

Key



10.3 COMPOSITE FIGURES



Use the Area Addition Postulate to find the areas of composite figures.

Use composite figures to estimate the areas of irregular shapes.

Part 1: A Composite figure is made up of simple shapes, such as triangles, rectangles, trapezoids, and circles. To find the area of a composite figure, find the areas of the simple shapes and then add to find the total area.

Example 1:
Find the area of the shaded region below.

1st $A_{\text{SO}} = \frac{\pi r^2}{2}$
 $= \frac{\pi(10)^2}{2}$
 $= 50\pi \text{ mm}^2$

2nd $A_{\text{R}} = b \cdot h$
 $= 20 \cdot 14$
 $= 280 \text{ mm}^2$

3rd $A_{\text{A}} = \frac{b \cdot h}{2}$
 $= \frac{12 \cdot 14}{2}$
 $= 84 \text{ mm}^2$

4th $A_F = 50\pi + 280 + 84$
 $A_F = (50\pi + 364) \text{ mm}^2$

Example 2:
A CD case measures 14cm by 12.4 cm. Use the figure below to find the area of the shaded region to the nearest tenth.

1st $A_{\text{R}} = b \cdot h$
 $= 14(12.4)$
 $= 173.6 \text{ cm}^2$

2nd $A_{\text{O}} = \pi r^2$
 $= \pi(6.2)^2$
 $= 38.44\pi$

3rd $A_{\text{O}} = \pi r^2$
 $= \pi(.75)^2$
 $= .5625\pi$

4th $A_F = 173.6 - 38.44\pi + .5625\pi$
 $A_F = (173.6 - 37.8775\pi) \text{ cm}^2$
 $A_F \approx 54.6 \text{ cm}^2$

Example 3: Anthony Rizzo is getting carpet installed in his living room and hallway. The cost of installation is \$6 per square yard. What is the total cost of installing the carpet?

P+I Area = $A_{\text{rectangle}} - A_{\text{stairs}}$ P+II Total Cost = Area * \$6
 $= 45(6)$
Total Cost = \$270.00

① $A_{\text{total R}} = 7(8) = 56 \text{ yd}^2$
 ② $A_{\text{stairs}} = 5.5(2) = 11 \text{ yd}^2$
 ③ $A = 56 - 11 = 45 \text{ yd}^2$



Part 2: Areas of Irregular Shaped Figures

For STRANGE shapes in a coordinate plane: Find the total area by counting the number of grid squares that are entirely within the figure and the number of squares which have about half of the area inside the figure.

Example 3: Use a composite figure to estimate the shaded area. The grid has squares with a side length of 1 ft.

$A \text{ of 1 Square} = 1 \text{ ft}^2$
 $A \approx 5.5 - 6 \text{ ft}^2$

