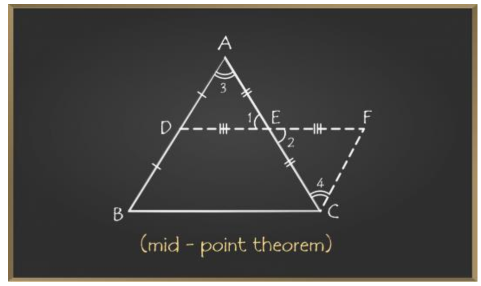
BCM SCHOOL, BASANT AVENUE, DUGRI, LUDHIANA. OCTOBER ASSIGNEMENT- ANSWER KEY CLASS- IX (MATHEMATICS) TOPICS: QUADRILATERALS & CIRCLES.	
SECTION –A (MULTIPLE CHOICE QUESTIONS)	
1.	d)Opposite angles are bisected by the diagonals
2.	c) 50°
3.	d) 45°
SECTION B(2 MARKS QUESTIONS)	
4.	50°
5.	175°
SECTION – C (3 MARKS QUESTIONS)	
6.	∠DAB = 2x ∠DCB = 2y We know that opposite angles of a parallelogram are equal. So, ∠A = ∠C 2x = 2y x = y As DC || AB, XC || AY ∠XCY = ∠CYB [Alternate angles] ∠CYB = x ∠XAY = x As ∠XAY and ∠CYB are corresponding angles AX || CY Therefore, AX is parallel to CY.
7.	∴ ∠BOC = ∠BCO | Angles opposite to equal sides of a triangle are equal ⇒ ∠BOC = y ...(1) In ΔBOC, ∠OBA = ∠BOC + ∠BCO | ∵ An exterior angle of a triangle is equal to the sum of its two interior opposite angles = y + y = 2y ...(2) In ΔOAB, ∵ OA = OB | Radii of the same circle ⇒ ∠OAB = ∠OBA | Angles opposite to equal sides of a triangle are equal ⇒ ∠OAB = 2y ...(3) Now, ∵ DOC is a straight line ∴ ∠AOD + ∠AOB + ∠BOC = 180° ⇒ x + {180° - (∠OAB + ∠OBA)} + y = 180° | Angle sum property of a triangle ⇒ x + 180° - (2y + 2y) + y = 180° ⇒ x = 3y

SECTION – D (5 MARKS QUESTIONS)

8.

△AED ≅ △CEF by SAS criteria

∠3 =∠4 (c.p.c.t)



But these are alternate interior angles.

So, AB ∥ CF

AD = CF (c.p.c.t)

But AD = DB (D is the mid-point)

Therefore, BD = CF

In BCFD

BD∥ CF (as AB ∥ CF)

BD = CF

BCFD is a parallelogram as one pair of opposite sides is parallel and equal.

Therefore, DF∥ BC (opposite sides of parallelogram)

DF = BC (opposite sides of parallelogram)

As DF∥ BC, DE∥ BC and DF = BC

But DE = EF

So, DF = 2(DE)

2(DE) = BC

DE = 1/2(BC)

9.

Proof: ∠XPY = 2∠XZY ...(1)

| The angle subtended by an arc of a circle at the centre is twice the angle subtended by it at any point on the remaining part of the circle

∠YPZ = 2 ∠YXZ ...(2)

| The angle subtended by an arc of a circle at the centre is twice the angle subtended by it at any point on the remaining part of the circle

Adding (1) and (2), we get,

∠XPY + ∠YPZ = 2 ∠XZY + 2 ∠YXZ

⇒ ∠XPZ = 2 (∠XZY + ∠YXZ)

⇒ 2 (∠XZY + ∠YXZ) = ∠XPZ.

SECTION – E (CASE STUDY)

10.

1. In $\triangle \mathrm{BIA}$ and $\triangle \mathrm{BIC}$,

$$\begin{aligned} \angle \mathrm{ABI} &= \angle \mathrm{CBI}[\mathrm{BD \text{ is a bisector of angle } B}] \\ \mathrm{BI} &= \mathrm{BI}[\mathrm{COmmon}] \\ \angle \mathrm{BIA} &= \angle \mathrm{BIC}[\text{ Each } 90] \\ \therefore \triangle \mathrm{BIA} &\cong \Delta \mathrm{BIC}[\text{SAS congruence rule }] \\ \therefore \mathrm{Al} &= \mathrm{Cl}[\mathrm{CPCT}] \end{aligned}$$

It means I is the mid-point of AC. Hence proved

2. Here, $HG = \frac{1}{2} AC$ [By mid-point theorem] and
$EF = \frac{1}{2} \mathrm{AC}$[By mid-point theorem]
$\mathrm{GH} \| \mathrm{EF}$ and $\mathrm{HG} = \mathrm{EF}$
If in a quadrilateral opposite side is parallel and equal then the quadrilateral is a parallelogram. So, quadrilateral EFGH is a parallelogram.

3. It is false, because every parallelogram is not a rectangle.