

MATHEMATICS

Class-7th

Chapter-6

**The Triangle and
its properties**

**Solution of
Exercise-6.4**

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Mathematics

Class - VII Ch - 06. Triangle and its properties..

Ex - 6.4

Q.4. ABCD is a quadrilateral. Is $AB + BC + CD + DA > AC + BD$?

Sol. - yes;

$$\underline{AB + BC + CD + DA > AC + BD}$$

Proof :- In $\triangle ABC$,

$$AB + BC > AC \quad \text{--- (i)}$$

Because sum of lengths of any two side of a triangle is always greater than the third side.

In $\triangle ADC$,

$$CD + DA > AC \quad \text{--- (ii)}$$

(Using same reason as above)

In $\triangle ABD$,

$$AB + DA > BD \quad \text{--- (iii)}$$

In $\triangle BCD$,

$$BC + CD > BD \quad \text{--- (iv)}$$

Adding (i), (ii), (iii) & (iv) we get,

$$(AB + BC) + (CD + DA) + (AB + DA) + (BC + CD) > AC + AC + BD + BD.$$

$$\Rightarrow (AB + AB) + (BC + BC) + (CD + CD) +$$

$$(DA + DA) > \underline{2AC + 2BD}$$

$$\Rightarrow \underline{2AB + 2BC + 2CD + 2DA} > \underline{2AC + 2BD}$$

$$\Rightarrow \underline{2(AB + BC + CD + DA)} > \underline{2(AC + BD)}$$

$$\Rightarrow \underline{AB + BC + CD + DA} > \underline{AC + BD}$$

→ Proved

Q.6. Sol.

If x can be the length of the third side,
we should have:

$$\begin{array}{l|l|l} \underline{12 + 15 > x} & \underline{x + 12 > 15} & \underline{x + 15 > 12} \\ \Rightarrow \underline{27 > x} & \Rightarrow \underline{x > 3} & \Rightarrow \underline{x > -3} \\ \Rightarrow \underline{x < 27} & & \end{array}$$

The length can't be negative. Therefore
we reject it.

Thus the numbers between 3 and 27,
satisfy these.

Hence, The length of the third side
could be any length
between 3 cm and 27 cm.

The End.