



# Quipus

*Students make their own versions of an Incan knot-tying tool for recording information.*

## TECHNOLOGY TOPICS

History  
Processes  
Place value

## PROCESS SKILLS

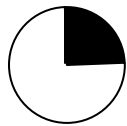
Communicating  
Measuring  
Collecting  
Information  
Using Symbols

## GRADE LEVELS

1-8

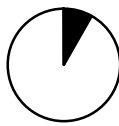
## TIME REQUIRED

### Advance Preparation



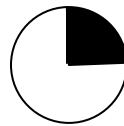
15 minutes

### Set Up



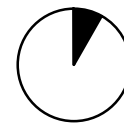
2 minutes

### Activity



15 minutes

### Clean Up



5 minutes

## SUPPLIES

- ❑ yarn in 6-8 colors, including black. 1 yard of each color per student
- ❑ scissors (1 per student)
- ❑ ruler (1 per student )
- ❑ Optional: masking tape

## ADVANCE PREPARATION

- ❑ Gather supplies. Divide the yarn into balls, so each group of students will have a ball of each color.
- ❑ Make an example quipu to show the students. See the Classroom Activity section for instructions.

## SET UP

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- Place the sets of colored yarn balls at each workstation.

## INTRODUCING THE ACTIVITY

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*Let students speculate before offering answers to any questions. The answers at the right are provided primarily for the teacher's benefit.*

Ask the students the following questions in **bold**. Possible student answers are shown in *italics*.

### **How do we pass down the stories of history?**

*Tell stories. Write stories in books. Talk with older people who witnessed important events. Put stories into songs, plays or dances. Hundreds of years ago, people recorded stories in stained glass windows in churches.*

Hold up a sample quipu.

This is a quipu (kee-poo). People in the Inca culture in South America used these to help remember stories. The different colors stand for different things, and they would tie complicated patterns of knots to keep track of information. They stopped using them when the Spanish conquistadors arrived. We're not sure what all the different knots and colors mean, but we have some ideas. Today we are going to make our own personal quipus.

## CLASSROOM ACTIVITY

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*Each student follows the directions below.*

## Procedure for Quipus

**1** Get out your scissors.

**2** Measure and cut a piece of black yarn 50 cm (24 in) long.

- This is the “time” cord. It helps us remember the order things happened.

**3** Cut pieces of yarn 25 cm (12 in) long in each of the other colors.

- These pieces will hang from the black “time” cord.

**4** Choose some objects, events, or activities for the story you want to tell.

- (Examples: pets, siblings, favorite toy or book, a trip.)
- Pick a color of yarn to represent each of the objects you picked.

**5** Tie each colored string to the “time” cord, in the order they happen in your story.

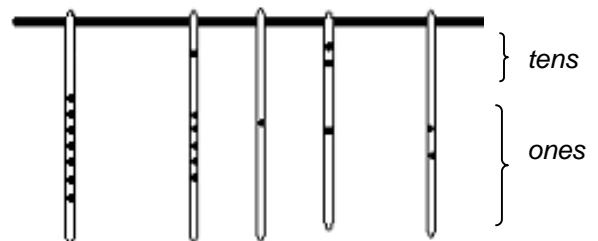
*For younger students, taping the ends of the black “time” cord to a desk makes tying knots much easier.*

**6** Choose a number that relates to the objects each string represents.

- You might remember the year of the trip you took, the year your brother or sister was born, how many dogs you have, how many books you read, etc.

**7** Tie knots in each string to represent numbers.

- For numbers larger than ten, a decimal system is used, with a clump of knots near the end of the string for ones, a clump further up the string for tens, another clump for hundreds, and so on.



From left to right, these strings represent the numbers 7, 15, 1, 21, and 2.

## CLASS DISCUSSION

Have students explain what their quipus mean.

## EXPLANATION

*In-depth background information for teachers and interested students.*

Quipu means knot in Quechua, the native language of the Andes.

There is a lot we don't know about how quipus work. They are very complicated and beautiful. There is a lot of information about what we do know at:

<http://www.anthropology.wisc.edu/chaysimire/titulo2/khipus/quipus.htm>

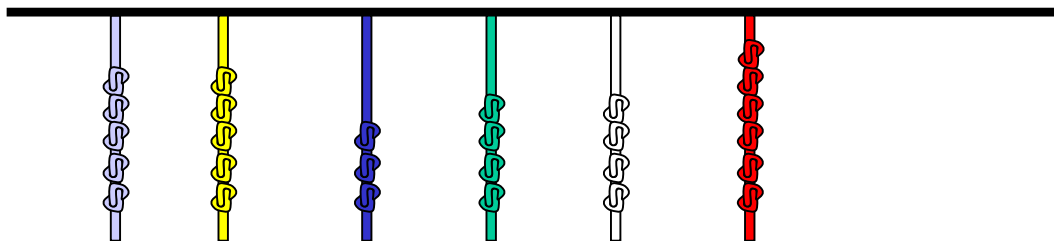
The Mayan culture in the same region as the Incas had a hieroglyphic writing system for remembering their stories. They also had a very detailed calendar. Some information can be found at:

<http://www.halfmoon.org/>

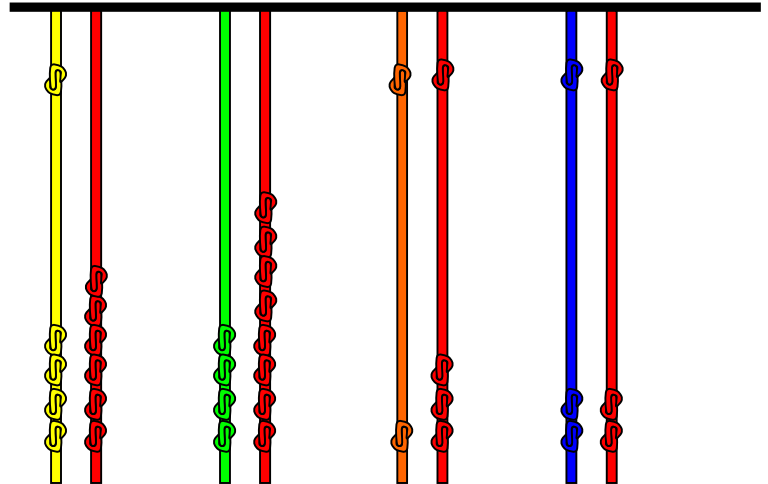
One excellent, detailed book on Quipu is Signs of the Inka Khipu, by Gary Urton.

Here are some example quipu ideas. We don't know exactly how quipu worked. The meaning may have been standardized, or each quipu may have worked only to remind the maker what they already knew. Each of your students could create a unique way to read a quipu.

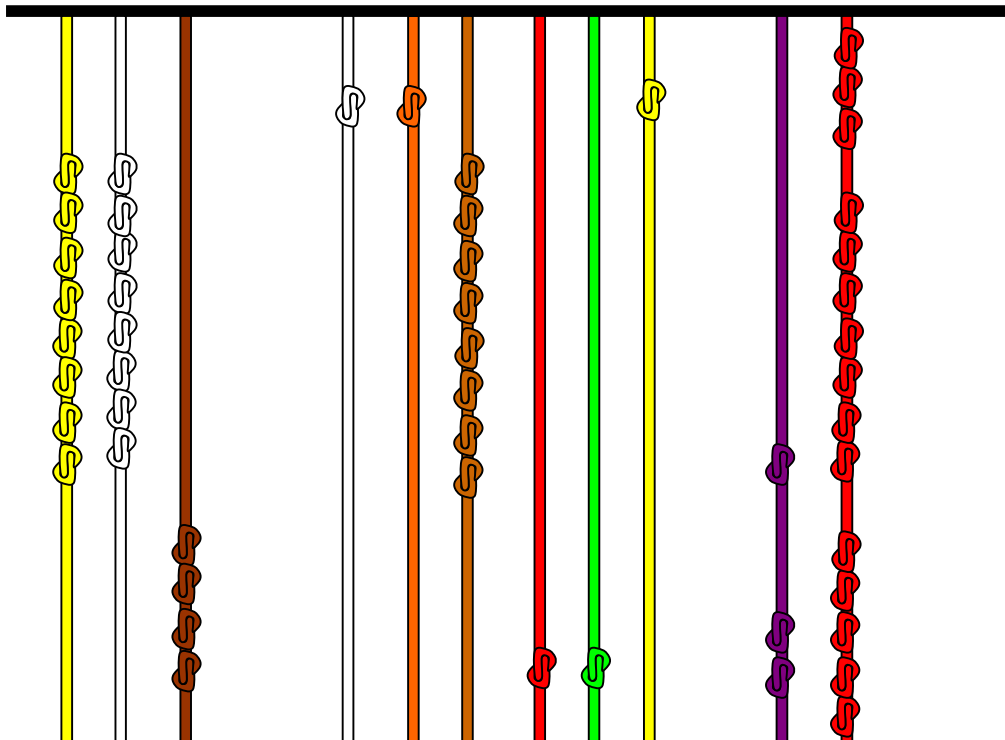
Quipu 1: Where I have lived. This quipu tracks the many different places the maker went to school. From left to right: 5 knots for 5 years as a baby (lavender), 5 years in elementary school (yellow), 3 years in junior high (blue), 4 years in high school (green), 4 years in college (white), and 6 years at a first job (red).



Quipu 2: Sports scores. The strings are paired, to show which teams played each other. This quipu tracks all the games of the Fighting Strawberries (red). In their first game, against the Bananas (yellow), the Strawberries lost, 14-6. In their second game, against the Limes (green), Strawberries won 8-4. In the third game, against the Traffic Cones (orange), Strawberries won 13-11. And against the Blueberries (blue), it was a tie, 12-12.



Quipu 3: Recipe rememberer. In this quipu, the different levels of knots don't stand for 100s, 10s, and ones, but cups, tablespoons and teaspoons. You have to remember what the different colors stand for, but it helps you remember the numbers. In this recipe for cookies, you mix 8 tablespoons white sugar (white), 8 tablespoons margarine (yellow) and 4 teaspoons cocoa (brown). Melt these together in a pan. Mix the dry ingredients together: 1 cup flour (white), 1 cup oats (orange), 8 tablespoons brown sugar (brown). Add 1 teaspoon vanilla (red) and 1 teaspoon green food coloring (green). Add one egg (yellow). Mix it all together and bake for 12 minutes (purple) at 375 degrees (red).



## OPTIONAL EXTENSIONS

- A. As a class, create a weather quipu. Yellow string for sun, white for snow, blue for rain. Every time the weather changes, tie a new string to the weather quipu. Every day the weather stays the same, tie a knot in the string.
- B. As a class, read a counting book, such as Eric Carle's The Very Hungry Caterpillar or Yuyi Morales' Just a Minute: A Trickster Tale and Counting Book. Then, construct a quipu to help remember the story.

## CROSS-CURRICULAR CONNECTIONS

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### LANGUAGE ARTS

Have students write the story that their quipu helps them remember.

Study Mayan hieroglyphs. We don't know how to read all of them, because no one with hieroglyphic knowledge survived to the present.

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### MATH

Study the complex math of the Mayan calendar, with its many multiples and factors.

Study the abacus, and the similarities of its counting system to the quipu.

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### SPACE SCIENCE

Examine the ancient South American calendars, particularly with regard to various planets. The Gregorian calendar has many leap days because it uses both the sun and the moon. The Mayan calendar had very accurate calculations about the planet Venus and Mercury.

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### ART

Make "stained glass windows" with colored tissue paper and waxed paper. Create a new window every day for weeks with pictures showing the major events of each day.

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### SOCIAL STUDIES

Have students research and report on Incan culture.