

Graphic Arts
Area Worksheet

Name Key

Find the areas and use appropriate units.

1. How many $3\frac{1}{2}$ " x 2" business cards will fit on a $8\frac{1}{2}$ " x 14" press sheet size?

$$\begin{array}{l} 3.5 \\ \boxed{} \quad 2 \\ A = 3.5(2) \\ A = 7 \end{array}$$

$$\begin{array}{l} 8.5 \\ A = 8.5(14) \\ 14 \quad A = 119 \end{array}$$

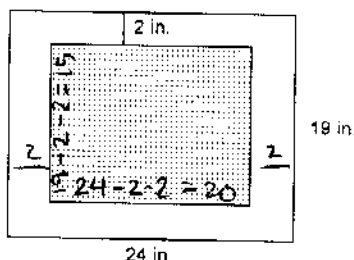
$$\begin{array}{l} 119 \div 7 \\ 17 \\ \text{possible} \\ \text{w/o layout} \end{array}$$

$$\begin{array}{l} \text{layout} \\ 8.5 \\ 8.5 \div 3.5 \\ \approx 2 \\ 14 \div 2 = 7 \\ 2 \times 7 \\ \boxed{14} \end{array}$$

$$\begin{array}{l} 8.5 \\ 8.5 \div 2 \\ \approx 4 \\ 4 \times 4 \\ \boxed{16} \\ 14 \div 3.5 = 4 \end{array}$$

14 + 16
cards

2. A picture frame has a 2-inch wide border running around its perimeter. What is the area of the border (the non-shaded region)?



$$A_{\text{picture}} = 20(15) = 300 \text{ in}^2$$

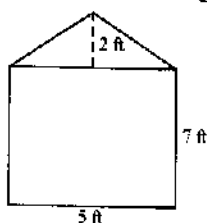
$$A_{\text{pic + frame}} = 24(19) = 456 \text{ in}^2$$

$$A_{\text{frame border}} = 456 - 300 = 156 \text{ in}^2$$

- a. 156 square inches
b. 300 square inches

- c. 456 square inches
d. 163 square inches

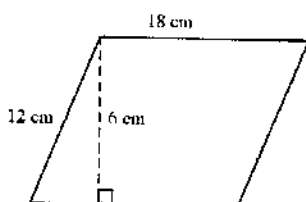
3. The diagram shows the dimensions of the front of a storage building. What is the area of the entire front of the building?



$$A_{\Delta} = \frac{1}{2}(5)(2) = 5$$

$$A_{\square} = 5 \times 7 = 35$$

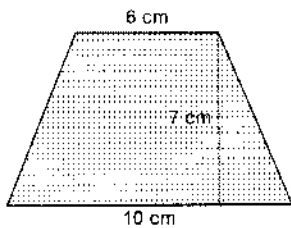
$$\begin{array}{l} A = 5 + 35 \\ A = 40 \text{ ft}^2 \end{array}$$



$$\begin{array}{l} A = 18(6) \\ A = 108 \text{ cm}^2 \end{array}$$

4.

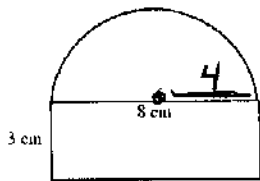
5. Jane is staining tiles to use in a mosaic pattern. How many square centimeters of stain will she need to cover the tile shown below?



$$A = \frac{1}{2}(6+10)7 = \frac{1}{2}(16)7$$

$$A = 56 \text{ cm}^2$$

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



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

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

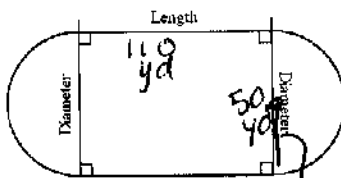
$$A_{\square} = 25.1$$

$$A_{\square} = 8.3$$

$$A_{\square} = 24$$

$$A = 25.1 + 24 = 49 \text{ cm}^2$$

7. 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 .



$$A_{\square} = lw$$

$$A_{\square} = 110(50)$$

$$A_{\square} = 5500 \text{ yd}^2$$

$$A = \pi r^2$$

$$A_{2 \text{ semi}} = \pi 25^2$$

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

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

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

$$\text{Cost} = A * (.10)$$

$$C = 7462.5(.10)$$

$$C = \$746.25$$

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

$$A = \pi r^2$$

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

$$A = 4\pi r^2$$

Multiply by 4

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

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

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

A) $A = \pi r^2$

$d = 25 \text{ ft}$
 $r = 12.5 \text{ ft}$

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

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

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

$$450 = \pi r^2$$

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

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

C) $d = 2r$

$$d = 2(12)$$

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