

Lesson 9-3

Objective – To find the area of composite figures by adding or subtracting.

Adding

$A = \text{Left} + \text{Right}$
 $A = l \cdot w + l \cdot w$
 $A = 15 \cdot 11 + 9 \cdot 8$
 $A = 165 + 72 = 237 \text{ un}^2$

Subtracting

$A = \text{Large} - \text{Small}$
 $A = l \cdot w - l \cdot w$
 $A = 20 \cdot 15 - 9 \cdot 7$
 $A = 300 - 63 = 237 \text{ un}^2$

$A = \text{Rect} + \text{Tri}$
 $A = l \cdot w + \frac{1}{2} b \cdot h$
 $A = 8 \cdot 7 + \frac{1}{2} \cdot 8 \cdot 3$
 $A = 56 + \frac{1}{2} \cdot 24$
 $A = 56 + 12 = 68 \text{ un}^2$

$A = \text{Rect} - \text{Tri}$
 $A = l \cdot w - \frac{1}{2} b \cdot h$
 $A = 12 \cdot 8 - \frac{1}{2} \cdot 6 \cdot 4$
 $A = 96 - \frac{1}{2} \cdot 24$
 $A = 96 - 12 = 84 \text{ un}^2$

$A = \text{Trap} + \text{Tri}$
 $A = \frac{1}{2} (b_1 + b_2) \cdot h + \frac{1}{2} b \cdot h$
 $A = \frac{1}{2} (7 + 11) \cdot 6 + \frac{1}{2} \cdot 6 \cdot 4$
 $A = \frac{1}{2} \cdot 18 \cdot 6 + \frac{1}{2} \cdot 24$
 $A = 9 \cdot 6 + 12$
 $A = 54 + 12 = 66 \text{ un}^2$

$A = \text{Trap} - \text{Rect}$
 $A = \frac{1}{2} (b_1 + b_2) \cdot h - l \cdot w$
 $A = \frac{1}{2} (20 + 12) \cdot 8 - 10 \cdot 4$
 $A = \frac{1}{2} \cdot 32 \cdot 8 - 40$
 $A = 16 \cdot 8 - 40$
 $A = 128 - 40 = 88 \text{ un}^2$

Find the area of the figure to the right.

Area of Rectangle

 $A = l \cdot w$
 $A = 10 \cdot 6$
 $A = 60 \text{ ft}^2$

Area of Semi-Circle

 $A = \frac{\pi \cdot r^2}{2} \approx \frac{3.14 \cdot 5^2}{2}$
 $A \approx \frac{3.14 \cdot 25}{2} \approx \frac{78.5}{2}$
 $A \approx 39.25 \text{ ft}^2$

Total Area $\approx 60 + 39.25 = 99.25 \text{ ft}^2$

Find the area of the figure to the right.

Area of Square

 $A = s^2$
 $A = 7^2$
 $A = 49 \text{ in}^2$

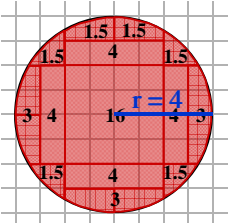
Area of Quarter-Circle

 $A = \frac{\pi \cdot r^2}{4} \approx \frac{3.14 \cdot 3^2}{4}$
 $A \approx \frac{3.14 \cdot 9}{4} \approx \frac{28.26}{4}$
 $A \approx 7.065 \text{ in}^2$

Total Area $\approx 49 - 7.065 = 41.935 \text{ in}^2$

Lesson 9-3

Estimate the area of the circle using the centimeter grid below, then find the area using $\pi \approx 3.14$.



Formula

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

$$A = \pi \cdot (4)^2$$

$$A = \pi \cdot 16$$

$$A \approx (3.14) \cdot 16$$

$$A \approx 50.24 \text{ cm}^2$$

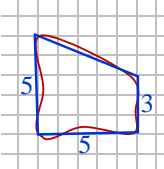
Estimate

$$\text{Area} \approx 16 + 4(4) + 4(1.5) + 4(3)$$

$$\text{Area} \approx 16 + 16 + 6 + 12 \approx 50 \text{ cm}^2$$

Close!

Use formulas to approximate the area of the irregular shape below.



Resembles a trapezoid

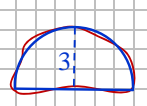
$$A = \frac{1}{2}(b_1 + b_2) \cdot h$$

$$A = \frac{1}{2}(5 + 3) \cdot 5$$

$$A = \frac{1}{2}(8) \cdot 5 = 4 \cdot 5 = 20 \text{ un}^2$$

Irregular Shape $\approx 20 \text{ un}^2$

Use formulas to approximate the area of the irregular shape below.



Resembles a semi-circle

$$A = \frac{1}{2}(\pi \cdot r^2)$$

$$A \approx \frac{1}{2}(3.14 \cdot 3^2)$$

$$A \approx \frac{1}{2}(3.14 \cdot 9) \approx 14.13 \text{ un}^2$$

Irregular Shape $\approx 14.13 \text{ un}^2$