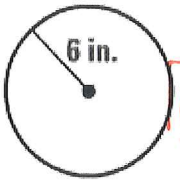
Name: Key Date: _____

Circumference and Arc Lengths Notes

$C = 2\pi r$ or $C = d\pi$

Use the diagram to find the indicated measure.

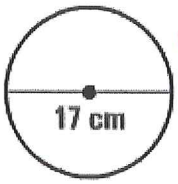
1. Find the circumference



$d = 12$ in

$C = 12\pi$ in

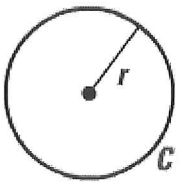
2. Find the circumference



$d = 17$ cm

$C = 17\pi$ cm

3. Find the radius



$C = d\pi$ MS. S

$\frac{63}{\pi} = \frac{d\pi}{\pi}$ Plugs in π key

$d \approx 20.05352283$

$\div 2$

$r = 10.0$ ft

Find the indicated measure.

4. The circumference of a circle with diameter 5 inches.

$d = 5$

$C = 5\pi$ in

5. The radius of a circle with circumference of 28π meters.

$C = 28\pi$

$\frac{d\pi}{\pi} = \frac{28\pi}{\pi}$

$d = 28$m

$C = d\pi$

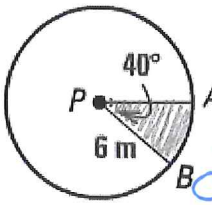
So $r = 14$m

Arc Length

$\frac{a}{360} \cdot C =$ arc length

Find the length of $\overset{\frown}{AB}$.

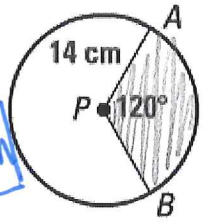
6.



$\frac{40}{360} \cdot 12\pi$

$l = \frac{480\pi}{360} = l = \frac{4}{3}\pi$m

7.



$C = 28\pi$cm

$l = \frac{120}{360} 28\pi$

Calculator:

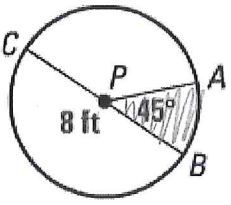
$120 \times 28 = 3360\pi$

$\frac{3360}{360}$

* Now Simplify!! *

$l = \frac{28\pi}{3}$ cm

8.



$C = 8\pi$ ft

$l = \frac{45}{360} \cdot 8\pi$

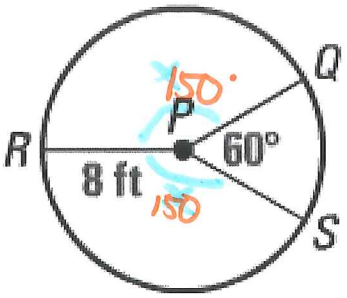
$= \frac{360\pi}{360}$

$l = 1\pi$ ft

We are using 40° of the 360° circle. The fraction of the circumference is the arc length. $\frac{40}{360}$ is the % of circumfurnce we are using.

Name: _____ Date: _____

In $\odot P$ shown at right, $\angle QPR \cong \angle RPS$. Find the indicated measure.



9. m<RPQ

$x + x + 60 = 360$

$2x + 60 = 360$

$2x = 300$

$x = 150°$

10. m<RPS

$= 150°$

$8\text{ ft} = r$

11. length of $\overset{\frown}{QRS}$

$150 + 150 = 300$

$\frac{300}{360}\ 16\pi$

$\frac{4800\pi}{360}$

$\ell = \frac{40\pi}{3}\text{ ft}$

13. length of $\overset{\frown}{QR}$

$\ell = \frac{150}{360}\ 16\pi$

$\frac{2400\pi}{360}$

$\ell = \frac{20\pi}{3}\text{ ft}$

14. length of $\overset{\frown}{RSQ}$

$150 + 60 = 210°$

$\ell = \frac{210}{360}\ 16\pi$

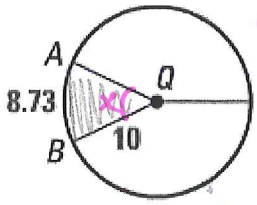
$= \frac{3360\pi}{360}$

$\ell = \frac{28\pi}{3}\text{ ft}$

$C = 16\pi\text{ ft}$

Find the indicated measure.

15. m<AQB



$C = 20\pi$

$8.73 = \ell$

$10 = r$

$\ell = \frac{a}{360} \cdot C$

$8.73 = \frac{a}{360} \cdot 20\pi$

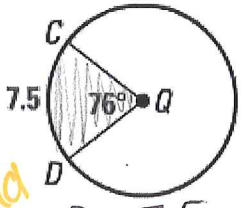
$360 \cdot 8.73 = \frac{a \cdot 20\pi}{360} \cdot 360$

$\frac{3142.8}{(20\pi)} = \frac{a \cdot 20\pi}{20\pi}$

$50.0° = a$

must put ( ) around 20π in calculator!

16. Circumference of $\odot Q$



$\ell = 7.5$

$a = 76°$

$r = ?\ d = ?$

$C = ?$

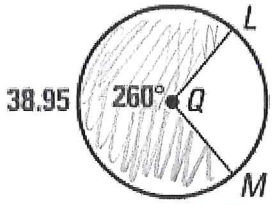
$\frac{360}{76} \cdot 7.5 = \frac{76}{360} C \cdot \frac{360}{76}$

calculator

$360 \times 7.5 \div 76$

$C = 35.5$

17. Radius of $\odot Q$



$38.95 = \frac{260}{360} C \cdot \frac{360}{260}$

$53.9 = C$

Now find radius!

$\frac{53.9}{\pi} = \frac{d\pi}{\pi}$

$17.1569\ldots = d$

$\div 2$

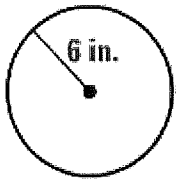
$r = 8.6$

Name: _____ Date: _____

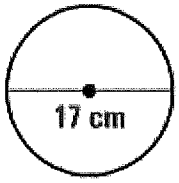
Circumference and Arc Lengths Notes

Use the diagram to find the indicated measure.

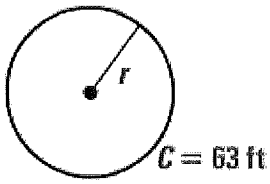
1. Find the circumference



2. Find the circumference



3. Find the radius



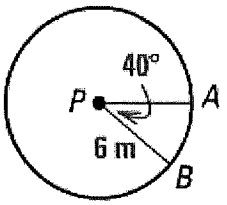
Find the indicated measure.

4. The circumference of a circle with diameter 5 inches.

5. The radius of a circle with circumference of 28π meters.

Find the length of $\overset{\frown}{AB}$.

6.



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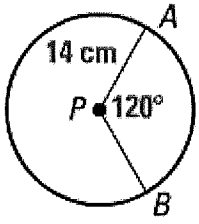
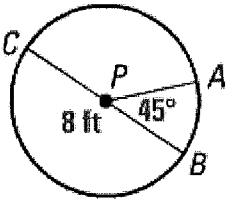


8.



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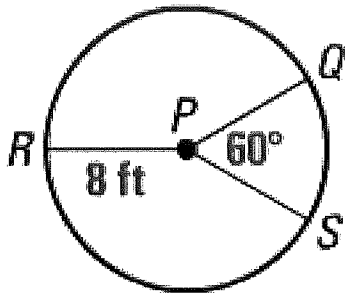


9. m<RPQ

10. m<RPS

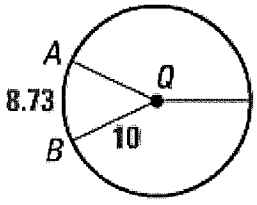
11. length of $\overset{\frown}{QRS}$

13. length of $\overset{\frown}{QR}$

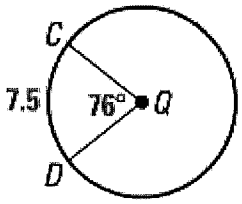
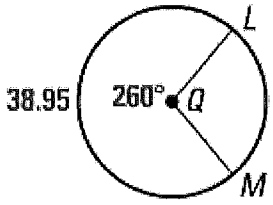
14. length of $\overset{\frown}{RSQ}$

Find the indicated measure.

15. m<AQB



16. Circumference of $\odot Q$



17. Radius of $\odot Q$