Geometry Part II 10.7 - Areas of Circles and Sectors

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10. Area of Circle = πr^2 The diameter is given as 2/3 in., so the radius is $\frac{1}{2} x \frac{2}{3} = \frac{1}{3} in.$

$$A = \pi(\frac{1}{3})^2 = \frac{1}{9}\pi$$

18. $\frac{\text{Degree of Sector}}{\text{Degree of Circle}} = \frac{\text{Area of Sector}}{\text{Area of Circle}}$ $\frac{315}{360} = \frac{\text{Area of Sector}}{\pi(8)^2}$ $\frac{315*\pi(8)^2}{360} = \text{Area of Sector}$

56π sq cm = Area of Sector

24. $\frac{90}{360} = \frac{\text{Area of Sector}}{\pi(8)^2}$ $\frac{90*\pi(8)^2}{360} = \text{Area of Sector}$ 16π sq ft = Area of Sector

Area of Triangle = $\frac{1}{2}(8)*(8) = 32$ sq. ft.

Area of Segment = Area of Sector - Area of Triangle = 16π - 32 = 18.3 sq. ft.

30. Area of Shading = Area of square - Area of two semi-circles, or one full circle

Area of Shading = 8 * 8 - π $(4)^2$ = 64 - 16 π =

38. C = πd = 26 π therefore d = 26, so r = 13; A = π$(13)^2$ = 169 π sq. in.

42. $\frac{90}{360} = \frac{\text{Area of Sector}}{\pi(9)^2}$ $\frac{90*\pi(9)^2}{360} = \text{Area of Sector}$ $\frac{81}{4}\pi$ sq ft = Area of Sector

Area of Triangle = $\frac{1}{2}(9)*(9) = \frac{81}{2}$ sq. ft.

Area of Segment = Area of Sector - Area of Triangle = $\frac{81}{4}\pi - \frac{81}{2}$ = 23.1 sq. ft.

46. Area of Shading = Area of Circle - Area of Hexagon

Area of Shading = $\pi r^2 - 1/2aP = \pi(7)^2 - 1/2(3.5*\sqrt{3})(6*7) = 49\pi - 73.5\sqrt{3}$ sq. m.

52. Using 45^o-45^o-90^o properties, the legs will equal the hypotenuse divided by $\sqrt{2}$

$x = \frac{6}{\sqrt{2}} = \frac{6}{\sqrt{2}} * \frac{\sqrt{2}}{\sqrt{2}} = \frac{6\sqrt{2}}{2} = 3\sqrt{2}$ which is answer G

54. a. $81\pi = \pi r^2$ so r = 9 C = $2\pi r = 2\pi 9 = 18\pi$ yd.

b. $\frac{\text{Degree of Arc}}{\text{Degree of Circle}} = \frac{\text{Length of Arc}}{\text{Circumference of Circle}}$ $\frac{45}{360} = \frac{\text{Length of Arc}}{18\pi}$

$\frac{45*18\pi}{360} = \text{Length of Arc}$ $\frac{9\pi}{4} = \text{Length of Arc} = 7$ yd.