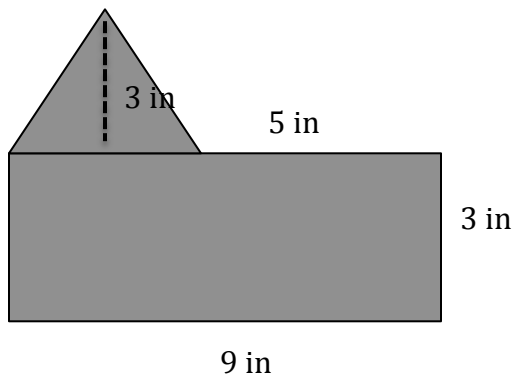


Study Guide Answer KEY

Complex Polygons and Circles – Areas and Circumference

1) Find the **area** of the complex shape.



$$\text{Area of Triangle} = \frac{bh}{2}$$

$$b = 9 - 5 = 4$$

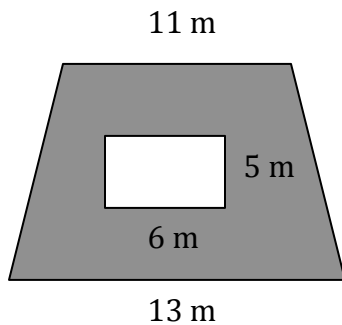
$$h = 3$$

$$\begin{aligned} \text{Area of Triangle} &= 4(3)/2 \\ &= \mathbf{6 \text{ in}^2} \end{aligned}$$

$$\begin{aligned} \text{Area of Rectangle} &= bh \\ &= 9(3) \\ &= \mathbf{27 \text{ in}^2} \end{aligned}$$

$$\text{Total AREA} = 6 + 27 = \mathbf{33 \text{ in}^2}$$

2) Find the **area** of the **shaded region**.



height of trapezoid = 15 m.

$$\text{Area of Trapezoid} = \frac{(b+b)h}{2}$$

$$= \frac{(11+13)15}{2}$$

$$= \frac{(24)15}{2}$$

$$= \frac{360}{2}$$

$$= \mathbf{180 m^2}$$

$$\begin{aligned} \text{Area of the rectangle} &= bh \\ &= 6(5) \\ &= \mathbf{30 m^2} \end{aligned}$$

$$\begin{aligned} \text{Area of the shaded region} &= \text{Area of Trapezoid} - \text{Area of Rectangle} \\ &= 180 m^2 - 30 m^2 \\ &= \mathbf{150 m^2} \end{aligned}$$

3) Find the **circumference** and **area** of a circle that has a **radius of 6 cm**.

$$\begin{aligned} r &= 6 \text{ cm} \\ d &= 6(2) = \mathbf{12 \text{ cm}} \end{aligned}$$

$$\begin{aligned} C &= \pi d \\ C &= 3.14 (12) \\ \mathbf{C} &= \mathbf{37.68 \text{ cm}} \end{aligned}$$

$$\begin{aligned} A &= \pi r^2 \\ A &= 3.14 (6^2) \\ A &= 3.14 (36) \\ \mathbf{A} &= \mathbf{113.04 cm^2} \end{aligned}$$

$$\begin{aligned} \text{Answer in } \pi \\ \mathbf{C} &= \mathbf{12 \pi} \end{aligned}$$

$$\begin{aligned} \text{Answer in } \pi \\ \mathbf{A} &= \mathbf{36 \pi} \end{aligned}$$

4) If a circle has an **area of 70 in²**, what is the **diameter**?

$$A = \pi r^2 \quad \text{FORMULA}$$

$$70 = 3.14 r^2 \quad \text{Plug in what you do know.}$$

$$\frac{70}{3.14} = \frac{3.14 r^2}{3.14} \quad \text{Divide both sides by 3.14.}$$

$$22.29 = r^2 \quad \text{Square root both sides. **** } r^2 = r(r)$$

$$\sqrt{22.29} = \sqrt{r^2}$$

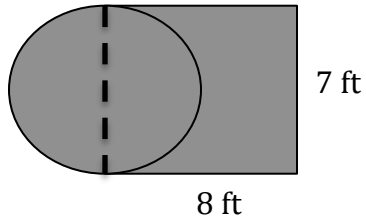
$$\mathbf{4.72 \text{ in} = r}$$

diameter = radius x 2

$$d = 4.72 (2)$$

$$d = 9.44 \text{ in}$$

5)



A = Area of a semicircle + Area of a rectangle

Area of the circle = πr^2

Area of the semicircle = $\frac{\pi r^2}{2}$

Diameter = 7 ft

Radius = $7/2 = 3.5 \text{ ft}$

$$\text{Area of semicircle} = \frac{3.14(3.5^2)}{2}$$

$$= \frac{3.14 (12.25)}{2}$$

$$= \frac{38.465}{2}$$

$$= 19.23 \text{ ft}^2$$

Area of the rectangle = bh

$$= (8)(7)$$

$$= 56 \text{ ft}^2$$

$$\text{Total AREA} = 19.23 \text{ ft}^2 + 56 \text{ ft}^2 = 75.23 \text{ ft}^2$$