

class-VII

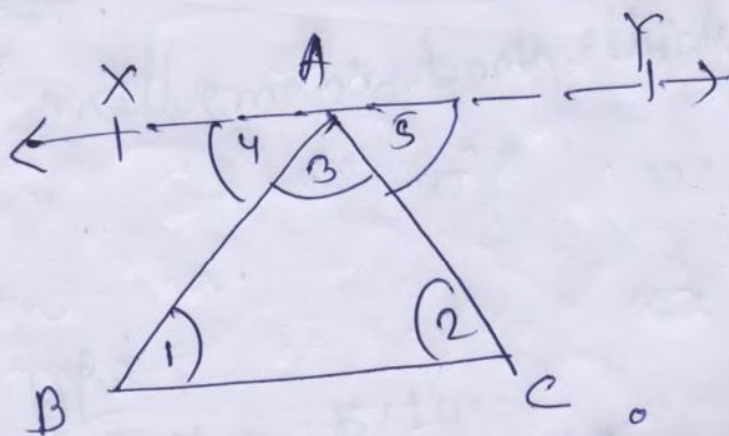
Subject: Math.
Chapter: Properties of Triangle.

good morning students
we ~~are~~ know that, classification of
Triangles study in last class
Therefore today I will discuss
is as below -

Theorem Angles sum property of
a Triangle.

* The sum of the angles
of a triangle is 180° .

Proof:



Prove that,

$$\angle 1 + \angle 2 + \angle 3 = 180^\circ$$

Construction: $AB \parallel XY$ (' \parallel ' means parallel)

Proof:

Since,

$XY \parallel BC$ transversal AB ;

Then, $\angle 1 = \angle 4$ (Alternative interior)

Again; $XY \parallel AC$ and transversal

AC then;

$\angle 2 = \angle 5$ (Alternative interior.)

We know that;

$\angle 4 + \angle 3 + \angle 5 = 180^\circ$ (linear pair.)

$\Rightarrow \angle 1 + \angle 3 + \angle 2 = 180^\circ$

[$\because \angle 4 = \angle 1; \angle 5 = \angle 2$]

Hence, The sum of the angles of a triangle is 180°

proved

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Ex = 15A

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1. given that $\angle A = 72^\circ$;
 $\angle B = 63^\circ$.

We know that, from, The sum
of the angles of a triangle is 180° .

$$\Rightarrow \angle A + \angle B + \angle C = 180^\circ$$

$$\Rightarrow \angle A + 63^\circ + 72^\circ = 180^\circ$$

$$\Rightarrow \angle A = 180^\circ - 135^\circ$$

$$\therefore \angle A = 45^\circ \quad \text{Ans.} //$$

4. Let, The three angles are
 $4x^\circ$; $3x^\circ$ and $2x^\circ$.

We know that;

The sum of the angles of a triangle is 180°

$$\Rightarrow 4x^\circ + 3x^\circ + 2x^\circ = 180^\circ$$

$$\Rightarrow 9x^\circ = 180^\circ$$

$$\Rightarrow x = \frac{180}{9} = 20$$

$$\therefore x = 20^\circ$$

Therefore,

The angles are

$$4x = 4 \times 20^\circ = 80^\circ$$

$$3x = 3 \times 20^\circ = 60^\circ$$

$$2x = 2 \times 20^\circ = 40^\circ$$

Ans

6. Let, An acute angles in a triangle are $2x^\circ$ and $1x^\circ$.

given that, ~~one angle right =~~

One right angle = 90° .

\therefore The sum of the angles of a triangle is 180° .

$$\Rightarrow 2x^\circ + 1x^\circ + 90^\circ = 180^\circ$$

$$\Rightarrow 3x = 90$$

$$\Rightarrow x = 30$$

Therefore;

These angles are

$$2x = 2 \times 30 = 60^\circ$$

$$1x = 1 \times 30 = 30^\circ$$

Ans

Let,
 $2\angle A = 3\angle B = 6\angle C = x$

$$\begin{array}{l|l|l} \therefore 2\angle A = x & 3\angle B = x & 6\angle C = x \\ \Rightarrow \angle A = \frac{x}{2} & \Rightarrow \angle B = \frac{x}{3} & \Rightarrow \angle C = \frac{x}{6} \end{array}$$

we know that,

The sum of the angles of a triangle is 180°

$$\Rightarrow \angle A + \angle B + \angle C = 180^\circ$$

$$\Rightarrow \frac{x}{2} + \frac{x}{3} + \frac{x}{6} = 180^\circ$$

$$\Rightarrow \frac{3x + 2x + x}{6} = 180$$

$$\Rightarrow 6x = 180 \times 6$$

$$\Rightarrow x = \frac{180 \times 6}{6}$$

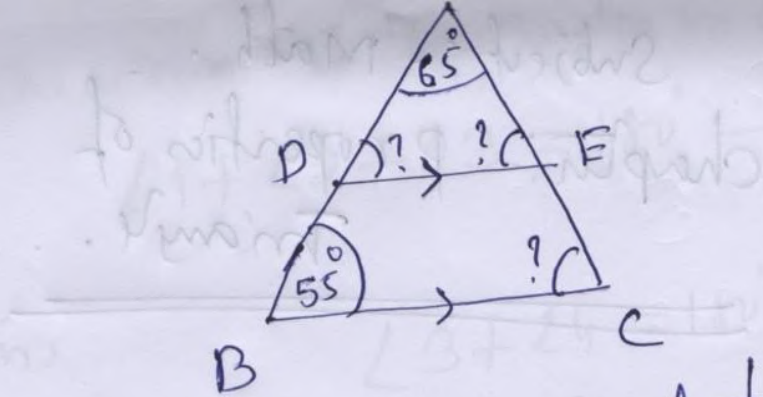
$$\therefore x = 180$$

$$\therefore \angle A = \frac{x}{2} = \frac{180}{2} = 90^\circ$$

$$\angle B = \frac{x}{3} = \frac{180}{3} = 60^\circ$$

$$\angle C = \frac{x}{6} = \frac{180}{6} = 30^\circ$$

Ans //



Since, $DE \parallel BC$ and transversal AB then;

$$\angle ADE = \angle ABC \quad (\text{corresponding angles})$$

$$\Rightarrow \angle ADE = 55^\circ$$

In $\triangle ABC$ from,

$$\angle A + \angle B + \angle C = 180^\circ$$

$$\Rightarrow 65^\circ + 55^\circ + \angle C = 180^\circ$$

$$\Rightarrow 120^\circ + \angle C = 180^\circ$$

$$\Rightarrow \angle C = 180^\circ - 120^\circ$$

$$\therefore \angle C = 60^\circ //$$

$DE \parallel BC$ and transversal AC

then, $\angle AED = \angle ACB$

$$\Rightarrow \angle AED = 60^\circ$$

$$\Rightarrow \angle AED = 60^\circ$$

H/w $\angle EX = 15^\circ$ (1 to 12) // all.

(The sum of the angles in a \triangle is 180° .)

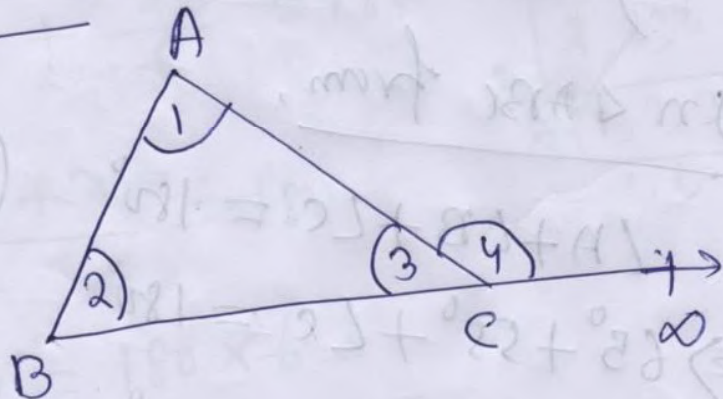
class - VII

Subject :- Math.

Chapter :- properties of Triangle.

Theorem.

If a side of a triangle is produced then the exterior angle so formed is equal to the sum of the two interior opposite angles.



Prove that,

$$\angle 1 + \angle 2 = \angle 4$$

Construction: Let, a side BC of a $\triangle ABC$ be produced to ∞ ; forming exterior angle $\angle ACD$.

We know that

The sum of the angles in a \triangle is 180°

$$\Rightarrow \angle 1 + \angle 2 + \angle 3 = 180^\circ \rightarrow \textcircled{1}$$

Again,

$$\angle 3 + \angle 4 = 180^\circ \rightarrow \textcircled{2}$$

(Linear pair.)

~~In eqⁿ (1)~~
In equation numbers (1) and (2)
by comparing we get,

$$\angle 1 + \angle 2 + \angle 3 = \angle 3 + \angle 4$$

$$\Rightarrow \angle 1 + \angle 2 + \angle 3 - \angle 3 = \angle 4$$

$$\Rightarrow \angle 1 + \angle 2 = \angle 4 \quad \text{proved.}$$

EX = 15B.

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1.

