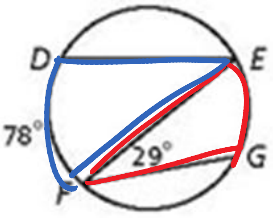
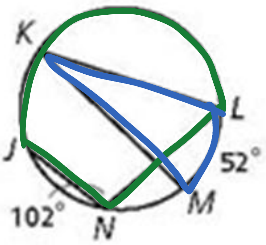
12.4 Inscribed Angles
Page 824 #2-11, 16-19, 26-27

Find each measure.

2. $m\angle DEF$
3. $m\overset{\frown}{EG}$



4. $m\overset{\frown}{JKL}$
5. $m\angle LKM$



2) $m\angle DEF = \frac{1}{2}(m\overset{\frown}{DF})$

$m\angle DEF = \frac{1}{2}(78)$

$m\angle DEF = 39°$

3) $m\angle EFG = \frac{1}{2}(m\overset{\frown}{EG})$

$2 \cdot 29° = \frac{1}{2}(m\overset{\frown}{EG}) \cdot 2$

$58° = m\overset{\frown}{EG}$

4) $m\angle JNL = \frac{1}{2}(m\overset{\frown}{JKL})$

$2 \cdot 102 = \frac{1}{2}(m\overset{\frown}{JKL}) \cdot 2$

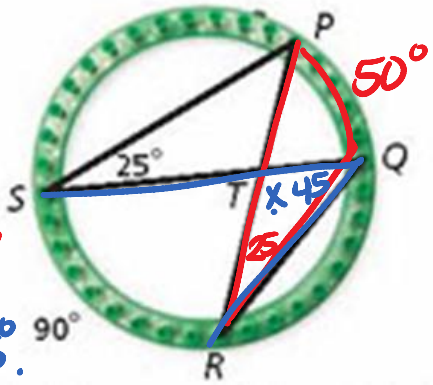
$204° = m\overset{\frown}{JKL}$

5) $m\angle LKM = \frac{1}{2}(m\overset{\frown}{LM})$

$m\angle LKM = \frac{1}{2}(52)$

$m\angle LKM = 26°$

6. **Crafts** A circular loom can be used for knitting. What is the $m\angle QTR$ in the knitting loom?



1st If $m\angle PSQ = 25°$, then $m\overset{\frown}{PQ} = 50°$

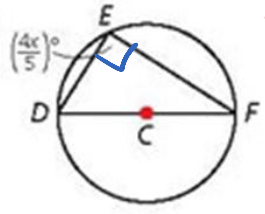
2nd If $m\overset{\frown}{PQ} = 50°$, then $m\angle PRQ = 25°$

3rd If $m\overset{\frown}{SR} = 90°$, then $m\angle SQR = 45°$.

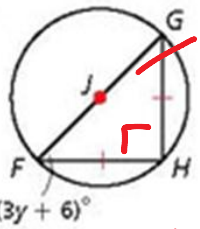
4th $x + 25 + 45 = 180$ so $x = 110°$ so $m\angle QTR = 110°$

Find each value.

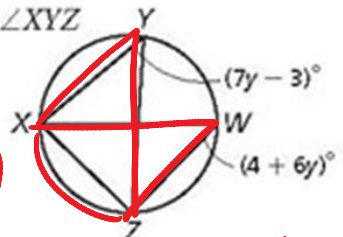
7. x



8. y



9. $m\angle XYZ$



5. $\frac{4x}{5} = 90 \cdot 5$

$4x = 450$

$x = 112.5$

$3y + 6 + 3y + 6 + 90 = 180$

$6y + 102 = 180$

$6y = 78$

$y = 13$

$7y - 3 = 4 + 6y$

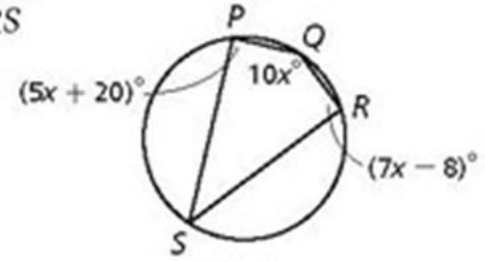
$y = 7$

$m\angle XYZ = 7(7) - 3$

$m\angle XYZ = 46°$

Multi-Step Find the angle measures of each quadrilateral.

10. *PQRS*



*Recall; opp ∠'s supp

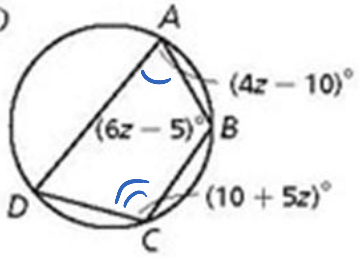
$5x+20+7x-8=180$

$12x=168$

$x=14$

$m\angle P=90°, m\angle R=90°, m\angle Q=140°, m\angle S=40°$

11. *ABCD*



$4z-10+10+5z=180$

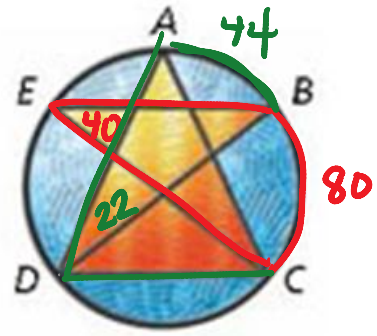
$9z=180$

$z=20$

$m\angle A=70°\ m\angle C=110°,$

$m\angle B=115°, m\angle D=65°$

16. **Crafts** An artist created a stained glass window. If $m\angle BEC = 40°$ and $m\overset{\frown}{AB} = 44°$, what is $m\angle ADC$?



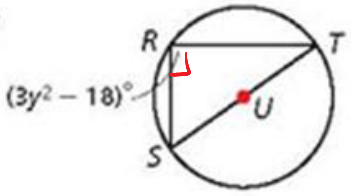
$m\angle ADC = \frac{1}{2}m\overset{\frown}{AC}$

$m\angle ADC = \frac{1}{2}(124)$

$m\angle ADC = 62°$

Algebra Find each value.

17. *y*



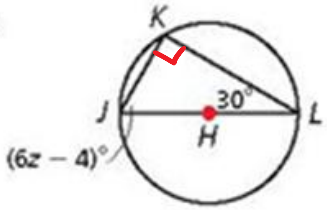
$3y^2-18=90$

$3y^2=108$

$y^2=36$

$y=\pm 6$

18. *z*

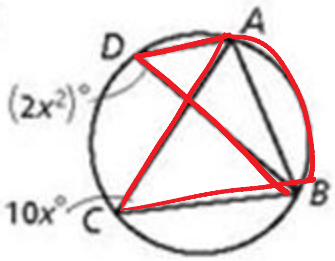


$6z-4+30+90=180$

$6z=64$

$z=\frac{32}{3}$ or $10\frac{2}{3}$ or 10.67

19. $m\overset{\frown}{AB}$



$2x^2 = 10x$

$2x^2 - 10x = 0$

$2x(x-5) = 0$

$2x = 0 \quad x-5 = 0$

$x = 0 \quad x = 5$

~~If $x=0$:~~

~~$m\angle ACB = 10(0) = 0$~~

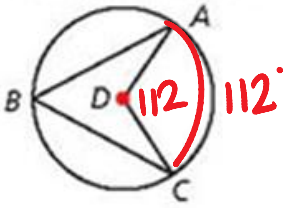
If $x=5$:

$m\angle ACB = 10(5) = 50°$

so $\overset{\frown}{AB} = 100°$

Multi-Step Find each angle measure.

26. $m\angle ABC$ if $m\angle ADC = 112°$

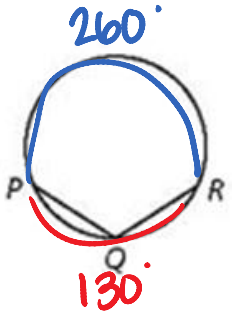


$m\angle ABC = \frac{1}{2}$ arc

$m\angle ABC = \frac{1}{2}(112)$

$m\angle ABC = 56°$

27. $m\angle PQR$ if $m\overset{\frown}{PQR} = 130°$



$m\angle PQR = \frac{1}{2}\overset{\frown}{PR}$

$m\angle PQR = \frac{1}{2}(260)$

$m\angle PQR = 130°$