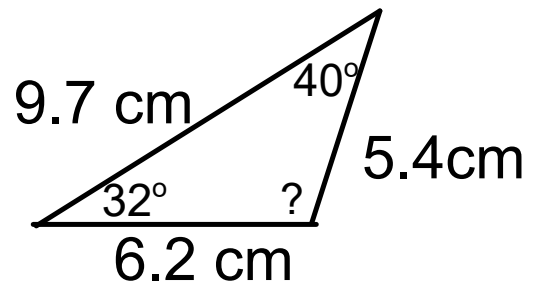




Chapter 6  
Geometry & Measurement

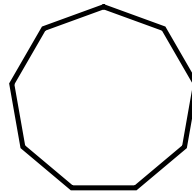
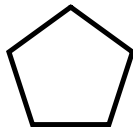
Lesson 4

We name triangles by side length (equilateral, isosceles and scalene) and interior angles (acute, right and obtuse)



1. Find the missing angle "?"
2. Name the triangle by length and interior angle

Part 2- Determine if the following is a regular polygon (what name?)





Chapter 6  
Geometry & Measurement

Lesson 4

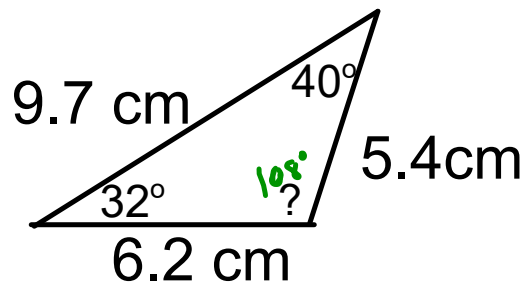
We name triangles by side length (equilateral, isosceles and scalene) and interior angles (acute, right and obtuse)

Missing angle in triangle =  $180 - \text{given angles}$

$$180 - (32 + 40)$$

$$180 - 72$$

$$108$$



1. Find the missing angle "?"
2. Name the triangle by length and interior angle

Scalene

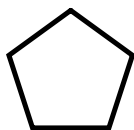
obtuse

Part 2- Determine if the following is a regular polygon (what name?)



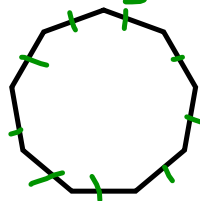
not all  
angles are equal

pentagon



all angles and  
side lengths  
are equal

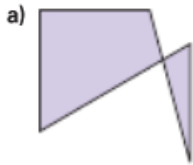
nonagon



all angles and  
side lengths  
are equal

# Homework Solutions

1. Explain why each shape is not a polygon.

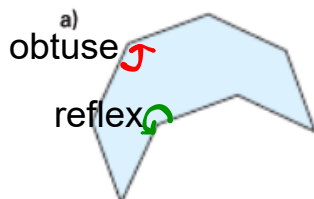


1a) Not a polygon because more than 2 sides meet at a vertex.

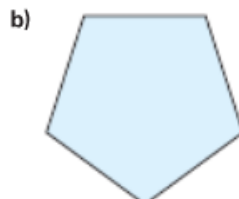


1b) Not a polygon because the shape is not closed.

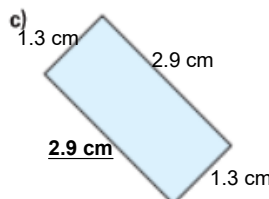
2. Is each polygon regular? How do you know?



No all angles are not equal



Yes all sides and angles are equal  
 angles =  $108^\circ$   
 sides = 2 cm



No sides are not equal  
 angles =  $90^\circ$

3. A cell in a honeycomb approximates a regular hexagon.

- Suppose  $\angle A = 120^\circ$ . What are the measures of angles B, C, D, E, and F?
- Suppose side AB has length 9 cm. What are the lengths of sides BC, CD, DE, EF, and FA?



a) In a regular hexagon all angles are equal so if  $\angle A$  is  $120^\circ$  then all other angles are  $120^\circ$

b) In a regular hexagon all sides are equal so if AB is 9cm then all other sides are 9cm.

# Homework Solutions

#4

## Polygons

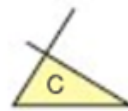


closed shapes with sides that are straight lines  
Only 2 Sides meet at a vertex

## Non Polygons



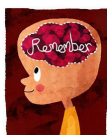
1 side is not a straight line



Sides go beyond vertex, not closed



Not closed



In grade 5 you were introduced to perimeter, area and volume of certain shapes.

### Review

Today we will focus on



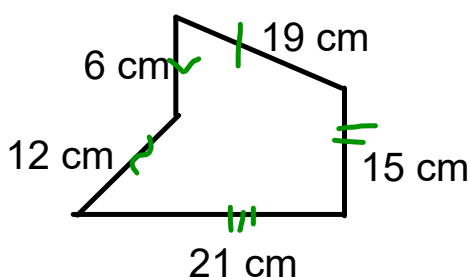
**Perimeter** is the distance around a polygon.

-You add side lengths together

- Measured in mm, cm, m, km...

Perimeter = side + side + side ....so on

1)find the perimeter of this shape (Show work)



(Diagram is not drawn to scale)

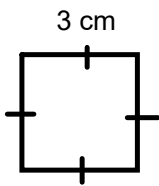
$$\text{Perimeter} = \text{side} + \text{side} + \text{side} + \text{side} + \text{side}$$

$$= 21 \text{ cm} + 15 \text{ cm} + 19 \text{ cm} + 6 \text{ cm} + 12 \text{ cm}$$

$$= 73 \text{ cm}$$

We can develop rules to apply to specific polygons

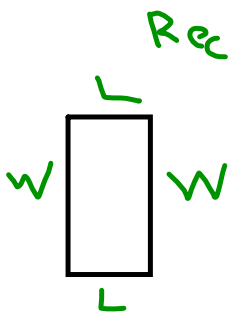
For instance a square has 4 equal sides



$$\begin{aligned} \text{so Perimeter of Sq} &= 4s \\ &= 4 \times 3\text{cm} \\ &= 12\text{cm} \end{aligned}$$

So the rule for the perimeter of a square is

$$\text{Perimeter of square} = 4 \times \text{side}$$



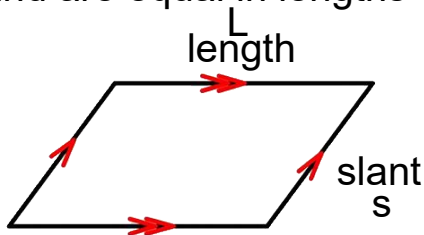
$$P_{\text{Rec}} = 2L + 2w$$



$$P_{\text{eq}\Delta} = 3 \times \text{side}$$

We can develop rules to apply to parallelogram

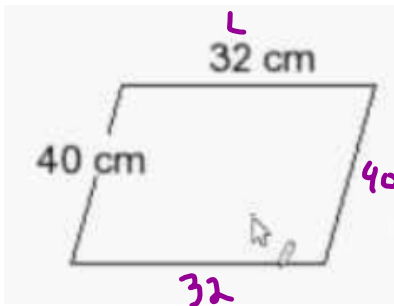
Parallelogram has opposite sides that are parallel and are equal in lengths



$$\begin{aligned} \text{so Perimeter} &= L + S + L + S \\ &= 2(L + S) \end{aligned}$$

$$\text{or } 2L + 2s$$

Find the perimeter of the following (Show work)

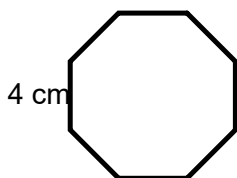


$$\begin{aligned} P &= (2 \times 32) + (2 \times 40) \\ &= 64 + 80 \\ &= 144 \text{ cm} \end{aligned}$$

OR

$$\begin{aligned} P &= \text{side} + \text{side} + \text{side} + \text{side} \\ &= 32 + 40 + 32 + 40 \\ &= 144 \text{ cm} \end{aligned}$$

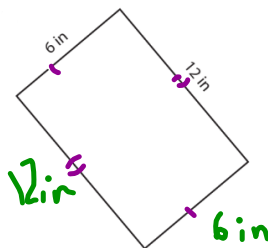
a) Find the perimeter of the regular octagon (Show work)



$$\begin{aligned}
 P_{\text{oct}} &= 8 \times \text{side} \\
 &= 8 \times 4 \text{ cm} \\
 &= 32 \text{ cm}
 \end{aligned}$$

b) Find the perimeter (Show work)

$$\begin{aligned}
 P &= 2L + 2W \\
 &= 2(6 \text{ in}) + 2(12 \text{ in}) \\
 &= 12 \text{ in} + 24 \text{ in} \\
 &= 36 \text{ in}
 \end{aligned}$$

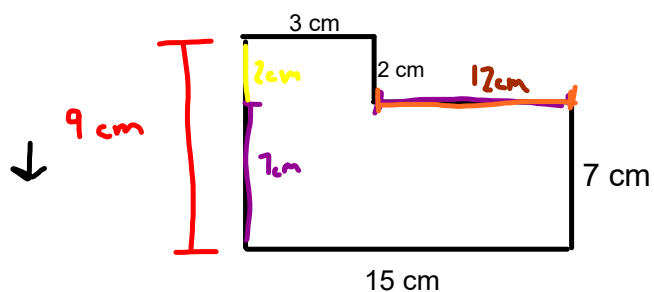


$$\begin{aligned}
 P &= 2(L + w) \\
 &= 2(6 + 12) \\
 &= 2(18 \text{ in}) \\
 &= 36 \text{ in}
 \end{aligned}$$

$$\begin{aligned}
 P &= 6 + 12 + 6 + 12 \\
 &= 36 \text{ in}
 \end{aligned}$$



Find the perimeter of the following  
 (hint: need to find the missing sides first)



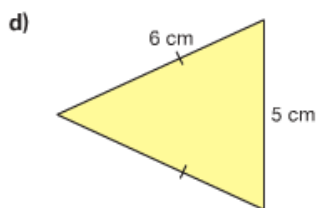
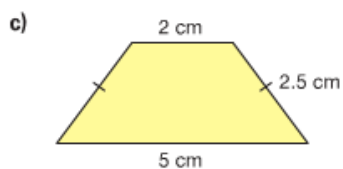
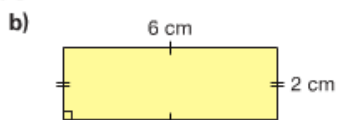
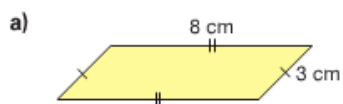
$$\begin{aligned}
 P &= 9 \text{ cm} + 15 \text{ cm} + 7 \text{ cm} + 12 \text{ cm} + 2 \text{ cm} + 3 \text{ cm} \\
 &= 48 \text{ cm}
 \end{aligned}$$

# Class/Homework

Page 229 #1ab #3,#5, #9

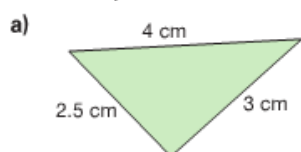
**Practice**

1. Find the perimeter of each polygon.



2. Describe the strategy you used to find the perimeter of each polygon in question 1.

3. Find the perimeter of each polygon.



Can you write a rule to find the perimeter of each of these polygons? Why or why not?

4. Use Pattern Blocks like those below.

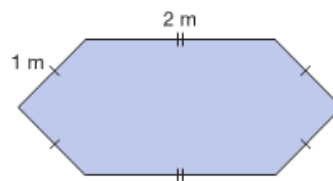


Write a rule to find the perimeter of each Pattern Block.

5. Aldo wants to install a skylight in the roof of his house. The base of the skylight is a regular hexagon with side length 40 cm. What is the perimeter of the base of the skylight? Give your answer in metres. Which strategy did you use to find out?



6. Winnie is building a hexagonal storage box. Here is a drawing of the top of the box.
- Write a rule to find the perimeter of the top of the box.
  - Write the rule as a formula.
  - What is the perimeter of the top of the box?



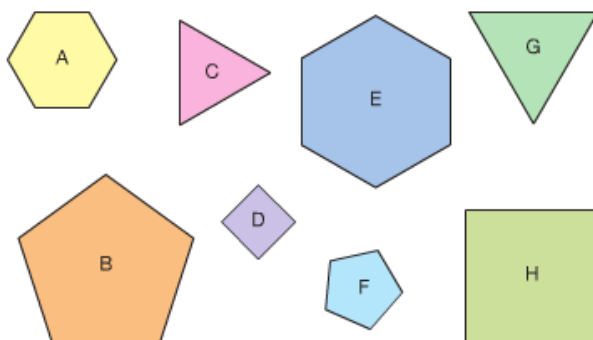
7. a) Find the perimeter of each polygon.



- b) Suppose the side lengths of each polygon are doubled. What would happen to each perimeter? Explain.



8. Your teacher will give you a large copy of these regular polygons.



- Find and record the perimeter of each polygon.
- How is the perimeter of a regular polygon related to the number of its sides?  
Write a formula to find the perimeter of a regular polygon.

9. Saki has a remote control car. She enters her car in a race. The track is close to rectangular.

- Use a formula to find the perimeter of the track.
- Suppose the car completes 8 laps. How far did the car travel?

