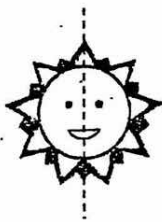
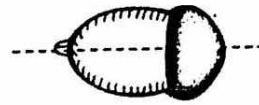


### G3-12: Lines of Symmetry

Answers

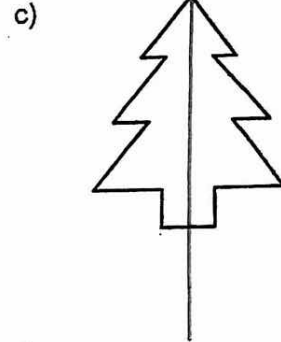
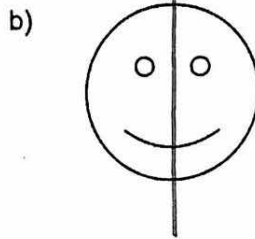
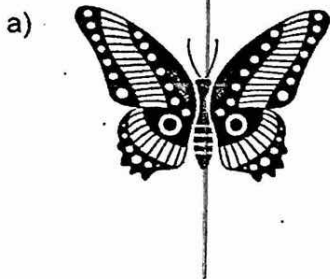


This picture has a vertical line of symmetry.

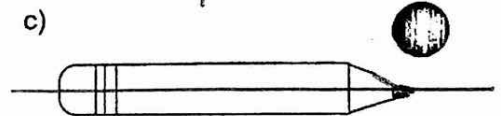
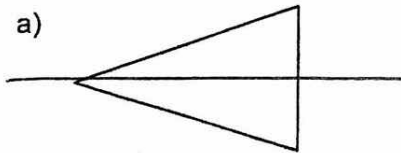


This picture has a horizontal line of symmetry.

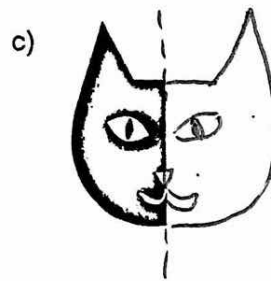
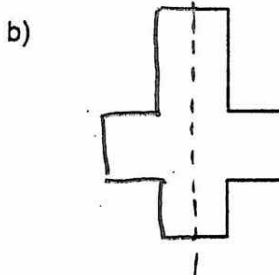
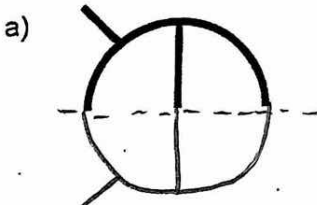
1. Draw a vertical line of symmetry onto the pictures with a ruler.



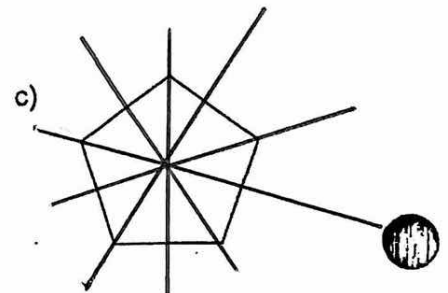
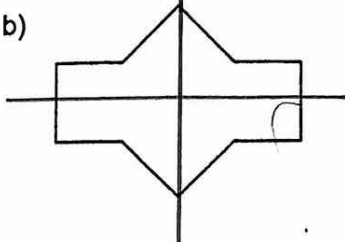
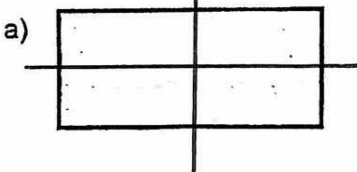
2. Draw a horizontal line of symmetry with a ruler.



3. Draw the missing half to make each picture symmetrical.



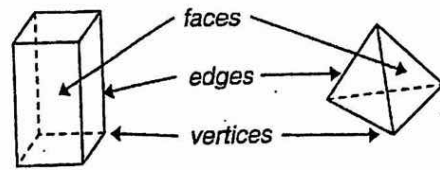
4. These pictures have more than one line of symmetry. Use a ruler to draw the lines of symmetry onto the pictures.



# G3-38: Prisms and Pyramids

The solid shapes in the figure are called **3-D shapes**.

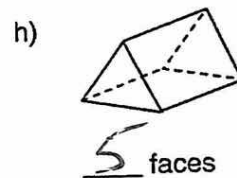
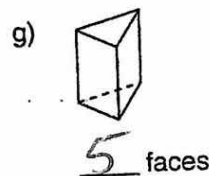
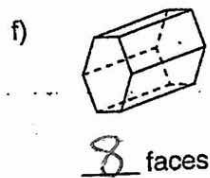
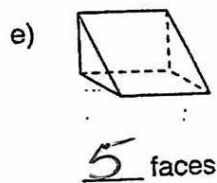
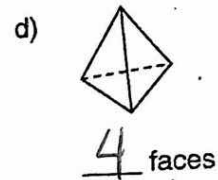
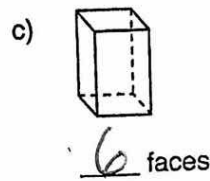
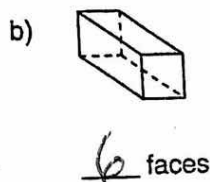
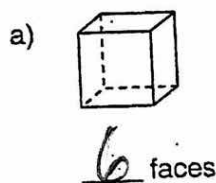
**faces** are the flat surfaces of a shape; **edges** are where two faces meet, and **vertices** are the points where 3 or more faces meet.



**Pyramids** have a point at one end. The base of the shape is a polygon; for instance, a triangle, a quadrilateral or a square (like the pyramids in Egypt), a pentagon, etc.

**Prisms** do not have a point. Their faces are the same at both ends of the shape.

1. Count the faces of each shape.



2. Using a set of 3-D shapes and the chart below as reference, answer the following questions.

	A	B	C	D	E
	Square Pyramid	Triangular Pyramid	Rectangular Prism	Cube	Triangular Prism

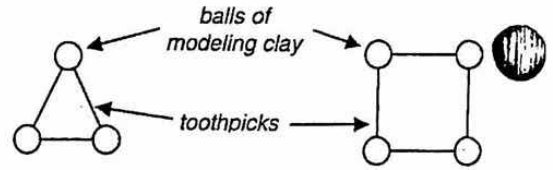
a) Describe each shape in terms of number of faces, vertices and edges. The first one has been done.

	A	B	C	D	E
Number of Faces	5	4	6	6	5
Number of Vertices	5	4	8	8	6
Number of Edges	8	6	12	12	9

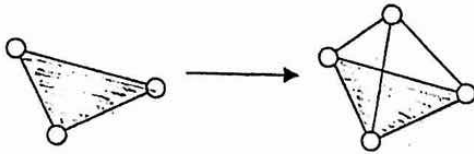
b) Did any shapes have the same number of faces / vertices / edges? If so, which shapes share which properties?

# G3-33: Building Pyramids

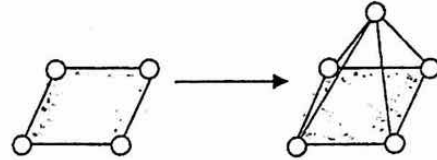
To make a **skeleton** for a **pyramid**, start by making a base. Your base might be a triangle or a square.



Now add an edge to each vertex on your base and join the edges at a point.



Triangular Pyramid



Square Pyramid

Make a triangular pyramid, a square pyramid, and a pentagonal pyramid.

1. Fill in the first three rows of the chart. Use the skeletons you made.

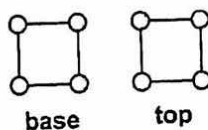
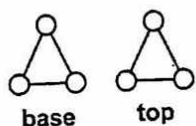
	Draw Shape of Base	Number of Sides of Base	Number of Edges of Pyramid	Number of Vertices of Pyramid
Triangular Pyramid		3	6	4
Square Pyramid		4	8	5
Pentagonal Pyramid		5	10	6
Hexagonal Pyramid		6	12	7



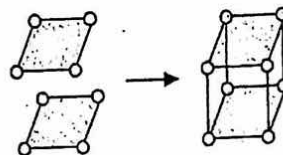
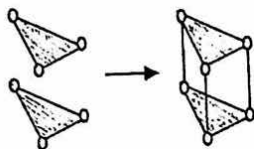
2. Describe the pattern in each column of your chart.   
 Pattern      +1      +2      +1
3. Use the pattern to fill in the row for the hexagonal pyramid.
4. What relationship do you see between the number of sides in the base of a pyramid and the number of edges in the pyramid?   
 +1

# G3-34: Building Prisms

make a skeleton for a **prism**, start by making a base (as you did for a pyramid). However, your prism will also need a top, so you should make a copy of the base.



Now join each vertex in the base to a vertex in the top.



1. Fill the first three rows of the chart using the skeletons you made.

	Draw Shape of Base	Number of Sides of Base	Number of Edges of Prism	Number of Vertices of Prism
Triangular Prism		3	9	6
Rectangular Prism		4	12	8
Pentagonal Prism		5	15	10
Hexagonal Prism		6	18	12
	→ Pattern	+1	+3	+2




2. Describe the pattern in each column of your chart.

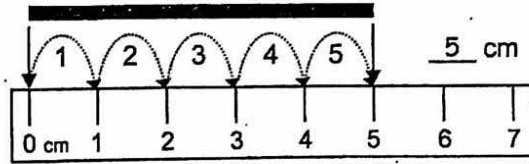
3. Use the pattern to fill in the row for the hexagonal prism.



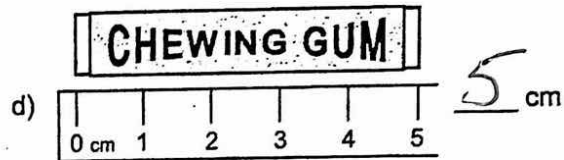
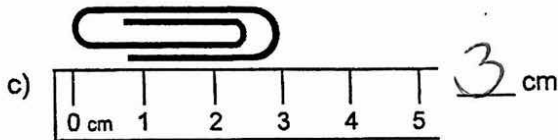
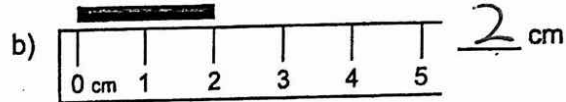
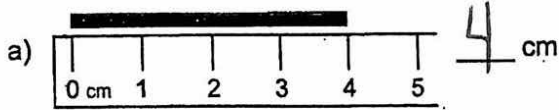
4. What relationship do you see between the number of sides in the base of a prism and the number of edges in the prism?  $\times 2$ .

# ME3-3: Rulers

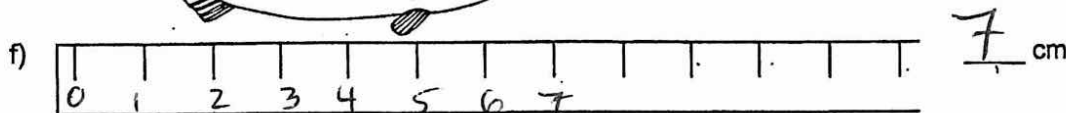
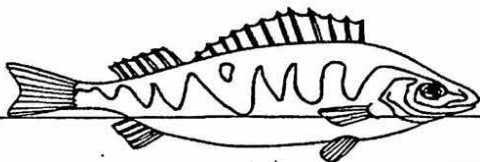
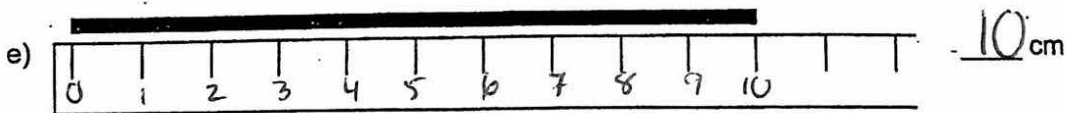
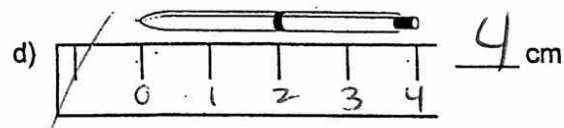
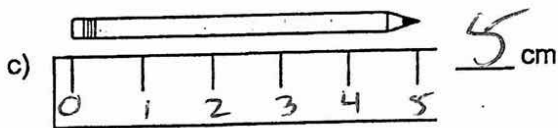
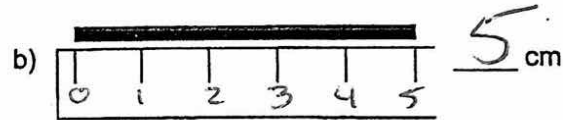
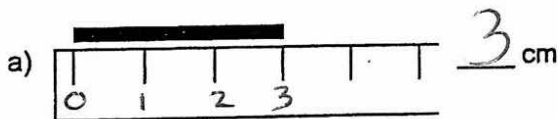
 Laura measures the line by lining up her ruler with the endpoint of the line. She counts the number of centimetre "hops" it takes to reach to the end of the line.



1. Measure the length of each line or object.



2. Measure the length of the lines and objects below.  
BE CAREFUL: The centimetre marks on these rulers are not numbered.



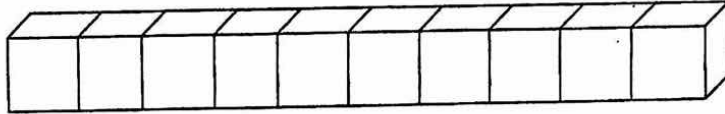
# ME3-7: Estimating in Metres

A metre is a unit of measurement for length (or height or thickness) equal to 100 cm.



metre stick is 100 cm long:

1. Ten interlocking centimetre cubes are 10 cm long.

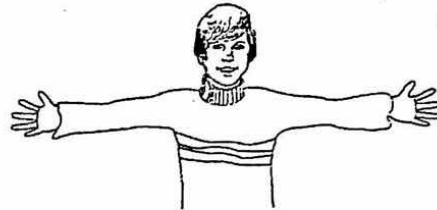


How many groups of ten cubes would make a metre?

10 groups of "10 cube sticks" = 1 metre

You can estimate metres using parts of your body:

- A giant step is about a metre long.
- If you stretch your arms out the distance between the tips of your fingers is about one metre. (This distance is called your *arm span*.)



2. Take a giant step and ask a friend to measure your step with a piece of string. Hold the string up to a metre stick. Is your step more or less than a metre?

answers may be different

3. Ask a friend to measure your arm span using a piece of string. Is your arm span more or less than a metre?

answers may be different

4. Stand against a wall and ask a friend to measure your height with chalk and a metre stick:

Your height is \_\_\_\_\_ cm. Are you taller than 1 metre? \_\_\_\_\_

5. Estimate each distance to the nearest metre. Then measure the distance:

- a) The length of the blackboard in your classroom: Estimate - \_\_\_\_\_ m Actual - \_\_\_\_\_ m  
b) The length of your desk: Estimate - \_\_\_\_\_ m Actual - \_\_\_\_\_ m  
c) The distance from the floor to the door handle: Estimate - \_\_\_\_\_ m Actual - \_\_\_\_\_ m



6. Find (or think of) an object in your classroom or outside that is approximately 2 metres long.

# ME3-15: Measuring Mass

Mass measures the amount of matter, or substance, in a thing.

Grams (g) and Kilograms (kg) are units for measuring weight or mass.

One kilogram is equal to 1000 grams.

Things that weigh about one gram:

- ✓ A paper clip
- ✓ A dime
- ✓ A chocolate chip

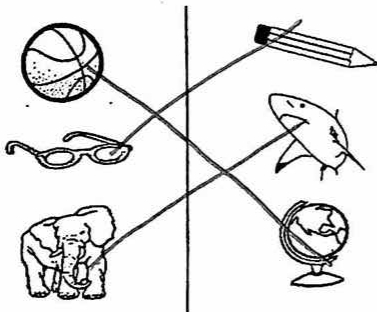
Things that weigh about one kilogram:

- ✓ A 1-litre bottle of water
- ✓ A bag of 200 nickels
- ✓ A squirrel

1. Can you name an object that weighs about
- a) one gram? any of these
- b) one kilogram? any of these

2. Estimate the weight of the following things in ... *\*answers will vary here\**
- Grams:**
- a) a chocolate chip cookie \_\_\_\_\_ b) an apple \_\_\_\_\_ c) a shoe \_\_\_\_\_
- Kilograms:**
- d) your math book \_\_\_\_\_ e) your school bag \_\_\_\_\_ f) yourself \_\_\_\_\_

3. Match the objects on the left with objects on the right that have a similar weight.



4. What unit is more appropriate to measure each item? Circle the appropriate unit.



grams or kilograms?



grams or kilograms?

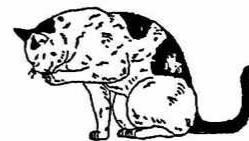


grams or kilograms?

5. a) How many dimes weigh as much as 6 nickels? 4
- b) How many quarters weigh as much as 5 nickels? 4

Coin	Weight
Dime	1 g
Nickel	4 g
Quarter	5 g

6. When Brian stands on a scale the arrow points to 40 kg.  
When he stands on the scale and holds his cat, the arrow points to 45 kg.  
How could he use these two measurements to find the weight of his cat?



$$45 \text{ kg (for both)} - 40 \text{ kg (Brian)} = 5 \text{ kg (cat)}$$

Measurement 1 ✓

# ME3-16: Measuring Capacity

The **capacity** of a container is how much it can hold.

**Litres** and **millilitres** are units for measuring capacity.

- ✓ The capacity of a regular carton of juice is 1 litre:



One litre (L) equals 1000 millilitres (mL).

- ✓ A small glass holds almost 100 mL.
- ✓ A drop of water contains about 1 mL of water.

1. Which unit would you use to measure the capacity of the container.

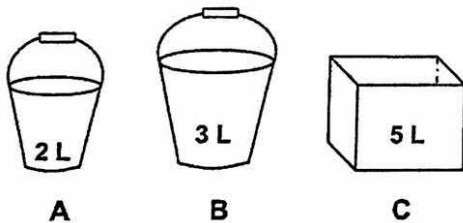
- a) L or mL? *L*    b) L or mL? *L*
- c) L or mL? *L*    d) *either* L or mL?

2. Which set of containers has the greatest capacity? How do you know?

- a) *OR*
- b)



3.



- a) How many containers of size C would hold 20 L? *4*
- b) How many containers of size A would hold as much water as 2 containers of size B? *3*
- c) Which will hold more, 4 containers of size B or 3 containers of size C? *12L* \* *3 containers of size C.*

Optional

4. How many containers would you need to make a litre if your container held ...

- a) 100 mL? *10*    b) 200 mL? *5*    c) 500 mL? *2*    d) 250 mL? *4*

5. To make punch for 6 people you need 50 mL of orange juice.

How many mL of orange juice would you need to make punch for 12 people? Explain. *100 mL*

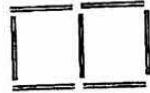
6. Clare fills a measuring cup with 40 mL of water.

She pours out some water and notices there are 30 mL left. How much water did she pour out? *10 mL*

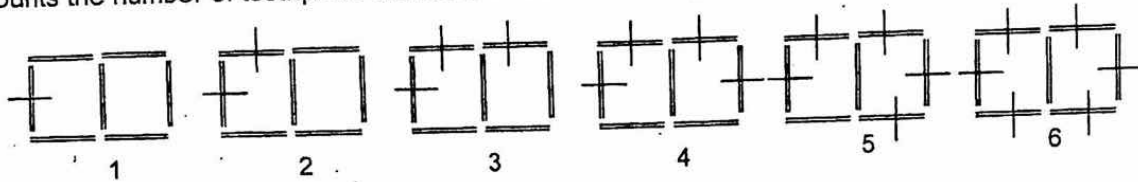


# ME3-12: Perimeter

Carlo makes a figure using toothpicks.

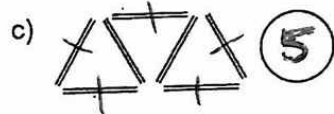


He counts the number of toothpicks around the outside of the figure:

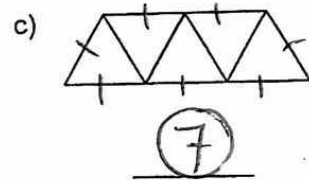
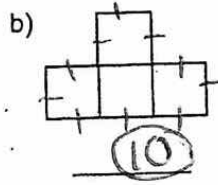
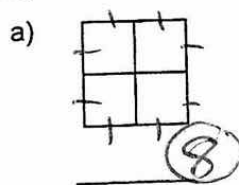
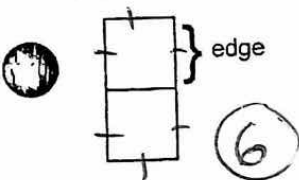


The distance around the outside of a shape is called the **perimeter** of the shape.  
The perimeter of Carlo's figure, measured in toothpicks, is 6 toothpicks.

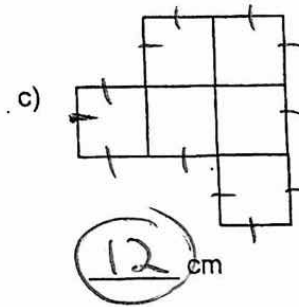
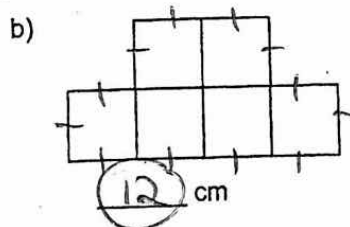
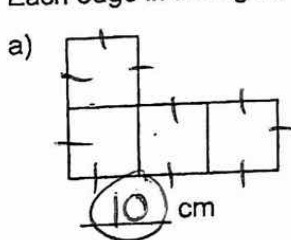
1. Count the number of toothpicks around the outside of the figure. (Mark the toothpicks as you count.)  
Write your answer in the circle provided.



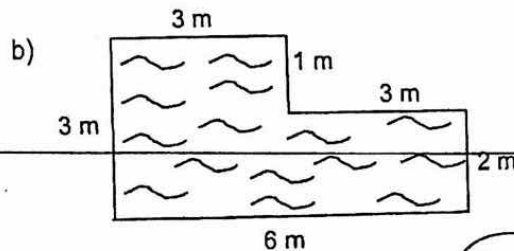
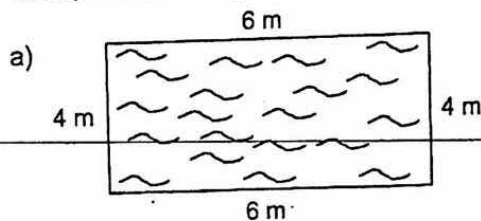
2. Count the number of edges around the outside of the figure, marking the edges as you count.



3. Each edge in the figure is 1 cm long. Find the perimeter in cm.



4. The picture shows the designs for two swimming pools, marked in metres. Find the perimeter of each pool by writing an addition statement.



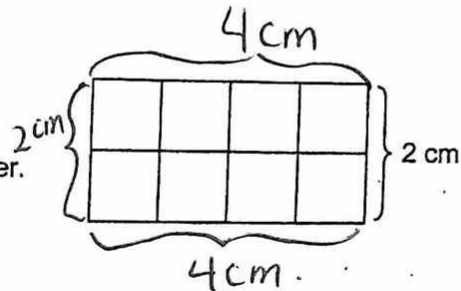
$$4\text{ m} + 6\text{ m} + 4\text{ m} + 6\text{ m} = 20\text{ m}$$

$$3 + 3 + 1 + 3 + 2 + 6 = 18\text{ m}$$

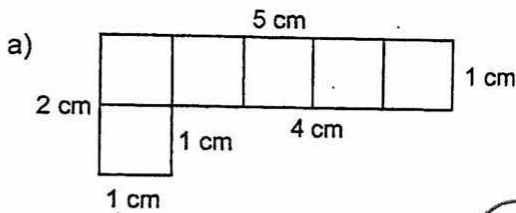
# ME3-13: Exploring Perimeter

- Write the total length of each side beside the figure (one side is done for you).  
Then write an addition statement and find the perimeter.

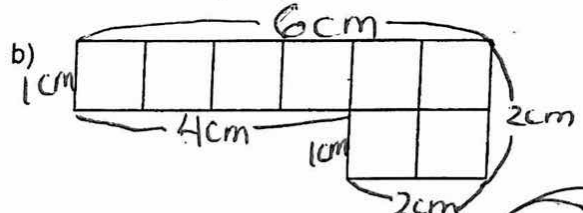
Perimeter:  $4 + 2 + 4 + 2 = 12 \text{ cm}$



- Write the total length of each side in cm as shown in the first figure.  
Then write an addition statement and find the perimeter. Don't miss any edges!

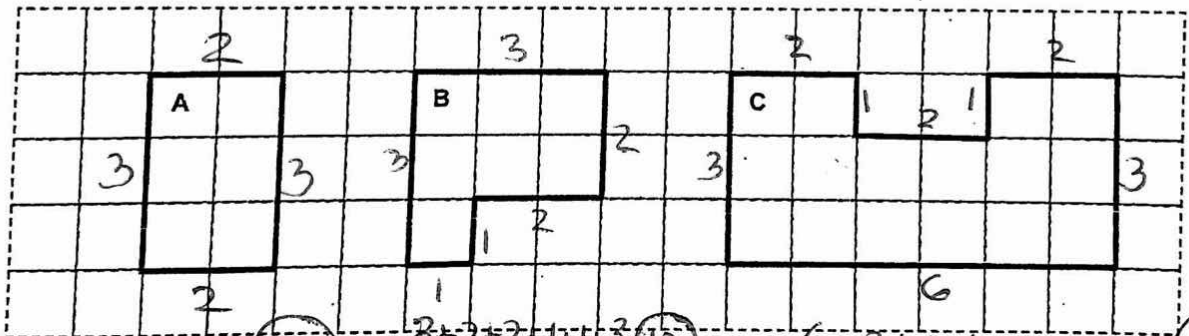


Perimeter:  $5 + 1 + 4 + 1 + 1 + 2 = 14 \text{ cm}$



Perimeter:  $6 + 2 + 2 + 1 + 4 + 1 = 16 \text{ cm}$

- Each edge is 1 unit long. Write the length of each side beside the figure (don't miss any edges!).  
Then use the side lengths to find the perimeter.



$2 + 3 + 2 + 3 = 10$

$3 + 2 + 2 + 1 + 1 + 3 = 12$

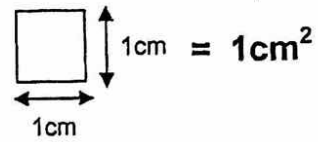
$6 + 3 + 2 + 1 + 2 + 1 + 2 + 3 = 20$

- Draw your own figure and find the perimeter.

Answers will vary here.  
\* Make sure you drew a figure that has straight edges and closed shape \*

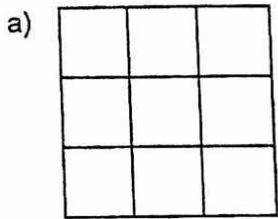
# ME3-29: Area in Square Centimetres

Canada, area is measured using a square with sides of length 1 cm. This unit of measurement is called a square centimetre.

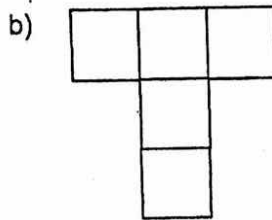


The short form for a square centimetre:  $\text{cm}^2$

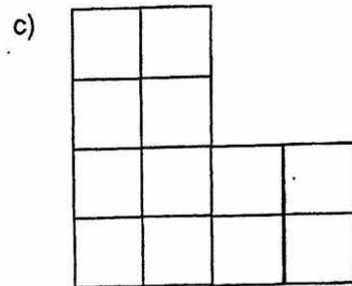
1. Find the area of these figures in square centimetres.



Area = 9  $\text{cm}^2$

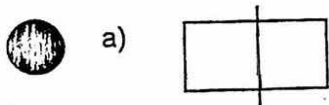


Area = 5  $\text{cm}^2$

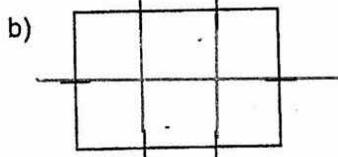


Area = 12  $\text{cm}^2$

2. The sides of the rectangles have been marked in centimetres. Using a ruler, draw lines to divide the rectangles into square centimetres.



Area = 2  $\text{cm}^2$

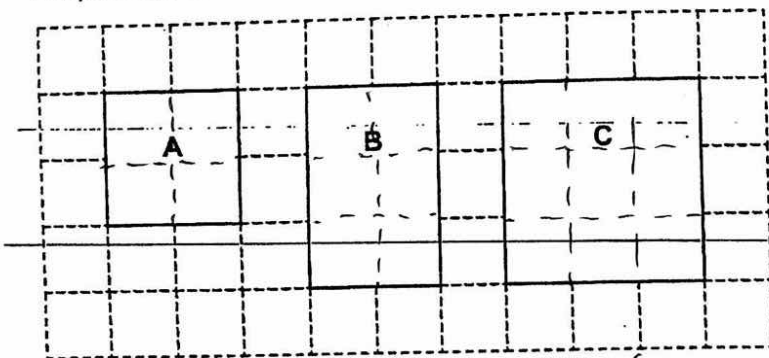


Area = 6  $\text{cm}^2$



Area = 4  $\text{cm}^2$

3. How can you find the area (in square units) of each of the shapes below?



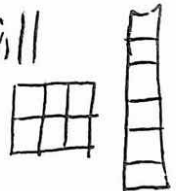
Area of A = 4

Area of B = 6

Area of C = 9

On grid paper: *Answers will vary.*

4. Draw 3 different shapes that have an area of  $6 \text{ cm}^2$  (the shapes don't have to be rectangles).



5. Draw several shapes and find their area and perimeter. *\* as long as your shapes include 6 squares each.*

6. Draw a rectangle with an area of  $6 \text{ cm}^2$  and perimeter of 10 cm.

