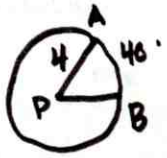
11.5

2) Suppose you double the arc measure of a sector in a given circle. Will the area of the sector also be doubled? Explain



$r = 4$

$m\overset{\frown}{AB} = 40°$

$\frac{x}{\pi(4)^2} = \frac{40°}{360}$

$360x = 40(16\pi)$

$A(\text{sector } APB) = 5.6u^2$

$r = 4$

$m\overset{\frown}{AB} = 80°$

$\frac{x}{\pi(4)^2} = \frac{80}{360}$

$360x = 80(16\pi)$

$A(\text{sector } APB) = 11.2u^2$

yes b/c it is a larger % of the total Area

Find the exact area of a circle, then round to the nearest hundredth.

3) $r = 5$ in

$A = \pi(5)^2$

$A = 25\pi in^2$

$= 78.54 in$

4) $d = 16$ ft $r = 8$ ft

$A = \pi(8)^2$

$A = 64\pi\ ft^2$

$= 201.06\ ft^2$

5) $d = 23$ cm $r = 11.5$

$A = \pi(11.5)^2$

$A = 132.25\pi\ cm^2$

$= 415.5\ cm^2$

6) $r = 1.5$ km

$A = \pi(1.5)^2$

$A = 2.25\pi\ km^2$

$= 7.07\ km^2$

7) Area of a circle is $154\ m^2$. Find the radius.

$A = 154$

$154 = \pi r^2$

$\sqrt{r^2} = \sqrt{\frac{154}{\pi}}$

$r = 7m$

8) Area of a circle is $380 in^2$. Find the radius

$A = 380$

$380 = \pi r^2$

$\sqrt{r^2} = \sqrt{\frac{380}{\pi}}$

$r = 11 in$

9) Area is $676\pi\ cm^2$. Find the diameter.

$A = 676\pi$

$676\pi = \pi r^2$

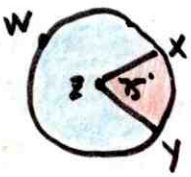
$\sqrt{r^2} = \sqrt{676}$

$r = 26$

$d = 2(26)$

$d = 52 cm$

10) The area of $\odot Z$ is $48\ ft^2$. A student writes a proportion to find the area of a sector XZY. Describe and correct the error in writing the proportion. Then find the area of sector XZY.



Let n be the area of sector XZY.

$\frac{n}{360} = \frac{48}{285}$ ✗

$\frac{n}{48} = \frac{75}{360}$

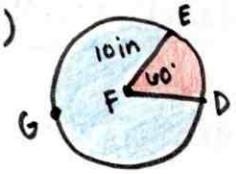
$360n = 48(75)$

$n = 10\ ft^2$

$\frac{\text{Area sector}}{\text{Area}} = \frac{\text{central}\angle}{360°}$

Find the areas of the sectors formed by $\angle DFE$.

11)



$\frac{x}{\pi(10)^2} = \frac{60}{360}$

$360x = 60(100\pi)$

$A(\text{sector } DFE) = 52.4 in^2$

12)

$\frac{x}{\pi(14)^2} = \frac{104°}{360}$

$360x = 104(196\pi)$

$A(\text{sector } DFG) = 177.9 cm^2$

13)

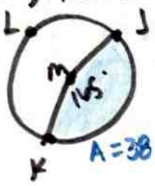
$\frac{x}{\pi(28)^2} = \frac{137°}{360°}$

$360x = 137(784\pi)$

$A(\text{sector } DFE) = 937.3 m^2$

Find the indicated measure.

14) Area of $\odot m$



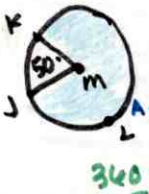
$A = 38.51 m^2$

$\frac{38.51}{x} = \frac{165}{360}$

$165x = 360(38.51)$

$A(\odot m) = 84.0 m^2$

15) Area of $\odot m$



$A = 56.87 cm^2$

$\frac{56.87}{x} = \frac{310°}{360°}$

$310x = 360(56.87)$

$360 - 50 = 310°$

$A(\odot m) = 66.0 cm^2$

16) Radius of $\odot m$.

$\frac{12.36}{\pi r^2} = \frac{89}{360}$

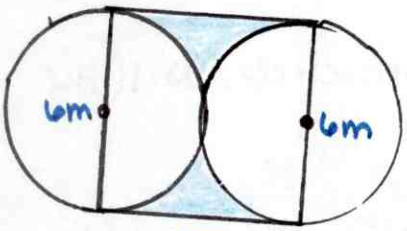
$\frac{89\pi r^2}{(89\pi)} = \frac{360(12.36)}{(89\pi)}$

$\sqrt{r^2} = \sqrt{15.9}$

$r = 4m$

53.99

Find the area of the shaded region.

17) 

r = 3

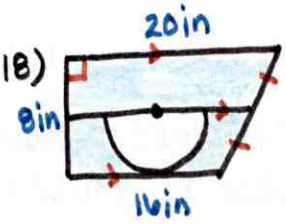
A(square) − A(circle)

s^2 πr^2

6^2 $\pi(3)^2$

$36 - 9\pi$

A(shaded) = 7.7 m²

18) 

r = 4

A(trapezoid) − A(circle)/2

$\frac{h(b_1+b_2)}{2}$ $\frac{\pi r^2}{2}$

$\frac{8(20+16)}{2}$ $\frac{\pi(4)^2}{2}$

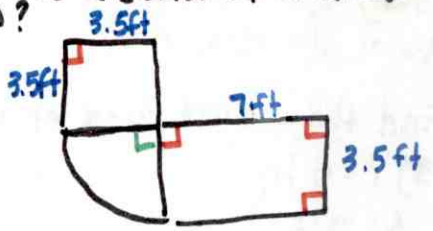
$144 - 8\pi$

A(shaded) = 118.9 in²

19) The diagram is the shape of a putting green. One part of the green is a sector of a circle. To the nearest square foot, what is the area of the putting green?

A) 46 ft² B) 49 ft²

C) 56 ft² D) 75 ft²



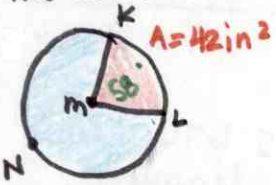
A(square) + ¼(A(circle)) + A(rectangle)

$(3.5)^2 + \frac{\pi(3.5)^2}{4} + 7(3.5)$

$12.25 + 9.6 + 24.5$

A = 46.34 ft²

The area of ⊙m is 260.67 in². The area of sector KML is 42 in². Find the indicated measures



Total A(⊙m) = 260.67

20) Radius of ⊙m

$\frac{260.67}{\pi} = \frac{\pi r^2}{\pi}$

$\sqrt{r^2} = \sqrt{82.97}$

r = 9.1 in

21) Circumference ⊙m.

C = 2π(9.1)

C = 57.2 in

22) m $\overset{\frown}{KL}$

$\frac{42}{260.67} = \frac{x}{360}$

$260.67x = 360(42)$

m $\overset{\frown}{KL}$ = 58°

23) Perimeter of blue region

Arc Length $\overset{\frown}{KNL}$ + 2r

$\frac{x}{57.2} = \frac{302}{360}$ 2(9.1)

$360x = 302(57.2)$

47.98 + 18.2

P(blue region) = 66.2 in

24) Length of $\overset{\frown}{KL}$

$\frac{x}{57.2} = \frac{58}{360}$

$360x = 58(57.2)$

Length $\overset{\frown}{KL}$ = 9.2 in

25) Perimeter of Red region

Arc length $\overset{\frown}{KL}$ + 2r

9.2 + 2(9.1)

P(red region) = 27.4 in

Find the area of the shaded region.

26) 

A(circle) − A(Δ)

$\pi(2.5\sqrt{2})^2$ $\frac{5(5)}{2}$

39.3 − 12.25

$x - x - x\sqrt{2}$

$5 - 5 - 5\sqrt{2}$

$r = \frac{5\sqrt{2}}{2}$

A(shaded) = 27 in²

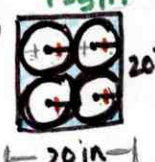
27) 

71 + 71

$\frac{x}{\pi(5.2)^2} = \frac{142}{360}$

$360x = 142(27.04\pi)$

A(shaded) = 33.5 ft²

28) 

r = 20/4

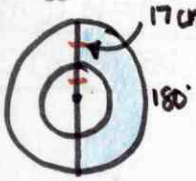
r = 5in

A(square) − 4(A(⊙

20^2 $4(\pi(5)^2$

$400 - 100\pi$

A(shaded) = 85.8 in²

29) 

Big r = 17(2)

r = 34

A(Big ⊙) − A(small ⊙)

2

$\pi(34)^2$ $\pi(17)^2$

$1156\pi - 289\pi$

2

$= \frac{867\pi}{2}$

A(shaded) = 1361.9 cm²

30) r = 8, 6, 4, 2

A(Blue) − A(white)

$[\pi(8)^2 + \pi(4)^2] - [\pi(6)^2 + \pi(2)^2]$

80π 40π

A = 125.7 ft²

31) 

r = 5/2

r = 2.5

A(circle) − 2(A(Δ))

$\pi(2.5)^2 - 2\left(\frac{3(4)}{2}\right)$

$6.25\pi - 12$

A = 7.6 m²