

## CHAPTER 7: TRIANGLES

### EXERCISE 7.3

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

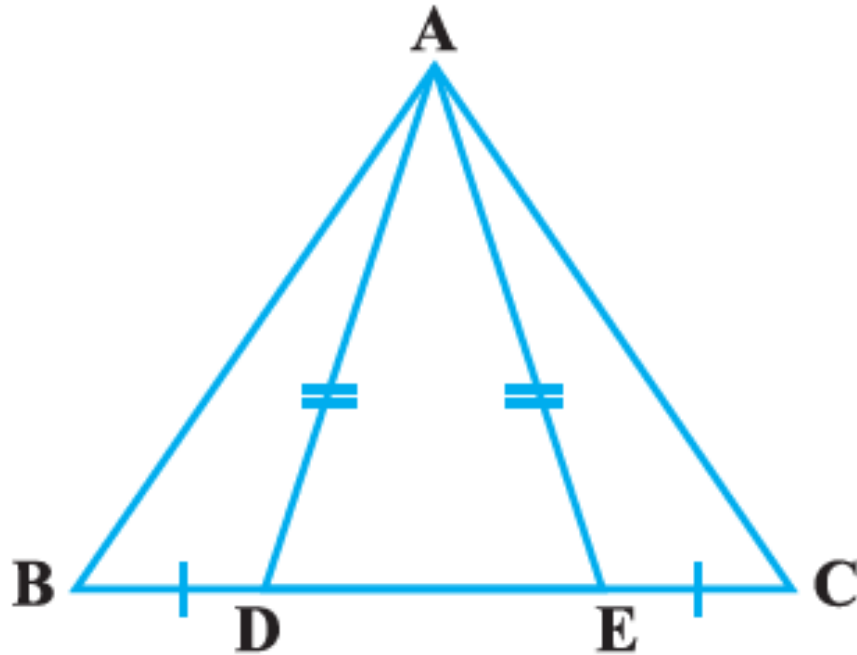


Figure 1:

3.  $CDE$  is an equilateral triangle formed on a side  $CD$  of a square  $ABCD$  (2). Show that  $\triangle ADE \cong \triangle BCE$ .
4. In 3,  $BA \perp AC$ ,  $DE \perp DF$  such that  $BA = DE$  and  $BF = EC$ . Show that  $\triangle ABC \cong \triangle DEF$ .
5.  $Q$  is a point on the side  $SR$  of  $\triangle PSR$  such that  $PQ = PR$ . Prove that  $PS > PQ$ .
6.  $S$  is any point on side  $QR$  of a  $\triangle PQR$ . Show that  $PQ + QR + RP > 2PS$ .

7. **D** is any point on side **AC** of a  $\triangle ABC$  with **AB** = **AC**. Show that **CD** < **BD**.
8. In 4, **l** || **m** and **M** is the mid-point of a line segment **AB**. Show that **M** is also the mid-point of any line segment **CD**, having its end points on **l** and **m**, respectively.
9. Bisectors of the  $\angle B$  and  $\angle C$  of an isosceles triangle with **AB** = **AC** intersect each other at **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 **O**. Show that the external angle adjacent to  $\angle ABC$  is equal to  $\angle BOC$ .

11. In **5**, **AD** is the bisector of  $\angle \mathbf{BAC}$ . Prove that  $\mathbf{AB} > \mathbf{BD}$ .

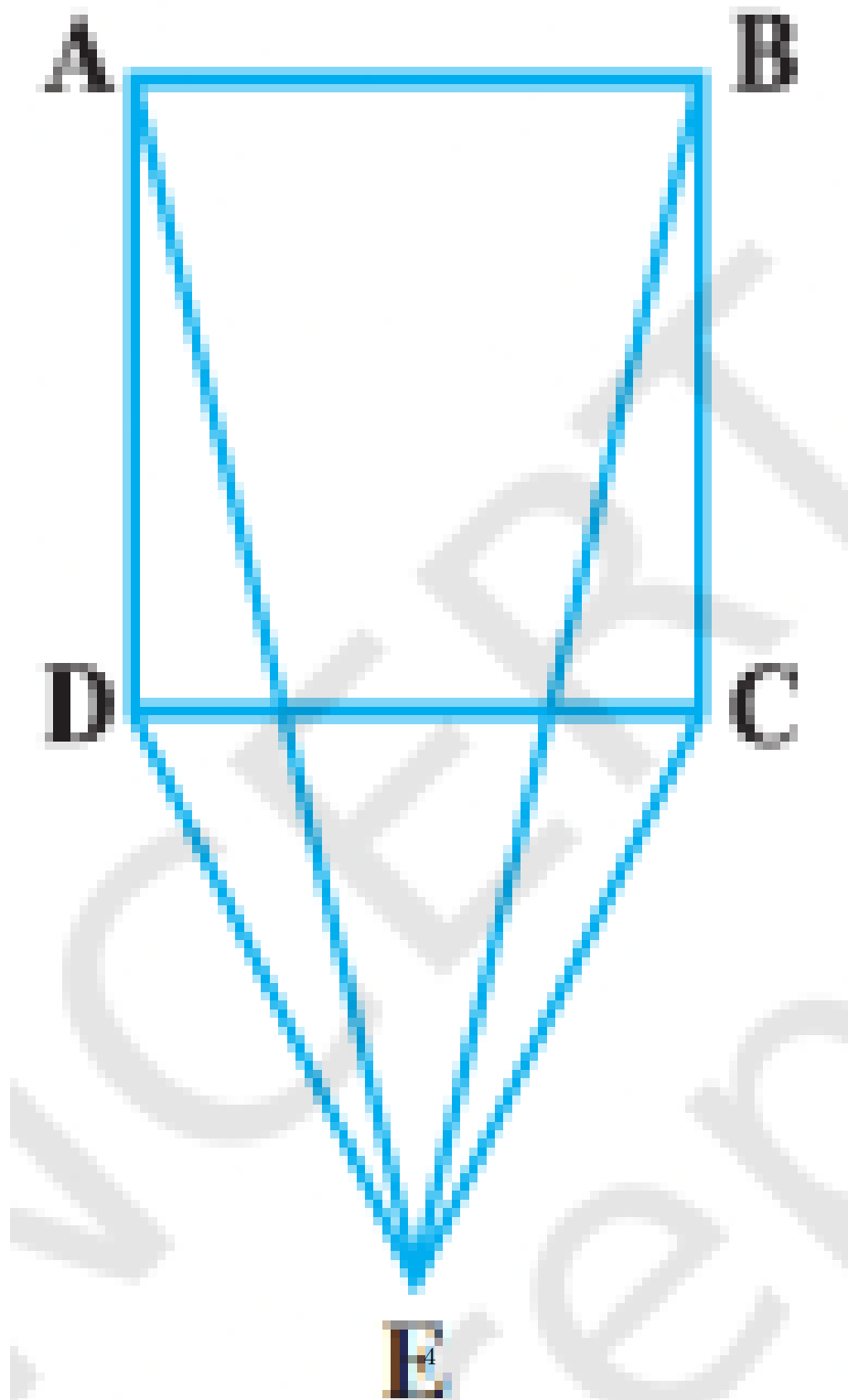


Figure 2:

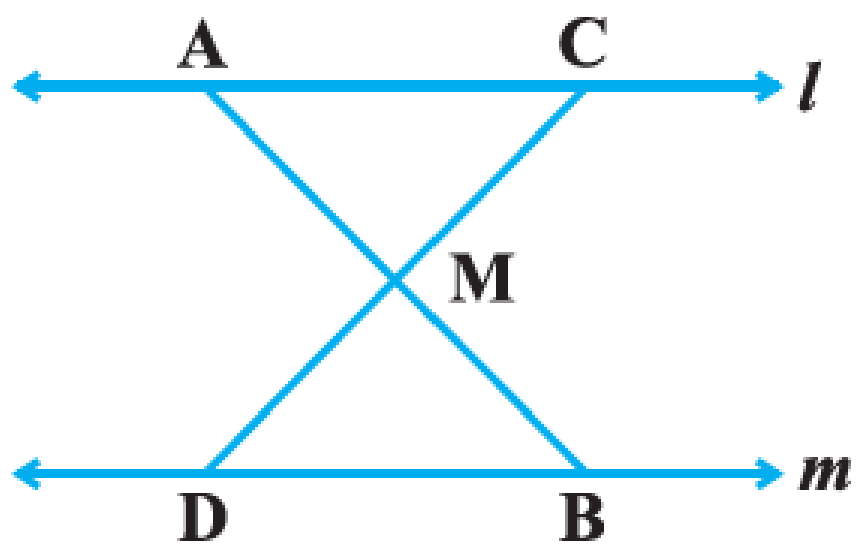


Figure 3:

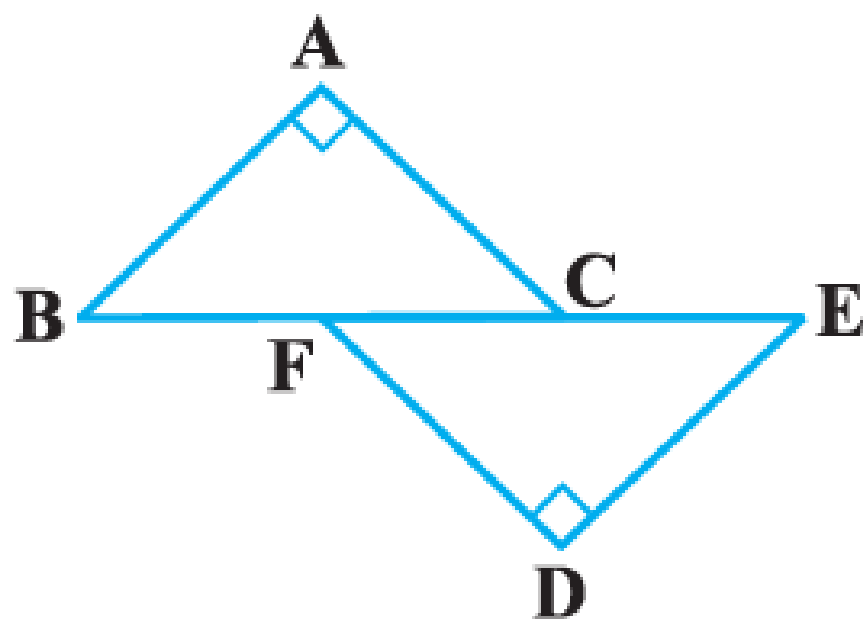


Figure 4:

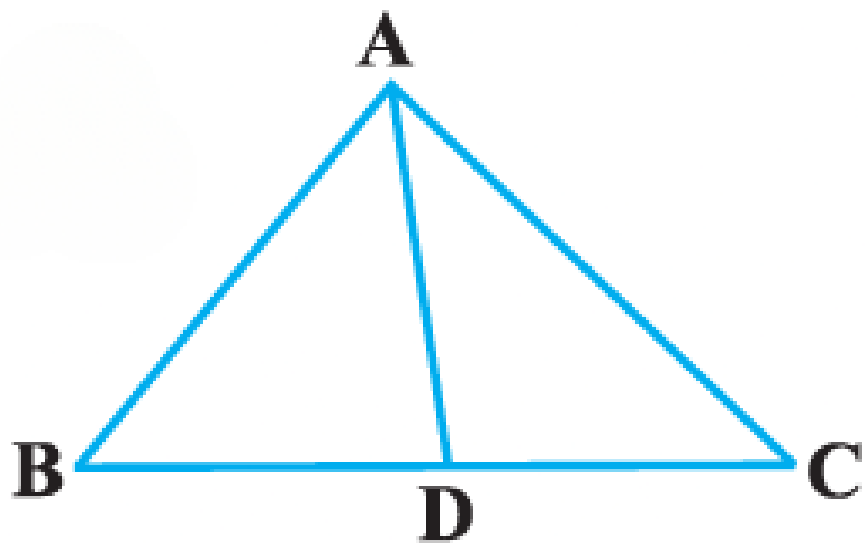


Figure 5: