

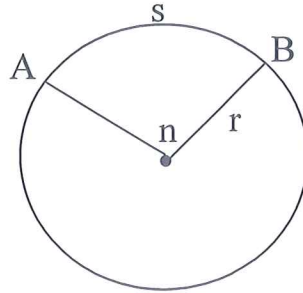
# Arc Length and Circumference of Circles HW

Key

Formula for arc length:  $S = \frac{n}{360} \cdot C$  (C = circumference) or

$$S = \frac{n}{360} \cdot 2\pi r \text{ (when given radius) or } S = \frac{n}{360} \pi d \text{ (when given diameter)}$$

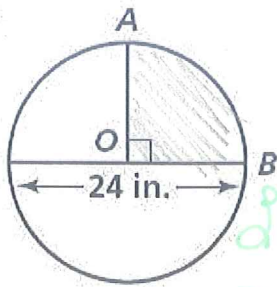
where: S – arc length  
r – radius of a circle  
n – degrees in a central angle



I can calculate the circumference AND an arc length of a circle. Shade in the given arc before calculating.

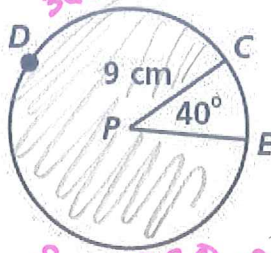
Find the arc length and circumference for each question. KEEP ALL ANSWERS IN TERMS OF PI.

1.  $\widehat{AB}$



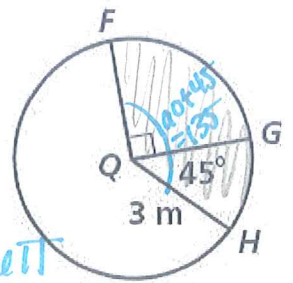
$$\begin{aligned} \theta &= \frac{90}{360} \cdot 24\pi \\ &= \frac{2160\pi}{360} \\ &= 6\pi \end{aligned}$$

2.  $\widehat{CDE}$



$$\begin{aligned} \theta &= \frac{320}{360} 18\pi \\ \theta &= \frac{5760\pi}{360} \end{aligned}$$

3.  $\widehat{FH}$



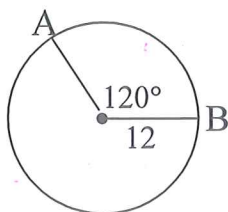
$$\begin{aligned} \theta &= \frac{135}{360} 6\pi \\ \theta &= \frac{810\pi}{360} \end{aligned}$$

C =  $24\pi$  in Length =  $6\pi$  in C =  $18\pi$  cm Length =  $16\pi$  cm C =  $6\pi$  m Length =  $\frac{9\pi}{4}$  m

Directions: Follow the given instructions below.

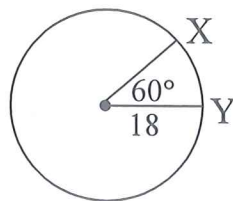
(Kids - Yes! You must show work!)

4. Find  $m\widehat{AB}$ .



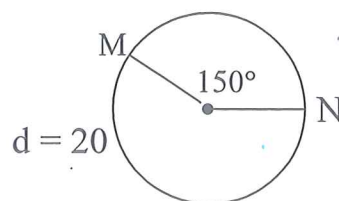
$$\theta = 8\pi$$

5. Find  $m\widehat{XY}$ .



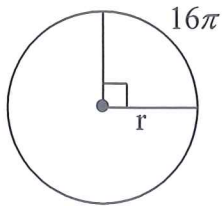
$$\theta = 6\pi$$

6. Find  $m\widehat{MN}$ .



$$\theta = \frac{25\pi}{3}$$

7. Find the radius.



$$d = \frac{a}{360} C$$

$$16\pi = \frac{90}{360} C$$

$$64\pi = C$$

$$\frac{64\pi}{\pi} = \frac{d\pi}{\pi}$$

$$d = 64$$

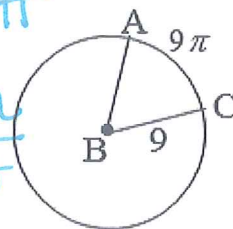
$$r = 32$$

8. Find  $m\angle ABC$ .

$$9\pi = \frac{a}{360} \cdot 18\pi$$

$$\frac{3240\pi}{18\pi} = \frac{18\pi a}{18\pi}$$

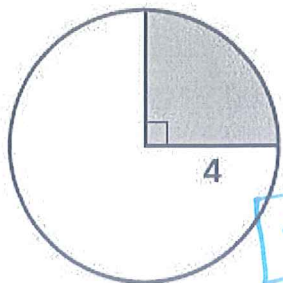
$$180 = a$$



Find the arc length of the given arc below. Keep your answers in terms of pi.

← You must show your work.

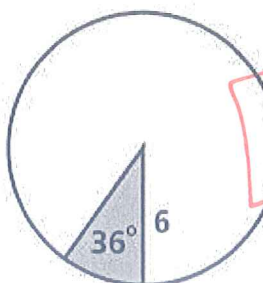
9.



$$\frac{90}{360} \cdot 8\pi$$

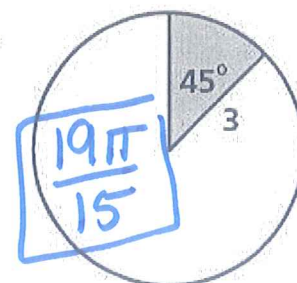
$$= 2\pi$$

10.



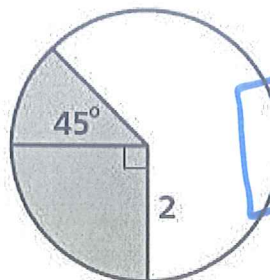
$$\frac{6\pi}{5}$$

11.



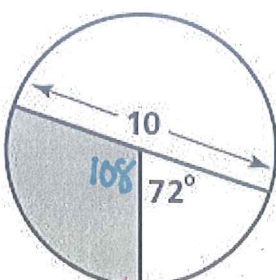
$$\frac{19\pi}{15}$$

12.



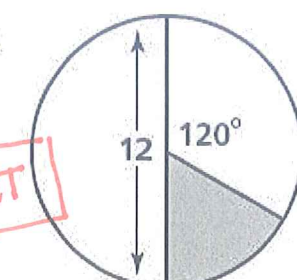
$$\frac{3\pi}{2}$$

13.



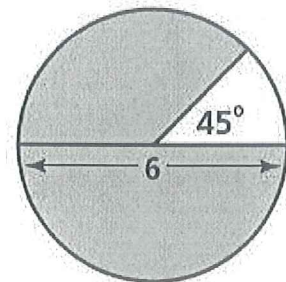
$$= 3\pi$$

14.



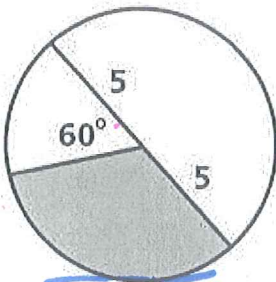
$$= 2\pi$$

15.



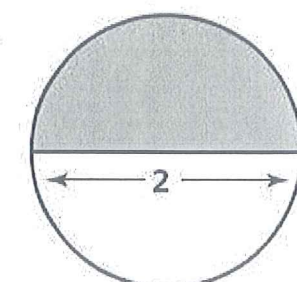
$$\frac{21\pi}{4}$$

16.



$$\frac{10\pi}{3}$$

17.



$$= \frac{180}{360} \cdot 2\pi$$

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

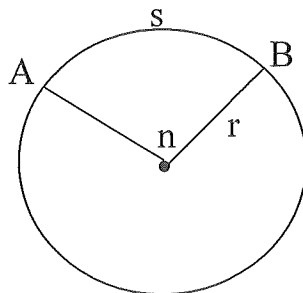
Key tomorrow

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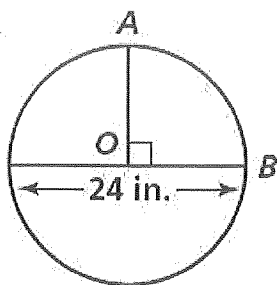
where: S – arc length  
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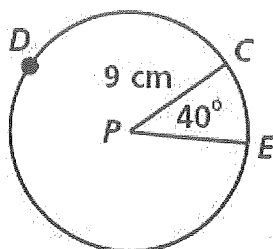
I can calculate the circumference AND an arc length of a circle. Shade in the given arc before calculating.

Find the arc length and circumference for each question. KEEP ALL ANSWERS IN TERMS OF PI.

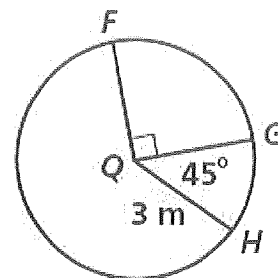
1.  $\widehat{AB}$



2.  $\widehat{CDE}$



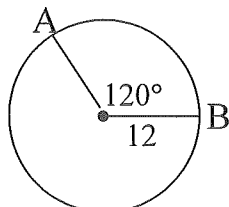
3.  $\widehat{FH}$



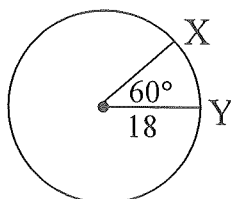
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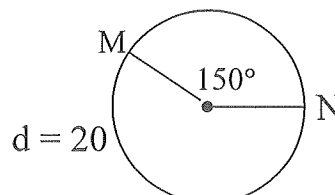
4. Find  $m\widehat{AB}$ .



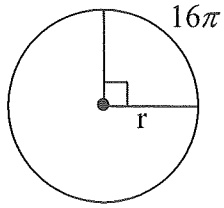
5. Find  $m\widehat{XY}$ .



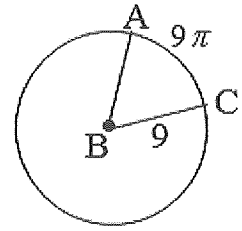
6. Find  $m\widehat{MN}$ .



7. Find the radius.

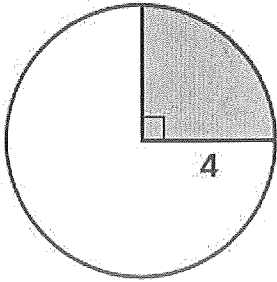


8. Find  $m\angle ABC$ .

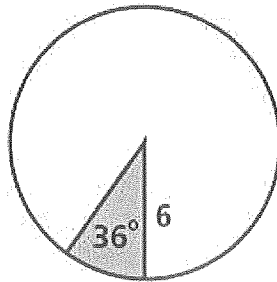


Find the arc length of the given arc below. Keep your answers in terms of pi.

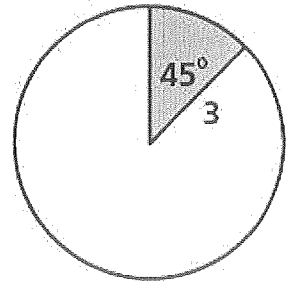
9.



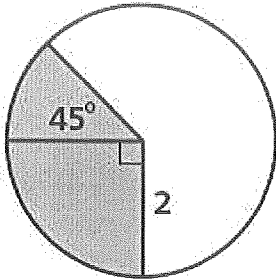
10.



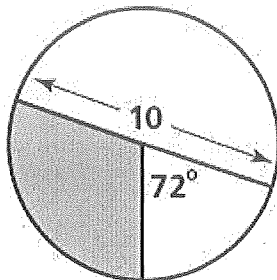
11.



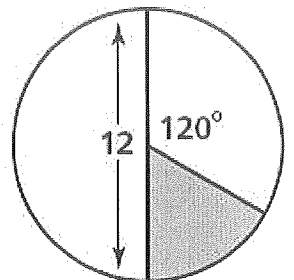
12.



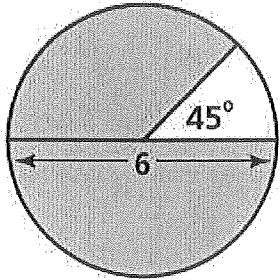
13.



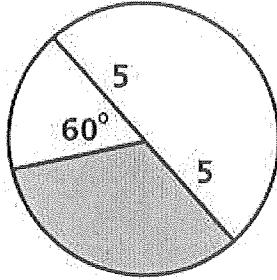
14.



15.



16.



17.

