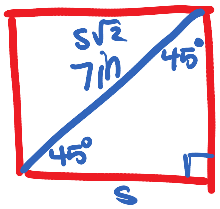
10.1-10.3 Geometry Review

Name:

1. Find the area of a square with a diagonal length of 7 inches. *(10.1)*



$\frac{s\sqrt{2}}{\sqrt{2}} = \frac{7}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}} = \frac{7\sqrt{2}}{2}$

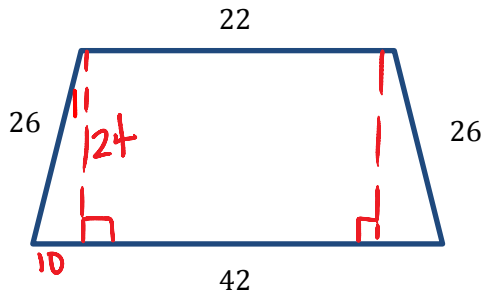
$s = \frac{7\sqrt{2}}{2}$

$A = s^2$

$A = \left(\frac{7\sqrt{2}}{2}\right)^2 = \frac{49 \cdot 2}{4} = 24.5 in^2$

$A = 24.5 in^2$

2. Find the area of the isosceles trapezoid. *(10.1)*



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

$= \frac{(22+42)}{2} \cdot 24 = 768 u^2$

3. Find the area of a rhombus with diagonal lengths (2x + 5)cm and (5x – 11)cm. *(10.1)*

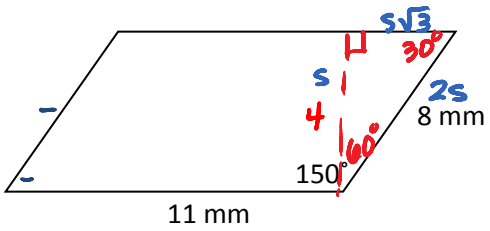
$A_{rhom} = \frac{d_1 \cdot d_2}{2}$

$A = \frac{(2x+5)(5x-11)}{2}$

$A = \frac{10x^2 - 22x + 25x - 55}{2}$

$A = \frac{10x^2 + 3x - 55}{2} = 5x^2 + 1.5x - 27.5 cm^2$

4. Find the area of the parallelogram. *(10.1)*



$A = b \cdot h$

$A = 11(4)$

$A = 44 mm^2$

4. Find the area of the circle with a circumference of ~~24π~~. *(10.2)*

$\pi d = 24\pi$

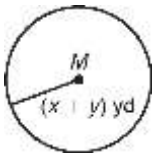
$d = 24$

$r = 12$

$A = \pi r^2 = \pi(12)^2$

$A = 144\pi$

6. Find the circumference of $\odot M$. *(10.2)*



$C = 2\pi r$

$C = 2(x+y)\pi$

$C = (2x+2y)\pi$ yd

or

$C = 2\pi x + 2\pi y$ yd

7. Find the circumference of a circle given the area is $196x^2\pi$. *(10.2)*

$\pi r^2 = 196x^2\pi$

$\sqrt{r^2} = \sqrt{196x^2}$

$r = 14x$

$d = 28x$

$C = 28\pi x$ units

8. Find the area of an equilateral triangle with a perimeter of 18 cm. *(10.2)*

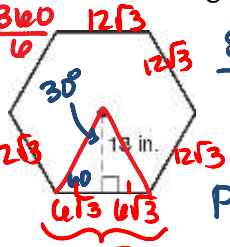
$s = \frac{18}{3} = 6$

$A_{\triangle} = \frac{s^2\sqrt{3}}{4}$

$A_{\triangle} = \frac{6^2\sqrt{3}}{4} = \frac{36\sqrt{3}}{4}$

$A_{\triangle} = 9\sqrt{3} cm^2$

9. Find the exact area of the regular polygon. *(10.2)*



Central ∠ = 360/6 = 60°

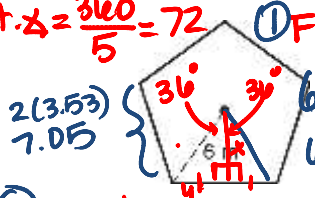
8√3/√3 = 18/√3 · √3/√3 = 18√3/3 = 6√3

Perimeter = 6(12√3) = 72√3

$A = \frac{a \cdot p}{2}$

$A = \frac{18(72\sqrt{3})}{2} = 648\sqrt{3}\ in^2$

10. Find the exact area of the regular polygon. *(10.2)*



Cent. ∠ = 360/5 = 72

① Find apothem:

6·cos36 = x/6 · 6

6·cos36 = x

x ≈ 4.85 (apothem)

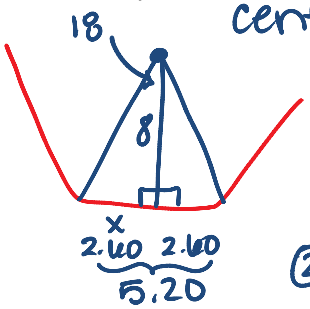
② Find side: sin36 = y/6

y = 6·sin36 = 3.53

③ P = 5(7.05) = 35.27

④ $A = \frac{a \cdot p}{2} = \frac{4.85(35.27)}{2} = 85.52\ m^2$

11. Find the exact area of a regular decagon with an apothem that measures 8 inches. *(10.2)*



Cent. ∠ = 360/10 = 36

① Find side.

tan18 = x/8

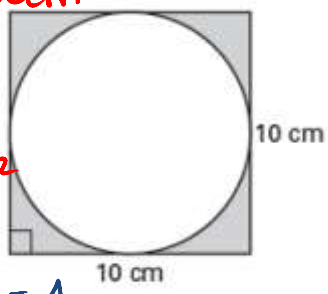
x = 8 tan18

x ≈ 2.60

② Perimeter = 52.00

③ $A = \frac{a \cdot p}{2} = \frac{8(52)}{2} = 208\ in^2$

12. Find the exact area of the shaded region. *(10.3)*



① $A_{\square} = 10^2 = 100\ cm^2$

② $A_O = \pi r^2$

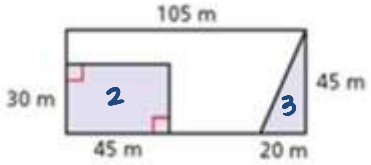
$= \pi(5)^2$

$A = 25\pi\ cm^2$

$A_F = A_{\square} - A_O$

$A_F = (100 - 25\pi)\ cm^2$

13. Find the area of the unshaded part of the rectangle. *(10.3)*



① $A_{\square} = b \cdot h = 45(105) = 4{,}725$

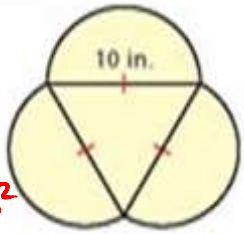
② $A_{\square} = b \cdot h = 45(30) = 1350$

③ $A_{\triangle} = \frac{b \cdot h}{2} = \frac{45(20)}{2} = 450$

④ $A_F = 4{,}725 - (1350 + 450)$

$A = 2{,}925\ m^2$

14. Find the exact measure of the figure below. *(10.3)*



① $A_{\triangle} = \frac{s^2\sqrt{3}}{4}$

$= \frac{10^2\sqrt{3}}{4}$

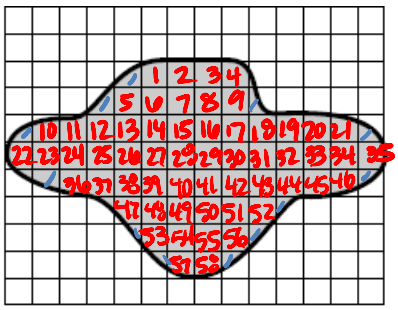
$A_{\triangle} = 25\sqrt{3}\ in^2$

② $3 \cdot A_{\triangle} = \frac{\pi r^2}{2} = \frac{\pi(5)^2}{2} = 12.5\pi$

$3(12.5\pi) = 37.5\pi\ in^2$

③ $A_F = (25\sqrt{3} + 37.5\pi)\ in^2$

15. Estimate the area of the figure. *(10.3)*



A = about 64 ft²

16. Use the grid on the map of Lake Superior to estimate the area of the surface of the lake. Each square on the grid has a side length of 100 miles. *(10.3)*

100 · 100 = 10,000

$A = 10{,}000(3.5) =$ about 35,000 mi²