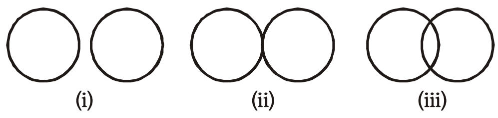
Ex - 10.3

Q1. Draw different pairs of circles. How many points does each pair have in common ? What is the maximum number of common points ?

Sol. Let us draw different pairs of circles as shown below :



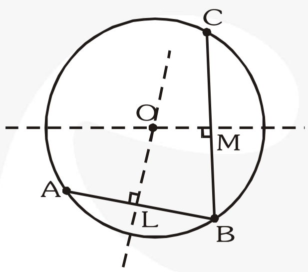
We have

In figure	Maximum number of common points
(i)	nil (zero)
(ii)	one
(iii)	two

Thus, two circles have at the most two points in common.

Q2. Suppose you are given a circle. Give the construction to find its centre.

Sol. We have three points A, B and C on the circle. Join AB and BC. Draw the right bisectors intersect at O. Then, O is the centre of the circle. Note that we can prove OA = OB and OB = OC, i.e., OA = OB = OC is equal to the radius of the circle.



Q3. If two circles intersect at two points, prove that their centres lie on the perpendicular bisector of the common chord.

Sol. Prove that

$\Delta C_1AC_1 = \Delta C_1BC_2$

$\Rightarrow \angle AC_1C_2 = \angle BC_1C_2$ ...(1)

and $\angle AC_2C_1 = \angle BC_2C_1$ . ...(2)

Now, in $\Delta C_1AM = \Delta C_1BM$ ...(2)

$C_1A = C_1B$ (Each = radius)

$C_1M = C_1M$ (Common)

$\angle AC_1M = \angle BC_1M$ (From 1)

$\Rightarrow \Delta C_1AM = \Delta C_1BM$ (SAS congruence)

Then by CPCT, we have

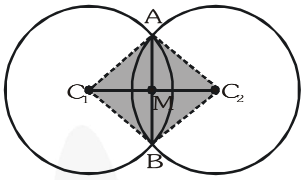
$AM = BM$

and $\angle C_1MA = \angle C_1MB$

Also, $\angle C_1MA + \angle C_1MB = 180°$

$\Rightarrow$ $AM = BM$

and $\angle C_1MA = \angle C_1MB = 90°$



$\Rightarrow$ C_1M is right bisector of chord AB and similarly, C_2M is right bisector of chord AB.

$\Rightarrow$ C_1M is right bisector of chord AB and similarly, C_2M is right bisector of chord AB.