Board – NCERT	Class – 6th	Topic – Understanding Elementary Shapes Ex:5.1

Exercise – 5.1

Q1. What is the disadvantage in comparing a line segment by meter observation?

Sol. Comparing the lengths of two-line segments simply by 'observation' may not be accurate. So we use a divider to compare the length of the given line segments.

Q2. Why is it better to use a divider than a ruler, while measuring the length of a line segment?

Sol. Measuring the length of a line segment using a ruler, we may have the following errors:

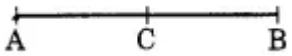
(i) Thickness of the ruler

(ii) Angular viewing

These errors can be eradicated by using a divider. So, it is better to use a divider than a ruler, while measuring the length of a line segment.

Q3. Draw any line segment, say $\overline{AB}$. Take any point C lying in between A and B. Measure the lengths of AB, BC, and AC. Is AB = AC + CB?

Sol. Let us consider



A, B and C such that C lies between A and B and AB = 7 cm.

AC = 3 cm, CB = 4 cm.

∴ AC + CB = 3 cm + 4 cm = 7 cm.

But, AB = 7 cm.

So, AB = AC + CB.

Q4. If A, B, C are three points on a line such that AB = 5 cm, BC = 3 cm, and AC = 8 cm, which one of them lies between the other two?

Sol. We have, AB = 5 cm; BC = 3 cm

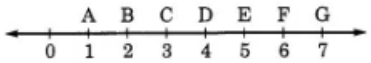
∴ AB + BC = 5 + 3 = 8 cm

But, AC = 8 cm

Hence, B lies between A and C.

Q5. Verify, whether D is the midpoint of $\overline{AG}$

Sol.



From the given figure, we have

AG = 7 cm – 1 cm = 6 cm

AD = 4 cm – 1 cm = 3 cm

and DG = 7 cm – 4 cm = 3 cm

∴ AG = AD + DG.

Hence, D is the midpoint of $\overline{AG}$

Q6. If B is the midpoint of $\overline{AC}$ and C is the midpoint of $\overline{BD}$, where A, B, C, D lie on a straight line, explain why AB = CD?

Sol. We have

B is the midpoint of $\overline{AC}$.

∴ AB = BC ...(i)

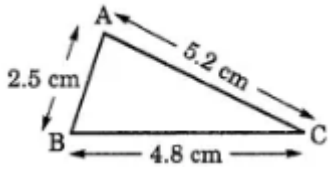
C is the mid-point of $\overline{BD}$.

BC = CD

From Eq.(i) and (ii), We have

AB = CD

Q7. Draw five triangles and measure their sides. Check in each case, if the sum of the length of any two sides is always less than the third side.



Sol. Case I. In ΔABC

Let AB = 2.5 cm

BC = 4.8 cm

and AC = 5.2 cm

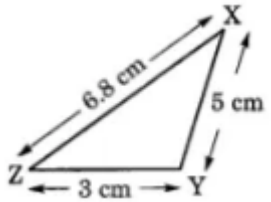
AB + BC = 2.5 cm + 4.8 cm

= 7.3 cm

Since, 7.3 > 5.2

So, AB + BC > AC

Hence, sum of any two sides of a triangle is greater than the third side.



Case II. In ΔPQR,

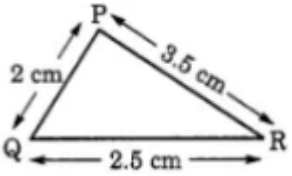
Let PQ = 2 cm

QR = 2.5 cm

and PR = 3.5 cm

PQ + QR = 2 cm + 2.5 cm = 4.5 cm

Since, 4.5 > 3.5



So, PQ + QR > PR

Hence, sum of any two sides of a triangle is greater than the third side.

Case III. In ΔXYZ

Let XY = 5 cm

YZ = 3 cm

and ZX = 6.8 cm

XY + YZ = 5 cm + 3 cm

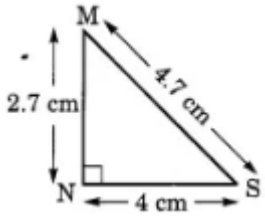
= 8 cm

Since, 8 > 6.8

So, XY + YZ > ZX

Hence, the sum of any two sides of a triangle is greater than the third side.

Case IV. In ΔMNS,



Let MN = 2.7 cm

NS = 4 cm

MS = 4.7 cm

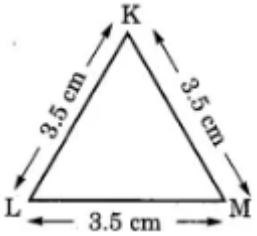
and MN + NS = 2.7 cm + 4 cm = 6.7 cm

Since, 6.7 >4.7

So, MN + NS > MS

Hence, the sum of any two sides of a triangle is greater than the third side.

Case V. In ΔKLM,



Let KL = 3.5 cm

LM = 3.5 cm

KM = 3.5 cm

and KL + LM = 3.5 cm + 3.5 cm = 7 cm

7 cm > 3.5 cm

So, KL + LM > KM

Hence, the sum of any two sides of a triangle is greater than the third side.

Hence, we conclude that the sum of any two sides of a triangle is never less than the third side.