

## Appendix: A

# Ethnomathematical Insights: A Thematic Analysis of Geometrical Concepts in Daily Lives of Fishermen Community

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### Summary of Embedded Geometrical Concepts in Fishing Practices

**Table 2.** Summary linking embedded geometrical concepts in fishing practices with levels of mathematical abstraction

Embedded Geometrical Concepts		Level of Abstraction	Examples from Fishing Practices
Mensuration	Length Area Volume Perimeter	Primary and High school	Measuring net size (length), gap length (length), fishing rod length (length), storage pots (area, volume), boat area (area), area of pond (area), construction of fishing nets and traps (area, perimeter), Cutting channels (volume, area, length).
Geometric shapes	Grid Circle & Ellipse Trapezium Cones Cylinder Cuboids Sphere Parallelepiped Disc		Net weaving patterns (grids), boat cross-sections (cone), fishing traps (parallelepiped), casting a net (circle), storage pots (cylinder, cuboids, sphere), shape of channels (trapezium), spinning a net (disc, circle), shape of a pond (disc).
Curvilinear motion		High School	Covering the pond walking along the boundary, boat movement in river currents.
Isoperimetric problem			Maximizing net area with minimum rope
Vector		High school and College & University	Direction of boat, net positioning in water, spreading a net, fish movement, river current, spinning a net, pulling a net in a particular direction.
Coordinate system			
Topology		College & University	Continuous deformation of nets, shape of a rubber tube, hole of a rubber tube.
Knot theory			Shape of a net, net making, untangle fish from a net,
Graph theory			Gathering people
Optimization theory			Choosing a fishing spot, maximizing fish catch with minimal resources, casting nets in different regions of a pond.