

## 3-D PICTURE GRAPH – Shape, Colour, Data

Students create a 3-d picture graph using construction paper and Model Magic shapes.

Required Time

120 Minutes

Grade Level

Grade 1 to Grade 2

Subject

Language Arts  
Mathematics  
Visual Arts

Vocabulary

batch  
blend  
column  
graph  
picture graph  
primary colours  
rule  
sort

Materials

Rolling Pin or Piece of Dowel

Ruler

Small Cookie Cutters

Model Magic Modelling Compound

Construction Paper

Glitter Glue

Scissors

White Glue

Shop Crayola Products



Model Magic Classpack,  
Assorted Colours



Construction Paper, 120  
Count



Washable No-Run School  
Glue, 118 ml



Blunt Tip Metal Scissors



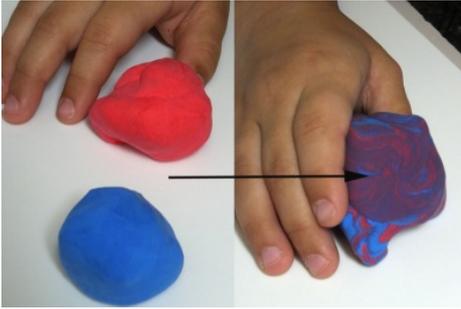
Washable Glitter Glue, 5  
Count

# Steps

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## Step One

1. Make 3 batches of shapes.
2. Make each batch a different colour.
3. Make at least one batch a mixed colour.
4. To make a mixed colour choose 2 primary colours and blend them together.



## Step Two

1. Choose one batch of Model Magic and roll it out until it is about .5 cm (1/4") thick.
2. Use a variety of cookie cutters to make some shapes.
3. Repeat with the other 2 batches to make a total of about 15 shapes.



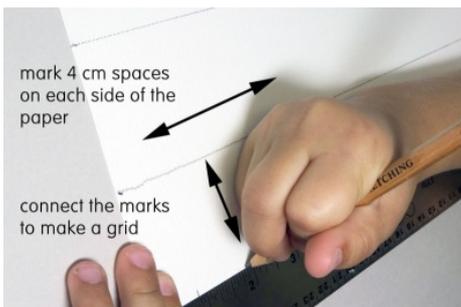
## Step Three

1. Use small pieces of Model Magic, glitter glue or beads to add details to each shape.
2. Set the shapes aside to dry overnight.



## Step Four

1. Mark 4 cm spaces on each side of the paper.
2. Join the dots on opposite sides of the paper to create a grid.



## Step Five

1. Use glitter glue to trace over all the lines on the graph.
2. Glue from the top of the line to the bottom so your hand does not get in the way.
3. Put the paper aside to dry.



## Step Six

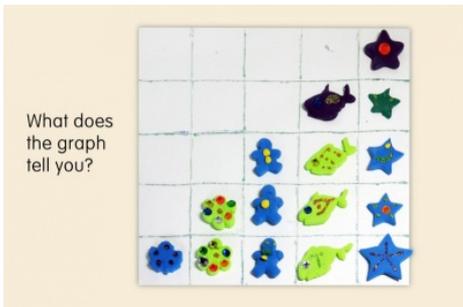
1. Sort similar shapes into groups.
2. Use a tally sheet to count the number of shapes you have in each group.
3. Each time you count a shape, make a mark in the column for that shape.
4. Add up the total for each shape and write it on the bottom of your tally sheet.

leaf	flower	boy	fish	star
I	II	III	IIII	IIII
1	2	3	4	5



## Step Seven

1. Use Crayola Washable Glue to attach your shapes to the grid.
2. Make sure you place similar shapes in the same column to make your picture graph.



## Step Eight

1. View your picture graph with fresh eyes.
2. What does it tell you?

# What to Do

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## Learning Goals

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Students will be able to:

1. Create a 3-D picture graph with 5 columns.
2. Create a variety of shapes using Model Magic and small cutting tools.
3. Use primary colours to create a mixed colour.
4. Demonstrate their understanding of how to read a graph.
5. Demonstrate technical accomplishment and creativity, and
6. Support their ideas with evidence found in the works.

## Extensions

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Have students:

1. Survey their classmates to find out what kind of ice cream they like.
2. Tally the results for each flavour.
3. Use coloured geometric stickers or small cut-out, geometric shapes to graph the results on a picture graph.

## Prepare

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1. Pre-cut paper 20 cm x 20 cm (8" x 8").
2. Download the Colour **poster** available on this website.
3. Gather and make available picture books about graphing and data management, for example, *Tally O'Malley*, by Stuart Murphy & Cynthia Jabar; *Family Reunion*, by Bonnie Bader, *The Great Graph Contest*, by Loreen Leedy; and *Tiger Math: Learning to Graph from a Baby Tiger*, by Ann Whitehead Nagda.
4. Prepare a tally sheet with pictures of 3 different objects, such as fruit or toys, at the top.
5. Prepare a graph chart paper with the same 3 objects at the top.

## Introduction

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1. Read and discuss a fiction book about graphing.
2. Show students the tally sheet and ask them which is their favourite object.
3. Put a tally mark under the appropriate picture for each student's choice. (4 strokes with a diagonal line through them to indicate 5)
4. Count the tally marks in each column and write the total at the bottom.
5. Draw the appropriate number of pictures in each column to demonstrate how the picture graph works.
6. Practice interpreting the data on the graph.
7. Introduce the challenge.

## Activities

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### The Challenge

1. Create a 3-d picture graph with 5 columns.
2. Create a variety of shapes using Model Magic and small cutting tools.
3. Use primary colours to create a mixed colour.
4. Demonstrate your understanding of how to read a graph.
5. Demonstrate technical accomplishment and creativity.

### The Process

1. Make sure that everyone understands the challenge.
2. Establish success criteria with your students, for example, I know I am successful when I have:
  - *measured accurately*
  - *glued carefully*
  - *mixed at least one new colour*
  - *created a variety of shapes*
  - *read the graph correctly*
3. Guide students through the steps in the lesson plan.
4. Demonstrate how to use the glitter glue on the marker lines so it does not smudge.
5. Observe students as they work.
6. Provide individual assistance and encouragement.

# Sharing

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1. Once all the graphs are completed ask students to share them in partners or small groups. Ask them to:
  - *Look closely at the graphs.*
  - *Talk about how shape and colour are used to create a pattern.*
  - *Discuss the use of more than one colour and how colour is used in each shape.*
  - *Take turns comparing their graphs and explaining what they mean.*
  - *Create 3 questions that can be answered by their graph, for example,*
    1. *How many shapes are there in total?*
    2. *What shape is there the most of?*
    3. *How many more fish than flowers are there?*
2. Ask some students to share their ideas with the whole class.
3. Display the graphs so students can view them as a body of work throughout the next few weeks.

# Assessment

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1. Observe students as they work - thoughtful focus, discriminating, seeking more information, elaborating, experimenting.
2. Observe students as they discuss and interpret their graph - active listening, insightful contributions, supporting ideas with evidence found in the artwork and from personal experience.
3. Use a checklist to track progress. (Downloads - Graph\_tracking.pdf)
4. Have students use the self-assessment form to evaluate their work. (Downloads - Graph\_self-assessment.pdf)