



# abun**DANCE**

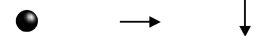
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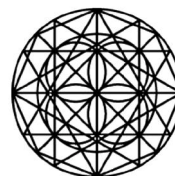
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MATHEMATICS



**SOUL**

Schools Of Unified Learning

[www.unifiedknowledge.org](http://www.unifiedknowledge.org)



# Transformations of Winchi

## - Guidance for Learners -

*unifiedknowledge* @ your learning centre

Today we are going to experience an introduction to the cultural arts of **dankira tehwagi** (*warrior dance*) using the **unifiedknowledge** (*yeht'mr urwuk'eht*) approach to learning where art and the core idea of math are learnt in one form. Our arts draw on African heritage.

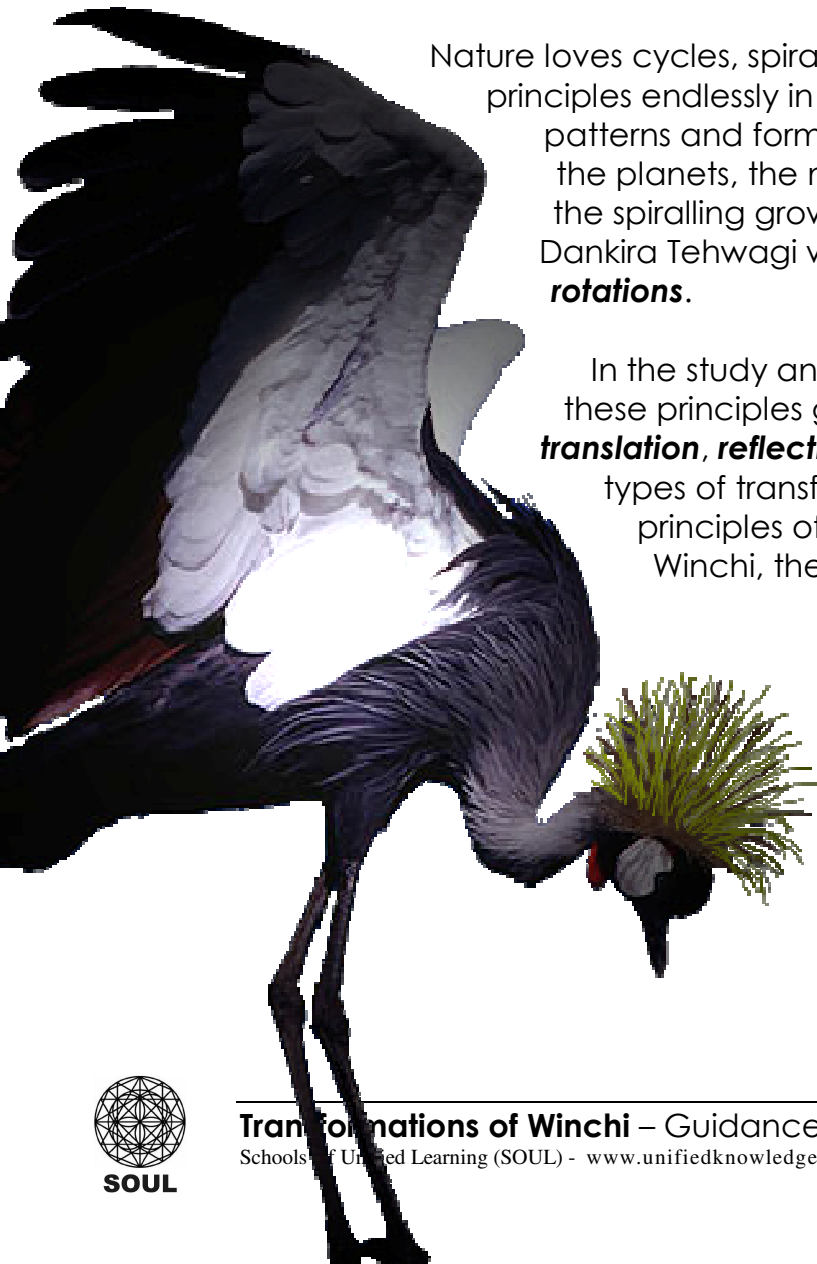
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Nature loves cycles, spirals and rotations. It uses these principles endlessly in the creation of various living patterns and forms. For example in the movements of the planets, the movement of electrons in an atom or the spiralling growth patterns of many plants. In Dankira Tehwagi we also use circles, cycles, spirals and **rotations**.

In the study and practice of mathematics One finds these principles grouped with the principles of **translation**, **reflection** and **enlargement**, these are all types of transformation. Let's explore all the principles of transformation with the help of Winchi, the graceful Crane.

*Our Objectives Today:*

1. To learn and correctly use the language associated with various types of transformation (rotation, enlargement reflection and translation).
2. To understand the principles of transformation and other principles associated to it.
3. To be introduced to expressive gestures and movements of Winchi (the crane), using these to help us recognise and visualise the transformation of points and patterns.
4. To begin learning how to apply Winchi's gestures and movements within One's Dankira Tehwagi (*warrior dance*).



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M A T H E M A T I C S

**hashima**  
*Respect*

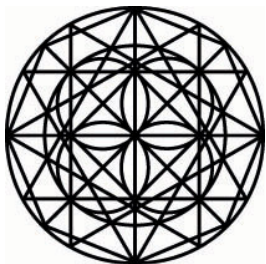
“do on to others, as you would have them do on to you”

To acknowledge that within each and every One (*living being*)  
is a principle of truth, justice, order & right; *ma’at*.

appreciation, honour, admiration and to be well thought of.

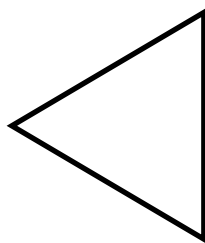
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- Activity 1 - **Winchi Spins**  
*Introducing rotational movement.*
- Activity 2 - **Basic Ngoma Movement**  
*Exploring rotational movement.*
- Activity 3 - **Winchi Enlarged**  
*Exploring enlargement and similar triangles.*
- Activity 4 - **Winchi Mirrors**  
*Exploring reflection.*
- Activity 5 - **Complementary Ngoma**  
*Moving together, forming a oneness.*
- Activity 6 - **The Ngoma**  
*Developing I freedom of expression.*



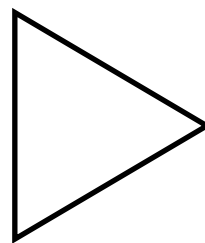
**Tehwagi Assab**

*Symbol of the Warrior Idea and the Warrior's Province.*



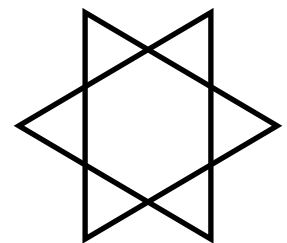
**Ngoma Triangle**

*Left foot is still, right leg moves forward and backward.*



**Ngoma Triangle**

*Right foot is still, left leg moves forward and backward.*



**Six Pointed Star**

*The two Ngoma Triangles united.*



# የጥምር ዕውቀት

**yeh.t'.m.r : ur.wu.k'eh.t :: (unifiedknowledge)**

A natural approach to learning where art, mathematics and science are taught as one. It involves dance, visualization, writing, individual and team work, presentations, logic, challenge, reasoning, humour, communication studies, music creation, intuition and creativity.

## የተዋጊ ሕገመሠረት

**yeh.teh.wa.gi :  
h.geh.meh.seh.reh.t ::**

### Warrior Charter

*I practice Dankira Tehwagi*

1. *to increase I perception and consciousness*
2. *to be the best communicators*
3. *to be creative*
4. *to master I self-command (will)*
5. *to become Master Warriors (Ras Tehwagi),  
Master Teachers (Ras Astehmari)  
and Supreme Beings*



## ተዋጊ ኣሳብ

**teh.wa.gi : a.sa.b ::**

- *The Warrior Idea* -

**እግዜር ይመስገን። ሐሺማ ተዋጊ ኣሳብ።**

*Creator be praised. Respect the Warrior Idea.*

## የሂሳብ ኣዋቂ ሕገመሠረት

**yeh.hi.sa.b : ah.wa.k'i :  
h.geh.meh.seh.reh.t ::**

### Mathematician's Charter

Mathematics is the study and application of patterns.

*I practice mathematics*

1. *To observe, record and enjoy patterns*
2. *To make estimates, calculations and forecasts*
3. *To enhance visualization*

*I practice of Dankira Tehwagi involves the study and application of dance patterns (movements). The range of patterns that One can create is infinite.*

*The Warrior Idea is the thoughts and perceptions of the warrior's mind forming clear desires, intentions and plans for the establishment and maintenance of peace throughout their Province. Through the creation of power and the communication of wisdom, the warrior relentlessly strives to grasp all of the Tehwagi Asab in the knowledge that the Self of the warrior ( I ) and the Self of the community ( I and I ) are One.*



# የቃላትና የመርሆች መግለጫ ቃላቶች

## Glossary of Terms and Principles

	Terms:	Meanings:
01 (፩)	አቢት, a.bi.t (የማርያም ፈረስ. ፕሬይንግ ማንቲስ)	The Praying Mantis, an insect of great power, character and legend.
02 (፪)	አንድነት , ah.n.d.neh.t	Unity
03 (፫)	መሠረታዊ የእንጎማ እንቅስቃሴ basic ngoma movement	Leg movement similar to human walking motion, but with one foot kept relatively still. Stepping forward and backwards with one leg.
04 (፬)	የማስተላቅ መሃል centre of enlargement	The point used, along with the <i>Scale Factor</i> , to define an enlargement.
05 (፭)	ተደጋጋፊ Complementary	Two events given by something 'happening' and 'not happening' are said to be complimentary. Forming one.
06 (፮)	ተደጋጋፊ እንጎማ complementary ngoma	The complementary use of the <i>Basic Ngoma Movement</i> and other parts of the body.
07 (፯)	የሚጣጣም Congruent	For any two shapes to be congruent to each other they must be <i>the same shape</i> and <i>the same size</i> .
08 (፰)	የሚጣጣሙ ሦስት ማዕዘኖች congruent triangles	For two triangles to be congruent they must have; <ul style="list-style-type: none"> <li>➢ 3 pairs of corresponding equal angles and</li> <li>➢ 3 pairs of corresponding equal sides.</li> </ul>
09 (፱)	ዳንኪራ ተዋጊ da.n.ki.ra teh.wa.gi	Warrior dance of a specific "pattern".
10 (፲)	ማስተላቅ Enlargement	A type of transformation which increases the size of a shape.
11 (፲፩)	ዕኩል ሦስት ማዕዘን equilateral triangle	A triangle formed with all sides equal in length and all internal angles equal.
12 (፲፪)	እግዚር ይመስገን። ሐሺማ ተዋጊ አሳብ። ur.g.ze.r yi.meh.s.geh.n:: ha.shi.ma teh.wa.gi a.sa.b::	Creator be praised:: Respect the Warrior Idea::
13 (፲፫)	ተቃራኒ Inverse	Opposite or contrary in effect, sequence, direction etc.
14 (፲፬)	የረድፍ ማህበር line organisation, (የረድፍ አደረጃጀት)	An arrangement of students in rows, organized by age.
15 (፲፭)	የመስታዋት መስመር mirror line	Symmetry about a plane (aka mirror plane, mirror symmetry) that divides the <i>object</i> or system into two mutual mirror <i>images</i> .
16 (፲፮)	እንጎማ ሦስት መዕዘን ngoma triangle	The triangular pattern formed during the <b>Basic Ngoma Movement</b> .
17 (፲፯)	እንጎማ ngoma, the	African dance movements and gestures that evolve towards harmony and complete freedom of expression.
18 (፲፰)	ማሳነስ Reducing	A type of transformation which decreases the size of a shape. The opposite of <i>enlargement</i>
19 (፲፱)	ነፀብራቅ Reflections	A type of transformation, which causes objects (shapes, light, sound, other electromagnetic radiation, particles etc) to be proportionally transformed after impinging on a surface ( <i>the mirror line</i> ).
20 (፳)	መዞላር Rotation	A circular motion of a object about a given point or line, without a change in shape.



21 (ጸ፩)	ስኬል ፋክተር scale factor	If a shape has been enlarged you can find the Scale Factor by dividing the length on the image (enlarged shape) by the corresponding length on the <i>object</i> (original shape). <i>The Enlarging Transformation</i> require a <i>Scale Factor</i> and a <i>Centre of Enlargement</i> .
22 (ጸ፪)	ተመሳሳይ ሦስት መደዘኖች similar triangles	There are three ways to recognize similar triangles: <ul style="list-style-type: none"> <li>➤ All corresponding angles are equal</li> <li>➤ All corresponding sides in the same ratio</li> <li>➤ Two corresponding sides in the same ratio and the angles between them are equal</li> </ul> Triangles that satisfy on of these conditions are similar.
23 (ጸ፫)	ባለስድስት አመላካች ኮከብ six pointed star	A star shape caused by overlaying two triangles whose sides are all equal in length ( <i>equilateral triangle</i> )
24 (ጸ፬)	የጥምር ዕውቀት ማዕከላት unifiedknowledge centre	Our Centres' vision is to promote unified and wholistic approaches to learning and community development by promoting <b>unifiedknowledge</b> courses, programmes and centres which allow both children and adults a deeper comprehension of the inspiring natural relationships between arts, sciences and self-development.  <b>Unifiedknowledge Centre is a part of the Schools Of Unified Learning (SOUL) network of educational foundations, teachers and learners.</b>
25 (ጸ፭)	ተዋጊ አሳብ teh.wa.gi a.sa.b (warrior idea)	ተዋጊ አሳብ ማለት በተዋጊው (እኔ) አዕምሮ ውስጥ ያሉት ሃሳቦችና ግንዛቤዎች በአገርሱ (እኔ) ግዛት ሰላምን ለመመስረትና ለማስፈን ሲሉ ግልፅ ፍላጎቶችን፣ ዓላማዎችንና ዕቅዶችን የሚያወጡበት ነው። ጥበብን በመግለፅና ሃይልን በመቆጣጠር ተዋጊው (እኔ) ያለምንም ዕረፍት የተዋጊ ሃሳብን ጥልቅ ምንነት ለመረዳት ይጥራል። የተዋጊው (እኔ) መሠረትና የማኅበረሰቡ (እኔ እና እኔ) መሠረት አንድ መሆኑን ይረዳል።  <i>The Warrior Idea is the thoughts and perceptions of the warrior's mind forming clear desires, intentions and plans for the establishment and maintenance of <b>peace</b> throughout their Province. Through the creation of power and the communication of wisdom, the warrior relentlessly strives to grasp all of the Tehwagi Asab in the knowledge that the Self of the warrior ( I ) and the Self of the community ( I and I ) are One.</i>
26 (ጸ፮)	ለውጦች, leh.wu.t'o.ch  transformations	The transformation process is concerned with size, shape, and relative position; ( <i>geometry</i> ). It involves the change in position or direction of the reference axis ( <i>points, principles</i> ) in an object, without an alteration in their <i>relative angles</i> . Transformation is a <i>function</i> that moves a <i>given (original, input) object</i> through a process of change that produces an <i>image (the output)</i> . In math its key themes are <i>rotation, reflection, enlargement</i> and <i>translation</i> .
27 (ጸ፯)	በግዛቱ መጓዝ travelling the province	One of the dances of Dankira Tehwagi. It utilizes the <b>Basic Ngoma Movement</b> , the principles of <i>Rotation</i> and the <b>Tehwagi Asab</b> symbol to develop co-ordination and precision.
28 (ጸ፰)	የተዋጊው ግዛት warrior province	The Warrior Province is a region of <i>space</i> (land, air and mind) that the Warrior perceives as their responsibility. Thus they continually seek to maintain a <i>harmony</i> of peace, power and wisdom throughout <i>their province</i> .
29 (ጸ፱)	ዊንቺ, wi.n.chi (አውሳጠን, ክሬንና)	The Crane, a bird of great power, character and legend.

