CHAPTER 7: TRIANGLES

EXERCISE 7.3

1. **ABC** is an isosceles triangle with **AB=AC** and **BD** and **CE** are its two medians. Show that **BD=CE**.
2. In Fig.7.4, $\vec{\mathbf{D}}$ and $\vec{\mathbf{E}}$ are the points on side **BC** of a $\triangle$**ABC** such that **BD=CE** and **AD=AE**. Show that $\triangle$**ABD** $\cong$ $\triangle$**ACE**.

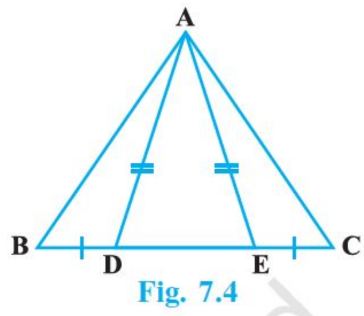

Figure 1

3. **CDE** is an equilateral triangle formed on a side **CD** of a square **ABCD** (Fig.7.5). Show that $\triangle$**ADE** $\cong$ $\triangle$**BCE**.

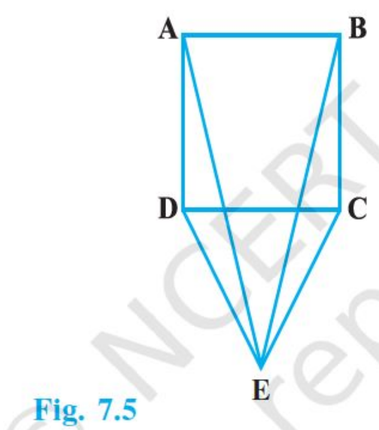

Figure 2

4. In Fig.7.6, **BA** $\perp$ **AC**, **DE** $\perp$ **DF** such that **BA=DE** and **BF=EC**. Show that $\triangle$**ABC** $\cong$ $\triangle$**DEF**.

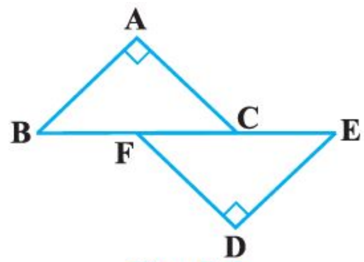

Figure 3

5. $\vec{\mathbf{Q}}$ is a point on the side **SR** of $\triangle$**PSR** such that **PQ=PR**. Prove that **PS>PQ**.

6. $\vec{\mathbf{S}}$ is any point on side **QR** of a $\triangle$**PQR**. Show that **PQ+QR+RP>2PS**.

7. $\vec{\mathbf{D}}$ is any point on side **AC** of a $\triangle$**ABC** with **AB=AC**. Show that **CD<BD**.

8. In Fig.7.7, **l**$\|$**m** an $\vec{\mathbf{M}}$ is the mid-point of a line segment **AB**. Show that $\vec{\mathbf{M}}$ is also the mid-point of any line segment **CD**, having its end points on **l** and **m**, respectively.

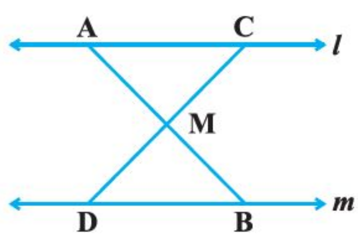

Figure 4

9. Bisectors of the $\angle$**B** and $\angle$**C** of an isosceles triangle with **AB=AC** intersect each other at $\vec{\mathbf{O}}$. **BO** is produced to a point **M**. Prove that $\angle$**MOC** = $\angle$**ABC**.

10. Bisectors of the $\angle$**B** and $\angle$**C** of an isosceles triangle **ABC** with **AB=AC** intersect each other at $\vec{\mathbf{O}}$. Show that the external angle adjacent to $\angle$**ABC** is equal to $\angle$**BOC**.

11. In Fig.7.8, **AD** is the bisector of $\angle$**BAC**. Prove that **AB**>**BD**.

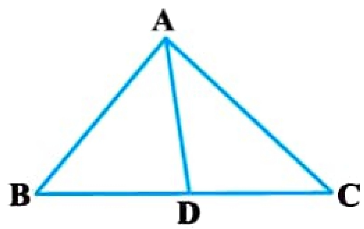

Fig. 7.8

Figure 5