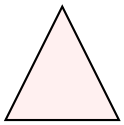
2D SHAPES

A PLANE GEOMETRY

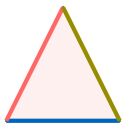
A.1 FINDING THE SIDES

Ex 1: How many sides does this shape have?

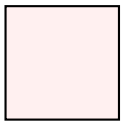


3 sides

Answer: Count each straight line to find the number of sides.

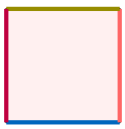
3 sides 

Ex 2: How many sides does this shape have?

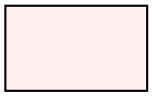


4 sides

Answer: Count each straight line to find the number of sides.

4 sides 

Ex 3: How many sides does this shape have?

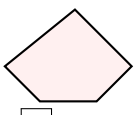


4 sides

Answer: Count each straight line to find the number of sides.

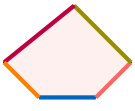
4 sides 

Ex 4: How many sides does this shape have?

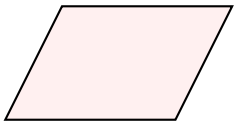


5 sides

Answer: Count each straight line to find the number of sides.

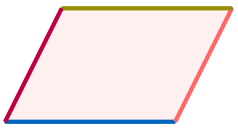
5 sides 

Ex 5: How many sides does this shape have?

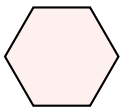


4 sides

Answer: Count each straight line to find the number of sides.

4 sides 

Ex 6: How many sides does this shape have?



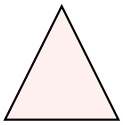
6 sides

Answer: Count each straight line to find the number of sides.

6 sides 

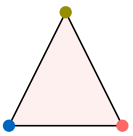
A.2 FINDING THE VERTICES

Ex 7: How many vertices does this shape have?

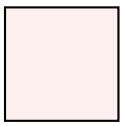


3 vertices

Answer: Count each point where two sides meet

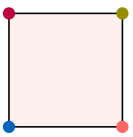
3 vertices 

Ex 8: How many vertices does this shape have?



4 vertices

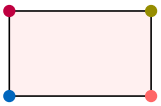
Answer: Count each point where two sides meet.

4 vertices 

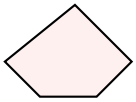
Ex 9: How many vertices does this shape have?

4 vertices

Answer: Count each point where two sides meet.

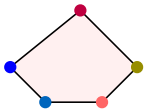
4 vertices 

Ex 10: How many vertices does this shape have?

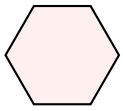


5 vertices

Answer: Count each point where two sides meet.

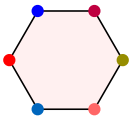
5 vertices 

Ex 11: How many vertices does this shape have?

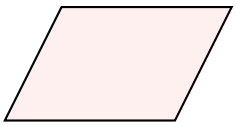


6 vertices

Answer: Count each point where two sides meet.

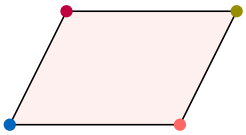
6 vertices 

Ex 12: How many vertices does this shape have?



4 vertices

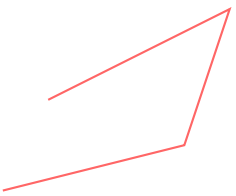
Answer: Count each point where two sides meet.

4 vertices 

B POLYGONS

B.1 IDENTIFYING POLYGONS

MCQ 13: Is this figure a polygon?



Pick the correct answer:

- ☐ Yes
- ☒ No

Answer: A polygon is a closed shape with straight sides. This figure is not a polygon because the lines do not connect at any point, so the shape is not closed.

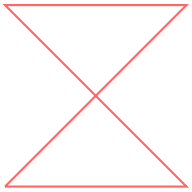
MCQ 14: Is this figure a polygon?

Pick the correct answer:

- ☒ Yes
- ☐ No

Answer: A polygon is a closed shape with only straight sides that do not cross. This figure is a polygon because it is closed, has straight lines, and its lines do not cross.

MCQ 15: Is this figure a polygon?

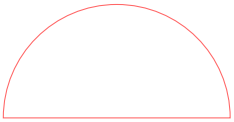


Pick the correct answer:

- ☐ Yes
- ☒ No

Answer: A polygon is a closed shape with straight sides that do not cross. This figure is not a polygon because its lines cross each other.

MCQ 16: Is this figure a polygon?



Pick the correct answer:

- ☐ Yes
- ☒ No

Answer: A polygon is a closed shape with only straight sides. This figure is not a polygon because it has a curved line.

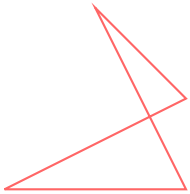
MCQ 17: Is this figure a polygon?

Pick the correct answer:

- ☒ Yes
- ☐ No

Answer: A polygon is a closed shape with only straight sides that do not cross. This figure is a polygon because it is closed, has straight lines, and its lines do not cross.

MCQ 18: Is this figure a polygon?



Pick the correct answer:

- ☐ Yes
- ☒ No

Answer: A polygon is a closed shape with only straight sides that do not cross. This figure is not a polygon because its lines cross each other.

MCQ 19: Is this figure a polygon?

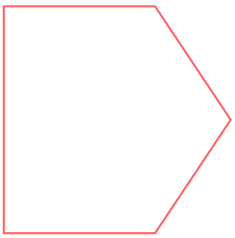
Pick the correct answer:

- ☐ Yes
- ☒ No

Answer: A polygon is a closed shape with only straight sides. This figure is not a polygon because the lines do not connect at any point, so the shape is not closed.

B.2 NAMING POLYGONS

MCQ 20: What is the name of this polygon?

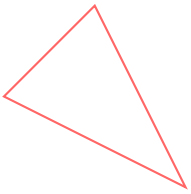


Pick the correct answer:

- ☐ Triangle
- ☐ Quadrilateral
- ☒ Pentagon
- ☐ Hexagon

Answer: A polygon is named by the number of its sides. This figure has 5 sides, so it is a pentagon.

MCQ 21: What is the name of this polygon?

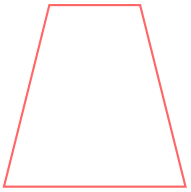


Pick the correct answer:

- ☒ Triangle
- ☐ Quadrilateral
- ☐ Pentagon
- ☐ Hexagon

Answer: A polygon is named by the number of its sides. This figure has 3 sides, so it is a triangle.

MCQ 22: What is the name of this polygon?

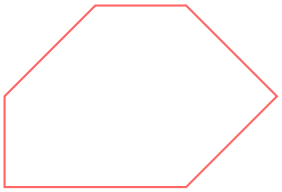


Pick the correct answer:

- ☐ Triangle
- ☒ Quadrilateral
- ☐ Pentagon
- ☐ Hexagon

Answer: A polygon is named by the number of its sides. This figure has 4 sides, so it is a quadrilateral.

MCQ 23: What is the name of this polygon?

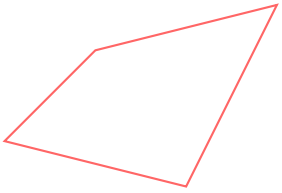


Pick the correct answer:

- ☐ Triangle
- ☐ Quadrilateral
- ☐ Pentagon
- ☒ Hexagon

Answer: A polygon is named by the number of its sides. This figure has 6 sides, so it is a hexagon.

MCQ 24: What is the name of this polygon?



Pick the correct answer:

☐ Triangle

☒ Quadrilateral

☐ Pentagon

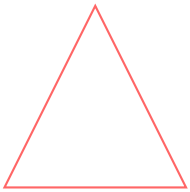
☐ Hexagon

Answer: A polygon is named by the number of its sides. This figure has 4 sides, so it is a quadrilateral.

B.3 DRAWING POLYGONS

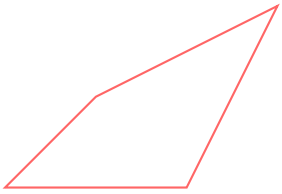
Ex 25: Draw a triangle with 3 straight sides that connect to form a closed shape.

Answer: A triangle is a polygon with 3 sides. To draw a triangle, connect three straight lines to form a closed shape with no crossing lines. For example:



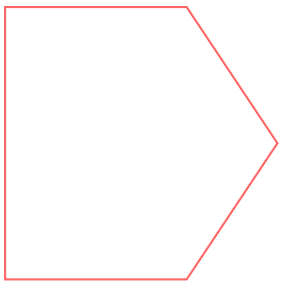
Ex 26: Draw a quadrilateral with 4 straight sides that connect to form a closed shape.

Answer: A quadrilateral is a polygon with 4 sides. To draw a quadrilateral, connect four straight lines to form a closed shape with no crossing lines. For example:



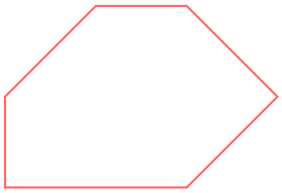
Ex 27: Draw a pentagon with 5 straight sides that connect to form a closed shape.

Answer: A pentagon is a polygon with 5 sides. To draw a pentagon, connect five straight lines to form a closed shape with no crossing lines. For example:



Ex 28: Draw a hexagon with 6 straight sides that connect to form a closed shape.

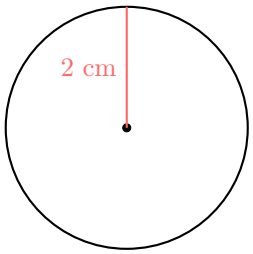
Answer: A hexagon is a polygon with 6 sides. To draw a hexagon, connect six straight lines to form a closed shape with no crossing lines. For example:



C CIRCLES

C.1 FINDING DIAMETERS

Ex 29: What is the radius and what is the diameter of this circle?



Radius = $\boxed{2}$ cm

Diameter = $\boxed{4}$ cm

Answer:

- The drawn segment is a radius of length 2 cm.
  Radius = 2 cm
- The diameter of the circle is twice the radius.

$$\begin{aligned} d &= 2 \times r \\ &= 2 \times 2 \text{ cm} \\ &= 4 \text{ cm} \end{aligned}$$

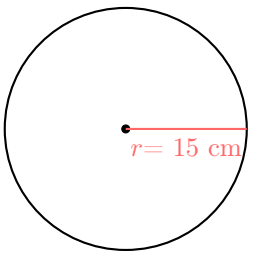
Diameter = 4 cm

Ex 30: The wheel of a child's bicycle is a circle with a radius of 15 cm. What is its diameter?

Diameter = $\boxed{30}$ cm

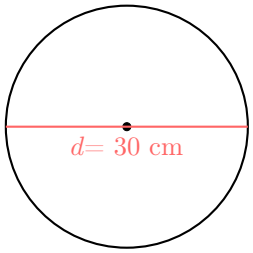
Answer:

- The radius of the wheel is 15 cm.



- The diameter of the circle is twice the radius.

$$\begin{aligned} d &= 2 \times r \\ &= 2 \times 15 \text{ cm} \\ &= 30 \text{ cm} \end{aligned}$$



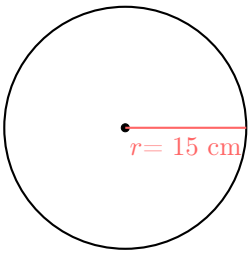
Diameter = 30 cm

Ex 31: A pizza is a circle with a radius of 15 cm. What is its diameter?

Diameter = $\boxed{30}$ cm

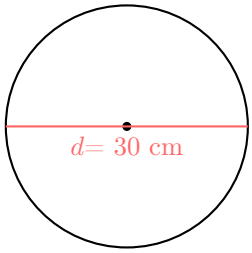
Answer:

- The radius of the pizza is 15 cm.



- The diameter of the circle is twice the radius.

$$\begin{aligned} d &= 2 \times r \\ &= 2 \times 15 \text{ cm} \\ &= 30 \text{ cm} \end{aligned}$$



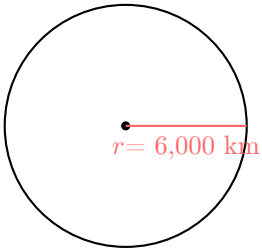
Diameter = 30 cm

Ex 32: The Earth is a sphere with a radius of 6,000 km. What is its diameter?

Diameter = $\boxed{12000}$ km

Answer:

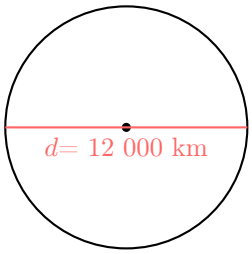
- The radius of the Earth is 6 000 km.



- The diameter is twice the radius.

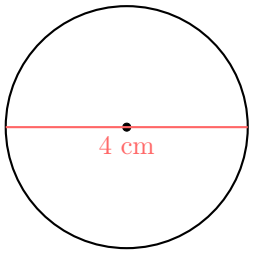
$$\begin{aligned} d &= 2 \times r \\ &= 2 \times 6\,000 \text{ km} \\ &= 12\,000 \text{ km} \end{aligned}$$

Diameter = 12,000 km



C.2 FINDING RADII

Ex 33: What is the radius and what is the diameter of this circle?



Radius = $\boxed{2}$ cm
Diameter = $\boxed{4}$ cm

Answer:

- The drawn segment is a diameter of length 4 cm.
  Diameter = 4 cm
- The radius of the circle is half the diameter.

$$\begin{aligned} r &= d \div 2 \\ &= 4 \text{ cm} \div 2 \\ &= 2 \text{ cm} \end{aligned}$$

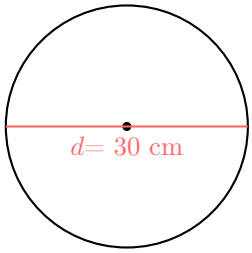
Radius = 2 cm

Ex 34: The wheel of a child's bicycle is a circle with a diameter of 30 cm. What is its radius?

Radius = $\boxed{15}$ cm

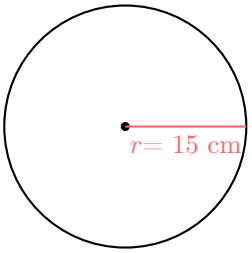
Answer:

- The diameter of the wheel is 30 cm.



- The radius of the circle is half the diameter.

$$\begin{aligned} r &= d \div 2 \\ &= 30 \text{ cm} \div 2 \\ &= 15 \text{ cm} \end{aligned}$$



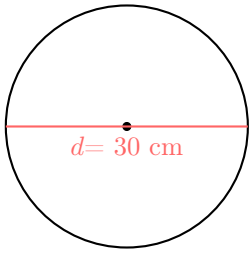
Radius = 15 cm

Ex 35: A pizza is a circle with a diameter of 30 cm. What is its radius?

Radius = $\boxed{15}$ cm

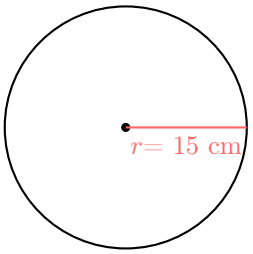
Answer:

- The diameter of the pizza is 30 cm.



- The radius of the circle is half the diameter.

$$\begin{aligned} r &= d \div 2 \\ &= 30 \text{ cm} \div 2 \\ &= 15 \text{ cm} \end{aligned}$$



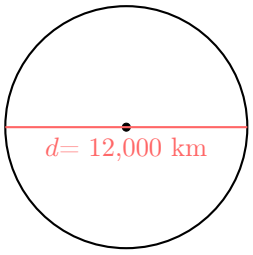
Radius = 15 cm

Ex 36: The Earth is a circle with a diameter of 12,000 km. What is its radius?

Radius = $\boxed{6000}$ km

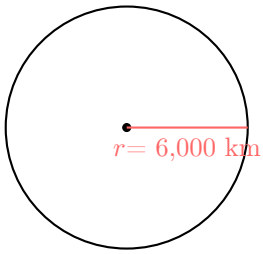
Answer:

- The diameter of the Earth is 12,000 km.



- The radius is half the diameter.

$$\begin{aligned} r &= d \div 2 \\ &= 12,000 \text{ km} \div 2 \\ &= 6,000 \text{ km} \end{aligned}$$



Radius = 6,000 km