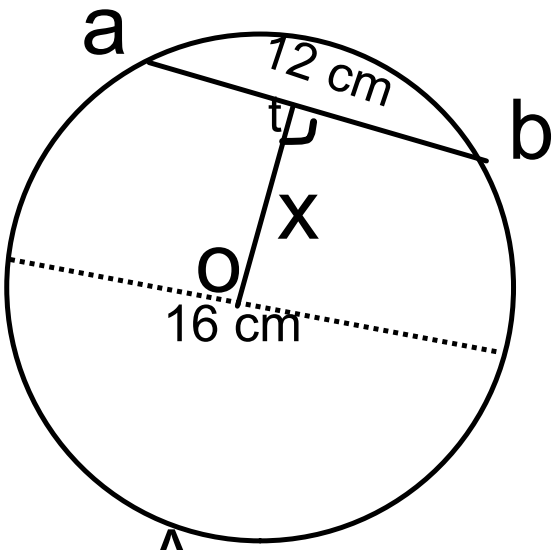
Curriculum Outcomes:

(SS1) Solve problems and justify the solution strategy using circle properties, including: the perpendicular from the centre of a circle to a chord bisects the chord; the measure of the central angle is equal to twice the measure of the inscribed angle subtended by the same arc; the inscribed angles subtended by the same arc are congruent; a tangent to a circle is perpendicular to the radius at the point of tangency.

Student Friendly:
How we can use the tangent properties to solve for unknown lengths. (Tangent properties go hand and hand with Pythagorean theorem)

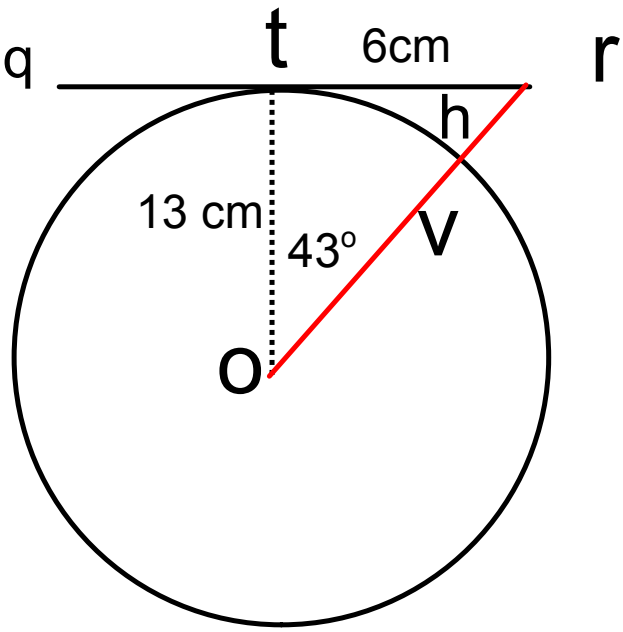
EXPLAIN YOUR ANSWERS

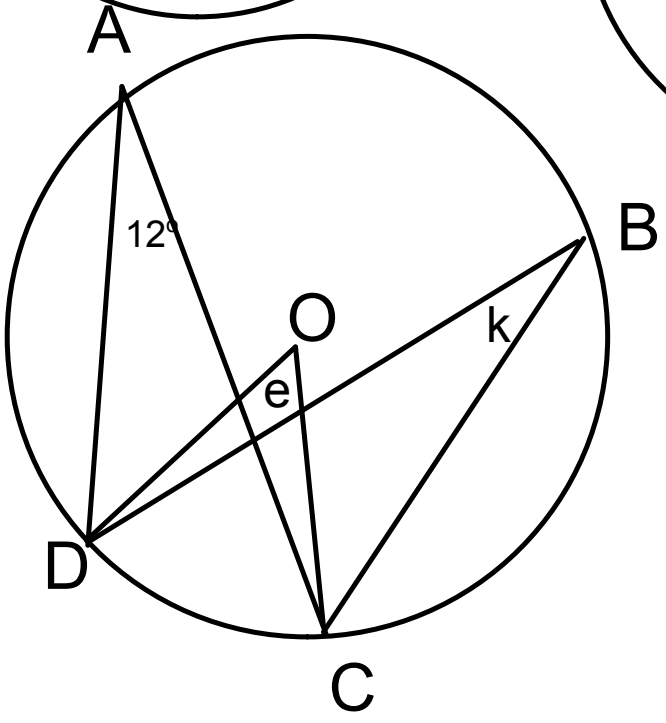
Determine the length of x



Determine the length of v

Determine h

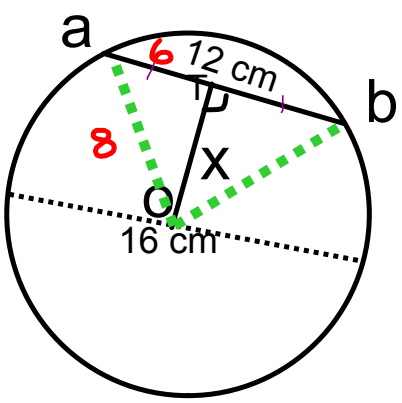


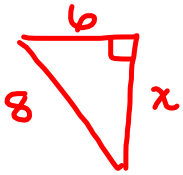


EXPLAIN YOUR ANSWERS

at = bt (chord P)

Determine the length of x





at $\Rightarrow$ leg

$a^2 = c^2 - b^2$

$a^2 = 8^2 - 6^2$

$a^2 = 64 - 36$

$\sqrt{a^2} = \sqrt{28}$

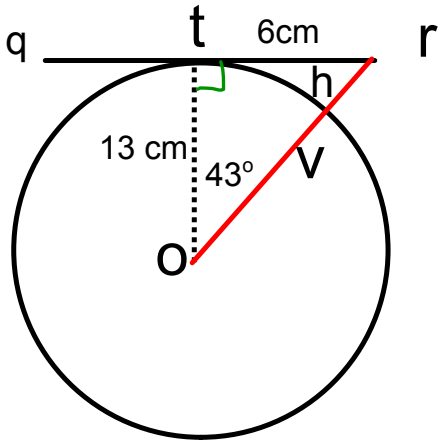
$a = 5.3$

$x = 5.3$

EXPLAIN YOUR ANSWERS

Determine the length of v

Determine h



$\angle OtR = 90°$ (tang P)

$h° = \angle tro = 47°$ (SATT)

or $\Rightarrow$ hy

$c^2 = a^2 + b^2$

$c^2 = 13^2 + 6^2$

$c^2 = 169 + 36$

$\sqrt{c^2} = \sqrt{205}$

$c = 14.3$

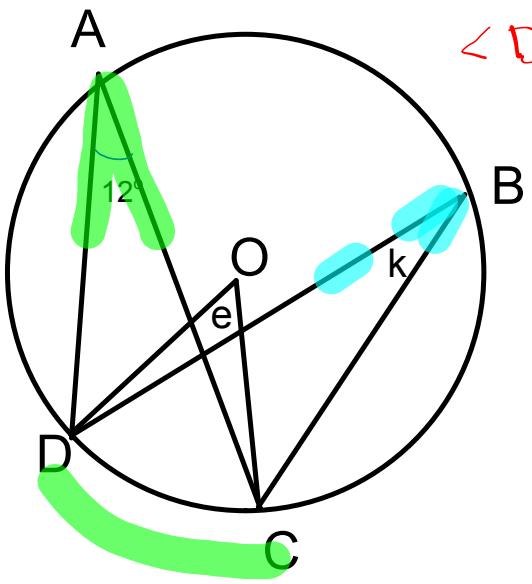
$v = 14.3$

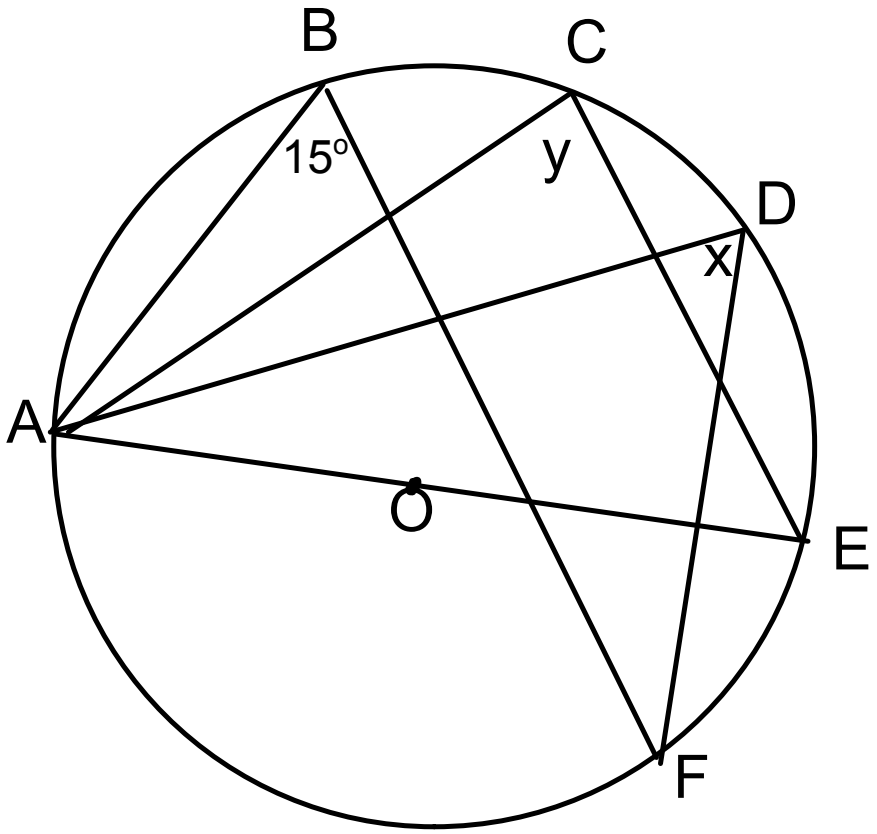
EXPLAIN YOUR ANSWERS

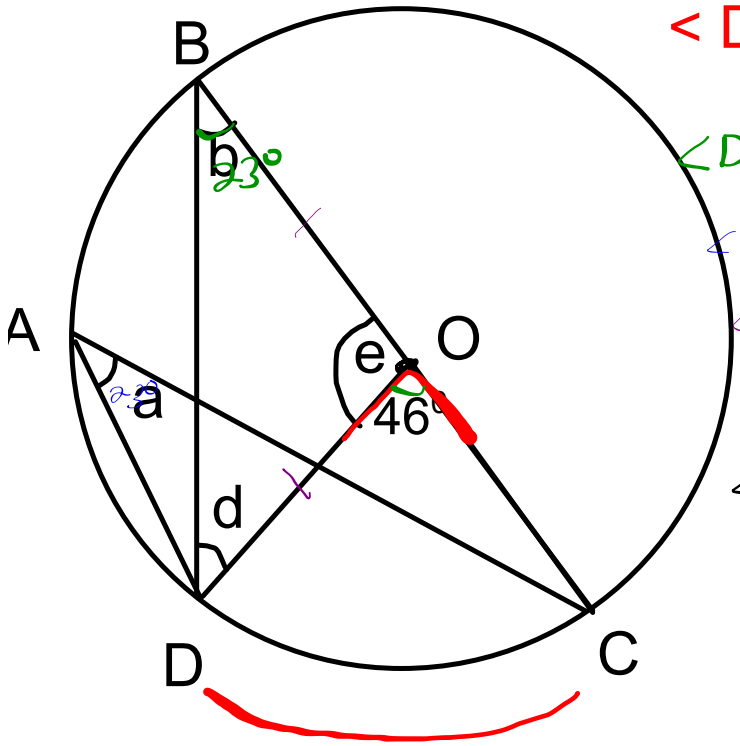
$\angle DAC = 12^\circ$ (given, ins)

$\angle DBC = 12^\circ$ (ins >, $\overset{\frown}{DC}$)

$\angle DOC = 24^\circ$ (ins/cent >, $\overset{\frown}{DC}$)




B
C
15°
y
D
x
A
O
E
F



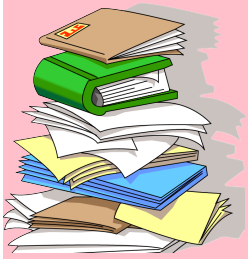
< D0C=46°(given,cent)

∠DBC = 23° (Ins/cent>,DC)

∠DAC = 23° (Ins/cent>, DC)

∠BDO = 23° (Itt)
or
(SATT)

∠DOB = 134° (SAT)
(SATT)

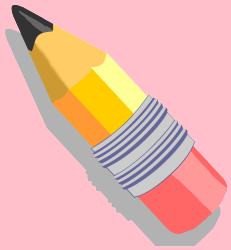


Homework:

- Worksheet - Angles in a Circle.doc

Worksheet 8.3- Angles in a circle

#7,8,9,10,



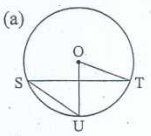
Worksheet 8.1 & 8.2- Angles in a circle

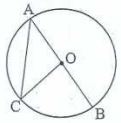
#1,3,4,9,11,12,14,15,18

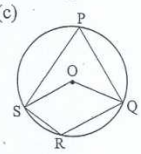
6.3 Exercise-Angles In A Circle

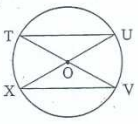
A Review the relationships with circles.

1 For each of the diagrams, name the inscribed angles and the central angles.

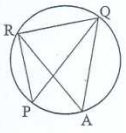
(a) 

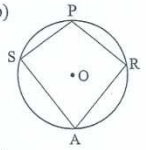
(b) 

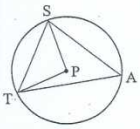
(c) 

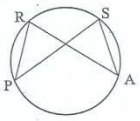
(d) 

2 How are ∠P and ∠A related in each diagram?

(a) 

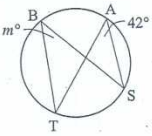
(b) 

(c) 

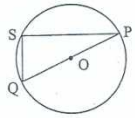
(d) 

3 Refer to each diagram.

(a) Why is ∠A = ∠B? What is the value of m?



(b) What type of line segment is PQ? What is the measure of ∠S?



4 An arc subtends each angle at the circumference. What is the measure of the corresponding central angle?

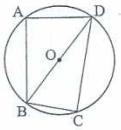
(a) 20° (b) 40° (c) 80°

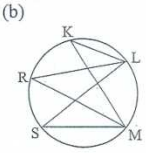
5 An arc subtends each angle at the centre of the circle. What is the measure of the corresponding inscribed angle at the circumference?

(a) 80° (b) 50° (c) 110°

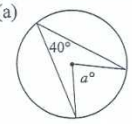
B To find the missing measures in some problems, you need to use other properties of geometric figures.

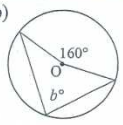
6 For each diagram, which angles are equal?

(a) 

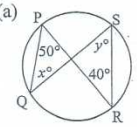
(b) 

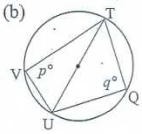
7 Which property of angles in a circle is used to find each measure? Find each missing measure. Give reasons for your answers.

(a) 

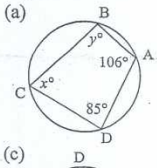
(b) 

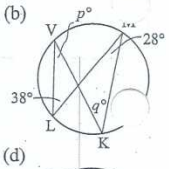
8 Which property of angles in a circle is used to find each measure? Find each missing measure. Give reasons for your answers.

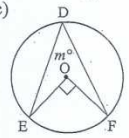
(a) 

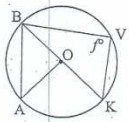
(b) 

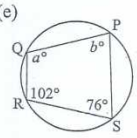
9 Find the missing measures. Do not use your protractor.

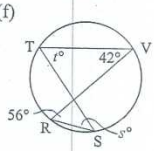
(a) 

(b) 

(c) 

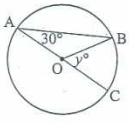
(d) 

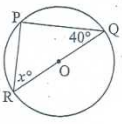
(e) 

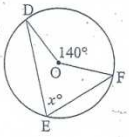
(f) 

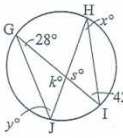
C To solve some problems, you may need to use more than one geometric fact.

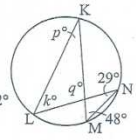
10 Find the missing measures. Give reasons for your answers.

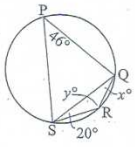
(a) 

(b) 

(c) 

(d) 

(e) 

(f) 

ANSWERS

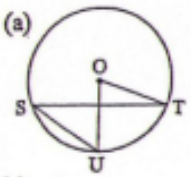
1.a) ∠TSU; ∠TOU **b)** ∠BAC; ∠BOC **c)** ∠SPQ, ∠SRQ, ∠PQR; ∠SOQ **d)** ∠VTU; ∠VXU, ∠TUX, ∠TVX; ∠XOV, ∠TOU **2.a)** ∠P = ∠A **b)** ∠P + ∠A = 180° **c)** ∠P = 2 ∠A **d)** ∠P = ∠A **3.a)** They are inscribed angles on the same chord; 42° **b)** diameter; 90° **4.a)** 40° **b)** 80° **c)** 160° **5.a)** 40° **b)** 25° **c)** 55° **6.a)** ∠BAD = ∠BCD **b)** ∠LKM = ∠LRM = ∠LSM; ∠KLS = ∠KMS; ∠RLS = ∠RMS **7.** The measure of a central angle in a circle is twice the inscribed angle drawn on the same chord. **a)** $a° = 80°$ **b)** $b° = 80°$ **8.a)** Angles drawn on the same chord have the same measure; $x° = 40°$, $y° = 50°$ **b)** Angles drawn on a diameter measure 90°; $p° = 90°$, $q° = 90°$ **9.a)** $x° = 74°$, $y° = 95°$ **b)** $p° = 28°$, $q° = 38°$ **c)** $m° = 45°$ **d)** $f° = 90°$ **e)** $a° = 104°$, $b° = 78°$ **f)** $g° = 42°$, $r° = 56°$ **10.a)** $y° = 60°$ **b)** $x° = 50°$ **c)** $x° = 70°$ **d)** $x° = 28°$, $y° = 42°$, $y° = 110°$, $k° = 110°$ **e)** $k° = 48°$, $p° = 29°$, $q° = 103°$ **f)** $x° = 26°$, $y° = 134°$

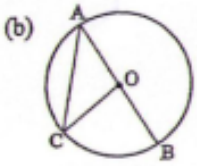
Answers

6.3 Exercise

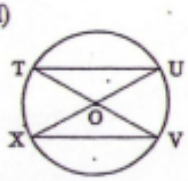
A **Review the relationships with circles.**

1 For each of the diagrams, name the inscribed angles and the central angles.

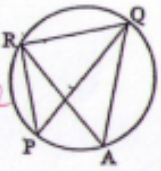
(a) 

(b) 

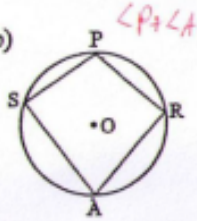
(c) 

(d) 

2 How are ∠P and ∠A related in each diagram?

(a) 

equal

(b) 

$\angle P + \angle A = 180°$

(c) 

$\angle P = 2\angle A$

(d) 

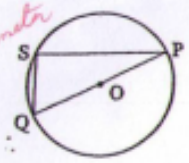
$\angle A = \angle P$

3 Refer to each diagram.

(a) Why is ∠A = ∠B? What is the value of m?

property II

(b) What type of line segment is PQ? What is the measure of ∠S?



diameter
90°

4 An arc subtends each angle at the circumference. What is the measure of the corresponding central angle?

(a) 20° (b) 40° (c) 80°

Central angle: 40° 80° 160°

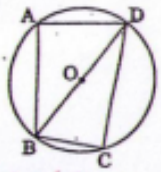
5 An arc subtends each angle at the centre of the circle. What is the measure of the corresponding inscribed angle at the circumference?

(a) 80° (b) 50° (c) 110°

inscribed angle 40° 25° 55°

B **To find the missing measures in some problems, you need to use other properties of geometric figures.**

6 For each diagram, which angles are equal?

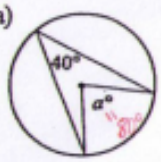
(a) 

$\angle A = \angle C$

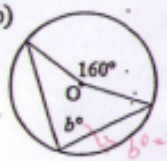
(b) 

$\angle K = \angle R = \angle S$

7 Which property of angles in a circle is used to find each measure? Find each missing measure. Give reasons for your answers.

(a) 

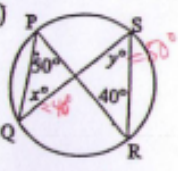
80°

(b) 

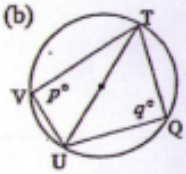
$b° = 80°$

property III

8 Which property of angles in a circle is used to find each measure? Find each missing measure. Give reasons for your answers.

(a) 

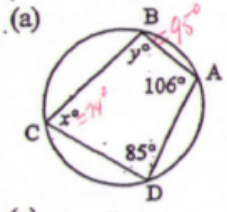
$y° = 80°$
$x° = 40°$
property II

(b) 

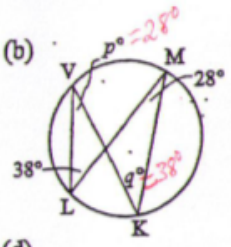
property I

9 Find the missing measures. Do not use your protractor.

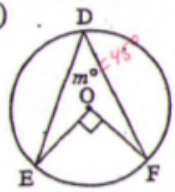
(a)



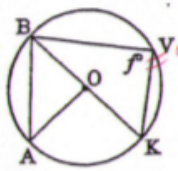
(b)



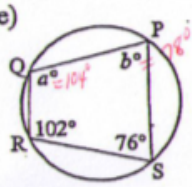
(c)



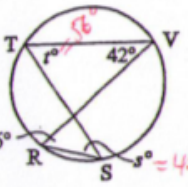
(d)



(e)



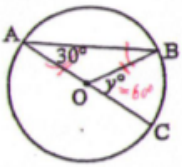
(f)



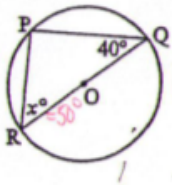
C To solve some problems, you may need to use more than one geometric fact.

10 Find the missing measures. Give reasons for your answers.

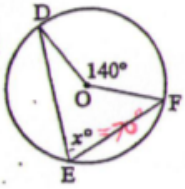
(a)



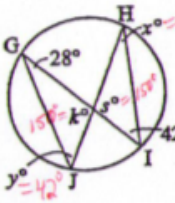
(b)



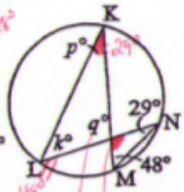
(c)



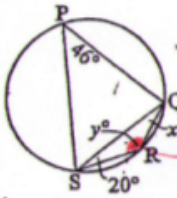
(d)



(e)



(f)



Attachments

Worksheet - Angles in a Circle.doc