# Instructions for creating Trundle Wheels for Classroom Activities
@ Activities using Trundle Wheels & Clinometers @

1. The circles for the Trundle Wheels are created easily from, 1/4" x 4ft x 8ft *untempered sheets of masonite*
   which will produce (8) wheels of radius about 16cm.   @ *Check Lowes or Home Depot!* @
   Create circles on 4x8 sheet **&** cut out with a Jig Saw & smooth edges with sandpaper **then** drill 1/4 " **center** hole.
   A **5.8 in radius** yields a circumference of *about* 1 yard.   C=(2)(**Pi**)(Radius)   C=(2)(3.14)(5.75) = 36 inches (**est**)
   A **16 cm radius** gives a circumference of *about* 1 meter.   C=(2)(**Pi**)(Radius)   C=(2)(3.14)(16) = 100 cm (**est**
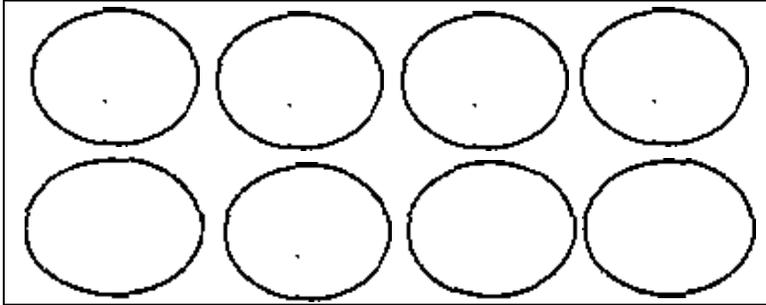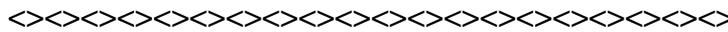

2. The handles for the trundle wheels can be created from
   about 1/4 " thick *lattice strips (1)* and about l00 cm *or 3 feet* long.
   Another idea for the handles could be to use 100 cm *or 3 feet* long strips.
   created from 1" x 2" x 8ft *furring strips (2)*. *Much stronger*!
   Still another idea is to use **meter sticks** *(3)* however added cost.
3. Using bolts, washers, and nuts are best for smooth movement of trundle wheel.
   1/4" x 1 " *hex head bolts*, 1/4" *flat washers*.   Don't use lock washers.
   Use (3) flat washers to minimize friction with one in middle.   (| H | W |) **H**andle & **W**heel & LW
   Better to use *square nuts not hex* so as to lock together **but** allow for smooth movement.

Trundle wheels can be used with a variety of measurements for *inside perimeter & area* activities in **gym**.
   This provides "**Real World**" surveying activities for perimeter & area measure along with calculations.

Activity #1: Create triangles. squares, rectangles, circles on playground, parking lot, gym using sticky notes for corners.
   then allow students to determine perimeter and area of **non-regular** figures by measuring with trundle wheels.
   P = (2L) (2W)   A = (L) (W)   C = (Pi) (D)   A = (2) (Pi) (R)
   <><><><><><><><><><><><><><><><><><><><><>
Trundle wheels are used with clinometers **&** stadia rods for outside **survey** measurements **as below**
   Simple proportional math **along with** duplicate page of trigonometric measurements.   (Maybe Calculator?)
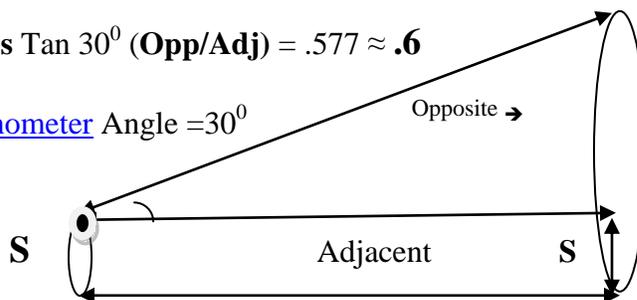
Activity #2: Using a trundle wheel **&** clinometer, you can determine the height of a **tree**, pole, or building.
   Just measure **out** from tree **then** use a clinometer to measure an angle to top of tree **then** create a proportion.

Using a *trigonometry* **angles** Tan 30^0 (**Opp/Adj**) = .577 ≈ **.6**

Solution to H of Tree!
Tree = H + S = 25.2ft + 5ft = **27.2** ft
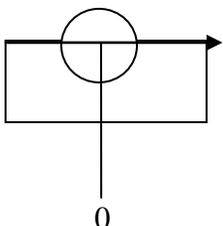
Clinometer Angle =30^0 Opposite ➔

H ← **Simple Proportion Solution!**
       .6 = H/M (Tan **= (Opp/Adj)**
       $\underline{6} = \underline{H}$
       10   42ft
       252 = 10H

S   Adjacent   **S**

0

Student = 5 ft   **M**easure by Trundle Wheel ⇔ 42 ft

25.2 ft = H   Solve Proportion!