Math 1201 **Date:_____**

1.1B Referents

What is measurement?

A quantity or an amount of something.

How do we measure things?

By using tools with set units. or referents

What are some commonly used units of measurement?

meters, yards, km, miles, kg, lbs, ...

Referents

A referent is an object that can be used to help estimate a measurement. From the earliest introduction to metric units, you have had experience relating non-standard and standard units of measurement. You have used referents to estimate the length of an object in centimetres, metres and millimetres.

The millimetre, for example, is suitable for measuring small distances.

Some common referents for linear measurement include:

Referent	Description
1 mm	thickness of a dime, thickness of a fingernail
1 cm	width of a fingernail, width of black keys on a standard piano, width of a crayon, width of a paper clip
1 m	distance from a doorknob to the floor, width of a volleyball net
1 km	distance you can walk comfortably in 15 minutes
1 in.	thickness of a hockey puck, length from end of thumb to first knuckle
1 ft.	length of a standard floor tile
1 yd.	distance from the tip of the nose to the outstretched fingers, average length of a guitar
1 mi.	distance you can walk comfortably in 20 minutes

The thumb can also be used as a measurement device. A person's measurement could be determined by measuring the distance around his or her thumb using string. Twice around the thumb is equal to once around the wrist. Twice around the wrist is once around the neck. Twice around the neck is once around the waist.

Each referent is a suggestion. Try and select your own personal referent that makes sense to you. For example, your waist height could be used as a referent for one metre. If you determine the height of the seat of a chair to be approximately half of your waist height, then the seat of the chair is 0.5 metres high.

When determining the length of a room you could count the tiles on the floor since the length of a standard tile is 1 foot in length.

Example 1:

List household objects that are:

(A) 2 ft. long

- printer
- lamp
- kitchen sink

(B) 4 in. thick

- pillow
- tissue box
- brick

(C) 12 cm wide

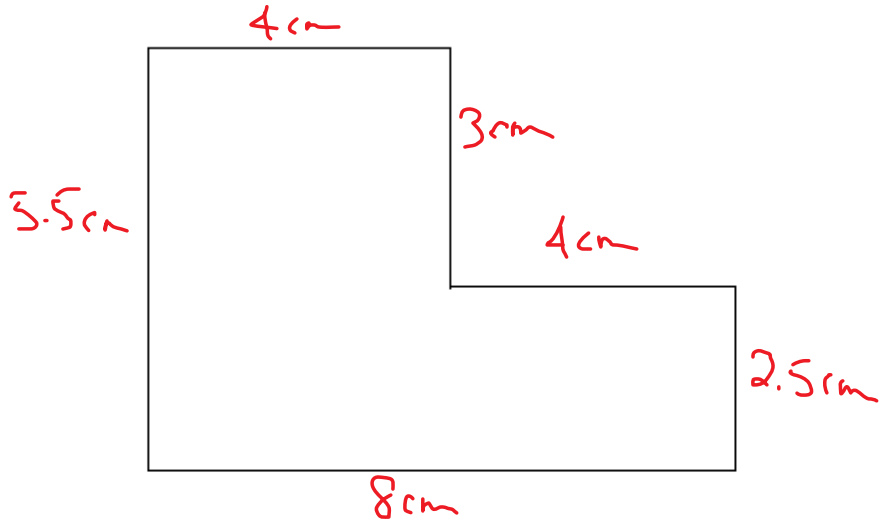
- butter knife
- tube of toothpaste
- plug in length

Example 2:

Complete the following:

(A) Estimate the perimeter of the figure in an appropriate SI unit.

27cm



(B) If all the angles are right angles, is it necessary to measure all sides of the figure?

No. You can add or subtract to find sides.

Example 3:

(A) A hockey net is 6 ft. wide. Explain how you could use a personal referent to mark off a width of approximately 6 ft.?

Use feet.

(B) What referent could you use to estimate how much snow fell after a snowstorm? Explain your choice.

Waist or knee height

Example 4:
Estimate the length of the following objects using a referent and explain how you determined your answer.

(A) height of a door

Use the door knob height

(B) width of a smartboard or whiteboard

floor tiles

(C) length of a keyboard

tip of thumb to knuckle.

(D) height of a light switch

waist height

(E) height of an electrical outlet

foot

Measurement

What are some examples of measuring instruments that are commonly used to measure distance in the home or workplace?

- ruler
- tape measure
- meter stick
- meter wheel

How would you measure:

the length of the parking lot?

tape or meter wheel.

how far you have to walk from the bus to the school's entrance?

tape or meter wheel.

how much fencing is needed or used to enclose the school grounds?

11 11

the circumference of a school bus tire?

String and tape measure

the length of a window?

ruler or tape measure

the height of a locker?

meter stick

How could you measuring irregular shaped objects such as a computer mouse, a horseshoe magnet or a badminton racquet?

String and tape measure

Example 5:
How you would determine the circumference of a cross section of a basketball going through the centre of the basketball. State the referent, the unit, and the measuring instrument used.

Example 6:
Explain a strategy that Julie can use to determine the perimeter of the basketball key represented by the shaded region.