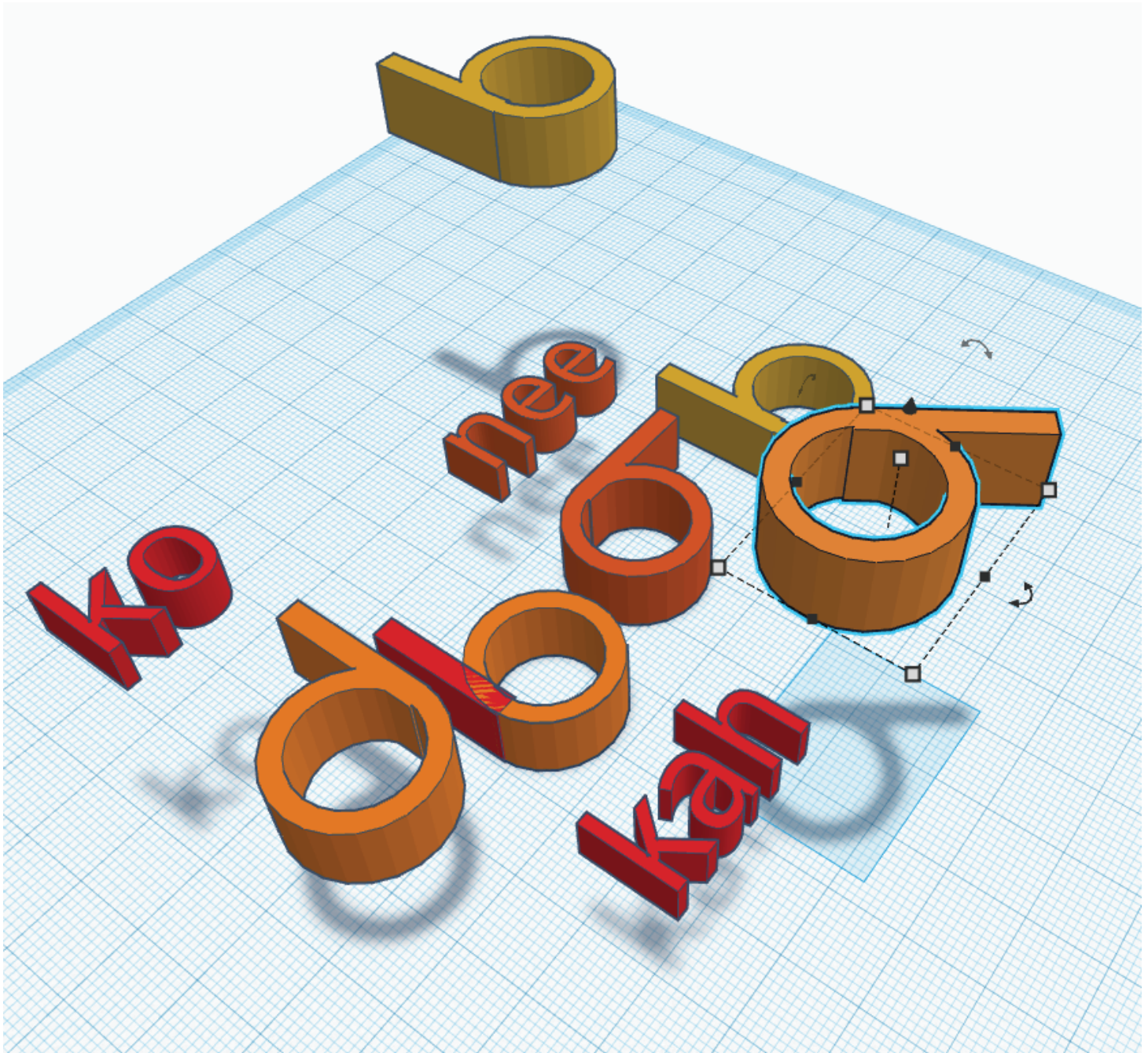


DIGITAL SYLLABICS



DIGITAL SYLLABICS



Curriculum Connections

Math (5) E1.5 describe and perform translations, reflections, and rotations up to 180° on a grid, and predict the results of these transformations

Math (6) E1.1 create lists of the geometric properties of various types of quadrilaterals, including the properties of the diagonals, rotational symmetry, and line symmetry

Math (6) E1.2 construct three-dimensional objects when given their top, front, and side views



Learning Goals

To learn the properties of translations, rotations and reflections and to gain a deeper understanding of syllabics and the role these math properties have on the syllabics.



Materials

Tinkercad.com - free web based software

Syllabics Chart - Oji-Cree

Computer mouse (recommended for Tinkercad)



Assessment / Evaluation

Activity 1- Assessment of learning, check for student understanding.

Activity 2 - tinkercad creations of syllabics

Activity 3 - demonstrate understanding of concepts



Accommodations / Modifications

Limit the number of syllabics student needs to design

Limit number of designs to complete on worksheet

Access to computer mouse will assist with fine motor skill controls

Student can work with TA



Teaching/Learning Strategies

Introduction

(minds on/activate prior knowledge)

TinkerCad fundamental navigation (tutorials and teacher guide link)

 Create initial shape(s)

 Copy shapes

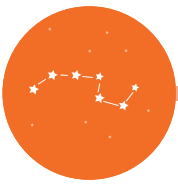
 Rotate shapes

Quadrilateral names and attributes

 Identify quadrilaterals as squares, rectangles, trapezoids, rhombus, parallelograms or irregular.

Students draw a triangle on graph paper to review coordinate graphing and labeling points

Syllabics Chart



New Learning (30 minutes) (give/demonstrate new information)

Activity 1

Teacher introduces concepts with the aid of graph paper and front of class modeling

Terms and concepts associated with Transformational Geometry (definitions on worksheet)

Translation (pre-image, image and congruence)

Left/Right

Up/Down

Rotation

90 degrees

Guided Practice (40 minutes) (checking for student understanding)

Teacher pre setup instructions link

Watch training videos on block manipulation as refresher

Create

Copy

Rotate

Create custom shapes for each syllabic

Note which shapes are rotations

Note reflection within the syllabic characters

Note Lines of symmetry within the syllabic characters



Teaching/Learning Strategies

Application

(activity to reinforce/demonstrate learning)

Worksheet to do translations, rotations, reflections with syllabics

Recognizing math concepts of reflection, translation and rotation are found in many designs in everyday life

Reflection

(what did/didn't work)

Next Steps

(what to teach/re-teach)

Large empty rectangular area for reflection notes.

Large empty rectangular area for next steps notes.



New to TinkerCad?

We selected TinkerCad software for this project as it's designed for a classroom environment. The software is web based so it will work on any recent student device (including iPads & Chromebooks).

Tinkercad is a free-of-charge, and easy to get your class setup with an email login. As a teacher you can monitor students work from one place. We have included some helpful links but recommend taking a few minutes to explore the software before starting the lesson with your students.

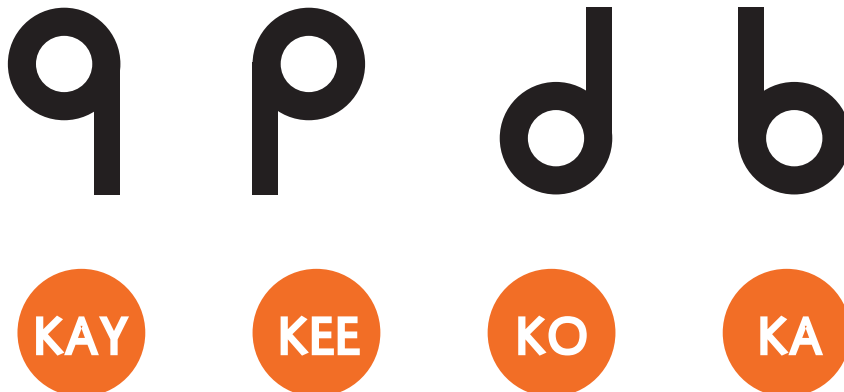
Students will use some navigation and basic tools for building this lesson. It is designed to be an entry level activity, but we recommend that learners had taken part in some of the tutorials on the TinkerCad student portal before beginning.

Link : <https://www.tinkercad.com/learn/designs?collectionId=OSZ5W2BL1W5N51Fv>

In this activity students can choose between two different design approaches to create syllabics in the TinkerCad software.

Encourage the learners to try both techniques before deciding on a method.

Oji-cree Syllabics Character with Roman Orthography

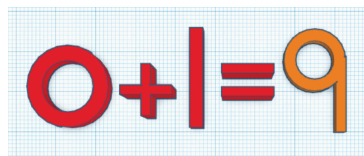
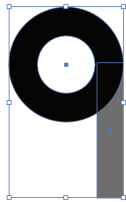


DIGITAL SYLLABICS

Option 1 - Build with shapes

This option allows learners to construct the syllabics using a library of existing shapes.

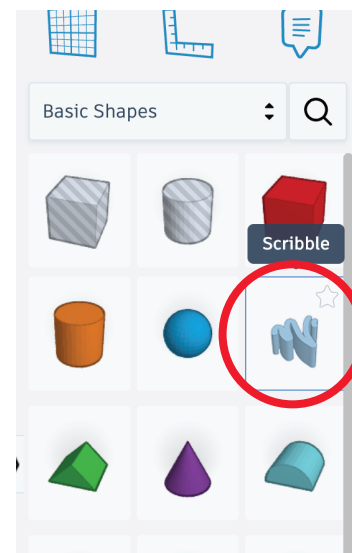
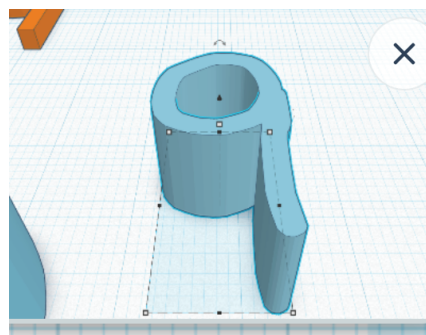
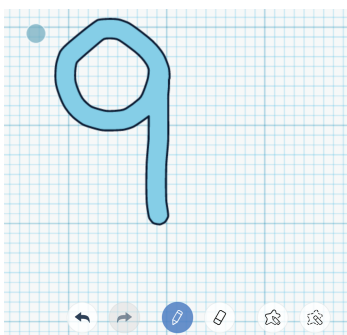
The process will result in more straight lines and the ability to have better control of scale and demensions.



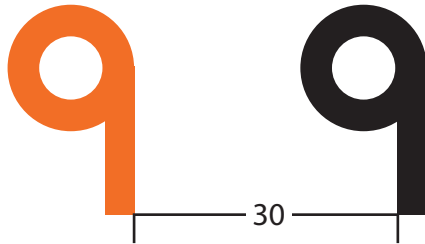
Option 2 - Draw the syllabics

This option allows for users to practice their fine motor skills in illustrating the shapes free hand.

This approach can give a natural freehand look but will require practice

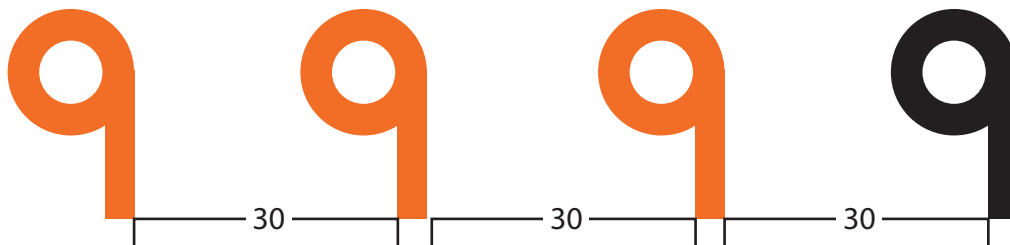


Translation

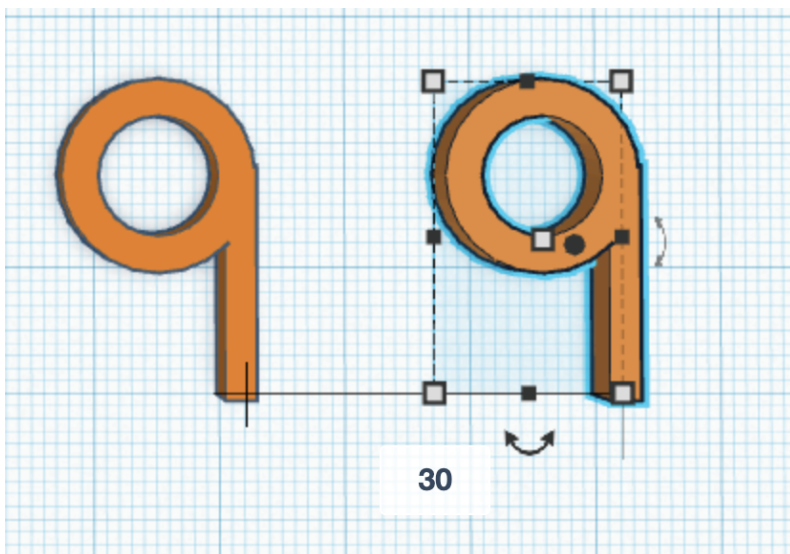


Draw your first option to the right while holding down the option key.

Complete this translation of 30 units to the right (repeat two more times)



Students can practice the use of translations, rotations, and reflections to create their syllabics.



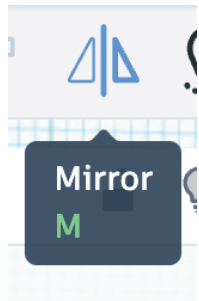
9

p

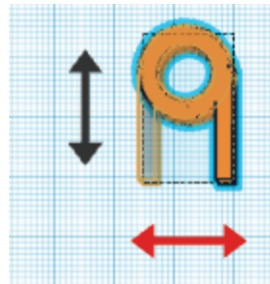
KAY

KEE

To create a **reflection**, students will need to select the the first shape and use the mirror tool



they will then have to choose the correct access for the object to reflect.



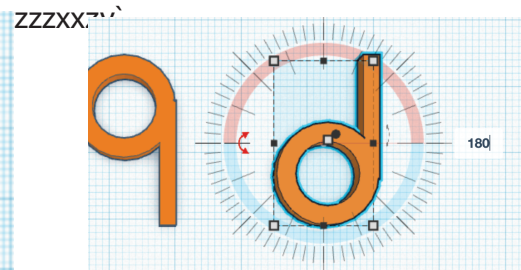
p

d

KEE

KO

Select the shape and the **rotation** tool will appear. Rotate the "Ko" character 180 degrees



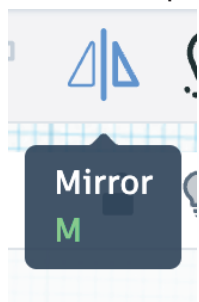
d

b

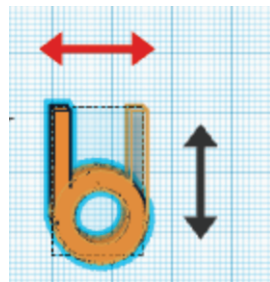
KO

KAH

To create a reflection, students will need to select the the first shape and use the mirror tool



they will then have to choose the correct access for the object to reflect.



Save your custom shapes

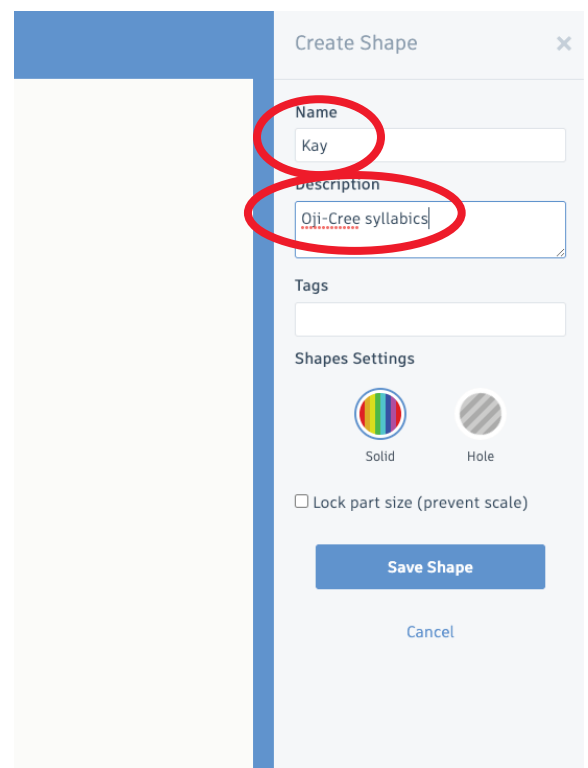
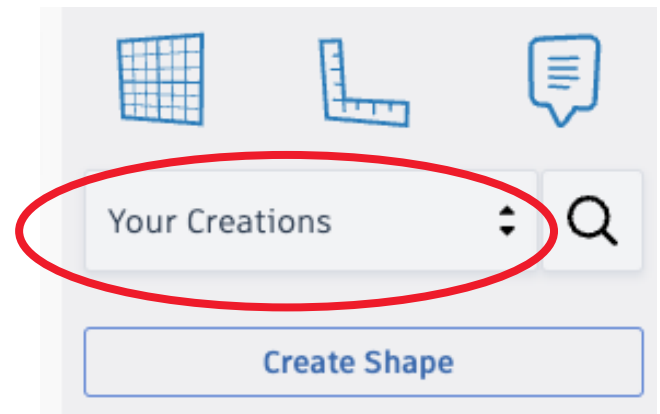
On the drop down on the right hand side select the "Your Creation" option.

Select the syllabic character that you would like to save and click on "Create Shape".

Name the new shape using the roman orthography characters to make it easier to find at a later date.

You can add additional information in the description.

The syllabic will now be saved to the account and available to use for future projects.



Name: _____

Date: _____

DIGITAL SYLLABICS



Translation

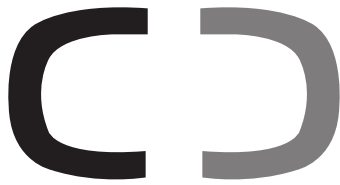


Reflection



Rotation

Identify the following as reflection, rotation or translation













Name: _____

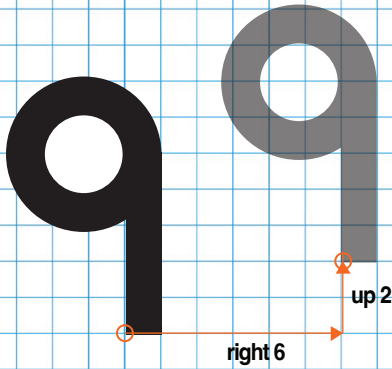
Date: _____

DIGITAL SYLLABICS



ACTIVITY 3
B

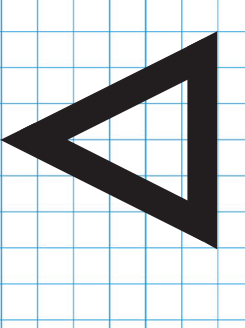
Translation - right 6, up 2



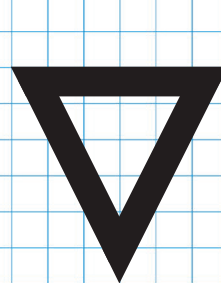
Translation - right 5, down 2



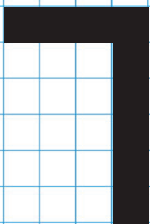
Complete a reflection



Complete a reflection



Rotate 90 degrees



Rotate 180 degrees

