NOTES

Name: *Key*

Measurement: Area and Perimeter Problems

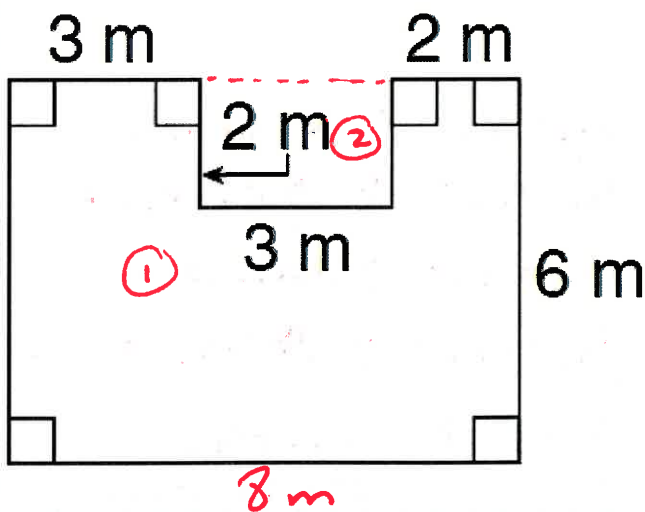1) Calculate the exact area of the figure shown.

← because semicircle

Estimate ⟹ $A_1 = \frac{1}{2}\pi r^2$ $A_2 = bh$

$A_1 \approx \frac{1}{2}(3.14)(3^2)$ $A_2 = 18 \cdot 8$

$A_1 \approx \frac{1}{2}(3.14)(9)$ $A_2 = 144\ ft^2$

$A_1 \approx 4.5(3.14)$

$A_1 \approx 14.13$ $A = A_1 + A_2$
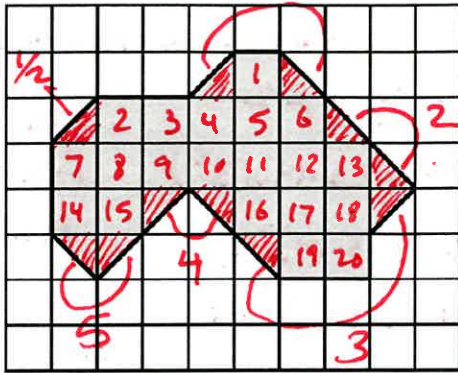
$A \approx 14.13 + 144$

$A \approx 158.13\ ft^2$

6 ft   3 ① 3   6 ft

②

8 ft

18 ft

$2'$
3.14
× 4.5
1570
12560
14.130

Exact ⟹ $A_1 = \frac{1}{2}\pi r^2$

$A_1 = \frac{1}{2}\pi(3^2)$

$A_1 = 4.5\pi$

$A = 144 + 4.5\pi\ ft^2$

2) Calculate the area of the figure shown.

$A = A_1 - A_2$ $A_1 = bh$
$A = 48 - 6$ $A_1 = 8 \cdot 6$
$A = 42\ m^2$ $A_1 = 48\ m^2$

$A_2 = bh$
$A_2 = 3 \cdot 2$
$A_2 = 6\ m^2$

3 m   2 m

2 m ②

3 m

①

6 m

8 m

3) In the diagram below, one square unit represents 9 square meters. What is the area of the shaded region?

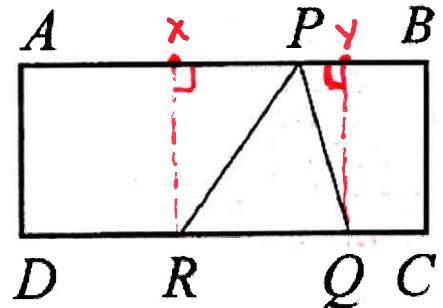20 wholes and 11 halves

$$20 + 5\tfrac{1}{2}$$

$$25\tfrac{1}{2} \times 9$$

$$25 \cdot 9 + \tfrac{1}{2} \cdot 9$$

$$225 + 4.5$$

$$\boxed{229.5 \, m^2}$$

4) Triangle PQR is inscribed in rectangle $ABCD$, as shown. The length of $\overline{RQ}$ is $\tfrac{2}{5}$ of the length of $\overline{DC}$. The area of triangle PQR is 6.4 square centimeters. What is the area of rectangle $ABCD$ in sq cm?

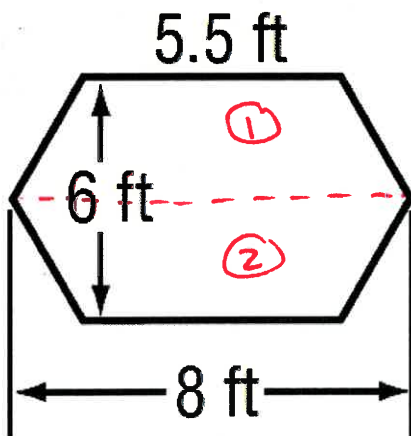$$A_{\square XYQR} = 2(A_{\triangle PQR}) = 2(6.4) = 12.8$$

$$\tfrac{2}{5} A_{\square ABCD} = 12.8$$

$$\tfrac{5}{2} \times \tfrac{2}{5} A_{\square ABCD} = \tfrac{5}{2} \times 12.8$$

$$A_{\square ABCD} = 5(6.4) = 32$$

$$\boxed{32 \, cm^2}$$

5) Calculate the area of the figure shown.

$$A_1 = A_2 = \tfrac{1}{2}(b_1 + b_2)h$$
$$A_1 = A_2 = \tfrac{1}{2}(8 + 5.5)(3)$$
$$A_1 = A_2 = \tfrac{1}{2}(13.5)(3)$$
$$A_1 = A_2 = \tfrac{1}{2}(40.5) = 20.25$$

but, $A = A_1 + A_2$

$$20.25 + 20.25$$

$$\boxed{A = 40.5 \, ft^2}$$