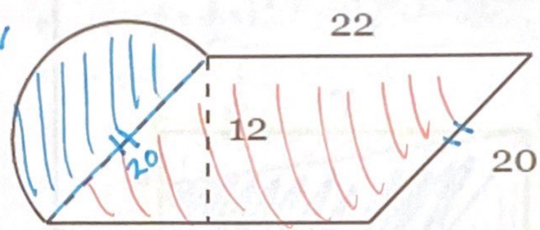
Area Notes 2020

1. Find the Area of the figure below, composed of a parallelogram and one semicircle.
Rounded to the nearest tenths place

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

$A = \frac{1}{2}\pi 10^2$

$A \approx 157.1 \text{ units}^2$



$A = b \cdot h$

$A = 22 \cdot 12$

$A = 264 \text{ units}^2$

Add together

$\boxed{\text{Total Area: } 421.1 \text{ units}^2}$

2. Find the Area of the figure below, composed of a square and four semicircles.
Rounded to the nearest tenths place

$b \cdot h$ and $4 \cdot \frac{1}{2}\pi 15^2$

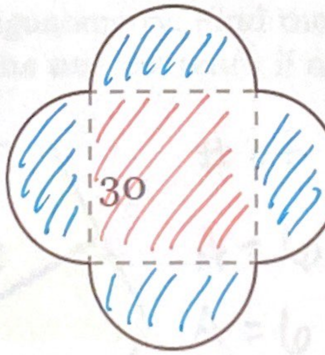
$30 \cdot 30$

$A = 900\,u^2$ $A = 1413.7\,u^2$

add together

Total Area

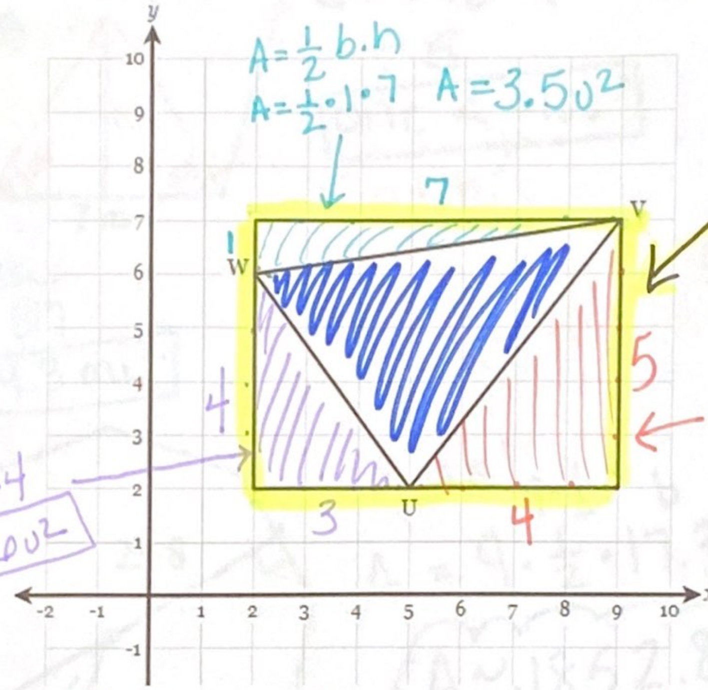
$2313.7\,u^2$



3. Triangle UVW, with vertices U(5,2), V(9,7), and W(2,6), is drawn inside a rectangle, as shown below.

$A=\frac{1}{2}b\cdot h$

$A=\frac{1}{2}\cdot 1\cdot 7$ $A=3.5u^2$



$A=b\cdot h$

$A=7\cdot 5$

$A=35u^2$

$A=\frac{1}{2}4\cdot 5$

$A=10u^2$

$A=\frac{1}{2}3\cdot 4$

$\boxed{A=6u^2}$

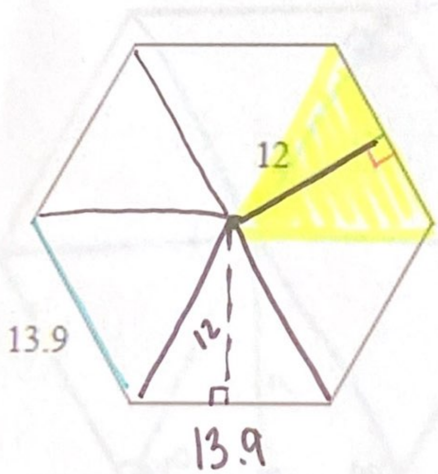
To Find white space in the center Δ take □ area and subtract the 3 Δ areas.

$35-3.5-10-6=\boxed{15.5\text{ units}^2 \text{ area of } \Delta UVW}$

Using Right Triangle Trigonometry: Find the area of each regular polygon. Round your answer to the nearest tenth if necessary.

↑ all ≅ Sides and ∠s.

4.



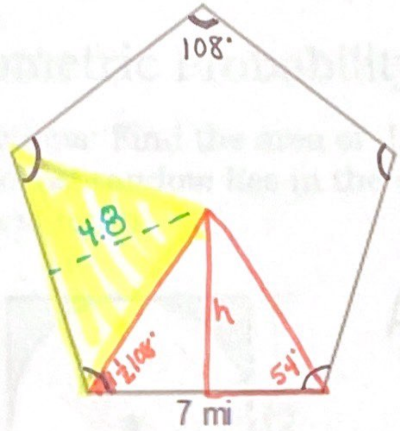
# of Δs = 6

$A=6\cdot\frac{1}{2}b\cdot h$

$A=6\cdot\frac{1}{2}13.9\cdot 12$

$A=500.4\text{ units}^2$

5.



$S = 180(n-2)$ sum of int. ∠s

$= 180(5-2)$

$S = 540°$ ← Now ÷ by 5 ≅ ∠s.

÷ 5

$\boxed{\text{one } \angle = 108°}$

Find h:

$\tan(54) = \frac{h}{3.5}$

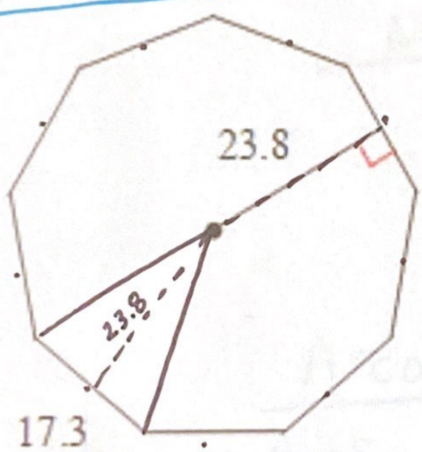
$h \approx 4.817$ ← use three decimal places for anything that is not the final answer.

Total Area

$5 \cdot \frac{1}{2} \cdot 7 \cdot 4.817$

$\boxed{A \approx 84.3 \text{ mi}^2}$

6.

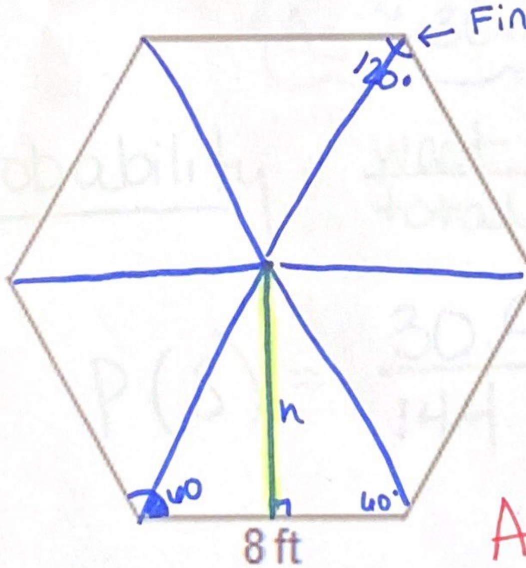


9 Δs! $9 \cdot \frac{1}{2} \cdot b \cdot h$

$A = 9 \cdot \frac{1}{2} \cdot 17.3 \cdot 23.8$

$A \approx 1852.8 \text{ units}^2$

7.



← Find 1 int ∠

$\frac{180(6-2)}{6} = 120°$

Find h:

$h = 4\sqrt{3}$ ft if using Sp. RT Δ

OR

$\tan(60) = \frac{h}{4}$

$h \approx 6.928$ ft

$A = 6 \frac{1}{2} b \cdot h$

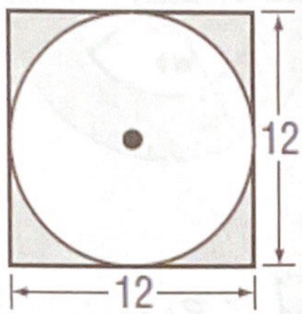
$A = 6 \cdot \frac{1}{2} \cdot 8 \cdot 6.928$

$A \approx 166.3 \text{ ft}^2$

Geometric Probability

Directions: Find the area of the shaded region and the probability that a point chosen at random lies in the shaded region. Round your answers to the nearest tenth.

8.



Area of Total (Square)

$12 \cdot 12$

$\boxed{A_T = 144\,u^2}$

Area of circle (white)

$A = \pi 6^2$

$\boxed{A \approx 113.097\,u^2}$

Area of shaded

A_s = Square − circle

$A_s = 144 - 113.097$

$A_s \approx 30.9\,u^2$

Probability = $\frac{\text{want}}{\text{total}}$ = $\frac{\text{Shaded}}{\text{total}}$

$P(S) = \frac{30.9}{144}$

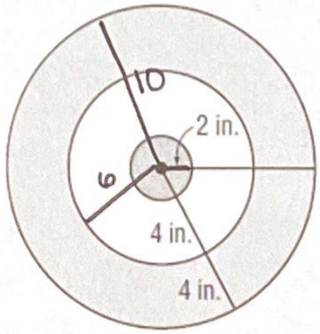
decimal

$P(S) = 0.215$

$P(S) = 21.5\%$

Percent

9.



Area of total: Big circle

$A_T = \pi 10^2$

$A_T = 100\pi \approx 314.159 \text{ in}^2$

Area of shaded:

$A_S = \text{Big} - \text{medium} + \text{little Area}$

$A_S = \pi 10^2 - \pi 6^2 + \pi 2^2$

$A_S = 100\pi - 36\pi + 4\pi$

$A_S \approx 213.628 \text{ in}^2$

$\text{Probability} = \frac{\text{shaded}}{\text{total}}$

$P(S) = \frac{213.628}{314.159}$

decimal: $0.67999 \approx 0.680$

Percent: 68.0%