# S.P.V.V.S.S
# G.P.PORWAL ARTS COMMERCE AND V V SALIMATH SCIENCE COLLEGE SINDAGI – 586128

Dist: Vijaypura

State: Karnataka

## DEPARTMENT OF MATHEMATICS

## PROJECT WORK

This is to certify that students of B. Sc I SEM participated in Mathematics Project work on Mathematics Day 2022-23. Model on Thales Theorem And Square Geo Board satisfactorily completed their work under my supervision at our college under Rani Chennamma University Belagavi.

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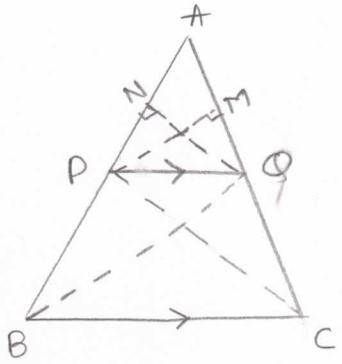
# Thales theorem OR

## Basic proportionality theorem

Statement – If a line is drawn to one side of a triangle intersecting the other two sides in distinct points, then the other two sides are divided in the same ratio.




Consider a $\Delta^{le}$ ABC. In this triangle we draw line PQ parallel to the side BC of $\Delta$ ABC and intersecting the sides AB and AC in P and Q respectively.

According to Basic proportionality theorem, we need to prove

$$\frac{AP}{PB} = \frac{AQ}{QC}$$

Construction :—
Join the vertex B of $\Delta^{le}$ ABC to Q and vertex C to P form the lines BQ and CP and then draw a perpendicular QN to the side AB and also draw $PM \perp AC$.

Proof

Now the area of $\Delta^{le} APQ = \frac{1}{2} \times AP \times QN$

Similarly, area of $\Delta^{le} PBQ = \frac{1}{2} \times PB \times QN$

area of $\Delta^{le} APQ = \frac{1}{2} \times AQ \times PM$

also area of $\Delta^{le} QCP = \frac{1}{2} \times QC \times PM$ ——> (1)

Now if we find the ratio of the area of triangles $\Delta APQ$ and $\Delta PBQ$

$$\frac{\text{Area of } \Delta^{le} APQ}{\text{Area of } \Delta^{le} PBQ} = \frac{\frac{1}{2} \times AP \times QN}{\frac{1}{2} \times PB \times QN} = \frac{AP}{PB}$$

Similarly

$$\frac{\text{Area of } \Delta^{le} APQ}{\text{Area of } \Delta^{le} QCP} = \frac{\frac{1}{2} \times AQ \times PM}{\frac{1}{2} \times QC \times PM} = \frac{AQ}{QC} \quad \text{——> (2)}$$

According to the property of triangles, the triangles drawn between the same parallel lines and on the same base have equal area.

Therefore $\Delta^{le} PBQ$ and $\Delta^{le} QCP$ have the same area.

area of $\Delta^{le} PBQ$ = area of $\Delta^{le} QCP$ ——> (3)

Therefore from eq (1), (2) and (3) we say that

$$\boxed{AP/PB = AQ/QC}$$

# Geo Board

Geoboards are square boards that have pegs to which students attach rubber bands to form various shapes like triangle, square, rectangle, etc. Square board come in 5 by 5 pin arrays and 10 by 10 pin arrays.

The geoboard is just one of many math manipulative that can be used in math to support understanding of a concept. Math manipulative helps to teach concepts in a concrete method which is preffered to before attempting symboilic format. Geoboards are used to support early geometric, measurement and numerical concepts.