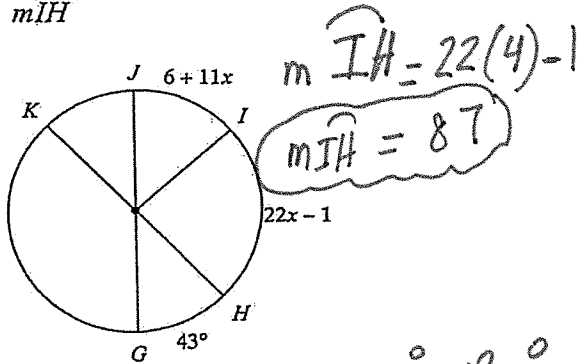


Arc measure and arc length

Find the measure of the arc or central angle indicated. Assume that lines which appear to be diameters are actual diameters.

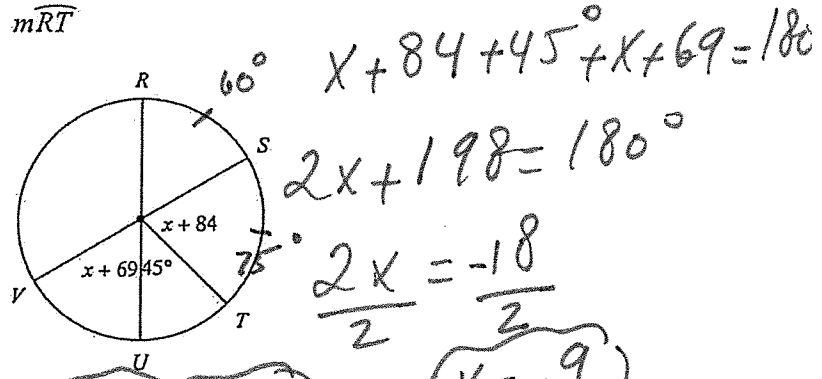
1) $m\widehat{IH}$



$m\widehat{IH} = 22(4) - 1$
 $m\widehat{IH} = 87$

$6 + 11x + 22x - 1 + 43 = 180$
 $33x = 132$
 $x = 4$

2) $m\widehat{RT}$

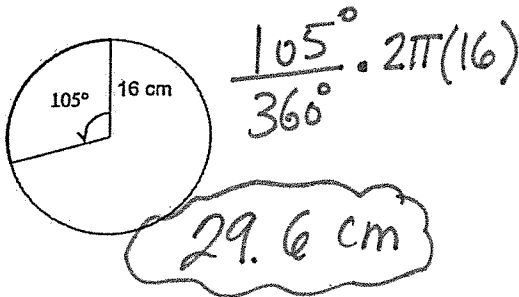


$x + 84 + 45 + x + 69 = 180$
 $2x + 198 = 180$
 $2x = -18$
 $x = -9$

$m\widehat{RT} = 135$

Find the length of each arc.

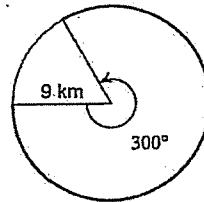
3)



$\frac{105}{360} \cdot 2\pi(16)$

29.6 cm

4)



$\frac{300}{360} \cdot 2\pi(9)$

47.1 km

5) $r = 12 \text{ in}, \theta = 270^\circ$

$\frac{270}{360} \cdot 2\pi(12)$
 56.52 in

6) $r = 9 \text{ km}, \theta = 240^\circ$

$\frac{240}{360} \cdot 2\pi(9)$
 37.68 km

7) A circle has an arc measure of 80 degrees and an arc length of 88π . What is the diameter of the circle?

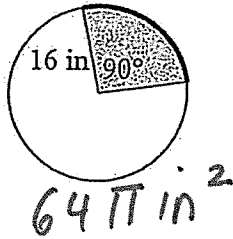
$\frac{80}{360} \cdot 2\pi r = 88\pi$
 $1.395r = 276.32$
 $r = 198$
 $d = 396$

Arc Length-Sector Area

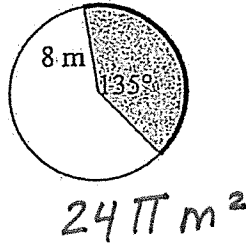
Name: _____

8. Calculate the sector area:

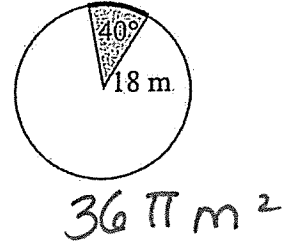
a.



b.



c.



9. The area of a circle is 225π square inches. Find the area of the sector whose central angle is 45° .

$$\frac{45^\circ}{360^\circ} \cdot 225\pi = 88.31$$

10. The central angle of a sector is 60° and the area of the circle is 144π . What is the area of the sector?

$$\frac{60^\circ}{360^\circ} \cdot 144\pi = 24\pi$$

11. A circle has a radius of 12. Find the area of the sector whose central angle is 120° .

$$\frac{120^\circ}{360^\circ} \cdot \pi(12)^2 = 48\pi$$

12. Find the radius of a circle which has a sector area of 9π whose central angle is 90° .

$$\frac{90^\circ}{360^\circ} \cdot \pi r^2 = 9\pi \quad \frac{1}{36} r^2 = 1 \quad r = 6$$

13. The central angle of a sector is 72° and the sector has an area of 5π . Find the radius.

$$\frac{72^\circ}{360^\circ} \cdot \pi r^2 = 5\pi \quad 0.2r^2 = 5 \quad r^2 = 25 \quad r = 5$$

14. Find the measure of the central angle of a sector if its area is 5π and the radius is 6.

$$\frac{\theta}{360^\circ} \cdot 36\pi = 5\pi \quad \frac{\theta}{10} = 5 \quad \theta = 50^\circ$$