

Mathematics

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(Chapter – 5) (Introduction to Euclid’s Geometry)(Exemplar Problems)
(Class – IX)

Exercise 5.3

Solve each of the following question using appropriate Euclid’s axiom:

Question 11:

In the Fig. 5.11, if $OX = \frac{1}{2} XY$, $PX = \frac{1}{2} XZ$ and $OX = PX$, show that $XY = XZ$.

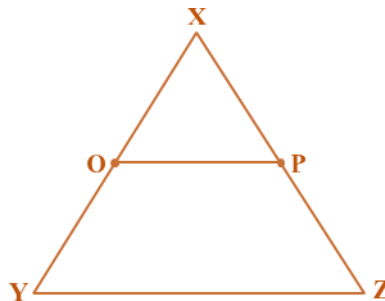


Fig. 5.11

Answer 11:

Given that:

$$\begin{aligned} OX &= \frac{1}{2} XY \\ \Rightarrow 2OX &= XY \end{aligned} \quad \dots \text{(i)}$$

$$\begin{aligned} \text{and} \quad PX &= \frac{1}{2} XZ \\ \Rightarrow 2PX &= XZ \end{aligned} \quad \dots \text{(ii)}$$

$$\text{and} \quad OX = PX \quad \dots \text{(iii)}$$

According to Euclid’s axioms, things which are double of the same things are equal to one another.

On multiplying equation (iii) by 2, we get

$$\begin{aligned} \Rightarrow 2OX &= 2PX \\ XY &= XZ \end{aligned} \quad \text{[From (i) and (ii)]}$$

