Knowledge of fibre

Fibre includes knowledges on how native plants and grasses are used to make string and rope, dilly bags, baskets, mats, fishing line and fishing nets. First Nations people use different fibres to make traditional dress, bark canoes and houses, and to decorate their bodies.

Indigenous Knowledges	Connecting Indigenous Knowledges and Mathematics	Connections to the Australian Curriculum
Matt Burns (Quandamooka Traditional Custodian from North Stradbroke Island) shares his knowledge of making rope and string. He shares methods to create thicker, stronger rope using the outside bark of the cotton tree. The inside bark that is softer makes thinner, finer string. Matt shares the uses of string for making spears, axes and jewellery. He describes how beeswax can waterproof the ropes and string to make them stronger.	**Share Indigenous Knowledge of ropes and string** Students: • draw the types of fibres showing differences like thickness and texture • use ropes and string to make direct or indirect comparisons and order them based on a certain feature • explain how the string and rope can be used.	In Foundation year, students: • identify and compare features of objects and events, including length, capacity, mass and duration • use direct comparisons and explain reasoning (AC9MFM01). In Year 1, students: • compare directly and indirectly • order objects and events using features of length, mass, capacity and duration, and explain reasoning – this could include investigating where First Nations people estimate, compare and communicate measurements (AC9M1M01).
Jason Smith (Palawa man from Lutruwita) shares his knowledge of using bark, grasses and cork reeds for making canoes. He mentions that cork reeds help canoes to float. Jason shares his knowledge of using stone tools to cut and take bark from the tree in longer lengths. He shares the way the different layers of bark are used for different purposes. The inner bark can be used to make straps to tie items such as canoes. The next layer of bark can be made into string for basket weaving and rope that is thick and strong. Jason shares his knowledge of the importance of the natural resources including stringybark, grasses and cork reeds and the locations in making canoes for transport. He refers to Truganini, an Aboriginal woman, the daughter of Mangana, leader of a band of the south-east tribe of Tasmania. She used a bark canoe to travel and trade with other First Nation people.	**Share Indigenous Knowledge of canoe design and construction using fibres** Students draw designs of canoes. To do this they: • estimate the length of a canoe • draw the shape using chalk on a large flat area or model a canoe using cardboard or natural materials. Students reflect on their estimate and justify the process they used to come up with it.	In Year 3, students measure and compare objects using: • familiar metric units of length, mass and capacity • instruments with labelled markings (AC9M3M02).
Matt Burns (Quandamooka Traditional Custodian from North Stradbroke Island) shares his knowledge of collecting sap from Xanthorrhoea – the grass tree. He describes how the sap is heated and used as a glue. Matt uses a gluestick that holds the cooled sap and is a portable tool for fixing canoes and axes. Matt also describes how native beeswax is used as a resin and a type of glue and for waterproofing wooden tools.	**Share Indigenous Knowledge of using heat from fire to melt sap to make glue** Students: • draw a picture of the impact heat has on the ball of sap • use scaled instruments, such as a digital or standard thermometer, to measure the degrees (in Celsius) in different areas and of different objects • communicate their findings about temperature.	In Year 4, students interpret unmarked and partial units when measuring and comparing length, mass, capacity, duration and temperature, using scaled and digital instruments and appropriate units (AC9M4M01).
Matt Burns (Quandamooka Traditional Custodian from North Stradbroke Island) shares his knowledge of using ropes for nets to catch dugong and thinner string for nets to catch fish. Matt describes the size and shape of the nets that are design based on what animal they were trying to catch.	**Share Indigenous Knowledge of the design and construction of nets made from ropes and fibres** Students: • draw the shapes they see in the designs • draw a design of a fishing net fit for purpose and show how to calculate the area and perimeter of the net • reflect on the process and justify the shape and design of their net for the intended catch.	In Year 5, students solve practical problems involving the perimeter and area of regular and irregular shapes using metric units. This could include exploring the designs of traditional fishing nets, investigating the perimeter, area and purpose of the shapes within the designs (AC9M5M02).

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Indigenous Knowledges	Connecting Indigenous Knowledges and Mathematics	Connections to the Australian Curriculum
Matt Burns (Quandamooka Traditional Custodian from North Stradbroke Island) shares his knowledge of using ropes and strings, explaining the different thicknesses and strengths. Jason Smith (Palawa man from Lutruwita) shares his knowledge of bark and the way the different layers of bark are used for different purposes. The inner bark can be used to make straps to tie items such as canoes. The next layer provides bark that can be made into string for basket weaving and rope that is thick and strong.	**Share Indigenous Knowledge of fibres** Students: • draw a diagram to show how to make string and ropes • design a fair test to collect data and compare how strong different fibres are based on the mass they will carry/hold • communicate their findings and suggest purposes for the fibres they tested • reflect on the process and justify the purposes for the different fibres.	In Year 7, students use mathematical modelling to: • solve practical problems involving ratios • formulate problems • interpret and communicate solutions • justify choices about the representation (AC9M7M06). In Year 8, students use mathematical modelling to: • solve practical problems involving ratios and rates, including financial ones • formulate problems • interpret and communicate solutions, reviewing the appropriateness of the model. This could include modelling ratio and applying it to make traditional string and ropes, including: • the ratio of length to the mass of a rope • the strength of the ply in proportion to a rope's pulling force • the proportion of fibre for the length of string required (AC9M8M07).
Matt Burns (Quandamooka Traditional Custodian from North Stradbroke Island) shares his knowledge of using ropes for nets to catch dugong and thinner string for nets to catch fish. Matt describes the size and shape of the nets that are design based on what animal they were trying to catch.	**Share Indigenous Knowledge of the design and construction of nets made from fibres** Students: • draw the shapes they see in the designs and recognise patterns in making the fishing nets, for example, repeated squares • develop an algebraic formula to represent an unknown, for example, the number of squares in a net with the area of 5 m^2 • reflect on the use of algebra to describe repeated patterns • justify their formula showing how it can predict the number of squares in a net.	In Year 7, students: • recognise and use variables to represent everyday formulas algebraically • substitute values into formulas to determine an unknown. This could include using everyday formulas and applying them to Country/Place contexts, investigating the relationships between variables (AC9M7A01).
Jason Smith (Palawa man from Lutruwita) shares his knowledge of architecture and using bark from the stringybark trees for roofing. Jason explains how dogwood and teatree are bent into an arc frame providing a dome shape for building shelters. He describes the size and shape of the bark needed to build a large dome shelter. Jason shows how to remove long pieces of bark and talks about the health of the trees to ensure sustainable harvesting of bark.	**Share Indigenous Knowledge of traditional architecture** Students: • draw the shapes they see in the design of bark shelters • experiment and estimate the materials needed to make the frame and the structure's covering. Using the various nets, students could: • consider how and why changes in a shape or object's dimensions affect the perimeter, area, surface area, or volume, including proportional and non-proportional change • experiment to find the volumes and surface areas of composite solids by looking at the individual solids they are made from. Students: • recognise that the dome is half a sphere and make a connection with formula for volume and surface area of a sphere • justify how their formula is used to calculate volume and surface area.	In Year 9, students solve problems involving the volume and surface area of right prisms and cylinders using appropriate units. This could include looking at First Nations objects and technologies and: • analysing and connecting surface area and volume • exploring their relationship to their capacity (AC9M9M01). In Year 10, students solve problems involving the surface area and volume of composite objects using appropriate units (AC9M10M01).

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