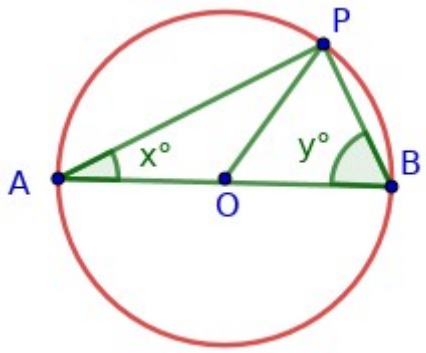
THIRUVANANTHAPURAM EDUCATIONAL DISTRICT

WS 2.1

MATHEMATICS STANDARD:10

CIRCLES

1.A) In the figure AB is the diameter of the circle with centre O. P is a point on the circle. The end points of the diameter are joined to the point P .



In $\triangle$OAP,

OA = ____ (Reason _____)

If < OAP = x° Then < OPA = _____ (Reason _____)

In $\triangle$BOP

OB = ____ (Reason _____)

If < OBP = y° Then < OPB = _____ (Reason _____)

In $\triangle$ APB ,

< A = _____

< B = _____

< P = < APO + < BPO = _____ + _____

<A + <B + <P = 180°

____ + ____ + x° + y° = 180°

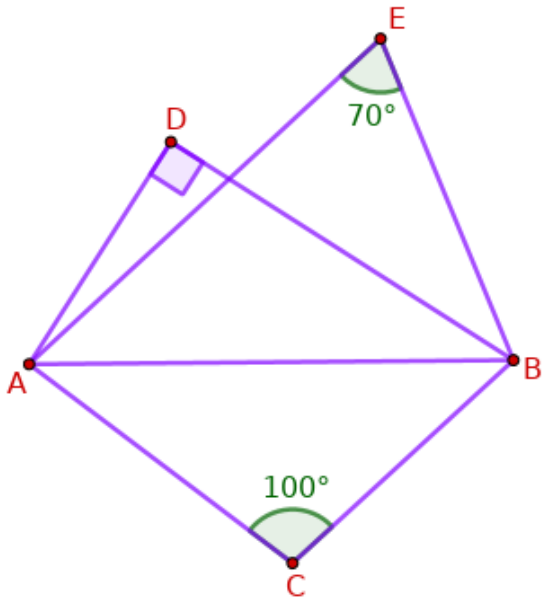
2(____ + ____) = 180°

$x^\circ + y^\circ = \frac{180}{2} =$ ____

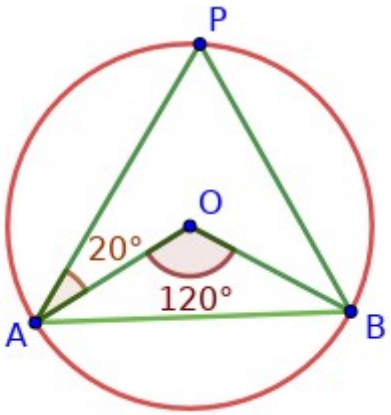
B) In the table below fill in the blanks using the above figure

< AOP	< BOP = 180º - < AOP	$x^\circ = \frac{180 - < AOP}{2}$	$y^\circ = \frac{180 - < BOP}{2}$	<P = x° + y°
70	110	$\frac{180-70}{2} = 55^\circ$	$\frac{180-110}{2} = 35^\circ$	55 + 35 = 90º
	80			
		30		
			45	
50				

2. A circle is drawn with AB as diameter. Find the position of the points C, D, E related to the circle (inside, outside or on the circle)



3. In the figure O is the centre of the circle and A, B, P are points on the circle < AOB = 120º, < OAP = 20º. Find all angles of△ ABP



Given < AOB = 120º

Therefore < p = _____ = _____

Join OP . Consider △AOP

OA = _____ (Reason)

△AOP is _____

Given < OAP = 20º

Therefore < OPA = _____

< AOP = 180 - (___+____) = _____

Therefore < B = _____ =____

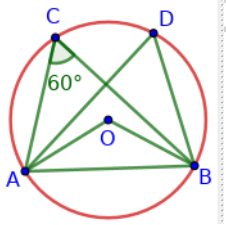
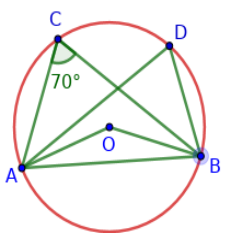
Consider △BOP

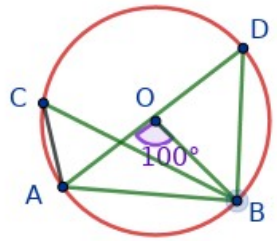
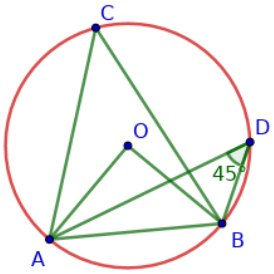
< BOP = 360 – (___+ ___)

= _____

Therefore < A = _____ = _____

4. O is the centre of the circle and A, B , C, D are points on it. Find the measures of the angles below.

Circle	< ACB	< ADB	< AOB	< OAB = < OBA
	60º	60º	2×60º = 120º	$\frac{180-120}{2}$ = 30º
	70			

			100	
		45		

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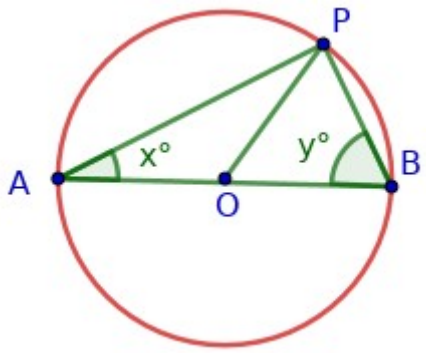
WS 2.1

MATHEMATICS STANDARD:10

CIRCLES (ANSWERS)

1.A) In the figure AB is the diameter of the circle with centre O. P is a point on the circle. The end points of the diameter are joined to the point P .



In △OAP,

OA = OP (Radius)

If < OAP = x° Then < OPA = x° (Isosceles triangle)

In △BOP

OB = OP (Radius)

If < OBP = y° Then < OPB = y° (Isosceles triangle)

In △ APB ,

< A = x°

< B = y°

< P = < APO + < BPO = x° + y°

<A + <B + <P = 180°

x° + y° + x° + y° = 180°

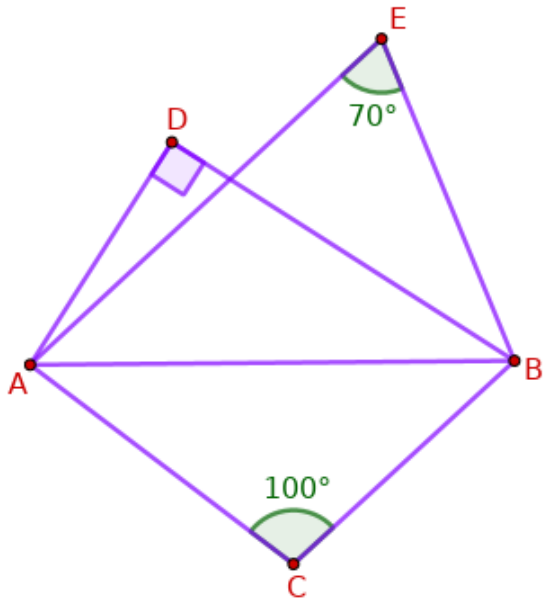
2(x° + y°) = 180°

x° + y° = $\frac{180}{2}$ = 90°

B) In the table below fill in the blanks using the above figure

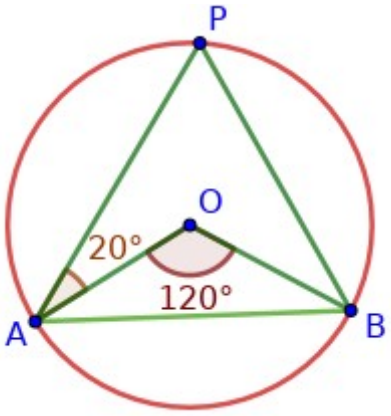
< AOP	< BOP = 180º - < AOP	$x^\circ = \frac{180 - < AOP}{2}$	$y^\circ = \frac{180 - < BOP}{2}$	<P = x° + y°
70º	110º	$\frac{180-70}{2} = 55^\circ$	$\frac{180-110}{2} = 35^\circ$	55º + 35º = 90º
100º	80º	$\frac{180-100}{2} = 40^\circ$	$\frac{180-80}{2} = 50^\circ$	40º + 50º = 90º
120º	60º	30º	60º	30º +60º = 90º
90º	90º	45º	45º	45º +45º = 90º
50º	130º	65º	25º	65º + 25º= 90º

2. A circle is drawn with AB as diameter. Find the position of the points C, D, E related to the circle (inside, outside or on the circle)



< D = 90º , The point D is on the circle.
<E =70º < 90º , The point E is outside the circle.
<C= 100º > 90, The point C is inside the circle.

3. In the figure O is the centre of the circle and A, B, P are points on the circle < AOB = 120º, < OAP = 20º. Find all angles of △ ABP.



Given < AOB = 120º

Therefore < P= $\frac{120}{2}$ = 60º

Join OP . Consider △ AOP

OA = OB (Radius)

△AOP is isosceles triangle

Given < OAP = 20º

Therefore < OPA = 20º

< AOP = 180º - (20º + 20º) = 180º – 40º = 140º

Therefore < B = $\frac{140}{2}$ = 70º

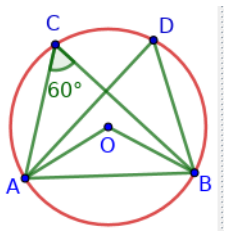
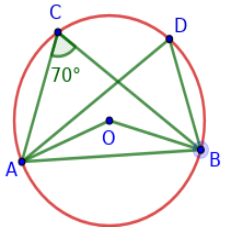
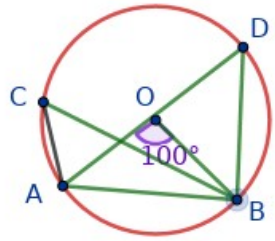
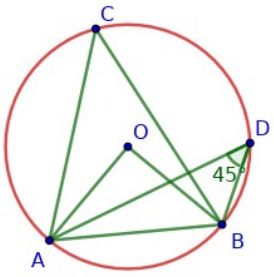
Consider △BOP

< BOP = 360º – (120º + 140º) = 360º – 260º

= 100º

Therefore < A = $\frac{100}{2}$ = 50º

4. O is the centre of the circle and A, B , C, D are points on it. Find the measures of the angles below.

Circle	< ACB	< ADB	< AOB	< OAB = < OBA
	60°	60°	2×60° = 120°	$\frac{180-120}{2}$ = 30°
	70	70°	2×70° = 140°	$\frac{180-140}{2}$ = 20°
	50°	50°	100	$\frac{180-100}{2}$ = 40°
	45°	45	2×45° = 90°	$\frac{180-90}{2}$ = 45°