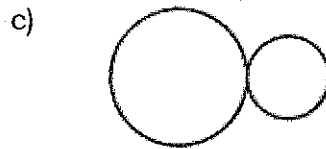
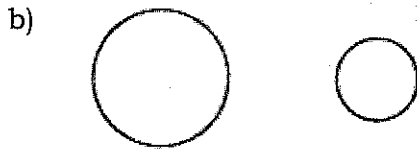
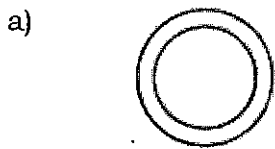


Circles: Arcs, Angles, Area of Sector, Arc Length Study Guide

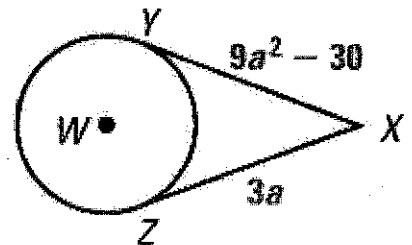
Complete: #4, #5, #6 A-I, #7-14 All

EXAMPLE PROBLEMS:

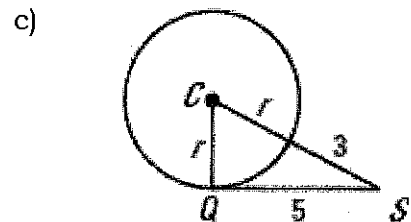
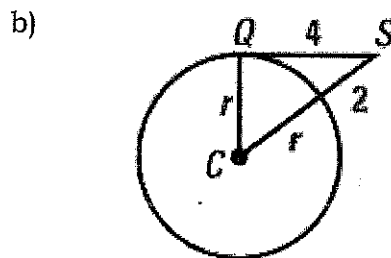
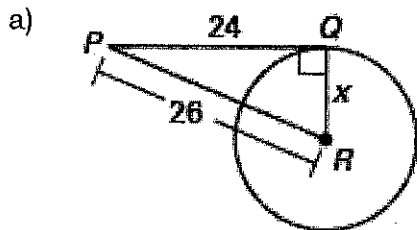
1) How many common tangents do the given circles have?



2) \overline{XY} and \overline{XZ} are tangent to circle W . Find the value of a :



3) Find the missing variable (lines shown are lines of tangency).



4) \overline{AC} and \overline{BD} are diameters of $\odot F$. Identify the given arc as a major arc, minor arc, or semicircle. Then find the measure of the arc.

a) $m\widehat{AB} = 70$

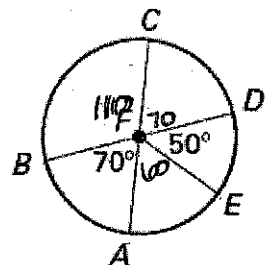
b) $m\widehat{BC} = 110$

c) $m\widehat{ABC} = 180$

d) $m\widehat{AE} = 60$

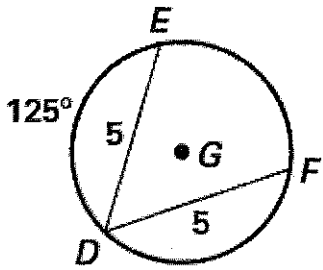
e) $m\widehat{CDE} = 120$

f) $m\widehat{BDC} = 250$

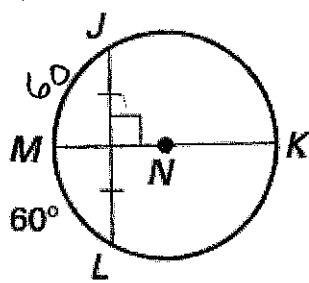


5) Find the measure of the given arc.

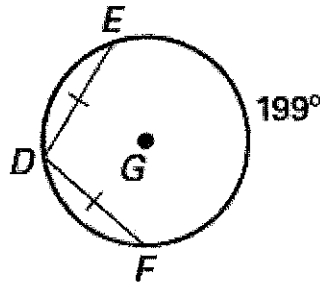
a) $m\widehat{DF} = 125$



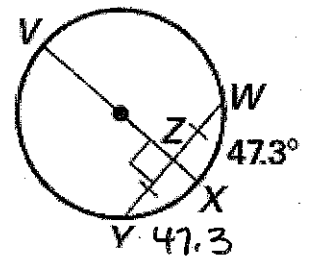
b) $m\widehat{JML} = 120$



c) $m\widehat{DE} = 80.5$

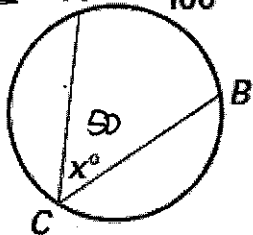


d) $m\widehat{WVY} = 265.4$

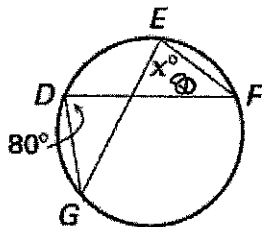


6) Find the value(s) of the variable(s).

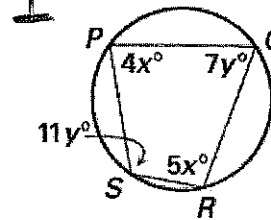
a) I $\angle A = 100^\circ$



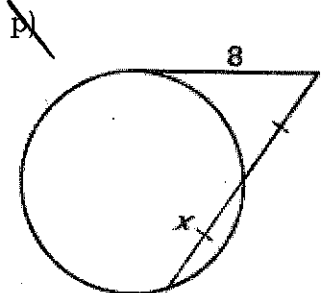
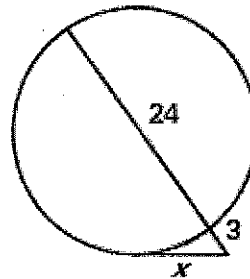
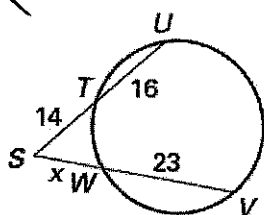
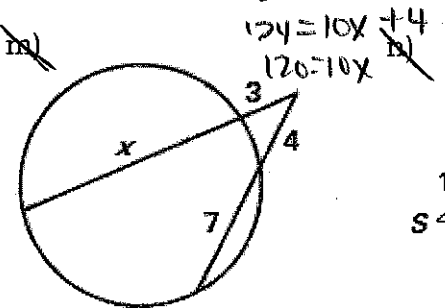
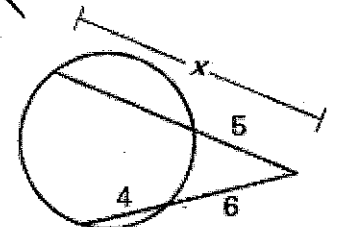
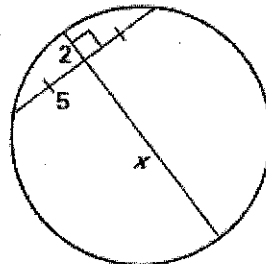
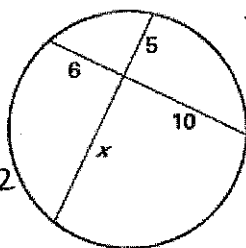
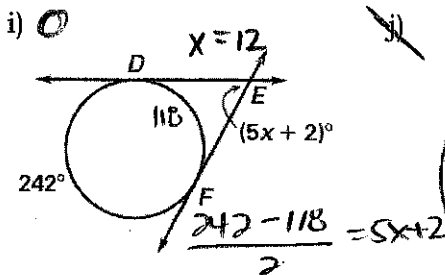
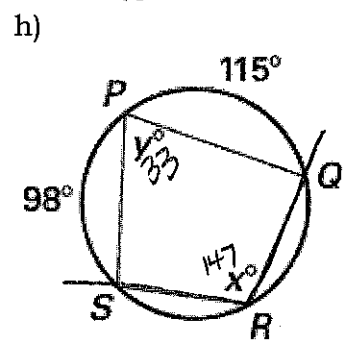
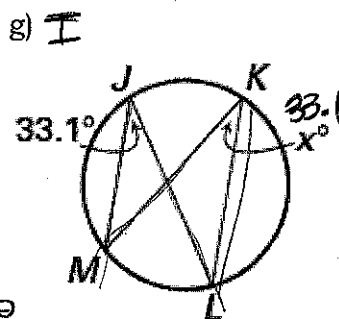
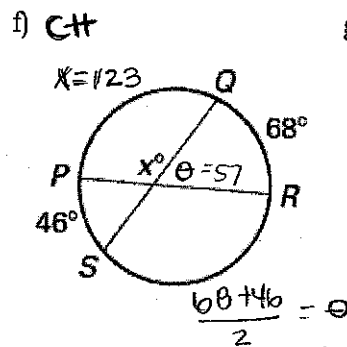
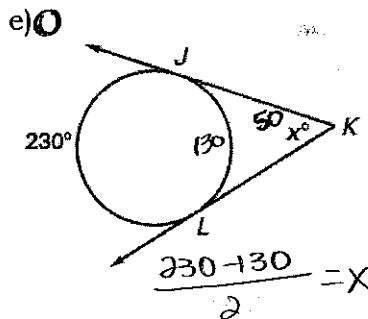
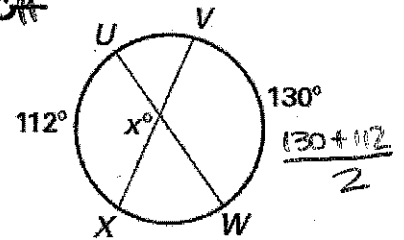
b) I

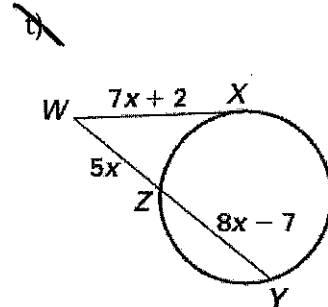
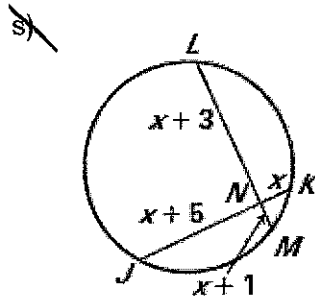
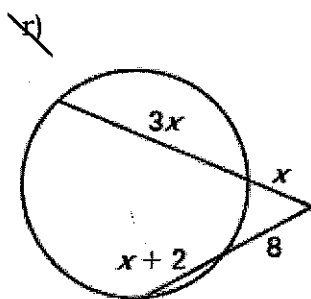
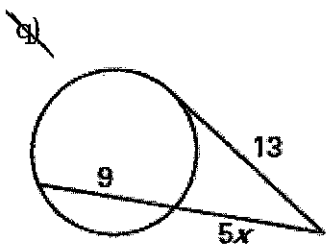


c) I $x = 20$ $y = 10$

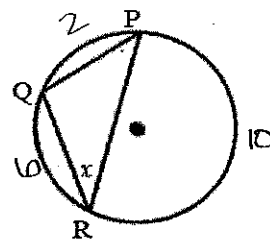


d) CII 121

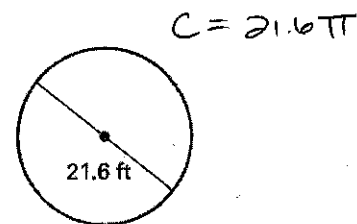
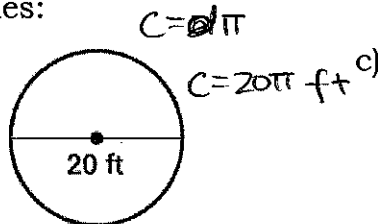
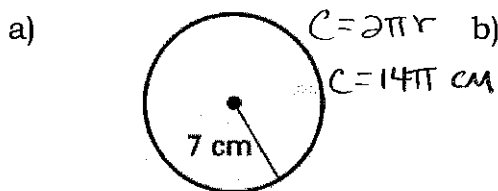




7) In the given circle shown at right, $m\widehat{PQ} : m\widehat{QR} : m\widehat{PR} = 2:6:10$. Find the value of x , and the measure of each arc.



8) Find the circumference of the circles:

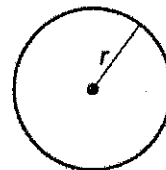


9) Find the length of the radius of the circles given their circumferences:

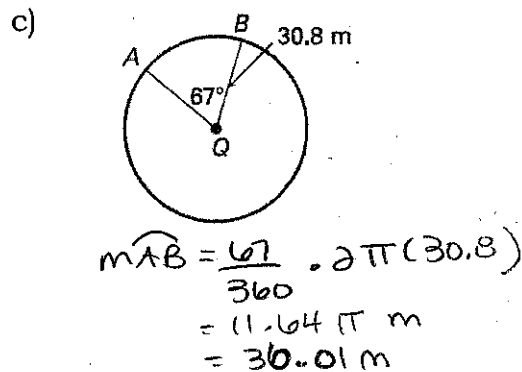
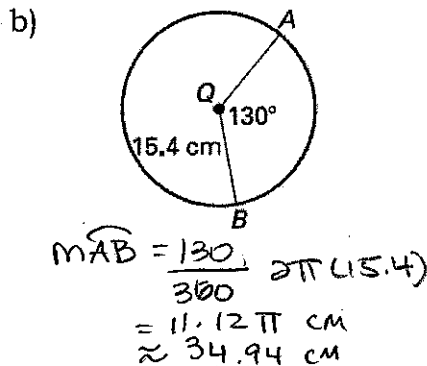
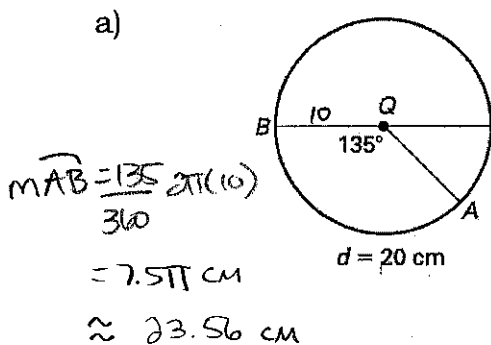
a) $C = 48$ in
 $48 = 2\pi r$
 $7.6 = r$

b) $C = 94$ in
 $94 = 2\pi r$
 $15 = r$

c) $C = 58$ ft
 $58 = 2\pi r$
 $9.2 = r$



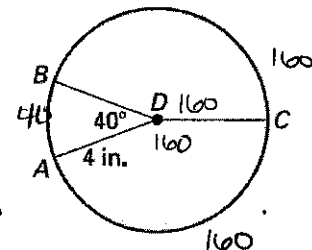
10) Find the length of \widehat{AB} .



11) In circle D at right, $\angle ADC \cong \angle BDC$. Find the indicated measure.

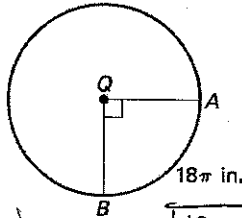
a) $m\widehat{ACB} = 320$
 c) length of $\widehat{ACB} = \frac{320}{360} \cdot 2\pi(4)$
 $= 7.1\pi$ in
 e) $m\widehat{ABC} = 200$

b) $m\widehat{CB} = 160$
 d) length of $\widehat{CB} = \frac{160}{360} \cdot 2\pi(4) = 3.56\pi$ in
 f) length of $\widehat{BAC} = \frac{200}{360} \cdot 2\pi(4) = 4.44\pi$ in



12) Find the indicated measure of each circle.

a) radius length

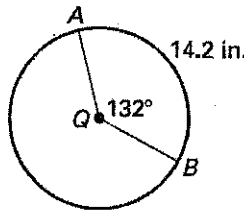


$$18\pi = \frac{90}{360} \cdot 2\pi r$$

$$18 = \frac{1}{2} r$$

$$r = 36 \text{ in}$$

b) radius length

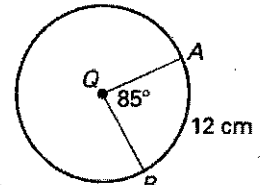


$$14.2 = \frac{132}{360} \cdot 2\pi r$$

$$14.3 = 2.3 r$$

$$6.2 = r \text{ in}$$

c) circumference



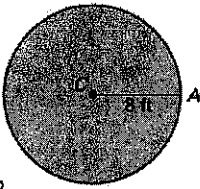
$$C = 2\pi r$$

$$12 = \frac{85}{360} (2\pi r)$$

$$50.8 = C$$

13) Find the area of the shaded region.

a)

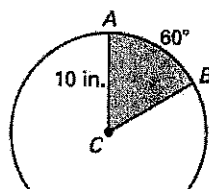


$$A = \pi r^2$$

$$= \pi (8)^2$$

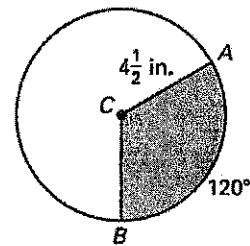
$$A = 64\pi \text{ ft}^2$$

b)



$$A = \frac{60}{360} \cdot 2\pi (10)$$

c)



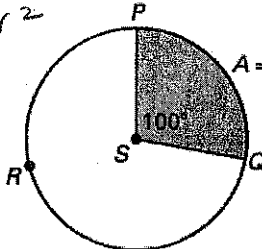
$$A = \frac{120}{360} \cdot 2\pi (4.5)$$

$$= 3.25\pi \text{ in}^2$$

14) Find the indicated measure of each circle.

a) Area of the circle

$$\pi r^2$$

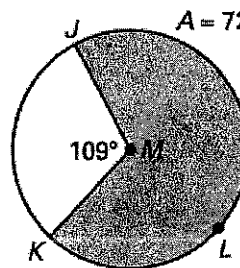


$$17.46 = \frac{100}{360} \pi r^2$$

$$62.86 = \pi r^2$$

$$\text{m}^2$$

b) diameter



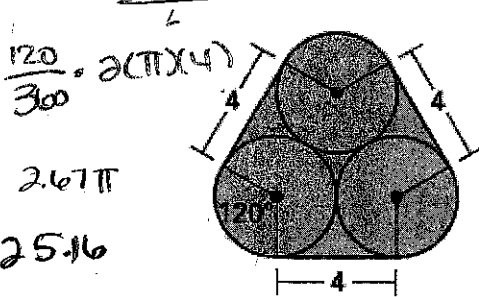
$$72.39 = \frac{109}{360} \cdot \pi r^2$$

$$33.05 = r^2$$

$$5.75 = r$$

$$11.5 = r$$

c) perimeter of the shaded region



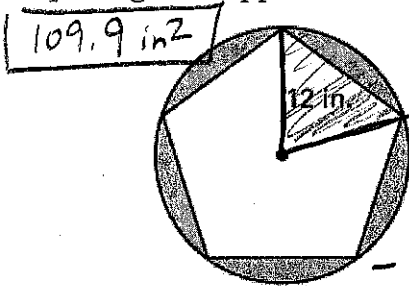
$$\frac{120}{360} \cdot 2(\pi)(4)$$

$$267\pi$$

$$25.16$$

$$37.16$$

d) Area of the shaded region (area of the pentagon is approximately 342.5 in²)



$$\frac{72}{360} \cdot \pi (12)^2$$

$$28.8\pi \text{ in}^2$$

$$452.40 \text{ in}^2$$

$$- 342.5 \text{ in}^2$$

15) Find the center and radius of a circle that has the standard equation $(x+5)^2 + (y-3)^2 = 81$