Pi Day
$$π$$

Activity 1:

1. Measure the circumference of the engine block cylinder using yarn.
2. Measure the diameter of your cylinder. (How would you do this accurately?)
3. Calculate the ratio of the circumference to the diameter.
4. Analyze your results. Are they accurate? If not, what might have been the cause?

Activity 2:

1. Measure the circumference of a cookie using yarn.
2. Measure the diameter of the cookie
3. Calculate the ratio of the circumference to the diameter.
4. Analyze your results. Are they accurate? If not, what might have been the cause?

Practice problems using pi. Use 3.14 for $π$. **Make sure you select the correct conversion factor for capacity!**

$V= πr^{2}h$ $Capacity in Gallons =\frac{V}{231 in^{3}/gal}$

 $Capacity in Gallons =\frac{V}{7.5ft^{3}/gal}$ $Capacity in Liters= \frac{V}{1000cm^{3}/liter}$

1. The cylindrical gasoline tank on a tractor is 10 inches in diameter and 30 inches long. How many gallons will the tank hold?
2. Find the capacity in gallons of a cylinder with a 2 foot diameter and a 4 foot height.
3. Find the capacity in liters of a cylinder with a 10cm diameter and a 30 cm height.
4. Complete the chart.

|  |  |  |  |
| --- | --- | --- | --- |
| Diameter | Height | Volume | Capacity |
| 1. 4 inches
 | 12 in |  | Gal. |
| 1. 70 cm
 | 95 cm |  | Liters |
| 1. 2 ft.
 | 8 ft. |  | Gal. |
| 1. 1 ft
 | 2.3 ft |  | Gal. |
| 1. 35.5 cm
 | 70.5 cm |  | Liters |
| 1. 20 cm
 | 20 cm |  | Liters |

Piston Displacement

$$piston displacement= πr^{2}SN$$

S equals the stroke and N the number of cylinders.

1. Find the piston displacement of an 8-cylinder engine with a 3.75 inch bore and a 3.5 inch stroke.
2. Find the piston displacement for a 4-cylinder engine with a 3.5 inch bore and a 2.75 in stroke.
3. Find the number of cylinders in a 250 cubic inches engine with a 3.89” bore and a 3.5” stroke.