

**Welding
Area Worksheet**

Name

Key

Find the areas and use appropriate units.

1. A customer wants metal cutouts of the following shapes from a 4' x 8' sheet of metal. Estimate if there is enough material to make the cuts. Sketch a possible layout for the cuts below.

2 - 18" x 36" rectangle

2 - 18" x 24" rectangle

1 - 24" x 36" rectangle

$$2 - A_{36 \times 18} = lw = 18 \times 36 = 648$$

$$2 - A_{24 \times 18} = lw = 18 \times 24 = 432$$

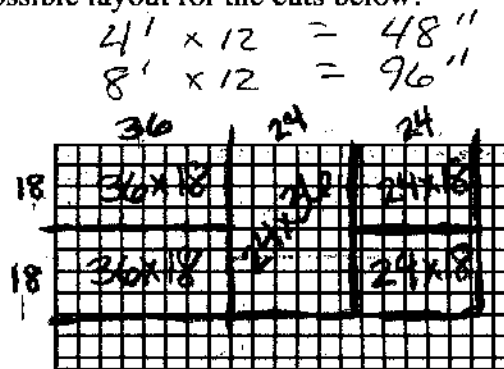
$$1 - A_{36 \times 24} = lw = 24 \times 36 = 864$$

$$A_{total} = 2(648) + 2(432) + 864$$

$$A_{total} = 3024 \text{ in}^2$$

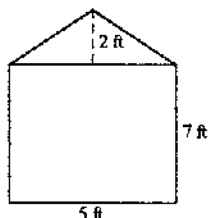
$$A_{4 \times 8} = 48 \times 96 = 4608 \text{ in}^2$$

A_{total} is less than A_{metal} so should be enough depending upon layout.



Layouts may vary

2. The diagram shows the dimensions of the front of a storage building. What is the area of the entire front of the building?



$$A_{\Delta} = \frac{1}{2}bh$$

$$A = \frac{1}{2}(5)(2)$$

$$A = 5 \text{ ft}^2$$

$$A_{\square} = bh$$

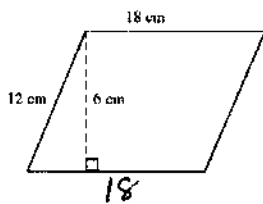
$$A = 5(7)$$

$$A = 35 \text{ ft}^2$$

$$A_{\text{building}} = 5 + 35$$

$$A = 40 \text{ ft}^2$$

3.



$$A = bh$$

$$A = 18(6)$$

$$A = 108 \text{ cm}^2$$

4.

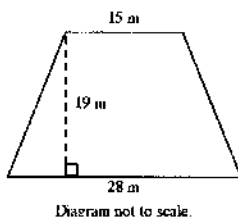


Diagram not to scale.

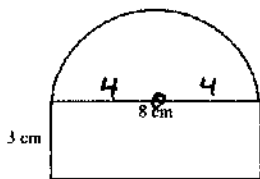
$$A = \frac{1}{2}(b_1 + b_2)h$$

$$A = \frac{1}{2}(15 + 28)19$$

$$A = \frac{1}{2}(43)(19)$$

$$A = 408.5 \text{ m}^2$$

5. Find the area of the figure to the nearest square unit.



$$A_{\square} = bh$$

$$A = 8(3)$$

$$A = 24 \text{ cm}^2$$

$$A_{\text{semi}} = \frac{1}{2} \pi r^2$$

$$= \frac{1}{2} \pi (4)^2$$

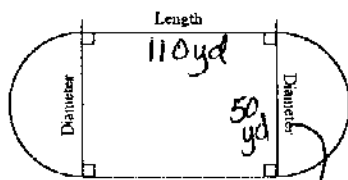
$$= \frac{1}{2} (\pi) (16)$$

$$A = 25 \text{ cm}^2$$

$$A_{\text{total}} = 24 + 25$$

$$A = 49 \text{ cm}^2$$

6. A field is to be fertilized at a cost of \$.10 per square yard. The rectangular part of the field is 110 yards long and the diameter of each semicircle is 50 yards. Find the cost of fertilizing the field. Use 3.14 for π .



$$A_{\square} = lw$$

$$A = 110(50)$$

$$A = 5500 \text{ yd}^2$$

$$A_{\text{2 semi}} = \pi r^2$$

$$= \pi (25)^2$$

$$A = 1962.5 \text{ yd}^2$$

$$A_{\text{total}} = 5500 + 1962.5$$

$$A = 7462.5 \text{ yd}^2$$

$$A_{\text{total}} \times \$0.10$$

$$7462.5 (.10)$$

$$\$746.25$$

7. A circle has an area of 28 cm^2 . If the radius is doubled, what is the area of the new circle?

$$A = \pi r^2 \text{ doubled } A = \pi (2r)^2$$

$$4\pi r^2$$

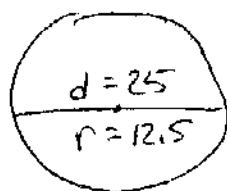
multiply by 4

$$28 \times 4 = 112 \text{ cm}^2$$

8. A new circular fountain being designed for a park has a diameter of 25 feet.

- a. Find the surface area of the water in the fountain. Explain how you find the area.

- b. Suppose the designer of the fountain decides that the surface area of the water in the fountain should be 450 square feet. Find the diameter of this fountain. Explain how you find the diameter.



- A) Find area of circle

$$A = \pi r^2$$

$$A = \pi (12.5)^2$$

$$A = 490.9 \text{ ft}^2$$

- B) $A = 450 \text{ ft}^2$

$$A = \pi r^2$$

$$450 = \pi r^2$$

$$\sqrt{r^2} = \sqrt{143.2}$$

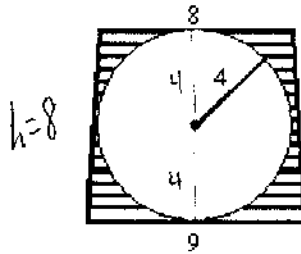
$$r = 12 \text{ ft}$$

$$2r = d$$

$$2(12) = d$$

$$d = 24 \text{ ft}$$

9. Find the area of the shaded portion of the figure. Dimensions are in feet. Leave your answer in terms of π . (Circle inside a trapezoid)



$$A_{\text{trapezoid}} = \frac{1}{2} (b_1 + b_2) h$$

$$A = \frac{1}{2} (8 + 9) 8$$

$$A = \frac{1}{2} (17)(8)$$

$$A = 68 \text{ ft}^2$$

$$A_{\text{circle}} = \pi r^2$$

$$A = \pi 4^2$$

$$A = 16\pi$$

$$A \approx 50.3$$

$$A_{\text{shaded}} = A_{\text{trap}} - A_{\text{circle}}$$

$$A = 68 - 16\pi \text{ ft}^2$$

OR

$$\approx 68 - 50.3$$

$$17.7 \text{ ft}^2$$