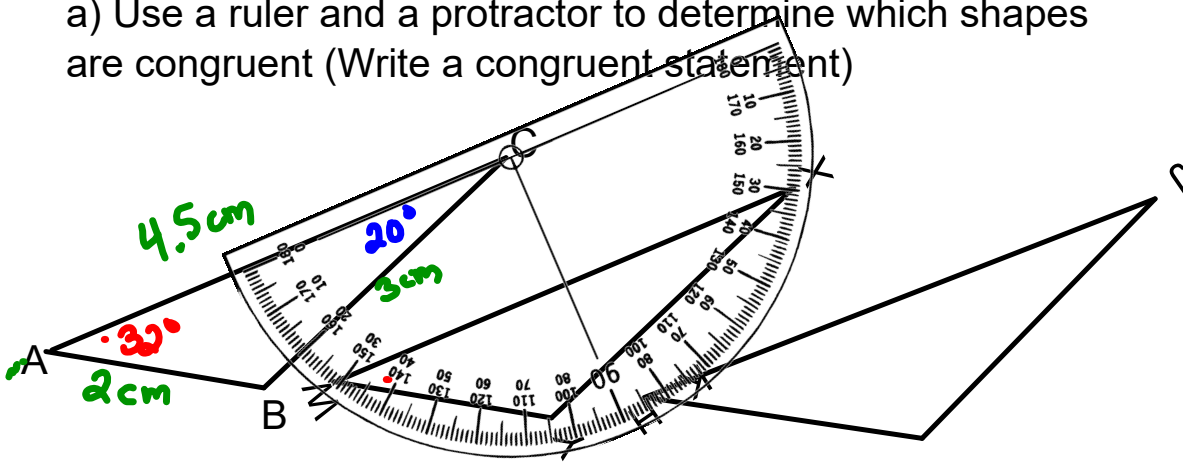




Chapter 6
Geometry & Measurement

Lesson 7

a) Use a ruler and a protractor to determine which shapes are congruent (Write a congruent statement)



b) Which angles are congruent? *protractor*

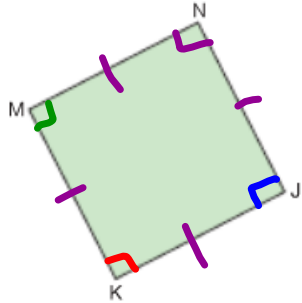
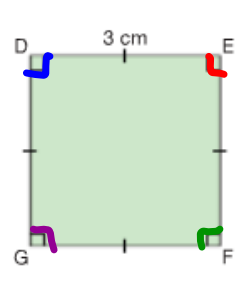
$$\begin{aligned} \angle A &\cong \angle W && 33^\circ \\ \angle B &\cong \angle Y && 127^\circ \\ \angle C &\cong \angle X && 20^\circ \end{aligned}$$

c) Which sides are congruent? *order matters*

$$\begin{aligned} \overline{AB} &\cong \overline{WY} && 2\text{ cm} \\ \overline{AC} &\cong \overline{WX} && 4.5\text{ cm} \\ \overline{BC} &\cong \overline{YX} && 3.0\text{ cm} \end{aligned}$$

Practice

1. Quadrilaterals DEFG and JKMN are congruent. $\angle M = \angle N = \angle J = \angle K = 90^\circ$
- Without using a protractor, write the measure of each angle in JKMN.
 - Without using a ruler, write the length of each side in JKMN.

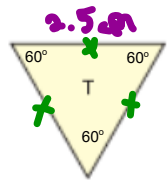
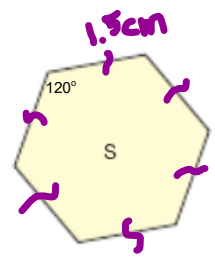
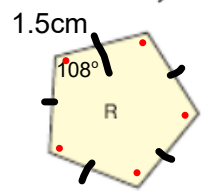


- MN = 3 cm
- NJ = 3 cm
- JK = 3 cm
- KM = 3 cm

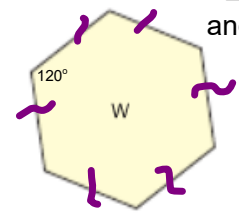
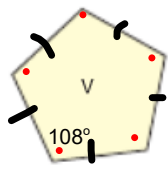
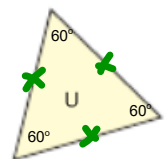
since congruent $\angle D \cong \angle J$

- $\angle E \cong \angle K$
- $\angle F \cong \angle M$
- $\angle G \cong \angle N$

2. Which of these polygons are congruent? $R \cong V$ since all sides are 1.5 cm and all angles are 108°
How can you tell?

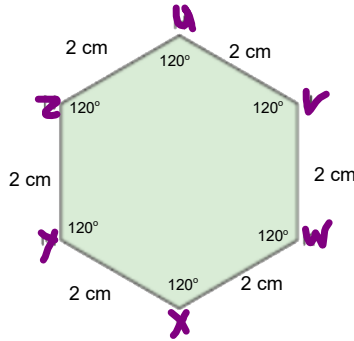
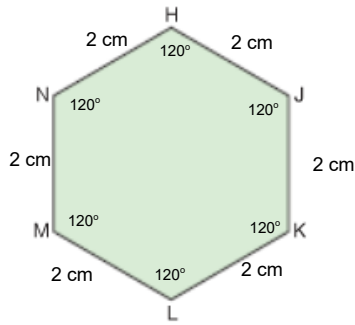


$S \cong W$ since all sides are 1.5 cm and all angles are 120°



$T \cong U$ since all sides are 2.5 cm and all angles are 60°

3. a) Use tracing paper. Trace hexagon HJKLMN on paper. Label the vertices of the traced hexagon UVWXYZ.



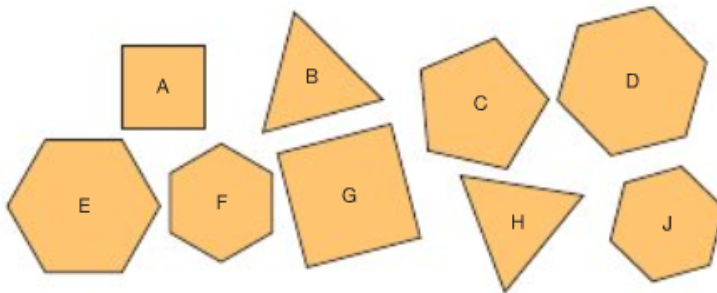
- b) Find the side lengths and angle measures of both hexagons. What do you notice?

They are the same side lengths. All 2cm

They have the same angle measures 120°



4. Your teacher will give you a large copy of these polygons. Use whatever materials you need.



- Which pairs of polygons have corresponding angles congruent? Which strategy did you use to find out?
- Which pairs of polygons have corresponding sides congruent? Which strategy did you use to find out?
- Which pairs of polygons in parts a and b are congruent? How did you decide?
Show your work.

5. Work with a partner. You will need tracing paper and a ruler. Each of you draws a triangle. Use tracing paper to draw 2 exact copies of the triangle in different orientations. Trade triangles with your partner. Check that your partner's triangles are congruent. Which strategy did you use to check?



6. Draw a regular hexagon on triangular dot paper. Use measuring and superimposing to show that all angles are congruent and all sides are congruent. Show your work.

7. A student drew a rectangle on grid paper. The student said, "Since all the angles measure 90° , the angles are congruent. So, the rectangle is a regular quadrilateral." Do you agree? Why or why not?



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

Review

Today we will focus on



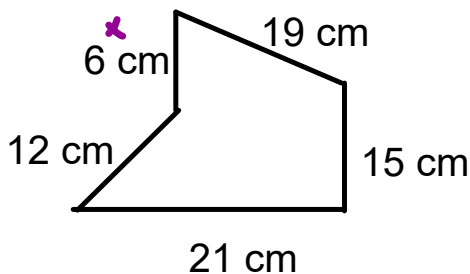
Perimeter is the distance around a polygon.

-You add side lengths together

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

Perimeter = side + side +sideso on

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



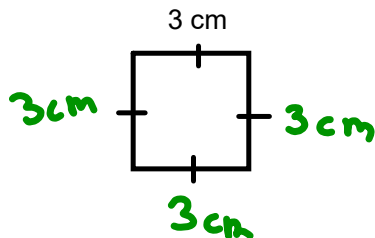
(Diagram is not drawn to scale)

$$\begin{aligned} \text{Perimeter} &= \text{Side} + \text{Side} + \text{Side} + \text{Side} + \text{Side} \\ &= 6\text{cm} + 19\text{cm} + 15\text{cm} + 21\text{cm} + 12\text{cm} \\ &= 73\text{cm} \end{aligned}$$

We can develop rules to apply to specific polygons

For instance a square has 4 equal sides

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



$$\begin{aligned} \text{so Perimeter} &= 3\text{cm} + 3\text{cm} + 3\text{cm} + 3\text{cm} \\ &= 12\text{cm} \end{aligned}$$

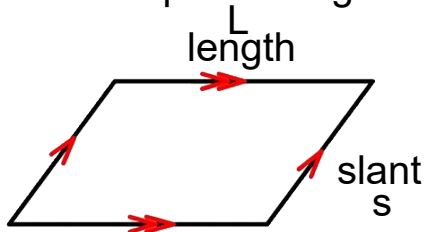
So the rule for the perimeter of a square is

$$\begin{aligned} \text{Perimeter of square} &= 4 \times \text{Side} \\ &= 4 \times 3\text{cm} \\ &= 12\text{cm} \end{aligned}$$

We can develop rules to apply to parallelogram

Study

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

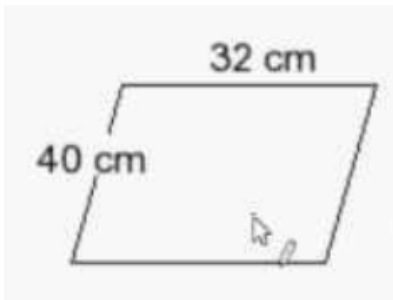


so Perimeter = $L + S + L + S$

$$\text{Parallelogram} = 2(L + S)$$

or $2L + 2s$

Find the perimeter of the following (Show work)

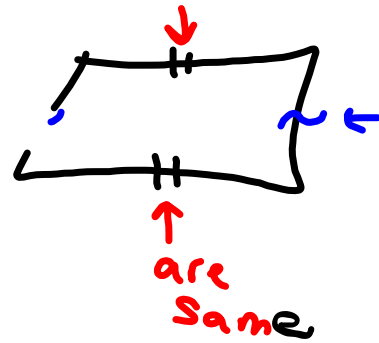


$$\begin{aligned} \text{Perimeter of Parallelogram} &= 2(L + S) \\ &= 2(32\text{cm} + 40\text{cm}) \\ &= 2(72\text{cm}) \\ &= 144\text{cm} \end{aligned}$$

Class/Homework

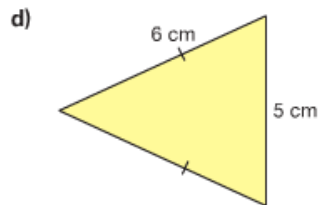
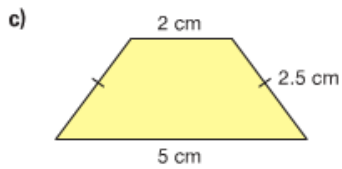
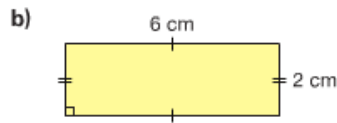
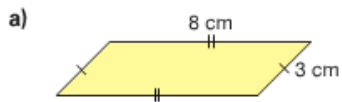
Page 229 #1 ~~#2~~, #3, ~~#4~~

Write
equation
out



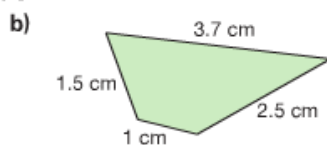
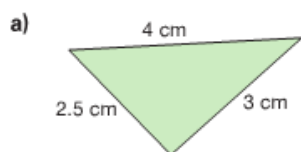
Practice

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.

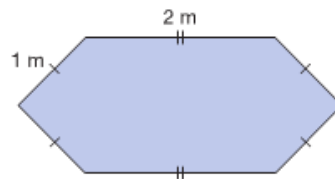


Write a rule to find the perimeter of each Pattern Block.

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?



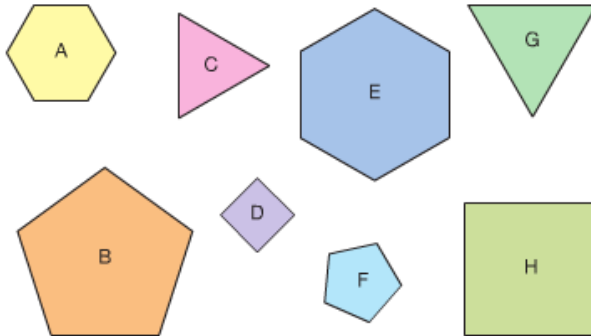
7. a) Find the perimeter of each polygon.



- 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.



- a) Find and record the perimeter of each polygon.
- b) 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.

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

