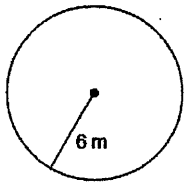
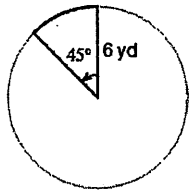
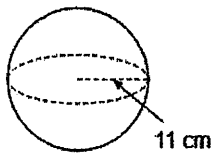
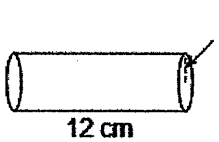
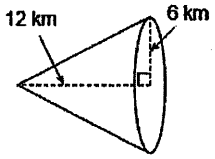
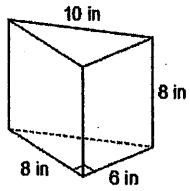
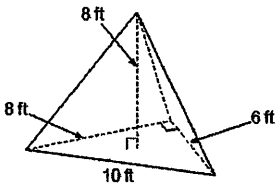
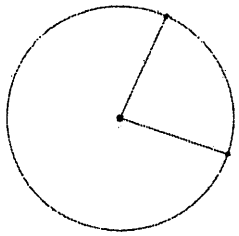
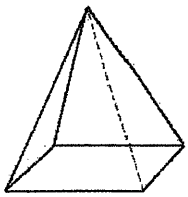
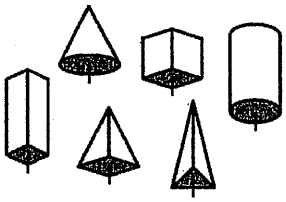
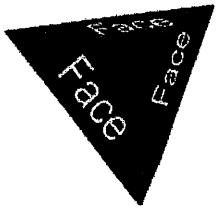
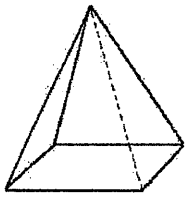
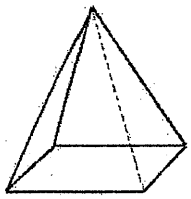
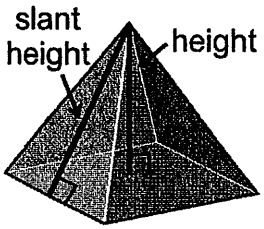
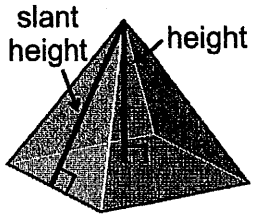
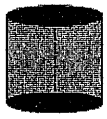
Formulas for Area and Volume

Key

	Picture	Examples
Area of a Circle		$A = \pi r^2$ $A = \pi (6)^2 = 36\pi$
Area of a Sector of a Circle		$\frac{S}{\pi r^2} = \frac{\widehat{AB}}{360^\circ}$
Volume of a Sphere		$V = \frac{4}{3}\pi r^3$
Volume of a Cylinder Area of base × height		$V = \pi r^2 h$
Volume of a Cone		$V = \frac{1}{3}\pi r^2 h$
Volume of a Prism $\frac{1}{2}$ Area $\frac{1}{2}(8)(6) \cdot 8$		$V = B \times h$
Volume of a Pyramid		$\frac{B \times h}{3}$ $V = \frac{1}{3} B \times h$

Vocabulary

Sector of a Circle 	**Vertex** 
Base 	**Lateral Faces** 
Base Edges 	**Lateral Edges** 
Altitude (Height) 	**Slant Height** 
Right Solid  right cylinder  right cone	**Oblique Solid**  oblique cylinder  oblique cone

11-3 Area of Circles and Sectors

$A = \pi r^2$

$A = \pi\left(\frac{d}{2}\right)^2$

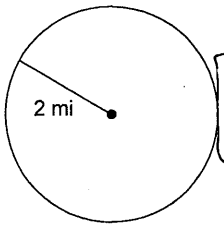
$A = \frac{\pi}{4} d^2$

$2r = d$

$r = \frac{d}{2}$

Find the area of each. Use your calculator's value of π. Round your answer to the nearest tenth.

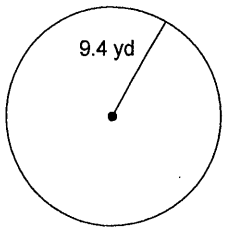
1)



$A = \pi(2)^2$

$\boxed{A = 4\pi}$

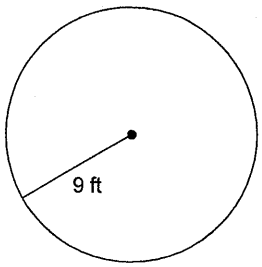
2)



$A = \pi(9.4)^2$

$\boxed{A = 88.36\pi}$

3)

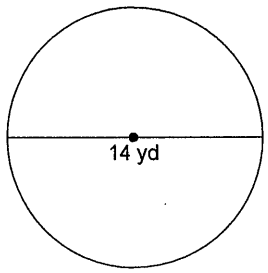


$A = \pi(9)^2$

$\boxed{A = 81\pi}$

4)

$r = 7$

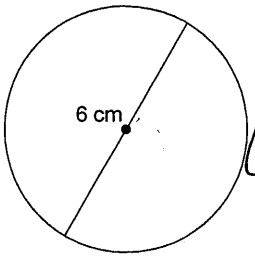


$A = (7)^2\pi$

$\boxed{A = 49\pi}$

5)

$r = 3$

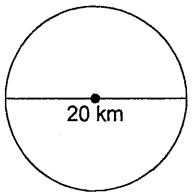


$A = \pi(3)^2$

$\boxed{A = 9\pi}$

6)

$r = 10$



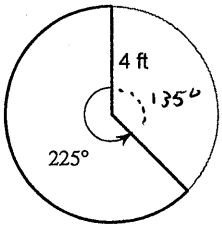
$A = \pi(10)^2$

$\boxed{A = 100\pi}$

Find the area of each sector. Leave answers in exact form.

$\frac{S}{\pi r^2} = \frac{AB}{360}$

7)



$360 - 225$

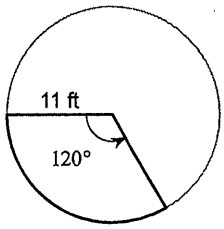
$\frac{S}{\pi(4)^2} = \frac{225}{360}$

$\frac{S}{16\pi} = \frac{5}{8}$

$8S = 80\pi$

$\boxed{S = 10\pi}$

8)



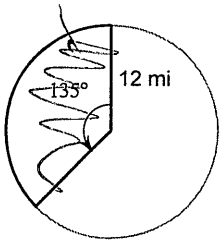
$\frac{S}{\pi(11)^2} = \frac{120}{360}$

$\frac{S}{121\pi} = \frac{1}{3}$

$3S = 121\pi$

$\boxed{S = \frac{121\pi}{3}}$

9)

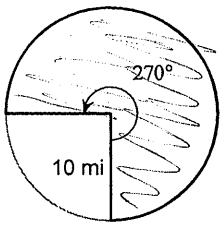


$$\frac{S}{\pi(12)^2} = \frac{135}{360}$$

$$\frac{S}{144\pi} = \frac{3}{8}$$

$$8S = 432\pi \qquad \boxed{S = 54\pi}$$

10)



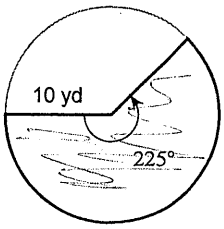
$$\frac{S}{\pi(10)^2} = \frac{270}{360}$$

$$\frac{S}{100\pi} = \frac{3}{4}$$

$$4S = 300\pi$$

$$\boxed{S = 75\pi}$$

11)



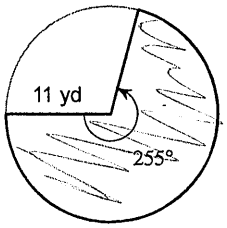
$$\frac{S}{\pi(10)^2} = \frac{225}{360}$$

$$\frac{S}{100\pi} = \frac{5}{8}$$

$$8S = 500\pi$$

$$\boxed{S = \frac{125}{2}\pi}$$

12)

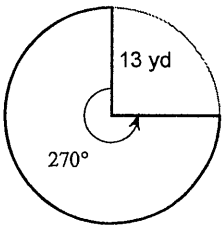


$$\frac{S}{\pi(11)^2} = \frac{255}{360}$$

$$\frac{S}{121\pi} = \frac{17}{24} \qquad 24S = 2057\pi$$

$$\boxed{S = \frac{2057\pi}{24}}$$

13)

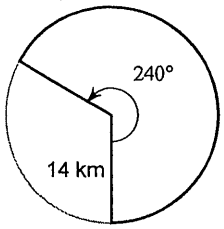


$$\frac{S}{\pi(13)^2} = \frac{270}{360}$$

$$\frac{S}{169\pi} = \frac{3}{4}$$

$$\boxed{S = \frac{507\pi}{4}}$$

14)

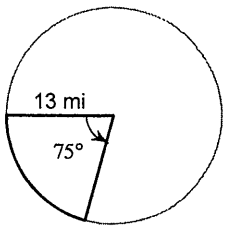


$$\frac{S}{\pi(14)^2} = \frac{240}{360}$$

$$\frac{S}{196\pi} = \frac{2}{3}$$

$$\boxed{S = \frac{392\pi}{3}}$$

15)



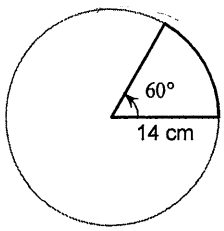
$$\frac{S}{\pi(13)^2} = \frac{75}{360}$$

$$\frac{S}{169\pi} = \frac{5}{24}$$

$$24S = 845\pi$$

$$\boxed{S = \frac{845}{24}\pi}$$

16)



$$\frac{S}{\pi(14)^2} = \frac{60}{360}$$

$$\frac{S}{196\pi} = \frac{1}{6}$$

$$6S = 196\pi$$

$$\boxed{S = \frac{98\pi}{3}}$$