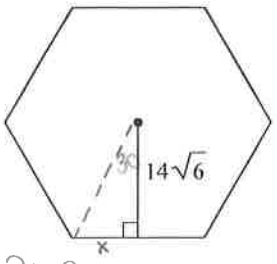
Geometry Name Key

WS 11.1 - 11.3 PC Review

Date _____ Period ____

Find the area of each regular polygon. Round your answer to the nearest tenth if necessary.

1)



$A = \frac{1}{2}aP$

$\frac{360}{6} = 60 \div 2 = 30$

$\frac{\tan 30}{1} = \frac{x}{14\sqrt{6}}$

$x = 19.8$

$19.8(2) = 39.6$

$S = 39.6$

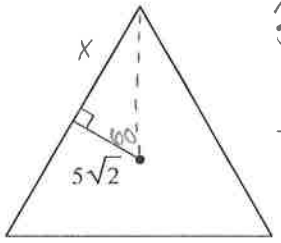
$P = 39.6(6) = 237.6$

$a = 14\sqrt{6}$

$A = \frac{1}{2}(14\sqrt{6})(237.6)$

$A = 4074 \text{ units}^2$

2)



$\frac{360}{3} = 120 \div 2 = 60$

$\tan 60 = \frac{x}{5\sqrt{2}}$

$x = 12.2$

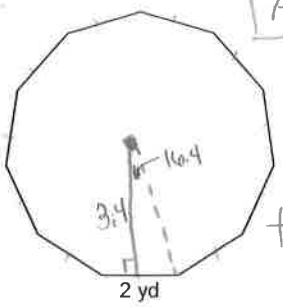
$S = 12.2(2) = 24.4$

$P = 24.4(3) = 73.2$

$A = \frac{1}{2}(5\sqrt{2})(73.2)$

$A = 258.8 \text{ units}^2$

3)



$\frac{360}{11} = 32.7 \div 2 = 16.4$

$\tan 16.4 = \frac{1}{x}$

$x \tan 16.4 = 1$

$\frac{x \tan 16.4}{\tan 16.4} = \frac{1}{\tan 16.4}$

$x = 3.4$

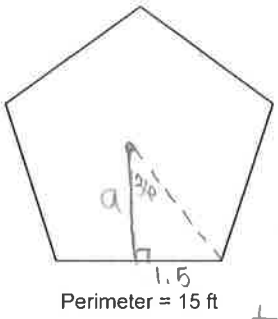
$a = 3.4$

$P = 2(11) = 22$

$A = \frac{1}{2}(3.4)(22)$

$A = 37.4 \text{ units}^2$

4)



$P = \frac{15}{5} = 3$

$S = 3$

$\frac{360}{5} = 72 \div 2 = 36$

$\tan 36 = \frac{1.5}{a}$

$a = 2.1$

$a \tan 36 = 1.5$

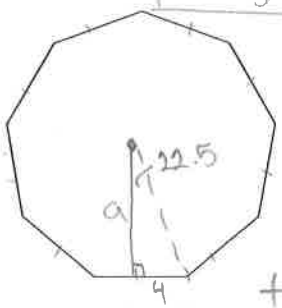
$\frac{a \tan 36}{\tan 36} = \frac{1.5}{\tan 36}$

$a = 2.1$

$A = \frac{1}{2}(2.1)(15)$

$A = 15.75 \text{ ft}^2$

5)



$P = \frac{72}{9} = 8$

$S = 8$

$\frac{360}{9} = 40 \div 2 = 20$

$\tan 20 = \frac{4}{a}$

$a = 10.99$

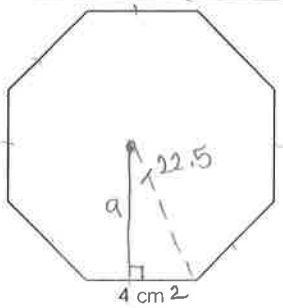
$a \tan 20 = 4$

$\frac{a \tan 20}{\tan 20} = \frac{4}{\tan 20}$

$A = \frac{1}{2}(10.99)(72)$

$A = 395.6 \text{ m}^2$

6)



$\frac{360}{8} = 45 \div 2 = 22.5$

$\tan 22.5 = \frac{2}{a}$

$a = 4.8$

$a \tan 22.5 = 2$

$\frac{a \tan 22.5}{\tan 22.5} = \frac{2}{\tan 22.5}$

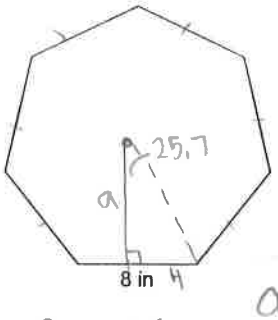
$a = 4.8$

$P = 8(4) = 32$

$A = \frac{1}{2}(4.8)(32)$

$A = 76.8 \text{ cm}^2$

7)



$\frac{360}{7} = 51.4 \div 2 = 25.7$

$\tan 25.7 = \frac{4}{a}$

$\frac{a\tan 25.7}{\tan 25.7} = \frac{4}{\tan 25.7}$

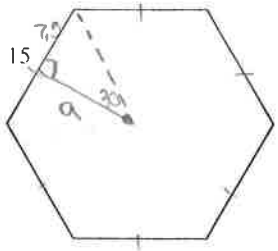
$a = 8.3$

$P = 8(7) = 56$

$A = \frac{1}{2}(8.3)(56)$

$A = 232.4 \text{ in}^2$

8)



$\frac{360}{6} = 60 \div 2 = 30$

$\tan 30 = \frac{7.5}{a}$

$\frac{a\tan 30}{\tan 30} = \frac{7.5}{\tan 30}$

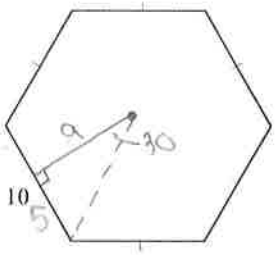
$P = 15(6) = 90$

$a = 13$

$A = \frac{1}{2}(13)(90)$

$A = 585 \text{ units}^2$

9)



$\frac{360}{6} = 60 \div 2 = 30$

$\tan 30 = \frac{5}{a}$

$\frac{a\tan 30}{\tan 30} = \frac{5}{\tan 30}$

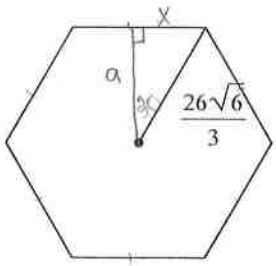
$a = 8.7 = 5\sqrt{3}$

$P = 10(6) = 60$

$A = \frac{1}{2}(5\sqrt{3})(60)$

$A = 259.8 \text{ units}^2$

10)



$\frac{360}{6} = 60 \div 2 = 30$

$\sin 30 = \frac{X}{\frac{26\sqrt{6}}{3}}$

$\frac{26\sqrt{6}}{3}\sin 30 = X$

$X = 10.6$

$S = 10.6(2) = 21.2$

$a = 18.4$

$P = 21.2(6) = 127.2$

$A = \frac{1}{2}(18.4)(127.2)$

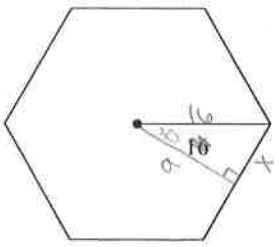
$A = 1170.24 \text{ units}^2$

$\cos 30 = \frac{a}{\frac{26\sqrt{6}}{3}}$

$\frac{26\sqrt{6}}{3}\cos 30 = a$

$a = 18.4$

11)



$\frac{360}{6} = 60 \div 2 = 30$

$\sin 30 = \frac{X}{16}$

$16\sin 30 = X$

$X = 8$

$S = 8(2) = 16$

$\cos 30 = \frac{a}{16}$

$16\cos 30 = a$

$a = 13.9$

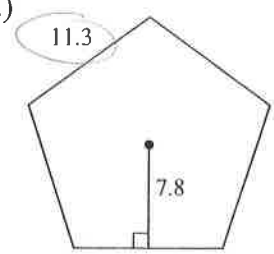
$P = 16(6) = 96$

$a = 13.9$

$A = \frac{1}{2}(13.9)(96)$

$A = 667.2 \text{ units}^2$

12)



$P = 11.3(5)$

$P = 56.5$

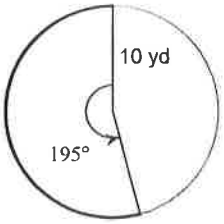
$a = 7.8$

$A = \frac{1}{2}(7.8)(56.5)$

$A = 220.4 \text{ units}^2$

Find the exact length of each arc.

13)

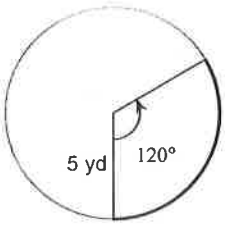


$\frac{195}{360} = \frac{x}{2\pi(10)}$

$\frac{360x}{360} = \frac{3900\pi}{360}$

$x = \frac{65\pi}{6}$ yd

14)



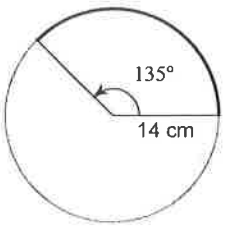
$\frac{120}{360} = \frac{x}{2\pi(5)}$

$\frac{360x}{360} = \frac{1200\pi}{360}$

$x = \frac{10\pi}{3}$ yd

Find the length of each arc. Round your answers to the nearest tenth.

15)

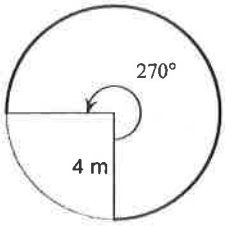


$\frac{135}{360} = \frac{x}{2\pi(14)}$

$\frac{360x}{360} = \frac{11,875.2}{360}$

$x = 33.0$ cm

16)



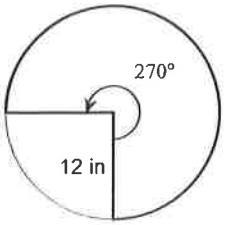
$\frac{270}{360} = \frac{x}{2\pi(4)}$

$\frac{360x}{360} = \frac{6785.8}{360}$

$x = 18.8$ m

Find the exact area of each sector.

17)

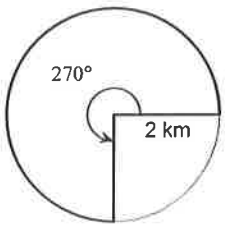


$\frac{270}{360} = \frac{x}{\pi(12)^2}$

$\frac{360x}{360} = \frac{38,880\pi}{360}$

$x = 108\pi$ in^2

18)



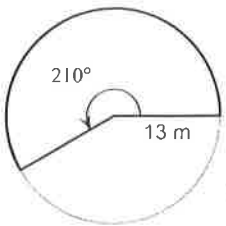
$\frac{270}{360} = \frac{x}{\pi(2)^2}$

$\frac{360x}{360} = \frac{1080\pi}{360}$

$x = 3\pi$ km^2

Find the area of each sector. Round your answers to the nearest tenth.

19)

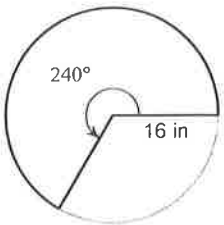


$\frac{210}{360} = \frac{x}{\pi(13)^2}$

$\frac{360x}{360} = \frac{111,495.1}{360}$

$x = 309.7$ m^2

20)



$\frac{240}{360} = \frac{x}{\pi(16)^2}$

$\frac{360x}{360} = \frac{193,019.5}{360}$

$x = 536.2$ in^2

Convert from degrees to radians.

21) 240°

$240 \cdot \frac{\pi}{180} = \boxed{\frac{4}{3}\pi}$

22) 210°

$210 \cdot \frac{\pi}{180} \quad \boxed{\frac{7}{6}\pi}$

23) 120°

$120 \cdot \frac{\pi}{180} = \boxed{\frac{2}{3}\pi}$

24) 20°

$20 \cdot \frac{\pi}{180} \quad \boxed{\frac{1}{9}\pi}$

Convert from radians to degrees.

25) $\frac{\pi}{4}$

$\frac{\pi}{4} \cdot \frac{180}{\pi} = \boxed{45°}$

26) $\frac{\pi}{6}$

$\frac{\pi}{6} \cdot \frac{180}{\pi} = \boxed{30°}$

27) $\frac{4\pi}{3}$ $\frac{4\pi}{3} \cdot \frac{180}{\pi} = \boxed{240°}$

28) $\frac{2\pi}{3}$ $\frac{2\pi}{3} \cdot \frac{180}{\pi} = \boxed{120°}$

29) A motorcycle wheel has a radius of 27 inches. If you ride your motorcycle for 1 mile (5,280 feet) how many revolutions does the wheel make?

$C = 2\pi(27)$

$= 54\pi$

$= 169.6 \text{ in}$

$5280 \text{ ft} = 63,360 \text{ in}$

$\frac{63,360}{169.6} = 373.6$

373 revolutions

30) Approximately 124,000 people live within a 10 mile radius of the Sprint Center in beautiful downtown Kansas City. Find the population density in people per square mile.

$A = \pi(10)^2$

$= 100\pi$

$= 314.2 \text{ mi}^2$

$\text{Pop. Den.} = \frac{\#\text{ of people}}{\text{Area}}$

$= \frac{124,000}{314.2}$

$= 394.6$

395 people/mi^2