Can You Help Me?

Submitted by: Rachel Cahill, Reading and Technology
Penn Mont Academy, Hollidaysburg, Pennsylvania

Target Grade: K-1st grade

Time Required: Day 1: 40 minutes, Day 2: 40 minutes, Day 3: 55 minutes

Standards:

Common Core English Language Arts Standards:

- CCSS.ELA-LITERACY.RL.K.7 With prompting and support, describe the relationship between illustrations and the story in which they appear (e.g., what moment in a story an illustration depicts).
- CCSS.ELA-LITERACY.RL.K.4 Ask and answer questions about unknown words in a text.
- CCSS.ELA-LITERACY.RL.1.7 Use illustrations and details in a story to describe its characters, setting, or events.

Common Core Mathematics Standards:

- CCSS.MATH.CONTENT.K.G.A.3 Identify shapes as two-dimensional (lying in a plane, "flat") or three-dimensional ("solid").
- CCSS.MATH.CONTENT.K.G.B.4 Analyze and compare two- and three-dimensional shapes, in different sizes and orientations, using informal language to describe their similarities, differences, parts (e.g., number of sides and vertices/"corners") and other attributes (e.g., having sides of equal length).
- CCSS.MATH.CONTENT.K.CC.B.4 Understand the relationship between numbers and quantities; connect counting to cardinality.
- CCSS.MATH.CONTENT.1.G.A.1 Distinguish between defining attributes (e.g., triangles are closed and three-sided) versus non-defining attributes (e.g., color, orientation, overall size); build and draw shapes to possess defining attributes.
- CCSS.MATH.CONTENT.1.G.A.2 Compose two-dimensional shapes (rectangles, squares, trapezoids, triangles, half-circles, and quarter-circles) or three-dimensional shapes (cubes, right rectangular prisms, right circular cones, and right circular cylinders) to create a composite shape, and compose new shapes from the composite shape.

Pennsylvania State Standards:

- 9.1.V K.A Know and Use basic elements of visual arts.
- AL.4 K.A Relate knowledge learned from one experience to a similar experience in a new setting.
- AL.2 K.C Accomplish challenging tasks by employing familiar and new strategies as needed.

- 15.4 K.B Demonstrate responsible use of technology and equipment.
- 15.4 K.D Demonstrate the correct use of simple input technology.

Lesson Objectives

Students will be able to:

- Identify basic colors and shapes
- Recognize the word representing the color to the actual color
- Recognize the appropriate shape to color
- Apply basic number counting
- Read direct input code
- Input a programming code into a technology device to complete a task

Central Focus

Zac the Robot needs your help! In this three day, interactive lesson, students will learn color and shape recognition, matching of colors and the appropriate words, and coding! Through the use of the story book *Zac the Robot* by Stephanie Lanier, students will make connections between literature, real-world shapes and colors, and robots. This lesson will "program" the students' love of literature and technology!

Key terms: programming, code, reading, coloring, recognize, match, numbers, number, count, counting, input, task, tech

Background Information

The students will need to be familiar with colors (blue, orange, red, green, yellow, and purple) prior to this lesson. Additionally, student will need to be familiar with basic shapes (circle, triangle, heart, star, diamond, and square) and will need to know what determines that shape (for instance, a square has four equal sides).

The teacher will need to be familiar with the "Code & Go Mouse" for Day 3. The codes to draw Zac are included. To program the "Mouse Artist," first slide the power on (located under the mouse). For this activity, it is recommended that the mouse stays on normal speed. For each forward or reverse step, the mouse will move 5 inches. When rotating right or left, the mouse will turn 90 degrees. For each action step, the mouse will perform one of three random actions (move forward and back, squeak, or chirp). Once you have input the code, press "Go" located in the middle of the mouse. To clear the input, press and hold the "clear" button until it beeps.

Materials

Day 1

- Student Worksheet- Coloring*

- *Zac the Robot* by Stephanie Lanier
- Blue crayon (one per student)
- Orange crayon (one per student)
- Red crayon (one per student)
- Green crayon (one per student)
- Yellow crayon (one per student)
- Purple crayon (one per student)
- Construction paper shapes (blue circle, yellow triangle, red heart, orange star, purple diamond and green square)

Day 2

- Student worksheet- Color and Shape Recognition*
- Pencil (one per student)
- Multiple sets of Shape/Color Word Sort worksheet part 1 (precut and prepared prior to class)
- Multiple sets of Shape/Color Word Sort worksheet part 2 (precut and prepared prior to class)
- Teacher scissors

Day 3

- Zac's programing code*
- The "Mouse Artist"*
    - Code & Go Mouse
    - Felt tip, fine point marker
    - Painter's tape
- The "Prepared Floor Map"*
    - White poster board
    - Painter's tape
    - Blue, red, green, orange, purple, pink, and brown markers
    - Yard/meter stick
- One piece of blue construction paper
- One piece of yellow construction paper
- One piece of red construction paper
- One piece of orange construction paper
- One piece of green construction paper
- Five pieces of black construction paper
- Two pieces of white construction paper
- One piece of paper saying "Thank you for helping me with my Code. I am so glad to have friends like YOU!"
- Pencils
- Student scissors
- Elmer's Glue or Glue Sticks

*Attached

Instruction

Day 1

Opening: 15 minutes

- The teacher will introduce the book they are going to read *Zac the Robot* written and illustrated by Stephanie Lanier.
- The teacher will explain Zac is a robot explorer, but he needs some help.
- The teacher can have his/her students act out Zac's interaction with his bedroom by creating a similar setting in their classroom.
- The teacher can have students simply walk stiffly like a robot around the room as the teacher says, "Step 1, step 2, step 3... Whoa…" and have the students pretend to fall to the floor similar to Zac. Once students are on the floor, have them observe what's around them.
- The teacher will have prepared the classroom floor with a number of indoor recess toys in addition to the construction paper shapes. The teacher will ask the students to identify a few items they see around the room; most likely students will not identify the shapes. The teacher can choose to place a few of each shape on the floor, so more students will find a shape in the closing.
- The teacher will then gather the students back into their reading location and share the wonderful story about *Zac the Robot*.

Procedure: 15 minutes

- After reading the story, the students should return to their desk to help Zac color his buttons.
- The teacher will provide each student with the "I Need Help to Color My Buttons" worksheet.
- Students can collaboratively read the directions for all the students in the classroom.
- Students will independently identify the correct color from their crayon selection and color the appropriate shape.

Closing: 10 minutes

- Once all students have successfully helped Zac color his buttons, they can continue their role play of Zac.
- The teacher will relive the story of Zac with his/her students, reminding them of the plot of the story.
- The student will help clean up the classroom by returning all the materials to their places while searching for the hidden pretend buttons (construction paper shapes).
- The teacher then asks for the students to identify each button found by its color and shape.

Day 2

Opening: 15 minutes

- The teacher will revisit the book *Zac the Robot* written and illustrated by Stephanie Lanier. The teacher will have the students re-tell the story of Zac. The teacher will ask if the students remember the setting or where the story took place. Students should recall Zac's problem where he lost his buttons in his messy room.
- The teacher will now create a goldfish pond made of the multiple sets of Shape/Color Word Sort Worksheet part 1. Students will match the colored shapes with the appropriate colored words. Example Green matches  . Once the students have matched all of their shapes and colored words, the teacher scans page by page through the story book and has the students identify the colored words on each page.

Procedure: 10 minutes

- After scanning the story, have the students return to their desk to help Zac find the correct colored shape to match his buttons based on the context clues in each sentence.
- The teacher will point out that the color word is underlined to help the students with their identification.
- The teacher is not to read the sentences to the students; however, the teacher can indicate there are context clues found on an illustration on the worksheet (Zac is visiting on the worksheet).
- Students will independently circle the correctly colored shape based on the context clues in the sentence.

Closing: 15 minutes

- Once all students have successfully helped Zac find the correctly colored and shaped buttons, they can create another goldfish pond in small groups using multiple sets of the Shape/Color Word Sort Worksheet part 2.
- This time the color clue found on the color's name card is missing, and all the colored names are black. Example **Green** matches  . The teacher will have each small group of students display the matching shape and color words.

Day 3

Opening: 5 minutes

- The teacher will revisit the book *Zac the Robot* written and illustrated by Stephanie Lanier. The teacher will talk about the problem Zac encountered with losing his buttons.
- The teacher will then introduce another problem Zac has encountered. This time the students need to find Zac and his code. Zac does have a friend willing to help the students find him and his code.
- At this point, the teacher can introduce the students to the "Mouse Artist." Unfortunately, the "Mouse Artist" can only do what someone else tells him/her.
- The teacher can demonstrate by placing the "Mouse Artist" on a piece of poster board. The Mouse will not move because no one told him/her what to do.
- Then, the teacher can input a simple program into the Mouse (the neck program, Program #2), placing him/her back on the poster board and touching the green circle. This time the students get to see the teacher tell the Mouse what to do and he/she does it.

Procedure: 40 minutes

Please Note: All program codes are attached below.

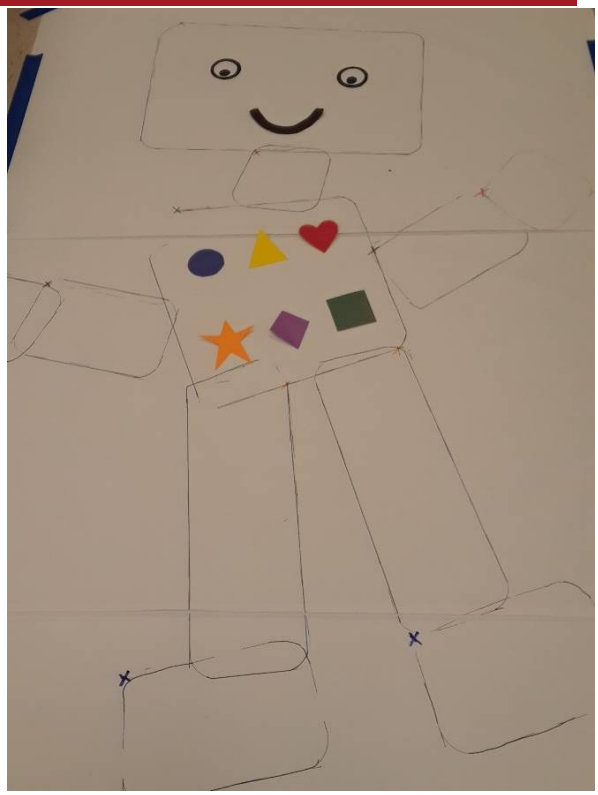
- After meeting Zac's friend, the teacher can ask the students, "How can we find Zac?" This may take some time and reminders that Zac is made of 2 main shapes, squares and rectangles. Revisiting the front cover of the book will help the students see the shapes.
- The teacher will have the students identify the shapes associated with the head, neck, body, arms, hands, legs and feet.
- The teacher will then suggest the students start by asking the "Mouse Artist" to draw Zac's head.
- The teacher will introduce Program #1 and have the students help program the code into the Mouse.
- The Teacher will then have a student place the mouse on the BLUE X on the floor map and press the green circle. During this time, the student can watch the Mouse create Zac's head.
- Once his head is completed, the teacher can ask the students, "How do we know his head is a rectangle?" The teacher would be looking for, "It has two sets of sides that are the same length." The students can then check and see if Zac's head is a rectangle.
- The teacher will then have the students look at Zac's neck and describe its shape. The teacher will then suggest the students tell the "Mouse Artist" to draw Zac's neck. The teacher will introduce Program #2 and have the students help program the code into the Mouse.
- The Teacher will then have a student place the mouse on the RED X on the floor map and press the green circle. Once his neck is completed, the teacher can ask the students, "How do we know his

neck is a square?" The teacher would be looking for, "It has all four sides that are the same length." The students can then check and see if Zac's neck is a square.

- The teacher will then have the students look at Zac's body and describe its shape. The teacher will then suggest the students tell the "Mouse Artist" to draw Zac's body. The teacher will introduce Program #3 and have the students help program the code into the Mouse.
- The teacher will then have a student place the mouse on the GREEN X on the floor map and press the green circle.
- Once his body is completed, the teacher can ask the students, "How do we know his body is a square?" The teacher would be looking for, "It has all four sides that are the same length." The students can then check and see if Zac's body is a square.
- The teacher will then have the students look at Zac's legs and describe their shape. The teacher will then suggest the students tell the "Mouse Artist" to draw Zac's legs, but only one at a time.
- The teacher will introduce Program #4 and have the students help program the code into the Mouse. The Teacher will then have a student place the mouse on the first ORANGE X (keep in mind the mouse needs to run Perpendicular to top for legs) on the floor map and press the green circle. Once his first leg is completed, the teacher can have the students place the Mouse on the second ORANGE X.
- Once both legs are completed, the teacher can ask the students, "How do we know his legs are rectangles?" The teacher would be looking for, "It has two sets of sides that are the same length." The students can then check and see if Zac's legs are rectangles.
- The teacher will then have the students look at Zac's feet and describe their shape. The teacher will then suggest the students tell the "Mouse Artist" to draw Zac's feet but only one at a time.
- The teacher will introduce Program #5 and have the students help program the code into the Mouse. The teacher will then have a student place the mouse on the first PURPLE X (we are back to running parallel as indicated in floor map description) on the floor map and press the green circle. Once his first foot is completed, the teacher can have the students place the Mouse on the second PURPLE X.
- Once both feet are completed, the teacher can ask the students, "How do we know his feet are rectangles?" The teacher would be looking for, "It has two sets of sides that are the same length." The students can then check and see if Zac's feet are rectangles.

- The teacher will then have the students look at Zac's arms and describe their shape. The teacher will then suggest the students tell the Mouse to draw Zac's arms but only one at a time. The teacher will introduce Program #6 and have the students help program the code into the Mouse. The teacher will then have a student place the mouse on the first BROWN X on the floor map and press the green circle. Once his first arm is completed, the teacher can have the students place the Mouse on the second BROWN X.
- Once both arms are completed, the teacher can ask the students, "How do we know his arms are rectangles?" The teacher would be looking for, "It has two sets of sides that are the same length." The students can then check and see if Zac's arms are rectangles.
- The teacher will then have the students look at Zac's hands and describe their shape. The teacher will then suggest the students tell the Mouse to draw Zac's hands, but only one at a time. The teacher will introduce Program #7 and have the students help program the code into the Mouse. The Teacher will then have a student place the mouse on the first PINK X on the floor map and press the green circle. Once his first hand is completed, the teacher can have the students place the Mouse on the second PINK X.
- Once both hands are completed, the teacher can ask the students, "How do we know his hands are squares?" The teacher would be looking for, "They have all four sides that are the same length." The students can then check and see if Zac's hands are squares.

Closing: 10 minutes



- The teacher will ask the students, "What is Zac still missing?" The teacher would be looking for, "His buttons and facial features."
- The teacher will distribute the blue paper and ask, "What shape is Zac's Blue button?" The students will respond, "Circle."
- The teacher will distribute the yellow paper and ask about its shape. The students will respond, "Triangle."
- The teacher will distribute the red paper and ask about its shape. The students will respond, "Heart."
- This process is repeated until all button paper is distributed.
- The students with the button paper are asked to cut out that correct shape and place it on Zac's Body.
- Lastly, the students need to create Zac's facial features. The teacher will ask the students about the shape of Zac's eyes. Each of Zac's eyes have 2 black circle. One circle is larger and the other is smaller. Zac's eyes also have one white medium sized circle. The teacher will then have the students create Zac's eyes.
- Then, all that is left is Zac's mouth. Once the students complete Zac's mouth, the teacher can drop a piece of paper near his mouth that says, "Thank you for helping me with my Code. I am so happy to have friends like you!"

Assessment

Formative Assessment:

- Day 1:
  - Students will be assessed on the correct identification of the shape and colored the appropriate color inside the button.
  - Students will be assessed on correctly identifying the shapes found on the floor of the classroom by both color and name.
- Day 2:

- Students will be assessed on the correct identification of the appropriate color for each shaped button.
- Students will be assessed on correctly matching color clued words with shapes.
- Students will be assessed on correctly matching color words with shapes.

- Day 3:
  - Students will be assessed on input of the coded programs to create Zac.
  - Students will be assessed on correctly matching colors with shapes for Zac's buttons.
  - Students will be assessed on correctly inferring the shape and colors of Zac's eyes.

Creating the "The Mouse Artist"

Materials-

Code & Go Mouse
Felt Tip Fine Point Marker
Painters Tape
Large Piece of White Paper or Poster Board

Creating the Mouse Artist-

1. Place large paper on the table to create a work space.
2. Remove cap from the felt tip, fine point marker.
3. Place cap to the side..
4. Rip a piece of tape 3-inches in length
5. Place on the loosely on the edge of the table for easy access
6. Place marker felt tip side down touching the paper on the Orange Arrow side of the Mouse.
7. Move the mouse back and forth manually to ensure the marker is in contact with the paper.
8. Secure with the 3-inch piece of tape.
9. Use other pieces of tape to ensure marker will remain stationary. Do not cover coding buttons.
10. Flip the mouse over to base and slide the on/ off switch to NORMAL
11. Run a sample straight line program to troubleshoot the mouse artist.

Sample Program- Press  to Start Program
Press 3 
Press  to Run the Program

Troubleshooting Mouse Artist-

-If mouse artist does not draw a line, the marker is not making good contact with the paper so lower the marker.

-If mouse artist draws a line is a circle, the marker is too low on the paper creating an excess of friction so lift the marker.

-If mouse artist draws a line that skips in places the marker is not parallel to the paper so make small adjustments to lower the marker to either the front or back of the tape attachment point.

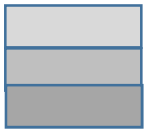
Creating the Floor Map for Zac

Materials-

- Bulletin Board Paper (white preferred)
  - 3 pieces - 35in x 60in
- Painters Tape
- Blue Marker
- Red Marker
- Green Marker
- Orange Marker
- Purple Marker
- Brown Marker
- Pink Marker
- Yard/Meter Stick

Creating the Floor Map-

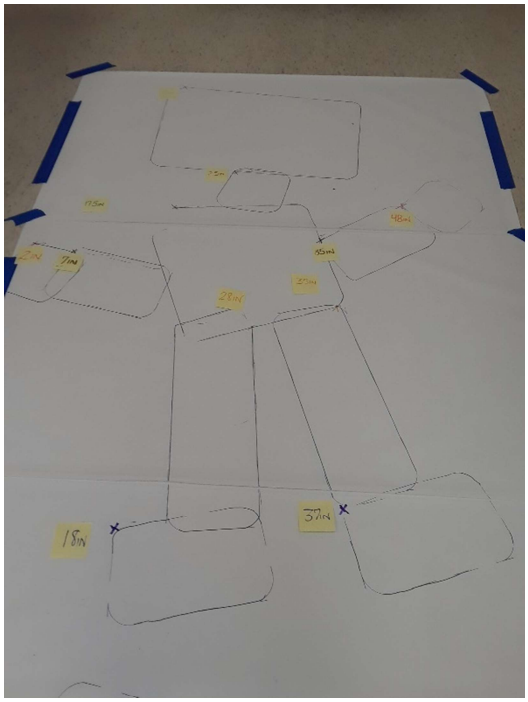
1. Cut 3 pieces of Bulletin Board Paper 35in X 60in.
2. Place cut pieces of paper on the floor.
3. Orient the paper side to side so that the paper overlaps by no more than 1 in.



4. Secure the edges with painters tape. Be sure to remove all air pockets and bubbles.
5. Measure down from the top of the paper 4in and in from the left side 16in (as you look at paper) and place a BLUE X.
6. Measure down from the top of the paper 24in and in from the left side 25in (as you look at paper) and place a RED X.
7. Measure down from the top of the paper 32in and in from the left side 18in (as you look at paper) and place a GREEN X.
8. Measure down from the top of the paper 50in and in from the left side 28in (as you look at paper) and place 1 of the two ORANGE X's.
9. Measure down from the top of the paper 50in and in from the left side 35in (as you look at paper) and place the second of the two ORANGE X's.
10. Measure down from the top of the paper 72in and in from the left side 20in (as you look at paper) and place 1 of the two Purple X's.
11. Measure down from the top of the paper 72in and in from the left side 31in (as you look at paper) and place the second of the two Purple X's.
12. Measure down from the top of the paper 40in and in from the left side 7in (as you look at paper) and place 1 of the two Brown X's.

13. Measure down from the top of the paper 40in and in from the left side 35in (as you look at paper) and place the second of the two Brown X's.
14. Measure down from the top of the paper 36in and in from the left side 2in (as you look at paper) and place 1 of the two Pink X's.
15. Measure down from the top of the paper 36in and in from the left side 48in (as you look at paper) and place the second of the two Pink X's.

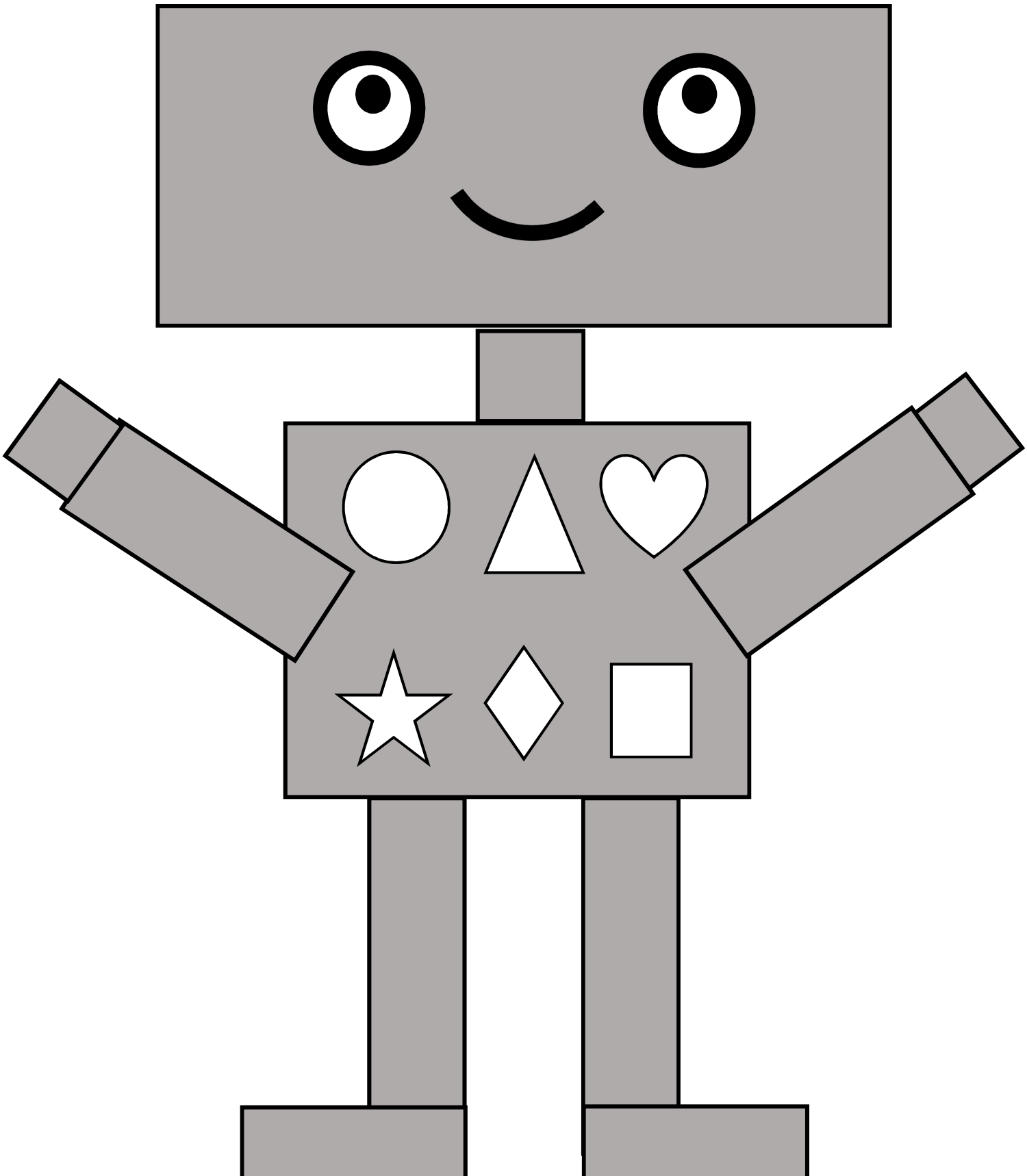
The mouse will move slightly with changes in friction therefore eye balling some of the locations as you go is recommended. The mouse artist is designed to move parallel to the long side of the paper and face right when placed on the floor map with the exception of the legs (orange X) which will move perpendicular to the long side.

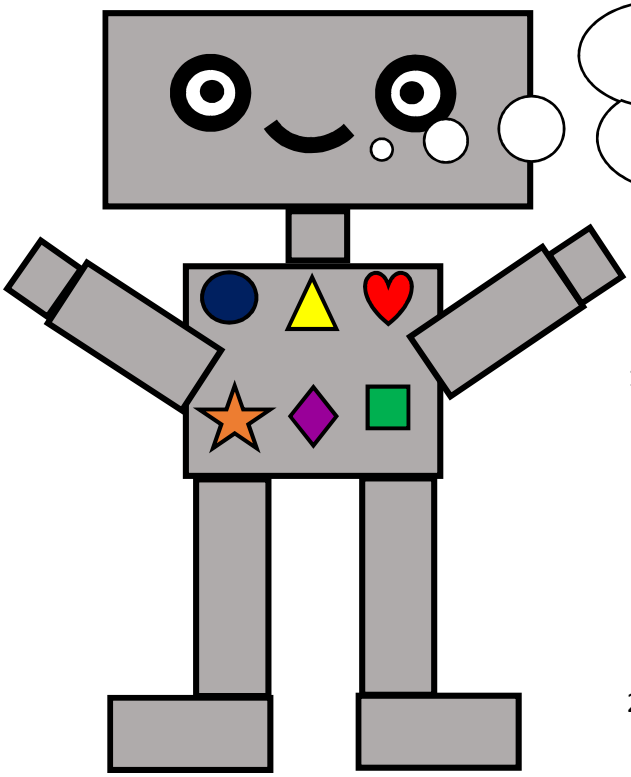


Hi, I am Zac.

Can You Help Me? I Need Help to Color My Buttons…

My Circle button is Blue. My Star button is Orange.
My Heart button is Red. My Square button is Green.
My Triangle button is Yellow. And my Diamond button is Purple.





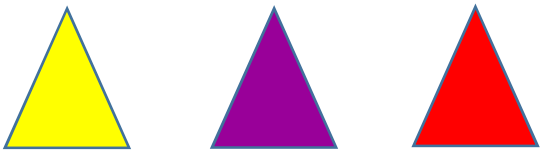
Hi, I am Zac.

Can you help me?

I need help in finding the correct color and shape for my buttons.

1. My Circle Button is Blue.
   Can you draw a circle around the Blue Circle?

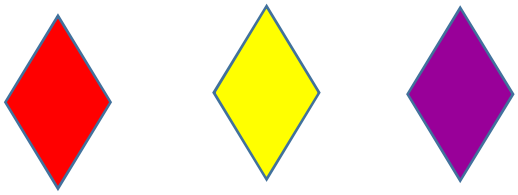
2. My Triangle Button is Yellow.
   Can you draw a circle around the Yellow Triangle?



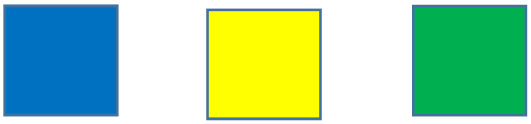
3. My Heart Button is Red.
   Can you draw a circle around the Red Heart?

4. My Star Button is Orange.
   Can you draw a circle around the Orange Star?

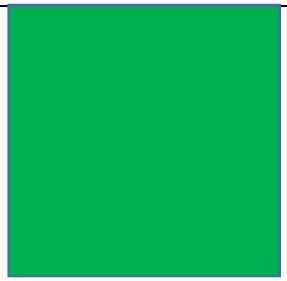
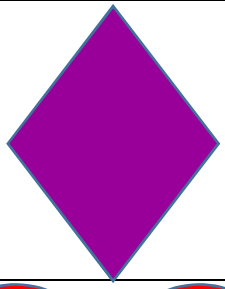
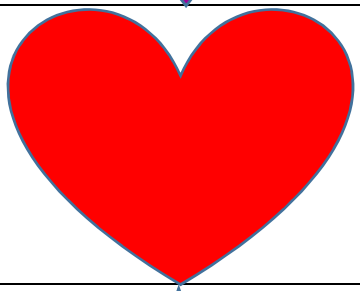
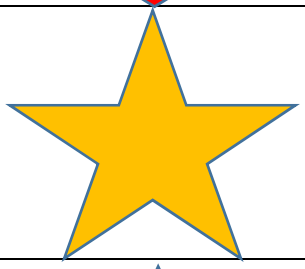
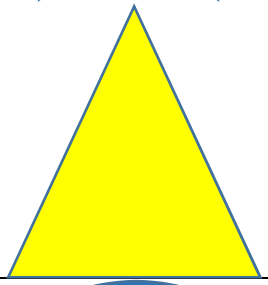
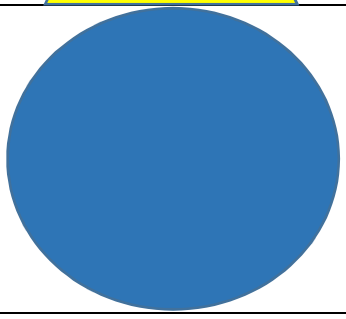
5. My Diamond Button is Purple.
   Can you draw a circle around the Purple Diamond?

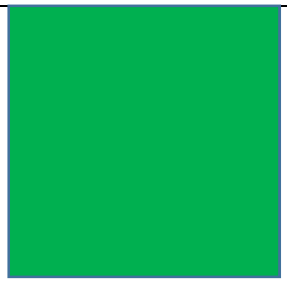
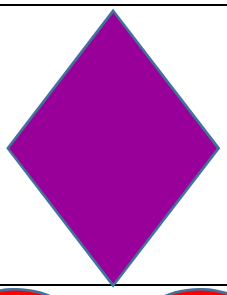
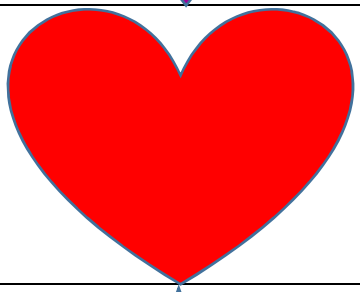
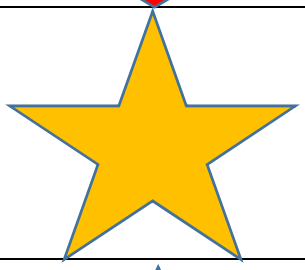
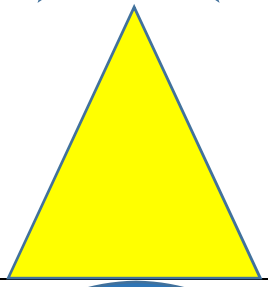
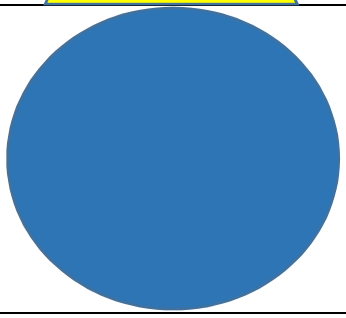


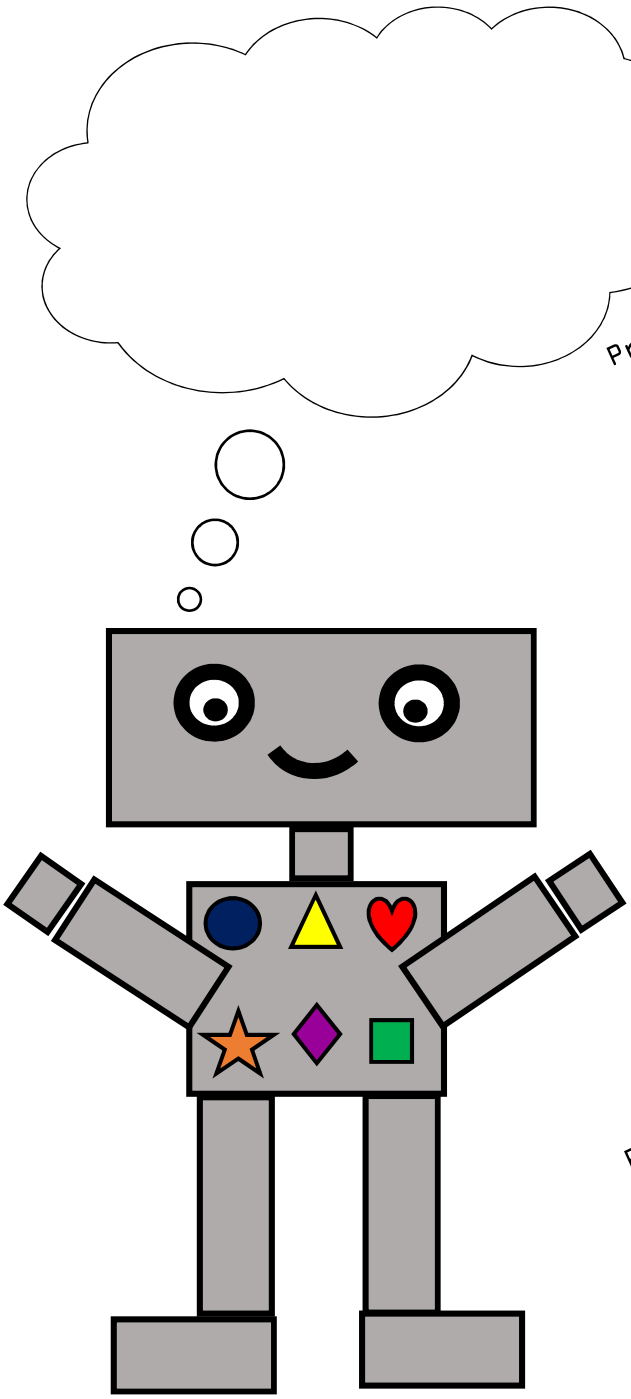
6. My Square Button is Green.
   Can you draw a circle around the Green Square?



Shape/Color Word Sort Worksheet part 1

	Green
	Purple
	Red
	Orange
	Yellow
	Blue

Shape/Color Word Sort Worksheet part 2	
	Green
	Purple
	Red
	Orange
	Yellow
	Blue



Program #1

My Head is a Rectangle,
so it has two sets of side that are the same length.

Can you help with the code for my HEAD?

Press 🔴 to Start Program
Press 5 ⬆
Press 1 ➡
Press 3 ⬆
Press 1 ➡
Press 5 ⬆
Press 1 ➡
Press 3 ⬆
Press 1 ➡

Place Mouse Artist on the BLUE X on the Paper.

Press 🟢 to Run the Program
Press 🟡 to Clear the Program

Hooray, I now have a Head…

Program #2

My Neck is a Square
so it has all four sides that are the same length.

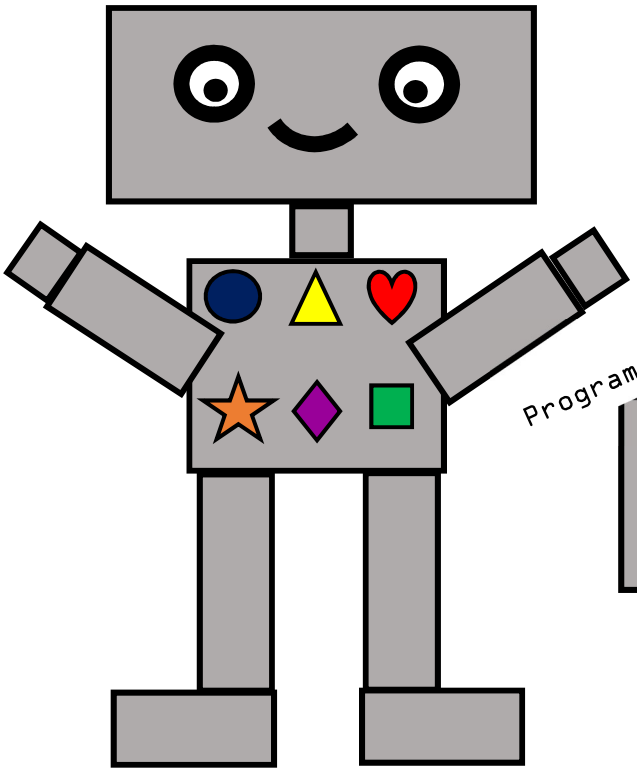
Can you help with the code for my NECK?

Press 🔴 to Start Program
Press 1 ⬆
Press 1 ➡
Press 1 ⬆
Press 1 ➡
Press 1 ⬆
Press 1 ➡
Press 1 ⬆
Press 1 ➡

Place Mouse Artist on the RED X on the Paper.

Press 🟢 to Run the Program
Press 🟡 to Clear the Program

Hooray, I now have a Neck…



Program #3

My Body is a Square,
so it has all four sides that are the same length.

Can you help with the code for my Body?

Press ● to Start Program
Press 3 ↑
Press 1 →
Press 3 ↑
Press 1 →
Press 3 ↑
Press 1 →
Press 3 ↑
Press 1 →

Place Mouse Artist on the Green X on the Paper.
Press ● to Run the Program
Press ● to Clear the Program

Hooray, I now have a Body…

Program #4

My Legs are Rectangles,
so they have two sets of side that are the same length.

Can you help with the code for my Legs?

Press ● to Start Program
Press 4 ↑
Press 1 →
Press 1 ↑
Press 1 →
Press 4 ↑
Press 1 →
Press 1 ↑
Press 1 →

Place Mouse Artist on one of the 2 Orange X's on the Paper. Don't Forget my Second Leg…
Press ● to Run the Program
Press ● to Clear the Program

Hooray, I now have my Legs…

Program #5

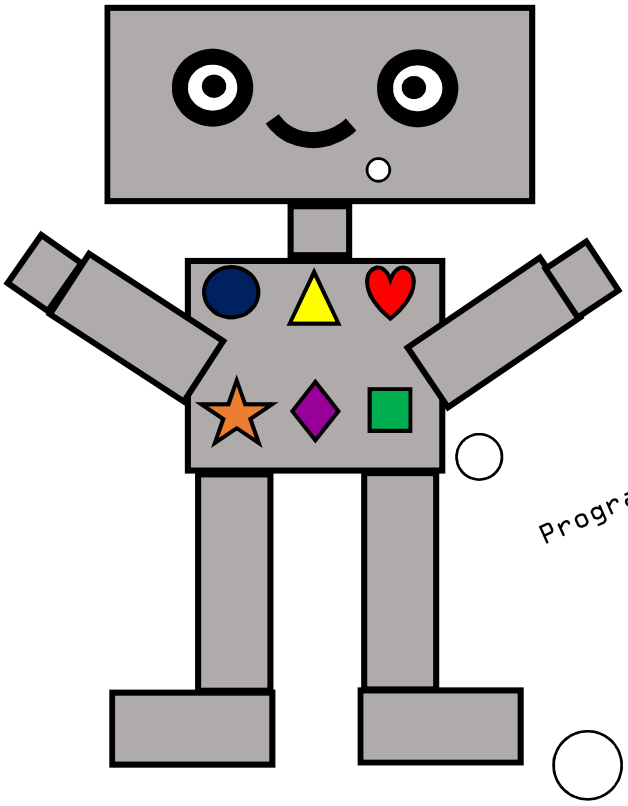
My Feet are Rectangles,
so they have two sets of side that are the same length.

Can you help with the code for my Feet?

Press ● to Start Program
Press 2 ↑
Press 1 →
Press 1 ↑
Press 1 →
Press 2 ↑
Press 1 →
Press 1 ↑
Press 1 →

Place Mouse Artist on one of the 2 Purple X's on the Paper. Don't Forget my Second Leg…
Press ● to Run the Program
Press ● to Clear the Program

Hooray, I now have my Feet…



Program #6

My Arms are Rectangles, so they have two sets of side that are the same length.

Can you help with the code for my Arms?

Press ● to Start Program
Press 2 ↑
Press 1 →
Press 1 ↑
Press 1 →
Press 2 ↑
Press 1 →
Press 1 ↑
Press 1 →

Place Mouse Artist on the Brown X on the Paper.
Press ● to Run the Program
Press ● to Clear the Program

Hooray, I now have my Arms…

Program #7

My Hands are Squares, so they have all four sides that are the same length.

Can you help with the code for my Hands?

Press ● to Start Program
Press 3 ↑
Press 1 →
Press 3 ↑
Press 1 →
Press 3 ↑
Press 1 →
Press 3 ↑
Press 1 →

Place Mouse Artist on the Pink X on the Paper.
Press ● to Run the Program
Press ● to Clear the Program

Hooray, I now have my Hands…

Now can you add my 6 buttons, we found in my story?