

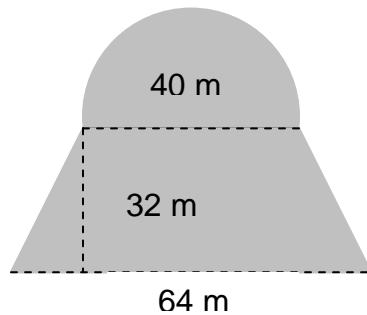
**PROBLEM-OF-THE-DAY: ALGEBRA 1****WEEK:** October 15 to October 19**DAY:** Friday

**RISD Objective:** Given a figure (including composite figures) and/or a word problem, students will find the area, applying it as necessary.

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**PROBLEM #43**

The cross section of a UFO is shown in the figure below.



The diameter of the semicircular top is 40 m. The height of the trapezoidal bottom is 32 m. The bottom base is 64 m. What is the area of the cross section of this UFO? Show and explain your work.

**MODEL SOLUTION #43**

Since this is a composite figure, I will first find the area of the semicircle and add it to the area of the trapezoid.

The area of the semicircle would be half of the area of a circle. Since a circle's area is  $\pi r^2$ , the area of the semicircle would be  $\frac{1}{2}\pi r^2$ .

$$\frac{1}{2}\pi r^2$$

$$\frac{1}{2}(3.14)(20^2)$$

$$\frac{1}{2}(3.14)(400)$$

$$628 \text{ m}^2$$

The area of the trapezoid would be

$$\frac{1}{2}(b_1 + b_2)h$$

$$\frac{1}{2}(64 + 40)(32)$$

$$\frac{1}{2}(104)(32)$$

$$1664 \text{ m}^2$$

Adding these two regions together will give us the total area.

$$\text{So, } 628 + 1664 = 2292$$

The area of the cross section of the UFO is 2,292 m<sup>2</sup>.