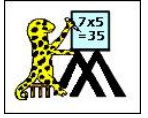


Name

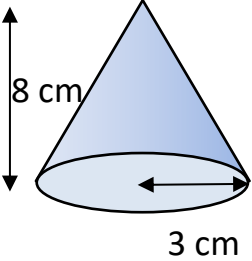
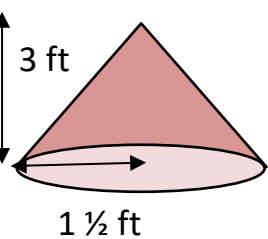
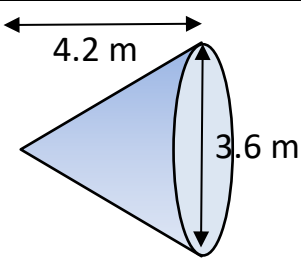
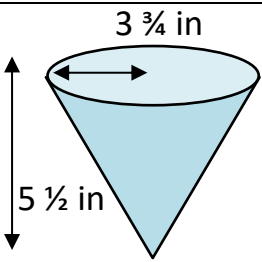
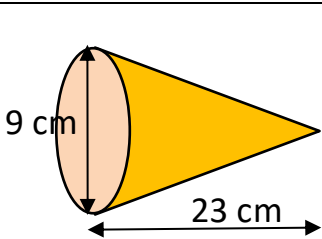
Date



SURFACE AREA OF A CONE SHEET 1

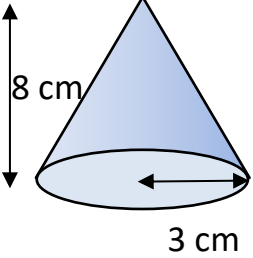
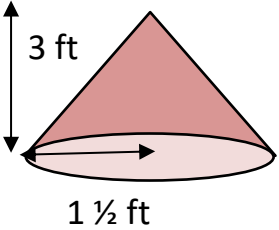
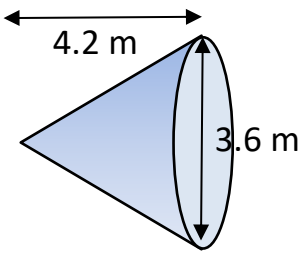
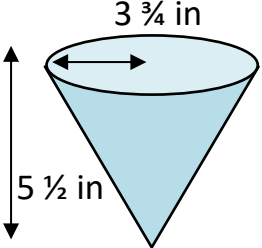
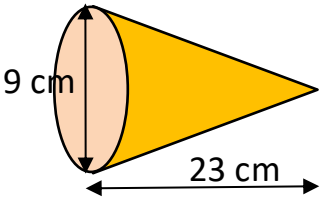
Use the radius or diameter and height measurements to find the area of these closed cones.

Give your answers to 1 decimal place.

CONE	WORKING OUT	AREA
1) 		
2) 		
3) 		
4) 		
5) 		



SURFACE AREA OF A CONE SHEET 1 ANSWERS

CONE	WORKING OUT	AREA
1) 	$\begin{aligned} \text{Area of closed cone} &= \pi r(r + \sqrt{r^2 + h^2}) \\ &= \pi(3)(3 + \sqrt{3^2 + 8^2}) = 3\pi(3 + \sqrt{9 + 64}) \\ &= 3\pi(3 + \sqrt{73}) = 3\pi(3 + 8.544\dots) \\ &= 3\pi(11.544\dots) = 34.632\dots \pi \\ &= 108.8 \text{ cm}^2 \text{ to 1 decimal place} \end{aligned}$	108.8 cm^2
2) 	$\begin{aligned} \text{Area of closed cone} &= \pi r(r + \sqrt{r^2 + h^2}) \\ &= \pi(1\frac{1}{2})(1\frac{1}{2} + \sqrt{(1\frac{1}{2})^2 + 3^2}) = 1\frac{1}{2} \pi(1\frac{1}{2} + \sqrt{2\frac{1}{4} + 9}) \\ &= 1\frac{1}{2} \pi(1\frac{1}{2} + \sqrt{11\frac{1}{4}}) = 1\frac{1}{2} \pi(1\frac{1}{2} + 3.354\dots) \\ &= 1\frac{1}{2} \pi(4.854\dots) = 7.281\dots \pi \\ &= 22.9 \text{ ft}^2 \text{ to 1 decimal place} \end{aligned}$	22.9 ft^2
3) 	$\begin{aligned} \text{Diameter of cone} &= 3.6 \text{ m so radius} = 3.6 \div 2 = 1.8 \text{ m.} \\ \text{Area of closed cone} &= \pi r(r + \sqrt{r^2 + h^2}) \\ &= \pi(1.8)(1.8 + \sqrt{1.8^2 + 4.2^2}) \\ &= 1.8 \pi(1.8 + \sqrt{3.24 + 17.64}) \\ &= 1.8 \pi(1.8 + \sqrt{20.88}) = 1.8 \pi(1.8 + 4.569\dots) \\ &= 1.8\pi(6.369\dots) = 11.465\dots \pi \\ &= 36.0 \text{ m}^2 \text{ to 1 decimal place} \end{aligned}$	36.0 m^2
4) 	$\begin{aligned} \text{Area of closed cone} &= \pi r(r + \sqrt{r^2 + h^2}) \\ &= \pi(3\frac{3}{4})(3\frac{3}{4} + \sqrt{(3\frac{3}{4})^2 + (5\frac{1}{2})^2}) \\ &= 3\frac{3}{4} \pi(3\frac{3}{4} + \sqrt{\frac{225}{16} + \frac{121}{4}}) \\ &= 3\frac{3}{4} \pi(3\frac{3}{4} + \sqrt{709/16}) = 3\frac{3}{4} \pi(3\frac{3}{4} + 6.656\dots) \\ &= 3\frac{3}{4} \pi(10.406\dots) = 39.025\dots \pi \\ &= 122.6 \text{ in}^2 \text{ to 1 decimal place} \end{aligned}$	122.6 in^2
5) 	$\begin{aligned} \text{Diameter of cone} &= 9 \text{ cm so radius} = 9 \div 2 = 4.5 \text{ cm.} \\ \text{Area of closed cone} &= \pi r(r + \sqrt{r^2 + h^2}) \\ &= \pi(4.5)(4.5 + \sqrt{4.5^2 + 23^2}) \\ &= 4.5 \pi(4.5 + \sqrt{20.25 + 529}) \\ &= 4.5 \pi(4.5 + \sqrt{549.25}) = 4.5 \pi(4.5 + 23.436\dots) \\ &= 4.5 \pi(27.936\dots) = 125.712\dots \pi \\ &= 394.9 \text{ cm}^2 \text{ to 1 decimal place} \end{aligned}$	394.9 cm^2