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.

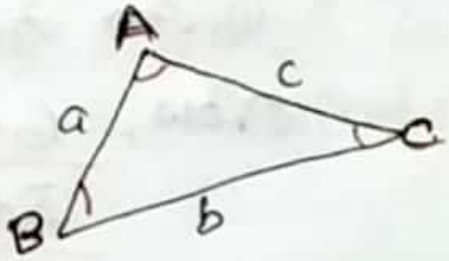
Property:- Sum of the length of any two sides of a triangle is greater than the third side.

As. If a, b and c are three sides of a triangle, then:

$a + b > c$

$b + c > a$

$a + c > b$



Q. 1 Possibility to have a triangle with the following sides.

(i) 2 cm, 3 cm, 5 cm

Sol. Given sides are 2 cm, 3 cm & 5 cm.

Now, $2 + 3 = 5$ — (i)

$3 + 5 > 2$

$5 + 2 > 3$

∴ Of eq. (i), It is not possible.

(ii) 3 cm, 6 cm, 7 cm. →

given sides are 3cm, 6cm & 7cm.

Now, $3+6>7$

$6+7>3$

$7+3>6$

Here, sum of the length of any two sides are greater than the length of the third side.

(iii) 6cm, 3cm, 2cm.

Given sides are 6cm, 3cm and 2cm

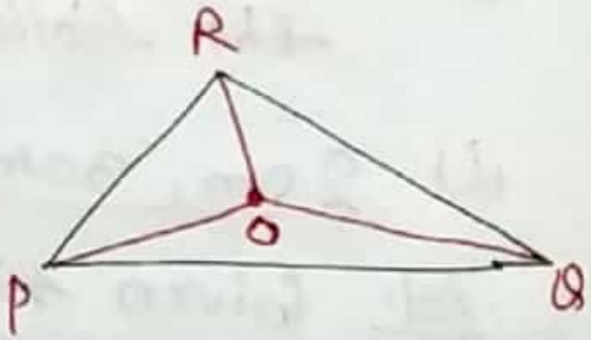
Now, $6+3>2$

$3+2<6$

∴ Of this, it is not possible.

Q.2. Property of triangle, based on its sides.

Sol.



(i) yes, $OP+OQ>PQ$.

because sum of the length any two sides of ΔPQR is always greater than the third side.

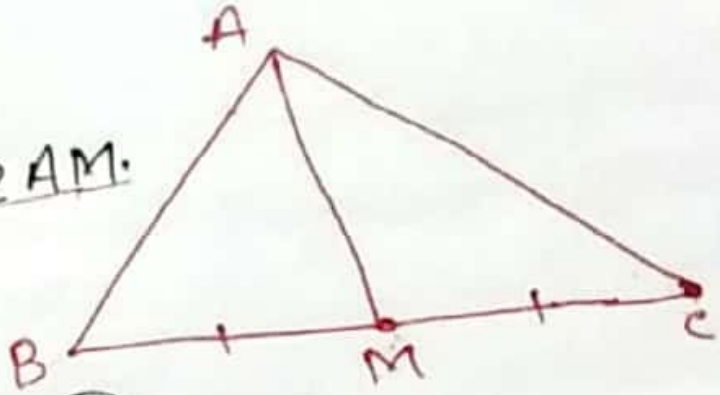
(ii) yes, $OQ+OR>QR$

(iii) yes, $OR+OP>RP$

Because OR and OP are the sum of two sides

Q.3. To prove in ΔABC,
$AB + BC + CA > 2AM$.

Sol.



Yes. $AB+BC+CA > 2AM$.

Proof: In ΔABM,

$AB + BM > AM$. — (i)

Reason: Sum of the lengths of any two sides of a triangle is greater than the third side.

In ΔACM;

$AC + MC > AM$. — (ii)

(using same reason)

Adding (i) and (ii), we get

$(AB + BM) + (AC + MC) > AM + AM$

$\Rightarrow AB + (BM + MC) + AC > 2AM$.

$\Rightarrow AB + BC + AC > 2AM$. Proved.

$\because$ AM is the median of triangle ABC. So, $BM = MC$ (M is the mid point on BC). Hence, $BC = BM + MC$.