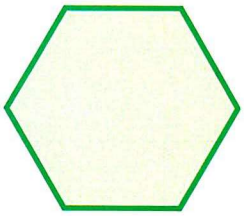
## Rhombus

**The rhombus has :**
- 4 sides equal in length
- 4 vertices



## Pentagon

**The pentagon has :**
- 5 sides
- 5 vertices



## Hexagon

**The hexagon has :**
- 6 sides
- 6 vertices

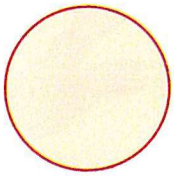
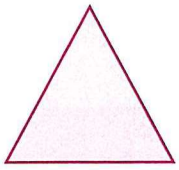
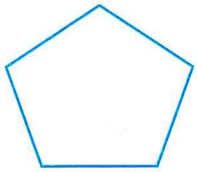
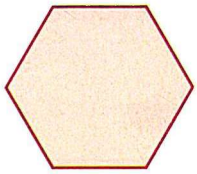
**Hint**

All two-dimensional shapes with 4 sides and 4 vertices are called "quadrilaterals"
(for example : square, rectangle, trapezoid and rhombus).

• Help your child understand the meaning of "parallel". Give examples as railway.

## Check

**Complete the table. The first one is done for you.**

| Shape | Name | Number of sides | Number of vertices |
|---|---|---|---|
| a.  | Square | 4 | 4 |
| b.  | | | |
| c.  | | | |
| d.  | | | |
| e.  | | | |
| f.  | | | |
| g.  | | | |



**Notes for parents**

- Help your child determine the number of sides and the number of vertices of each shape.

## Learn 2 Sorting 2-dimensional shapes

Shapes may be sorting based on their attributes.

### Triangles

*These triangles look different but each one of them has 3 sides and 3 vertices.*

### Pentagons

### Quadrilaterals

***"Quadrilateral"***

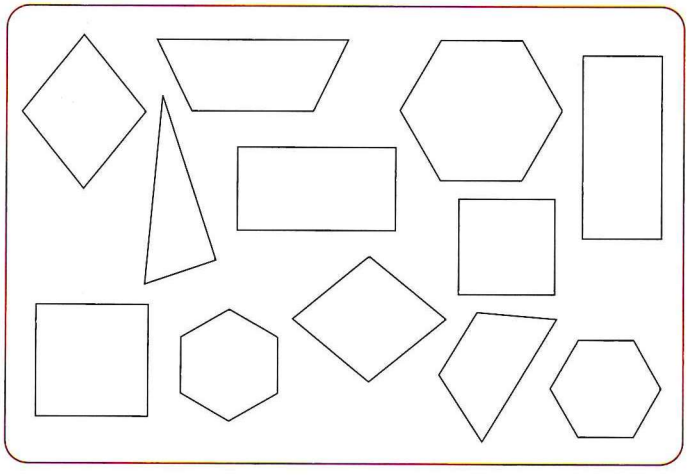
- *"**Quad**" means "**4**"*
- *"**Lateral**" is related to the word "**side**"*
- *A quadrilateral is a shape made up of **4** sides.*

### Hexagons

## Check

**Color.**

- Color the hexagons red.
- Color the triangles green.
- Color the trapezoids blue.
- Color the rhombuses yellow.
- Color the squares pink.
- Color the rectangles brown.



• Help your child know that changing the size and the position of any shape does not change its name.

# Exercise 21

On Lessons 1 & 2

- Attributes of 2-dimensional shapes
- Sorting 2-dimensional shapes

From the school book

**1** Use  to label each side. Use  to label each vertex.

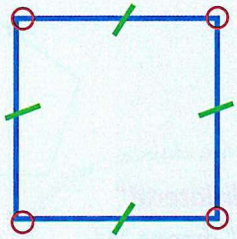
Write the name, and how many sides and vertices there are.

a.

Name : _____

_____ sides

_____ vertices



b.

Name : _____

_____ sides

_____ vertices

c.

Name : _____

_____ sides

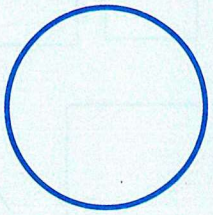
_____ vertices

d.

Name : _____

_____ sides

_____ vertices

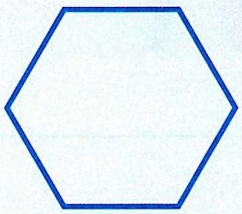


e.

Name : _____

_____ sides

_____ vertices

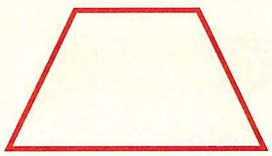


f.

Name : _____

_____ sides

_____ vertices

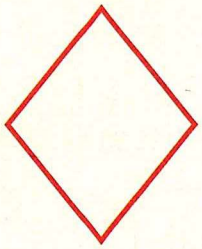


g.

Name : _____

_____ sides

_____ vertices

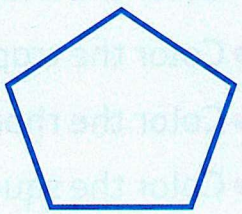


h.

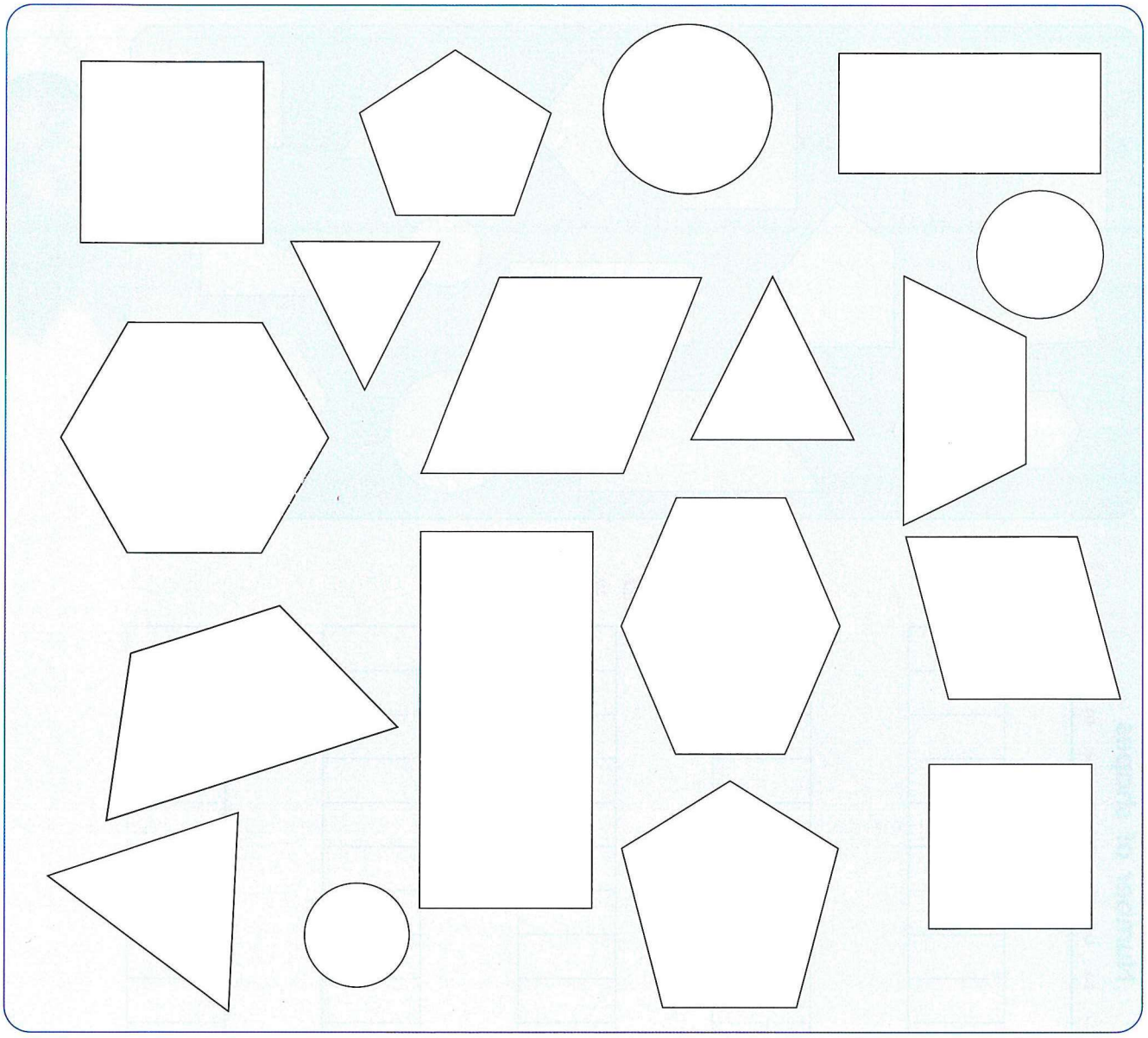
Name : _____

_____ sides

_____ vertices



**2** 🕮 **Follow the attribute rules below to sort the shapes.**



**Attribute Sorting Rules**

a. Color the shapes with 3 or fewer sides red.

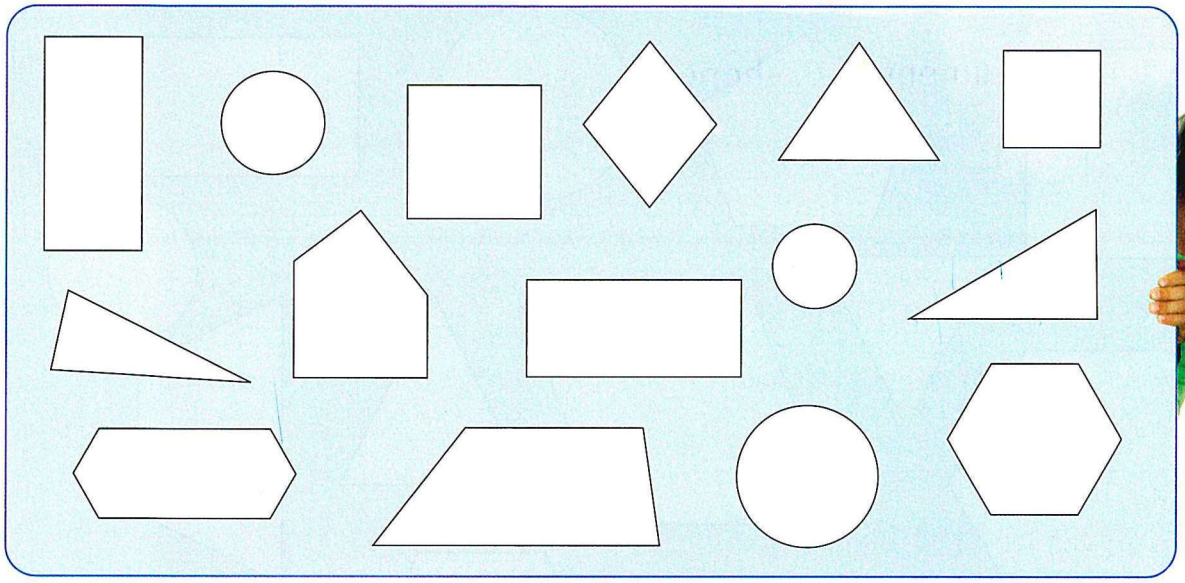
b. Color the shapes with 4 sides and 4 vertices blue.

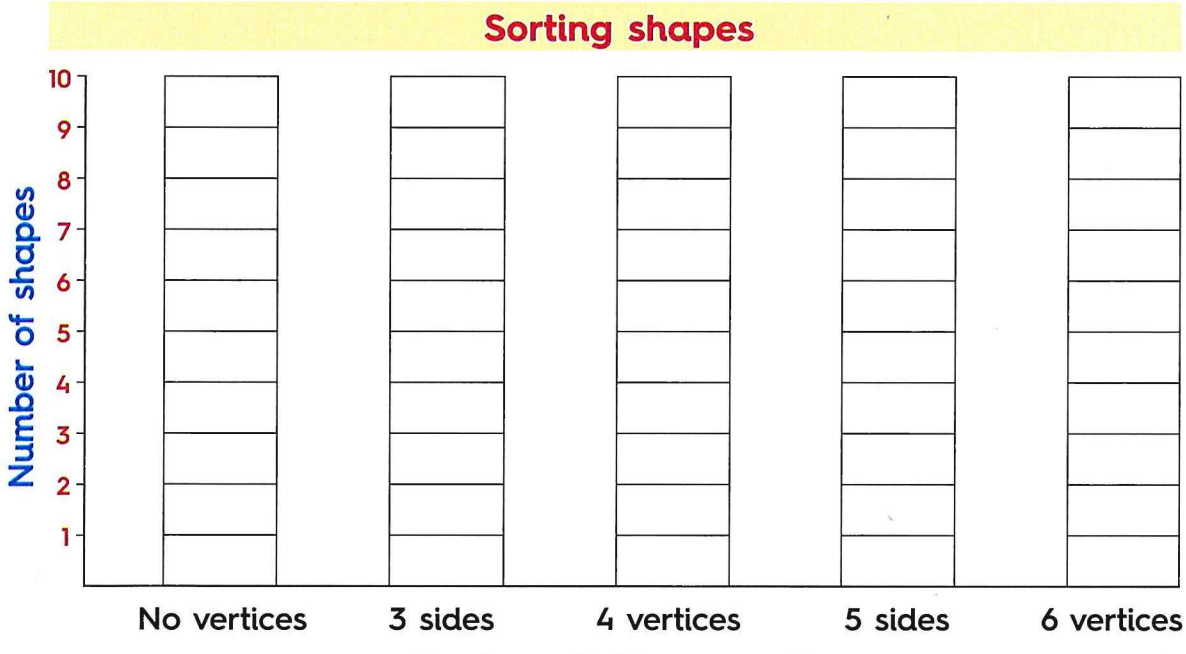
c. Color the shapes with more than 5 vertices green.

d. Circle the shapes that have 4 equal sides.

e. Cross out the shapes that have no straight sides or vercices.

**3** **Sort the shapes by the number of sides and vertices. Complete the bar graph. Answer the questions.**




a. Do more shapes have 3 sides or 5 sides ? _____

b. Do more shapes have 4 vertices or no vertices ? _____

c. How many squares and rectangles are there ? _____

d. How many quadrilaterals are there ? _____

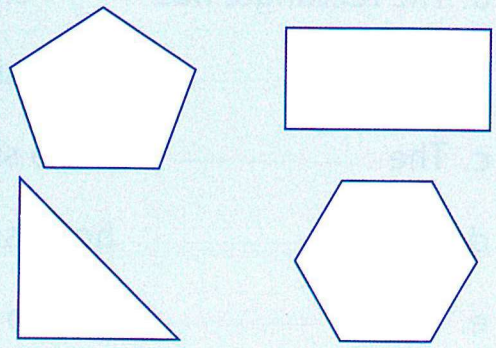
**4** **Circle the shape that answers the question.**

a.

I am a two-dimensional shape.

I have 4 sides.

Which shape am I ?



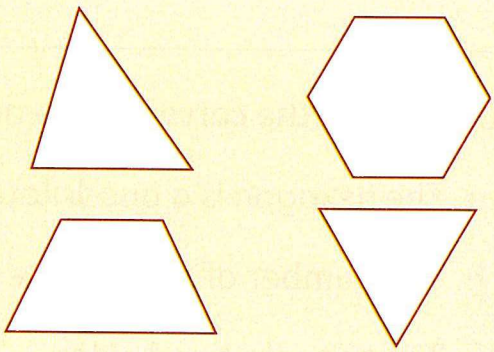
b.

I am a two-dimensional shape.

I have more than 3 sides.

I have fewer than 6 vertices.

Which shape am I ?



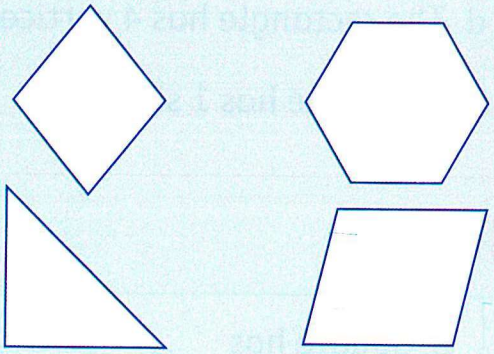
c.

I am a two-dimensional shape.

I have fewer than 6 sides.

I have fewer than 4 vertices.

Which shape am I ?



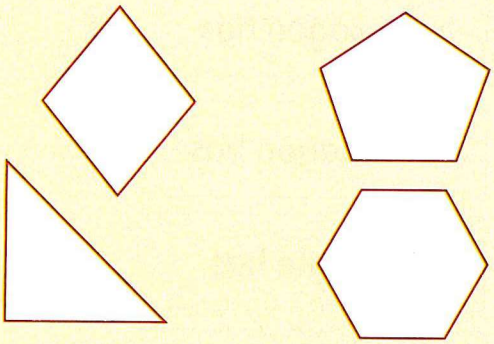
d.

I am a two-dimensional shape.

I have fewer than 6 vertices.

I have more than 4 sides.

Which shape am I ?



## 5 Complete.

a. The rectangle has _____ sides and _____ vertices.

b. The _____ has 3 sides and 3 vertices.

c. The _____ has 5 sides.

d. The _____ has 6 sides.

e. The _____ has no sides.

f. The _____ , _____ , _____ , _____ are quadrilaterals.

## 6 Put (✓) to the correct statement or (✗) to the incorrect statement.

a. The hexagon is a quadrilateral. (  )

b. The number of sides of the square equals 4. (  )

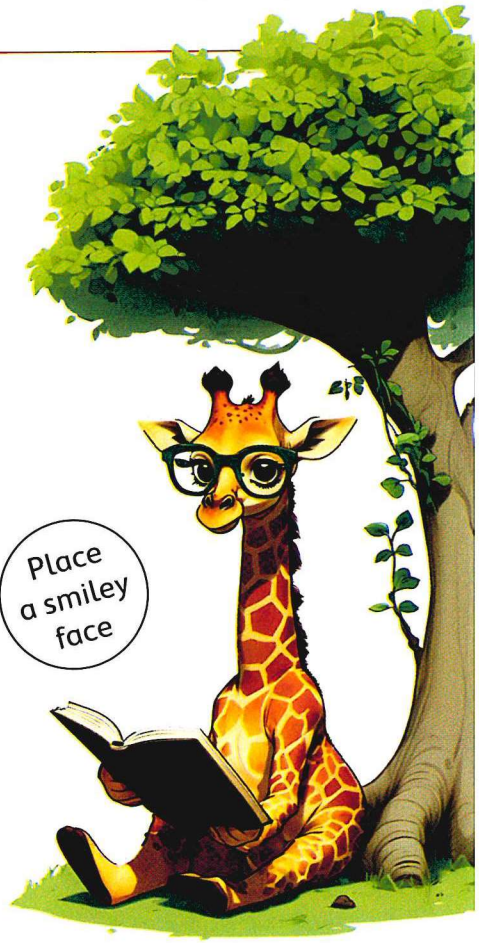
c. The triangle has 4 sides. (  )

d. The rectangle has 4 vertices. (  )

e. The circle has 1 side. (  )

## 7 Match.

| | |
|---|---|
| a. Square has | 5 sides |
| b. Hexagon has | 3 sides |
| c. Pentagon has | 0 sides |
| d. Triangle has | 4 sides |
| e. Circle has | 6 sides |

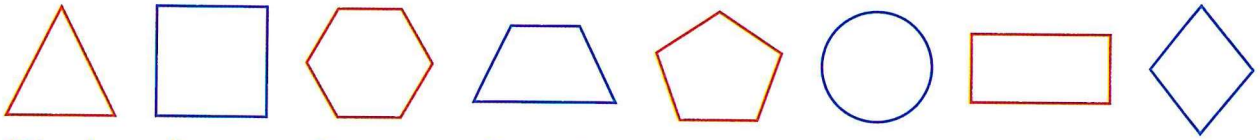


Lessons

# 3 & 4

- Drawing geometric shapes
- Creating a picture using 2-dimensional shapes

## Remember



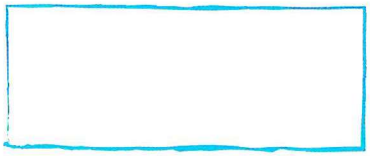
Triangle | Square | Hexagon | Trapezoid (Trapezium) | Pentagon | Circle | Rectangle | Rhombus

## Check

**Draw the shapes. Write the names as the example.**

**Example**

Draw a shape with 4 sides and 4 vertices.



rectangle

Draw a different shape with 4 sides and 4 vertices.

Draw a shape with 0 vertices.

Draw a shape with 3 sides and 3 vertices.

Draw a shape with 6 sides and 6 vertices.

Draw a shape with 5 sides and 5 vertices.

**Notes for parents**

- Your child will draw the shapes on the air before in the paper. Sometimes there is more than one correct answer as in numbers 1 and 2.

# Exercise 22

On Lessons 3 & 4

- **Drawing geometric shapes**
- **Creating a picture using 2-dimensional shapes**

From the school book

## 1 Match.

| | |
|---|---|
| a. The shape with 4 sides equal in length | Hexagon |
| b. The shape with 5 sides | Circle |
| c. The shape with 6 sides | Pentagon |
| d. The shape with 4 sides (2 short sides equal in length, 2 long sides equal in length) | Square |
| e. The shape with 0 vertices | Rectangle |

## 2 What shape am I ? Draw the shapes. Write the names.

a. I am a shape with 4 sides equal in length.

_____

_____

_____

b. I am a shape with 4 sides (2 short sides equal in length, 2 long sides equal in length).

_____

_____

_____

c. I am a shape with 4 sides. I am not a square or a rectangle.

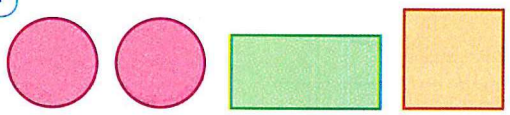
d. I am a shape with 4 sides. I am not a square.

e. I am a shape with 0 vertices.

f. I am a shape with 6 sides and 6 vertices.

**3** **Using the given shapes, draw to create a picture.**

a.



Car

b.

Rocket

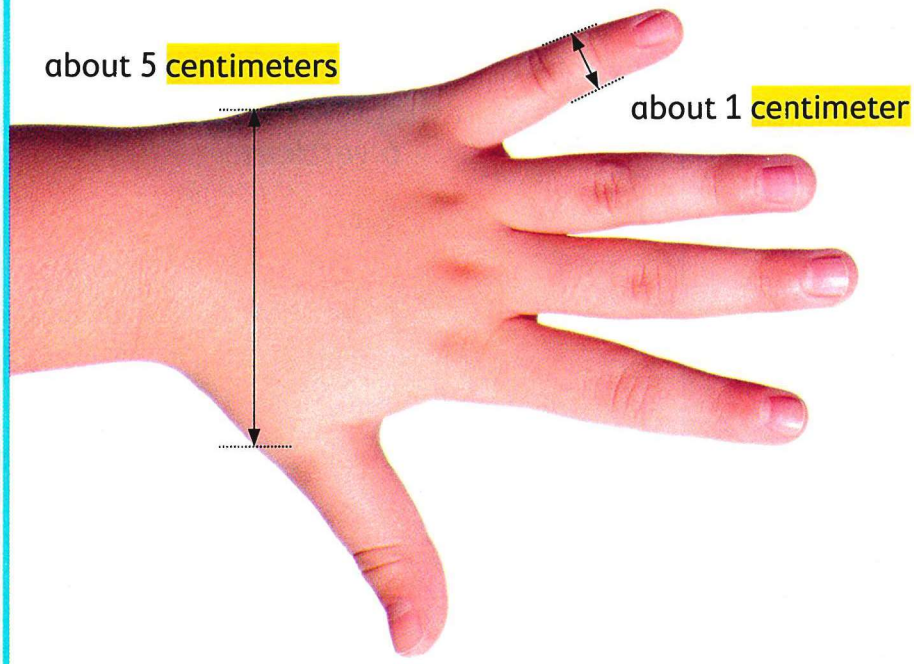
Place a smiley face

Lessons
# 5 to 7

- Measuring the length in centimeters
- Estimating the length
- Measuring the side length of a geometric shape

## Learn 1 Measuring the length in centimeters

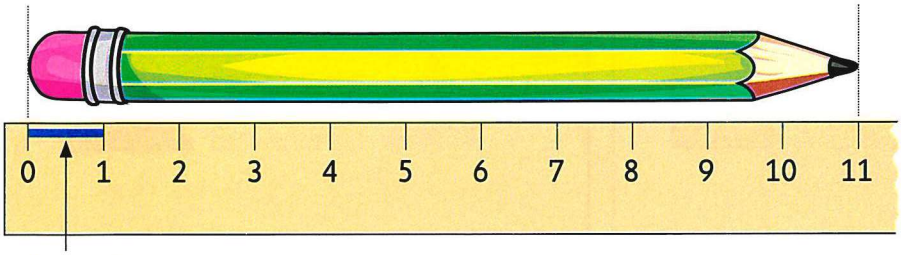
- The length of an object is how long it is.
- A centimeter (cm) is a small standard unit of measuring length, used to measure the length of small objects as : pencils, books and erasers.




*Your finger is about 1 centimeter across.*

*A ruler is a measurement tool used to measure the length of small objects.*

- **What is the length of the pencil in centimeters ?**




- **How to use a ruler to measure the length of any object as a pencil ?**

**Step 1**

Line up one end of the pencil with the zero mark on the ruler.

**Step 2**

Find the centimeter mark on the ruler that is at the other end of the pencil.

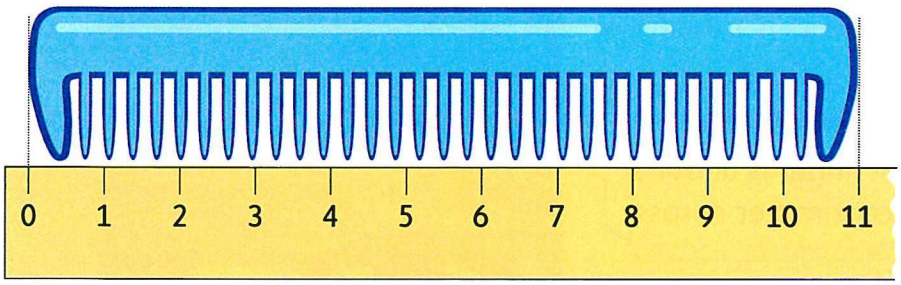


**Notes for parents**

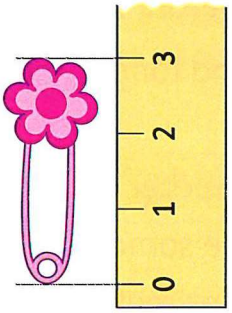
- Let your child use a ruler to measure one of his/her fingers.
- Help your child use centimeter ruler to measure objects at home.

## Check

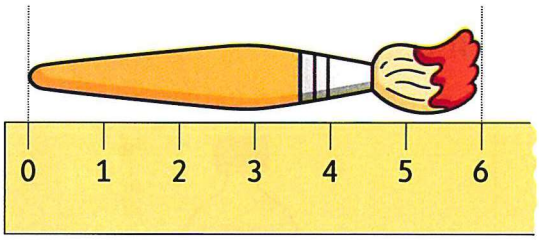
**Measure the length of each object.**



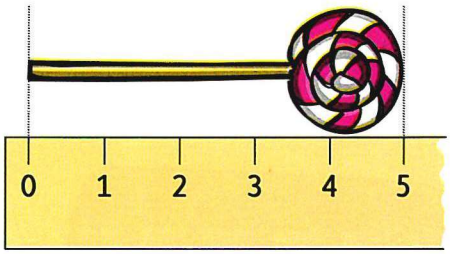

_____ centimeter




_____ centimeter



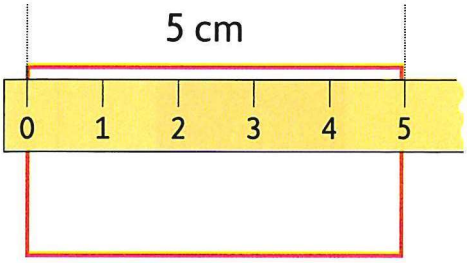

_____ centimeter

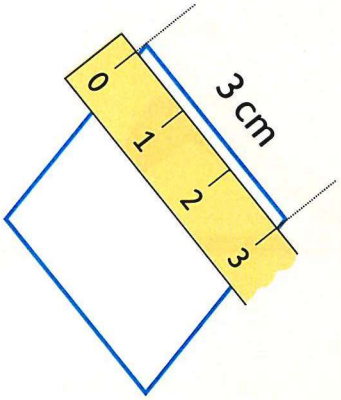



_____ centimeter

## Learn 2 Measuring the side length of a geometric shape

You can measure the side length of a geometric by using a ruler as the following.




- Have your child measure some objects around your home using a centimeter ruler.
- Give your child 4 strings of lengths 1 cm, 10 cm , 50 cm and 100 cm and ask him/her to use them to find 4 objects of length 1 cm, 10 cm , 50 cm and 100 cm at home.

## Learn 3 Measuring the length in meters

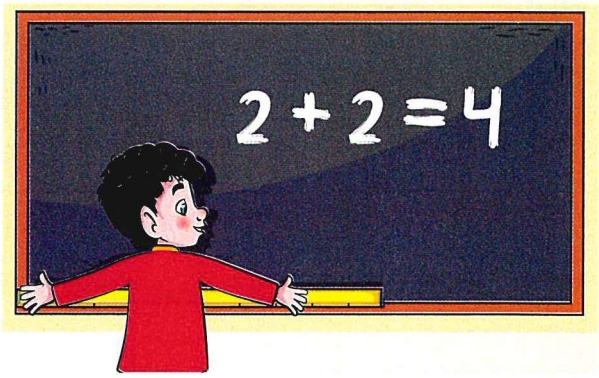
- Centimeters are used to measure short lengths.

  Meters are used to measure distances and longer lengths.

- A meter (m) is the same as 100 centimeters.

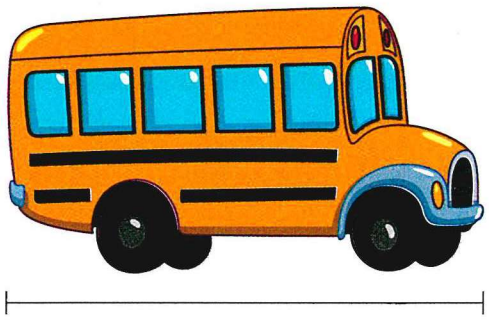
Remember :
A finger is about 1 centimeter across.

**1 m = 100 cm**

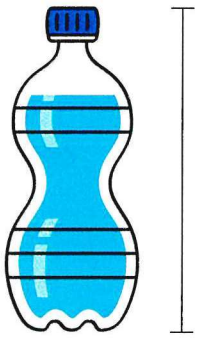



## Check

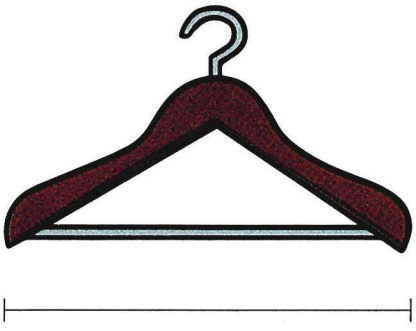
**Choose the suitable unit to measure each object.**



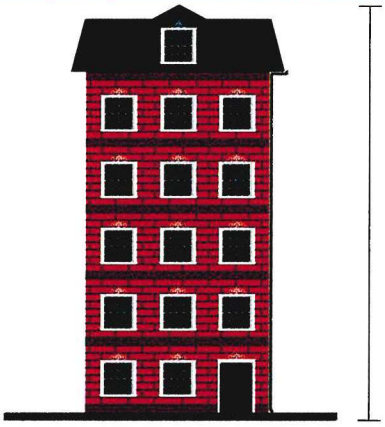
centimeter meter



centimeter meter



centimeter meter



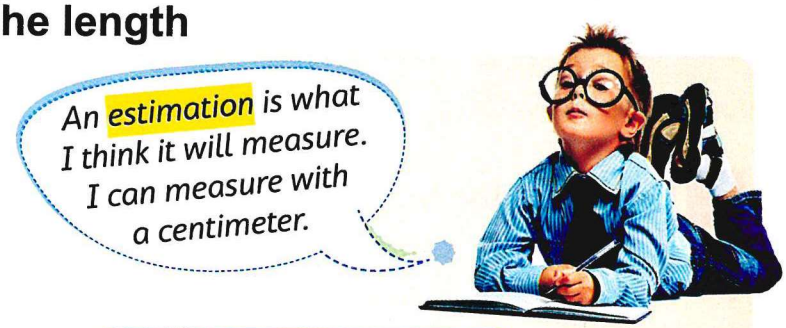
centimeter meter



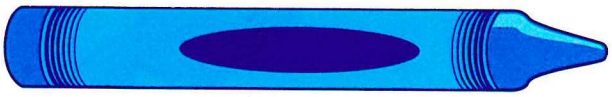
**Notes for parents**

• Ask your child to find something at home is about 1 meter in length, width or height.

## Learn 4 Estimating the length




How long is the crayon ?

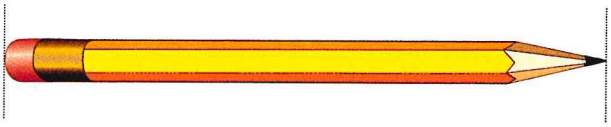


| Estimate | Measure |
|---|---|
| about 7 cm | 8 cm |

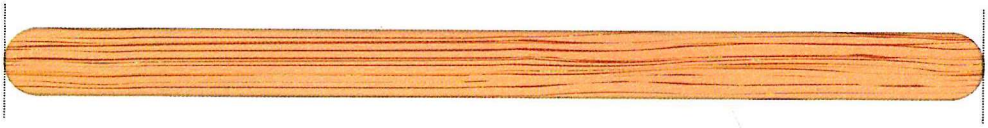
## Check

**Estimate the length of each object. Then use a ruler to measure.**

| Estimate | Measure |
|---|---|
| _____ | _____ |



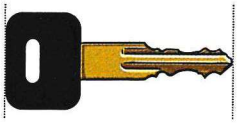
| Estimate | Measure |
|---|---|
| _____ | _____ |



| Estimate | Measure |
|---|---|
| _____ | _____ |

| Estimate | Measure |
|---|---|
| _____ | _____ |

| Estimate | Measure |
|---|---|
| _____ | _____ |



| Estimate | Measure |
|---|---|
| _____ | _____ |

- Ask your child to use the width of his/her finger to estimate the length of a notebook in centimeters.
- Ask him/her to measure the length of the toy, then compare the actual length to his/her estimation.

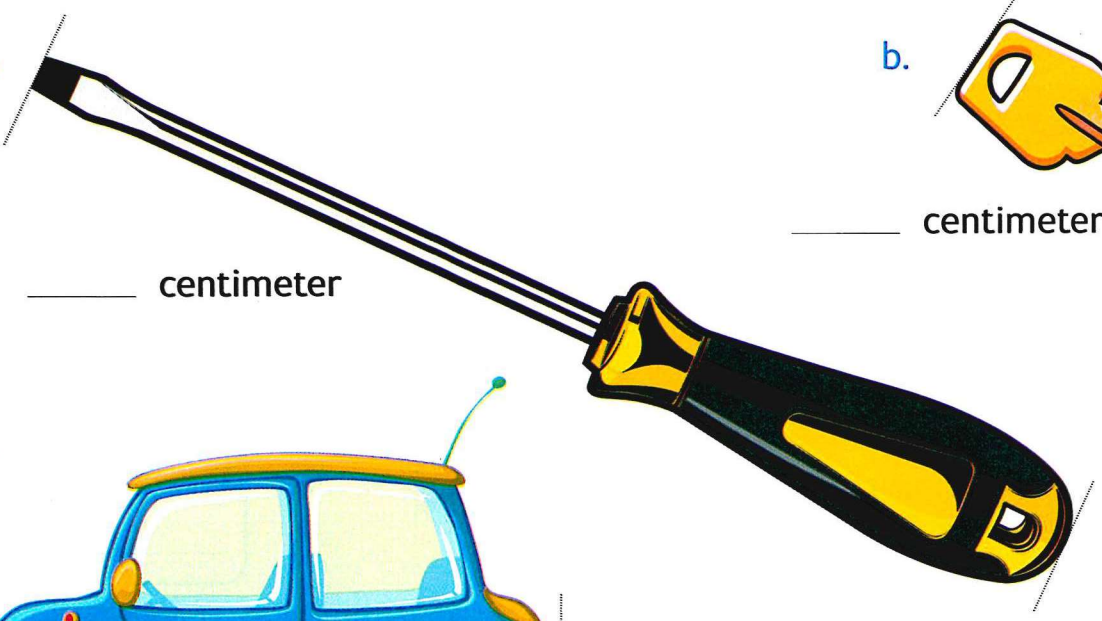
# Exercise 23

On Lessons 5 to 7

- Measuring the length in centimeters
- Estimating the length
- Measuring the side length of a geometric shape

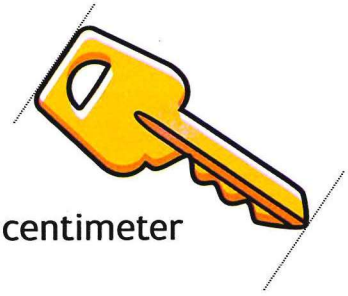
**1** Use the ruler to measure each object.

a.



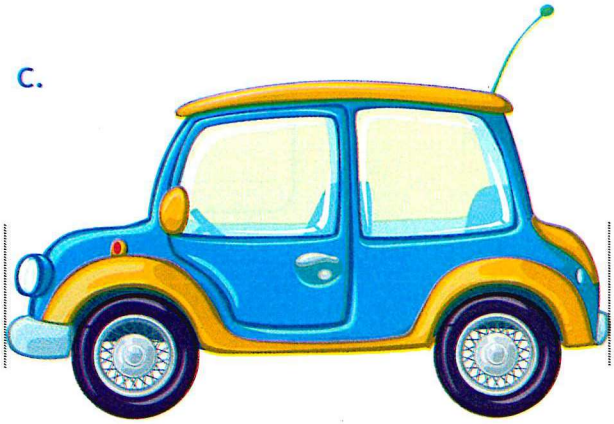
_____ centimeter

b.



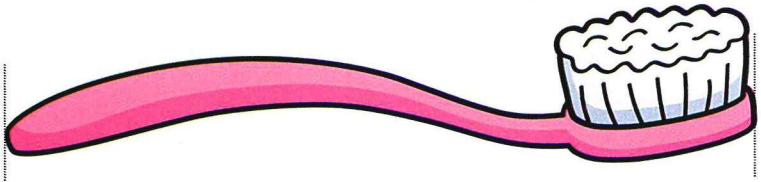
_____ centimeter

c.



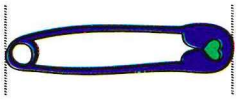
_____ centimeter

d.



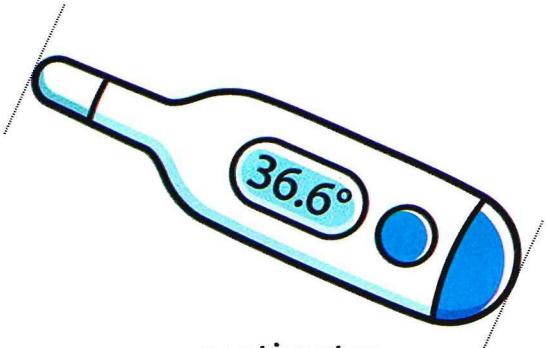
_____ centimeter

e.



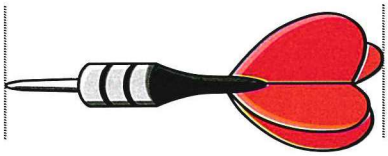
_____ centimeter

f.



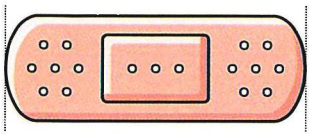

_____ centimeter

g.



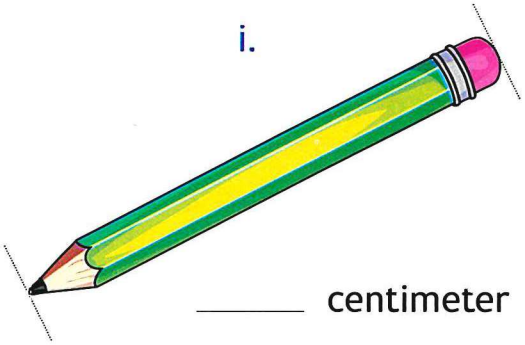
_____ centimeter

h.



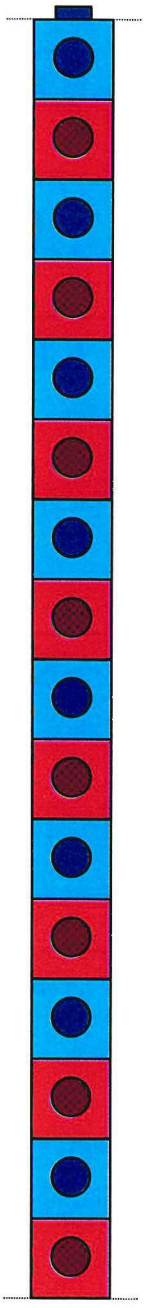
_____ centimeter

i.



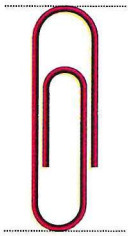
_____ centimeter

j.



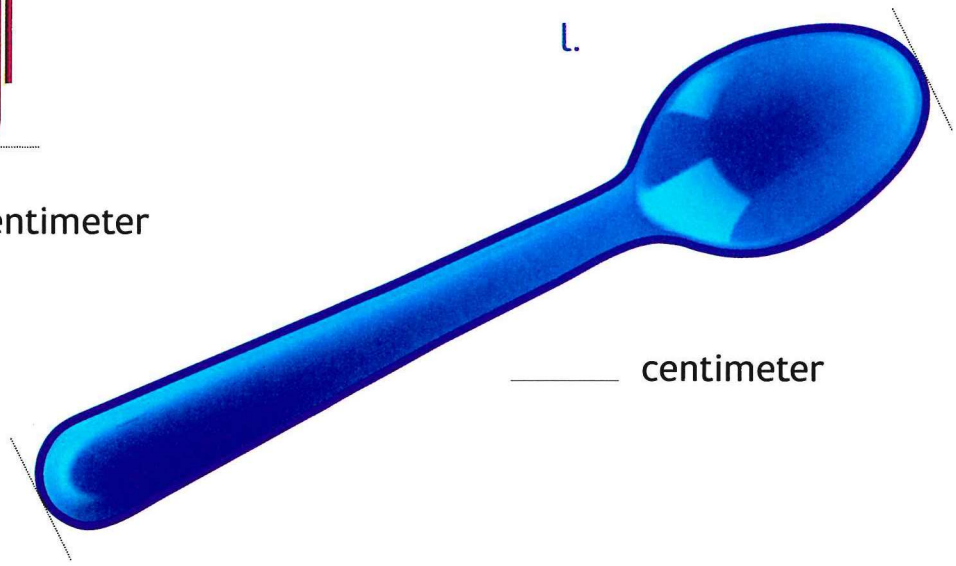
_____ centimeter

k.



_____ centimeter

l.

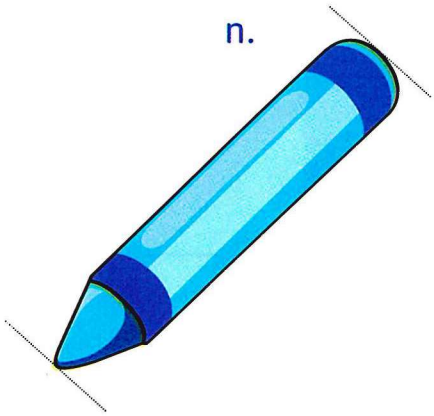


_____ centimeter

m.

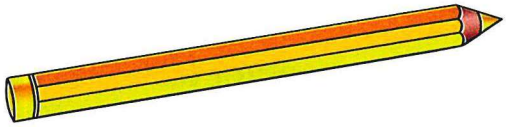
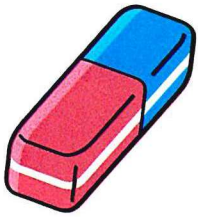
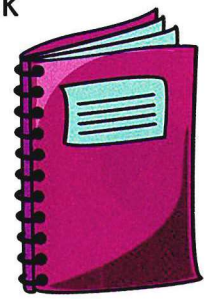

_____ centimeter

n.

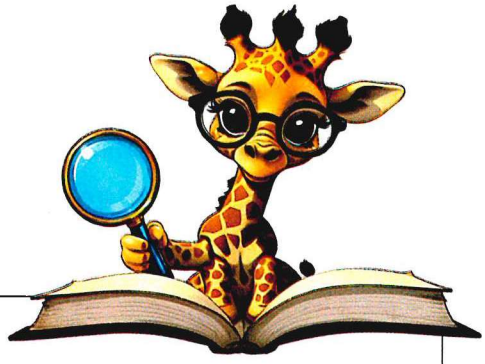


_____ centimeter

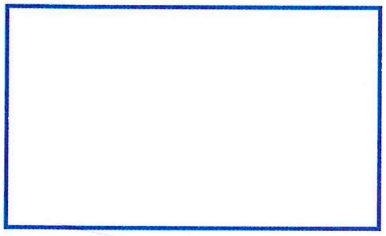
**2** Estimate in centimeters. Choose the suitable estimation.

| Find the object | Estimate the length |
|---|---|
| a. Pencil  | ◯ 2 cm ◯ 12 cm<br>◯ 30 cm ◯ 50 cm |
| b. Eraser  | ◯ 30 cm ◯ 20 cm<br>◯ 10 cm ◯ 4 cm |
| c. Shoe  | ◯ 8 cm ◯ 80 cm<br>◯ 18 cm ◯ 38 cm |
| d. Notebook  | ◯ 2 cm ◯ 25 cm<br>◯ 50 cm ◯ 100 cm |
| e. Mobile   | ◯ 5 cm ◯ 15 cm<br>◯ 50 cm ◯ 80 cm |

**3** Measure the missing side length using a ruler.



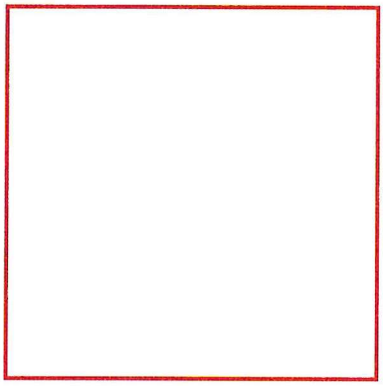
a.



_____ cm

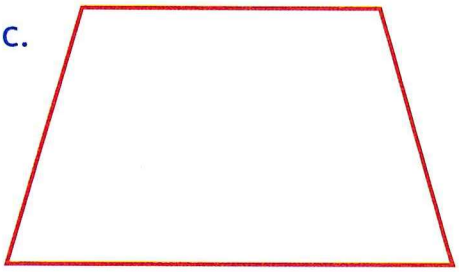
_____ cm

b.



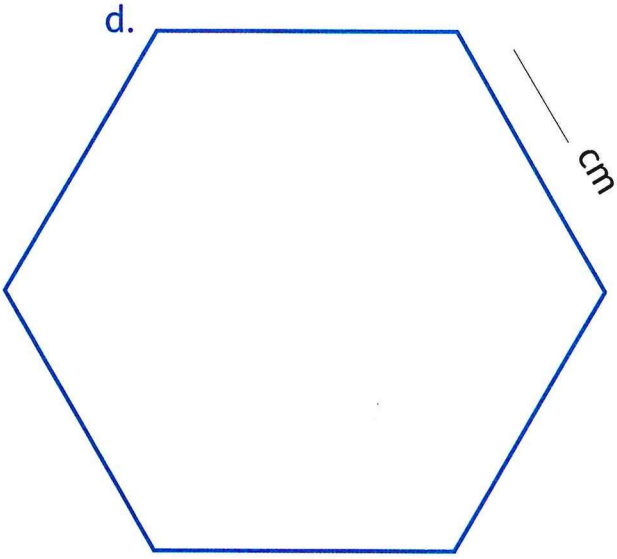
_____ cm

c.



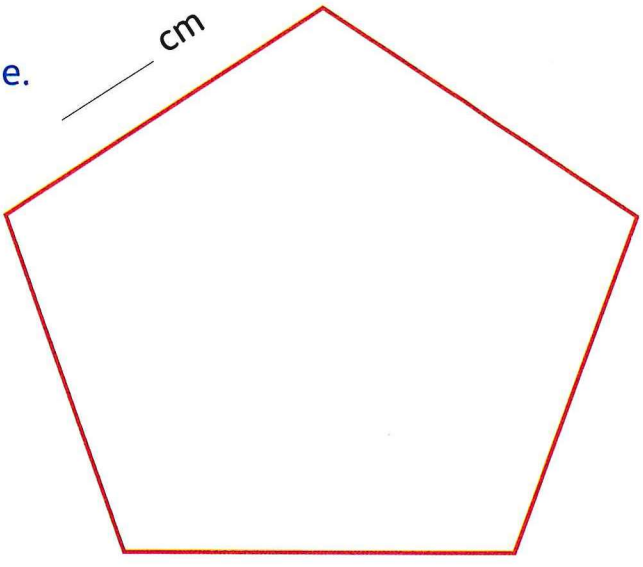
_____ cm

d.



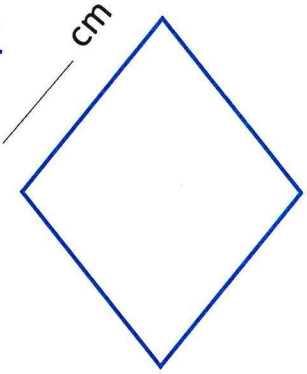
_____ cm

e.



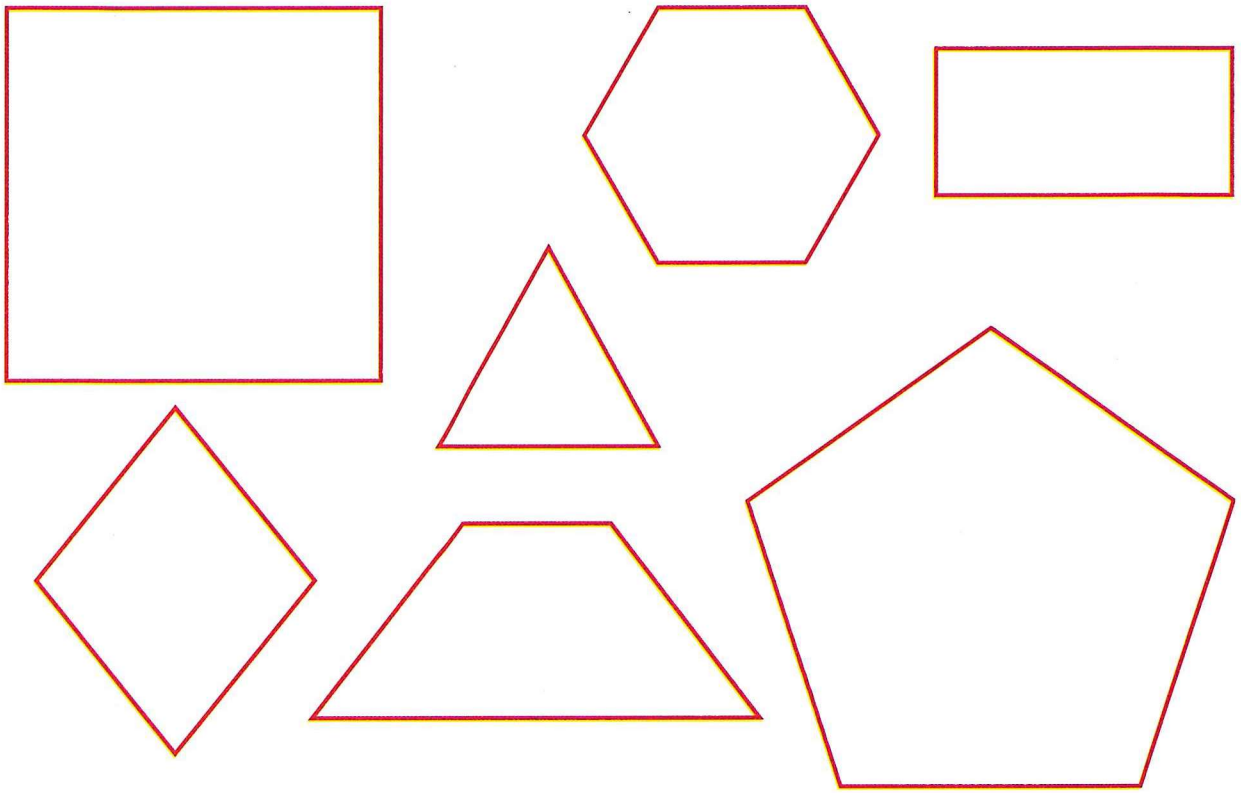
_____ cm

f.



_____ cm

**4** **Measure one side of each shape.**
**Record each measurement in the table below.**



| Object | Measurement |
|---|---|
| a. Triangle | _____ cm |
| b. Square | _____ cm |
| c. Rhombus | _____ cm |
| d. Rectangle short side | _____ cm |
| e. Rectangle long side | _____ cm |

| Object | Measurement |
|---|---|
| f. Trapezoid short side | _____ cm |
| g. Trapezoid long side | _____ cm |
| h. Pentagon | _____ cm |
| i. Hexagon | _____ cm |

Place a smiley face

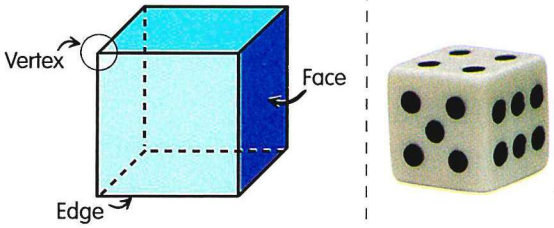
Lessons

# 8 to 10

- Attributes of 3-dimensional shapes
- Sorting 3-dimensional shapes
- Creating 3-dimensional shapes

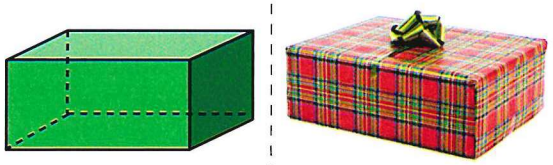
## Learn 1 Attributes of 3-dimensional shapes

- An edge is where two faces meet.
- The vertices are the corners where edges meet.



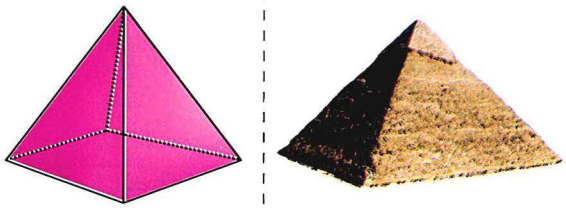

### Cube

**The cube has :**
- 8 vertices.
- 12 edges.
- 6 flat faces.
  - *Each face is a square.*
  - *All faces have the same size.*



### Rectangular prism (Cuboid)

**The rectangular prism has :**
- 8 vertices.
- 12 edges.
- 6 flat faces.
  - *Each face is a rectangle or a square.*
  - *Each two opposite faces have the same size.*

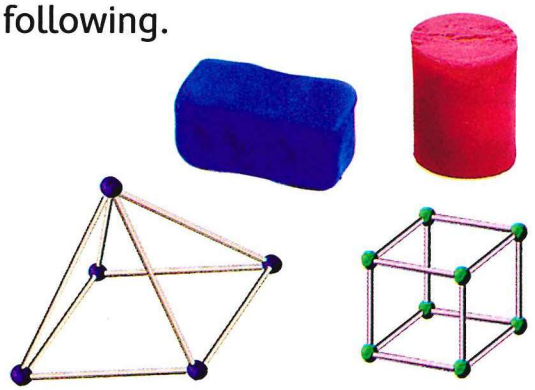


### Square-based pyramid

**The square-based pyramid has :**
- 5 vertices.
- 8 edges.
- 5 faces.

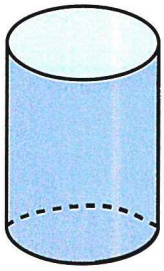
(1 square flat face (base) and 4 triangular flat faces)

You can create many solids using clay and straws as the following.



**Notes for parents**

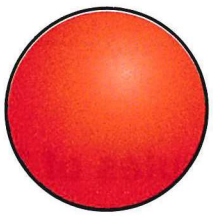
- Ask your child to find two objects in your home and tell you how many faces, vertices and edges for each object.
- Ask your child to count the faces, edges, and vertices of each solid in this page.




## Cylinder

**The cylinder has :**

- No vertices.
- No edges.
- 2 circular flat faces (bases).
- 1 curved face.




## Sphere

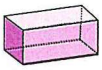
**The sphere has :**

- No vertices.
- No edges.
- No flat faces.
- 1 curved face.

## Learn 2 Sorting 3-dimensional shapes

- **There are different sortings for 3-dimensional shapes as the following.**

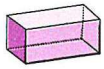
### Solids with 4 or more faces

- Cube 
- Rectangular prism 
- Square-based pyramid 

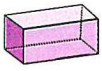
### Solids with 0 edges, faces or vertices

- Sphere 

### Solids with 10 or more edges

- Cube 
- Rectangular prism 

### Solids with 6 or more edges

- Cube 
- Rectangular 
- Prism
- Square-based pyramid 

### Solids with at least 1 circle face

- Cylinder 

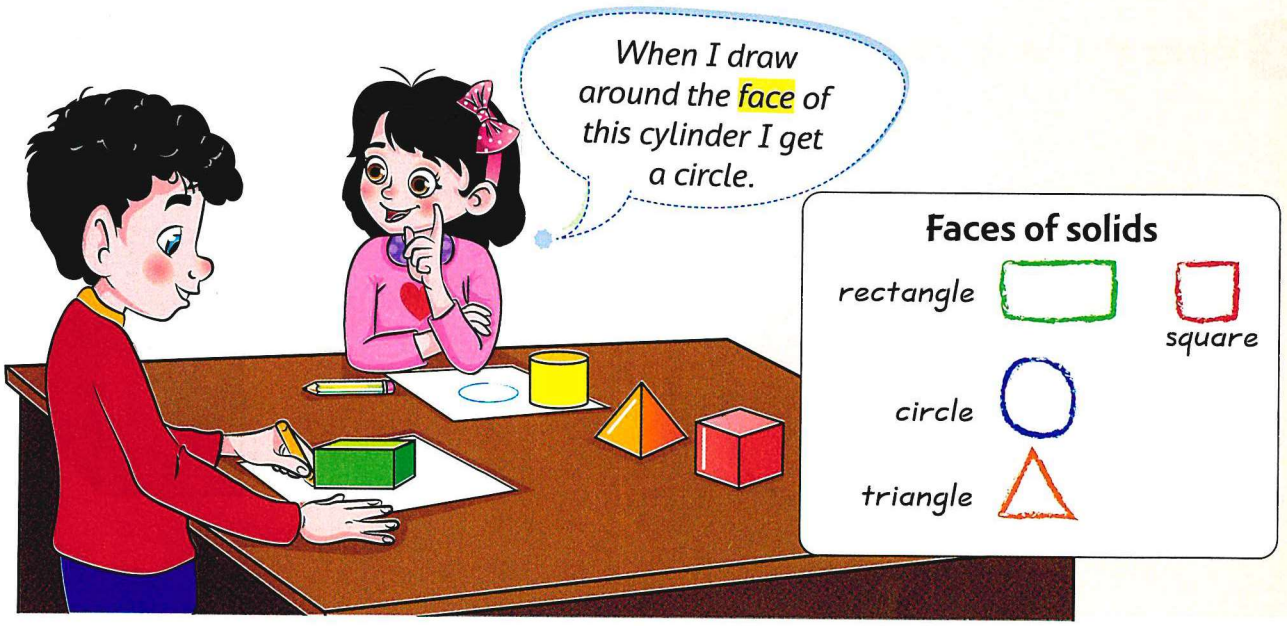
### Solids with more than 2 faces but fewer than 6

- Square-based pyramid 

**Notes for parents**

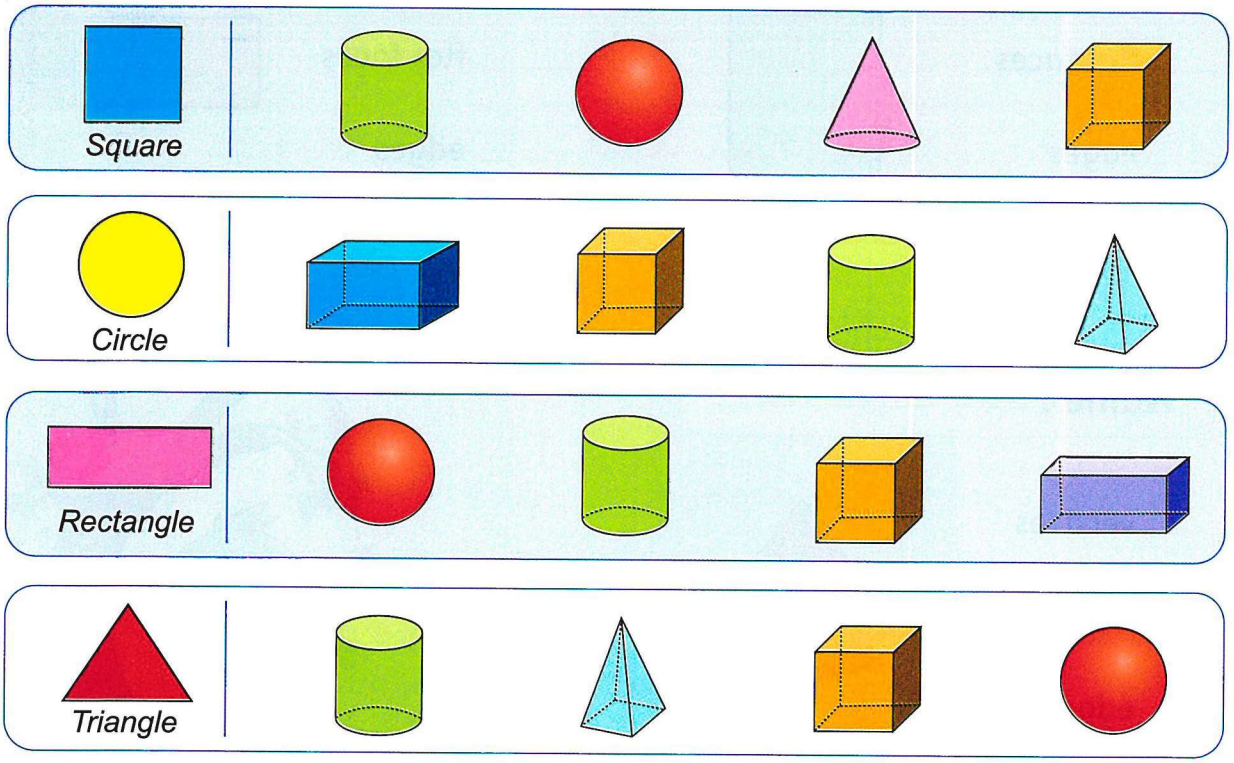
- Ask your child to find a ball and a can, and then tell how they are a like and how they are different.
- Bring to your child cans, dice, basketball, model to Giza Pyramids, variety of boxes and ask him/her to sort them based on their shapes.

## Learn 3 Faces of solids




## Check

**Circle the solid in which you can see the given shape.**




- Help your child color one face of a solid and make it as a print stamp on a paper sheet.
- Help your child know the difference between attributes of each solid.

# Exercise 24

On Lessons 8 to 10

- Attributes of 3-dimensional shapes
- Sorting 3-dimensional shapes
- Creating 3-dimensional shapes

**1** Write the name, and how many faces, edges and vertices there are.

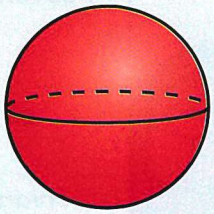
a.

Name : _____

_____ vertices

_____ flat faces

_____ edges



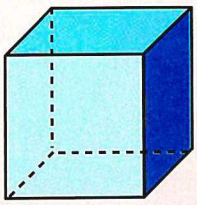
b.

Name : _____

_____ vertices

_____ flat faces

_____ edges



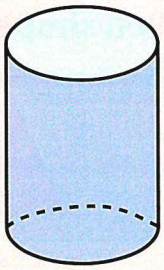
c.

Name : _____

_____ vertices

_____ flat faces

_____ edges



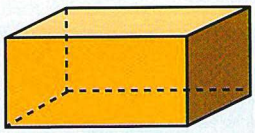
d.

Name : _____

_____ vertices

_____ flat faces

_____ edges



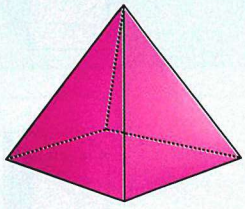
e.

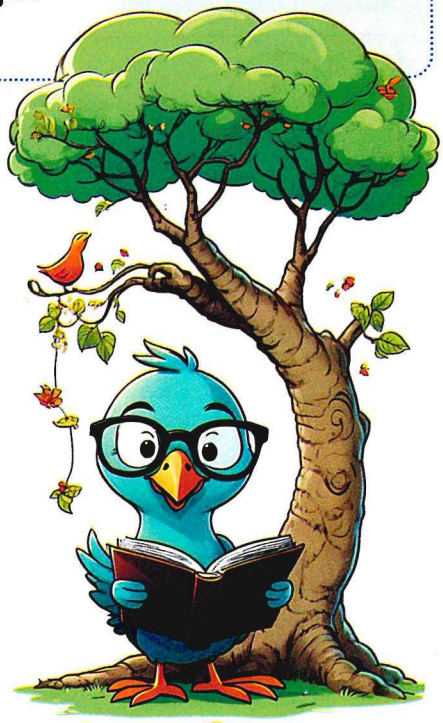
Name : _____

_____ vertices

_____ flat faces

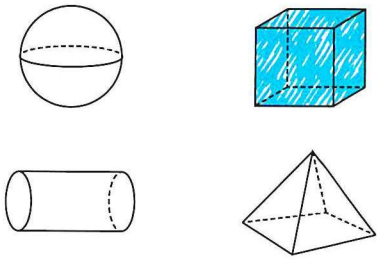
_____ edges



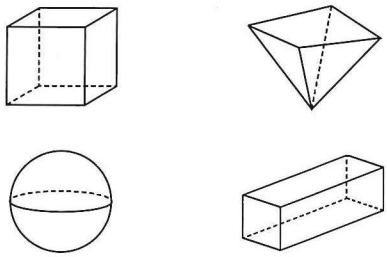


**2** **Color the solid figure that matches the number of faces, edges, and vertices. The first one is done for you.**

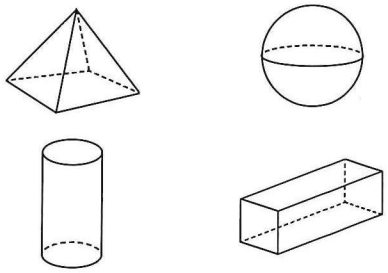
a. 6 faces, 12 edges, 8 vertices



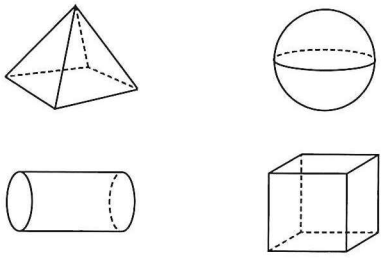
b. 5 faces, 8 edges, 5 vertices



c. 6 faces, 12 edges, 8 vertices



d. 0 faces, 0 edges, 0 vertices



**3** **Circle the objects that have the same shape. Cross out the object that does not belong. Name the solid figures you circled.**

a.

_____

b.

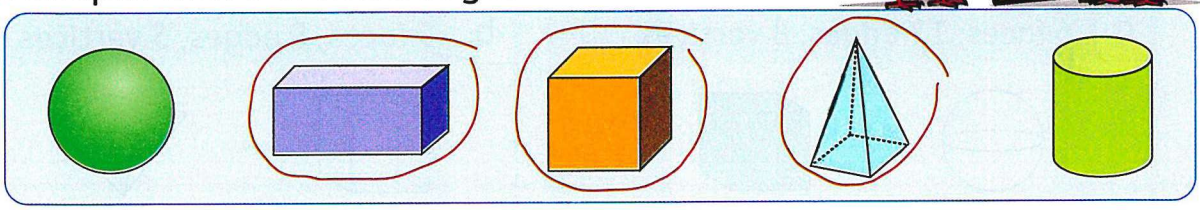
_____

c.

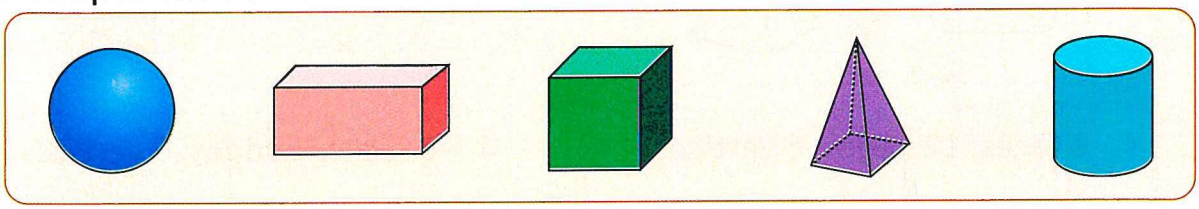

_____

**4** **Circle the solid figures that match the given data. The first one done for you.**

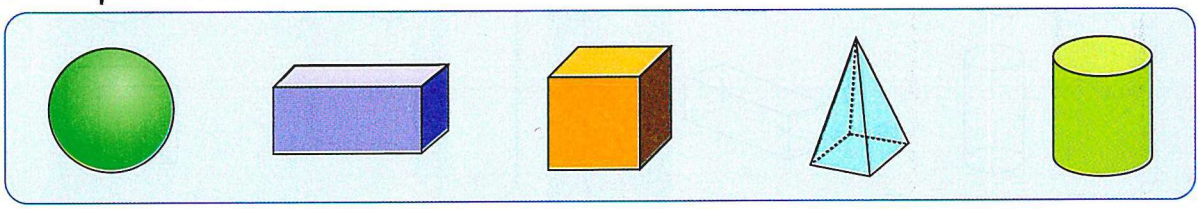
a. Shapes with 6 or more edges.



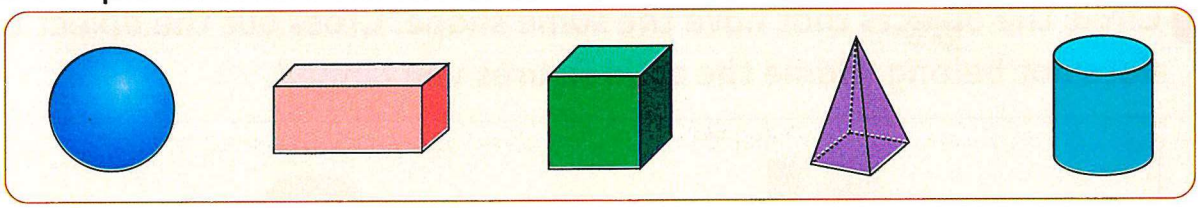
b. Shapes with 5 vertices.



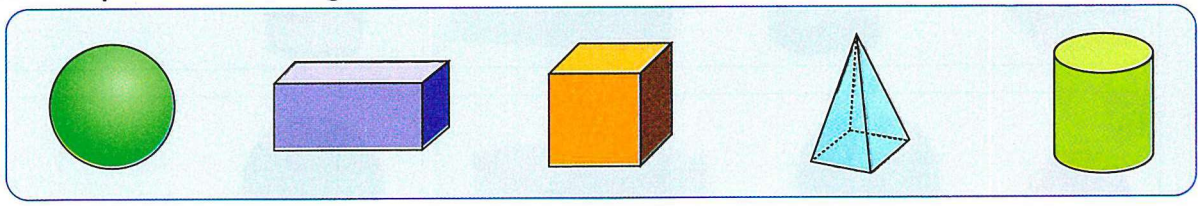
c. Shapes with at least 1 circle face.



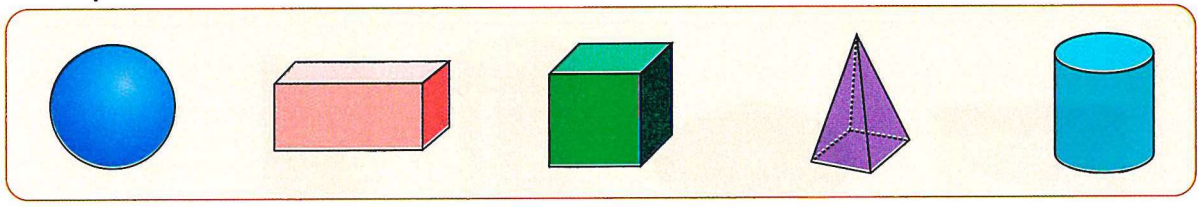
d. Shapes with more than 2 faces but fewer than 6.



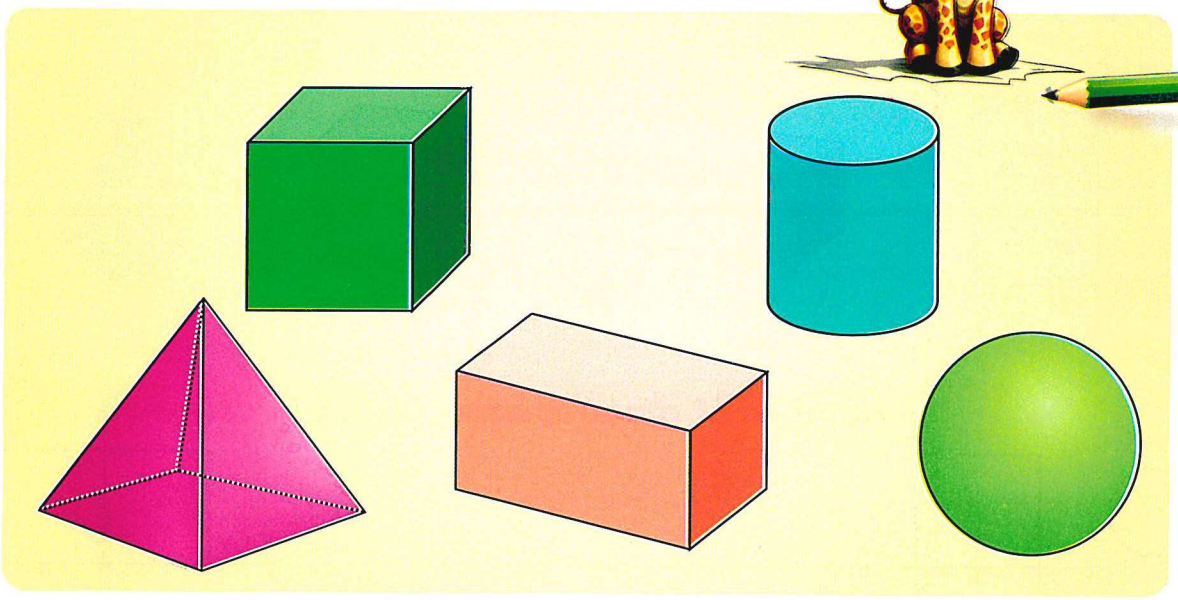
e. Shapes with 0 edges , 0 faces and 0 vertices.



f. Shapes with more than 5 vertices.

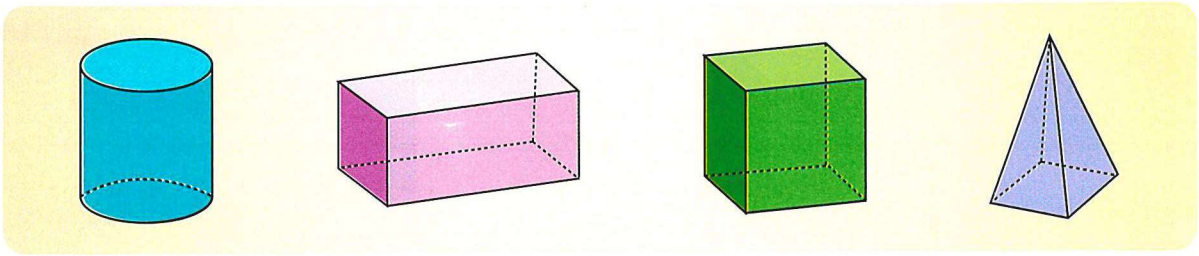


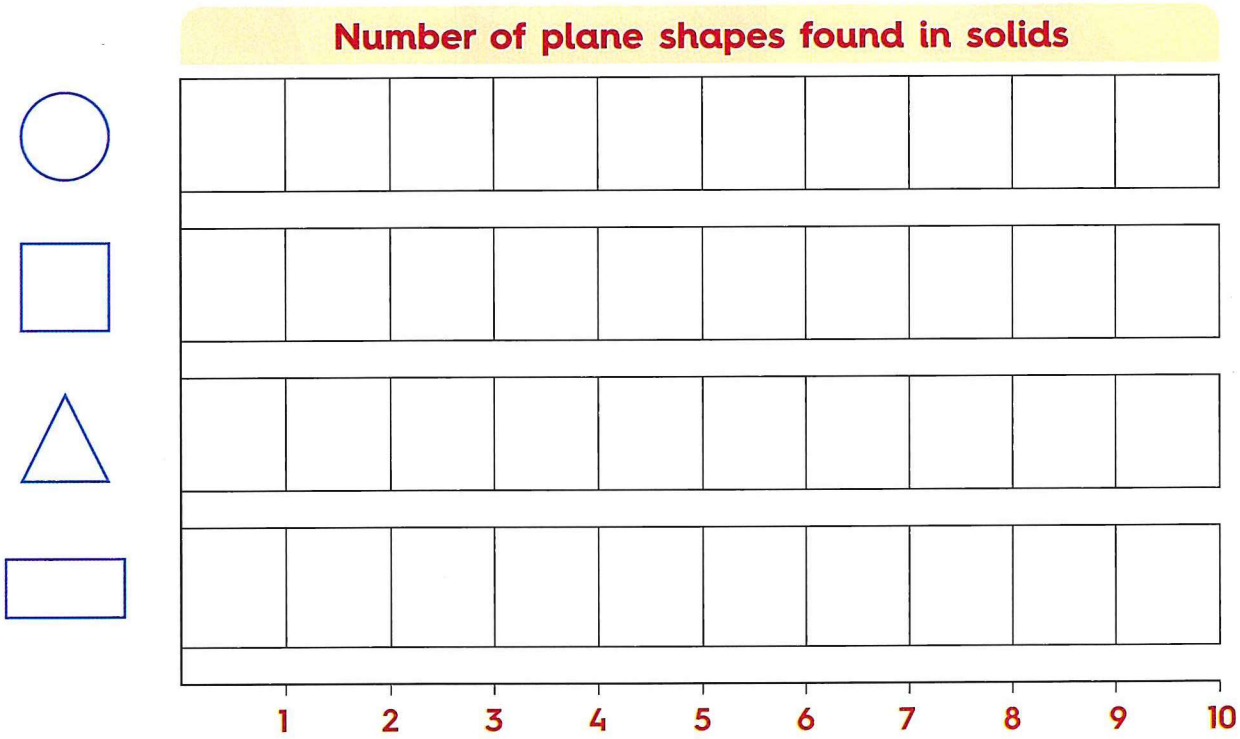
**5** Complete the table below by writing the number of solids.



| | |
|---|---|
| a. Number of solids with at least 1 circle face. | _____ |
| b. Number of solids with at least 1 square face. | _____ |
| c. Number of solids with no flat faces. | _____ |
| d. Number of solids with at least 1 triangular face. | _____ |
| e. Number of solids with 8 vertices. | _____ |
| f. Number of solids without any vertices. | _____ |
| g. Number of solids with 5 vertices. | _____ |
| h. Number of solids with 8 edges. | _____ |
| i. Number of solids with 12 edges. | _____ |
| j. Number of solids without any edges. | _____ |

**6** **Count the number of circles, squares, rectangles, and triangles that are made by tracing each flat surface of each solid. Color one box in the graph for every plane shape you count.**






**Answer the questions.**

a. Write the total number of plane shapes counted.

_____ circles _____ squares

_____ rectangles _____ triangles

b. Which plane shape was counted the most ? _____

c. Which plane shape was counted the least ? _____

## 7 Choose the correct answer.

a. Number vertices of square-based pyramid is _____ ( 3 **or** 4 **or** 5 **or** 8 )

b. _____ has 12 edges.
( Cylinder **or** Sphere **or** Square-based pyramid **or** Cuboid )

c. The solid figure which has 2 circular flat faces is _____
( sphere **or** cylinder **or** cube **or** rectangular prism )

d. Number of faces of cuboid ◯ number of faces of cube ( > **or** = **or** < )

e. _____ has no edges.
( Cube **or** Sphere **or** Square-based pyramid **or** Cuboid )

f. The solid in which all faces are squares is _____
( cuboid **or** square-based pyramid **or** sphere **or** cube )

g. _____ has a curved face.
( Cube **or** Cylinder **or** Cuboid **or** Square-based pyramid )

h. The solid figure that has 5 faces, 8 edges, 5 vertices is _____
( rectangular prism **or** cylinder **or** square-based pyramid **or** sphere )

---

## 8 Complete.

a. The rectangular prism has _____ edges.

b. Cylinder has _____ circular flat faces.

c. The solid figure which has 5 vertices is _____

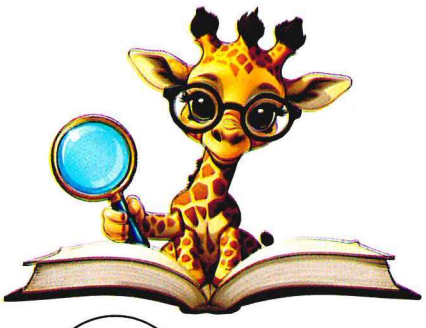
d. Cube has _____ edges, _____ vertices and _____ faces.

e. _____ has 0 flat faces and 1 curved face.

f. Each face in the cube is in the shape of _____

g. Each of _____ and _____ has 6 flat faces.

h. Number of vertices of a cylinder is _____



Place a smiley face