GALILEO MAKERS: TOYS
CAMP GALILEO
2016 STAR ART
(For rising 1st & 2nd grade campers)

This curriculum was developed by Galileo Learning in collaboration with the Maker Education Initiative.

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About Galileo Learning

Galileo Learning (Galileo) creates and operates Innovation Camps for kids. Their mission is “to develop innovators who envision and create a better world” and this mission comes to life each summer at nearly 60 imagination-sparking locations (40 in the Bay Area, 15 in SoCal locations and 4 in Chicagoland.) They also train and employ more than 2100 educators and aspiring educators as summer staff. Galileo’s programs serve campers from pre-K through 8th grade.

In all of Galileo’s programs, the curricula focuses on helping campers (and staff) develop 21st Century skills and mindsets through understanding and applying the Galileo Innovation Approach (GIA). The GIA is inspired by the Stanford d.school’s design thinking process and mindsets and fine tuned for 5-14 year old campers who are especially open to absorbing new ways to think, explore and create. Click here for more information about Galileo Learning.
The Galileo Innovation Approach

The Galileo Innovation Approach (GIA) is our unique approach to teach and learning. It is designed to develop Galileo Innovators – campers and staff who imagine and create a better world. Galileo Innovators approach their work with an Innovator’s Mindset, do their work with an Innovator’s Process, and seek/leverage Innovator’s Knowledge.

Galileo Innovator’s Mindset

Galileo Innovators have dispositions that support breakthrough thinking and creative work. The Galileo Innovator’s Mindset has five elements:

BE VISIONARY
- I envision a better world.
- I imagine things that don’t yet exist.
- I believe that it is my place to turn ideas into reality.

BE COURAGEOUS
- I freely share my creative thoughts.
- I stretch myself to try new things.
- I embrace challenges.

BE COLLABORATIVE
- I value the unique perspectives of others.
- I build on the ideas of others.
- I use my strengths to support the work of others.

BE DETERMINED
- I persevere until I achieve my goal.
- I recognize setbacks as opportunities to learn.
- I know that innovation and mastery require effort.

BE REFLECTIVE
- I take time to think about what is and isn’t working in my design.
- I think about how my work impacts other people and the world.
- I seek feedback to improve myself and my work.
Galileo Innovator’s Process
Galileo Innovators learn and practice an iterative process to bring the best ideas to fruition. The following diagram illustrates the Galileo Innovator’s Process:

Galileo Innovator’s Knowledge
Galileo Innovators require subject-specific knowledge to creatively solve problems and make their visions a reality. Galileo Innovator’s Knowledge lies in the following four categories:

CONCEPTS AND FACTS
Galileo Innovators understand the big ideas, principles, and facts relevant to their work.
Examples: Adding more tension to a rubber band creates a higher pitch when it’s plucked

HISTORICAL CONTEXT
Galileo Innovators understand the contributions, objectives, and processes of relevant movements, artists, scientists, designers, and other experts who came before them.
Examples: Kandinsky uses a variety of brushstrokes and line types to represent music visually

SKILLS AND TECHNIQUES
Galileo Innovators understand how to use relevant materials, tools, and technology so they can effectively build, test, and share their ideas.
Examples: Manipulating cardboard by cutting, curling, bending, folding, scoring, tabbing, and fastening; taping techniques; watercolor resist

AUDIENCE AND ENVIRONMENT
Galileo Innovators understand the needs, beliefs, and circumstances of their users and the physical context in which their work will be received.
Examples: Engineers need to design buildings in a specific way when constructing in an earthquake prone area
Galileo Innovation Approach and the Curriculum

Our curriculum is designed to support you in teaching the Galileo Innovation Approach and nurturing Galileo Innovators. Below are some ways in which the curriculum fosters your development as an Innovation Educator.

First, you’ll find that the components of the GIA literally leap off the page.

- The GIA terms are emphasized throughout the curriculum in ALL CAPS to help you easily identify opportunities to integrate the GIA.
- An overview of the key Innovator’s Knowledge, Process, and Mindset for each lesson appears on the “Secret Sauce” page. This page clearly spells out the key ingredients that transform each project into an innovation-based Galileo lesson.

Second, the curriculum includes a daily Innovator’s Mindset Challenge. The Mindset Challenge helps campers focus on developing a different part of the Innovator’s Mindset each day and shows how practicing this element can help them develop as innovators. Detailed facilitation notes about how to introduce and support the Mindset Challenge are included as a core part of each lesson.

Third, each day concludes with a Lesson Wrap Up that provides a forum for you to go deep on innovation themes with campers. Prompts are provided to support project sharing, reviewing key Innovator’s Knowledge and debriefing the day’s Mindset Challenge. Use this time to help campers solidify what they learned, notice how practicing the mindset helped them with their project and recognize the innovator in themselves and in others. Familiarize yourself with the discussion questions before each lesson so you can best guide campers to develop as innovators throughout the rotation.

Additionally, these general practices can help you to bring the GIA to life:

- Think about what it means to you to be an Innovation Educator and find ways to realize that vision.
- Pace your class to allow time for campers to engage with each project, giving ample time for the TEST, EVALUATE and REDESIGN phase so that campers can thoughtfully evaluate how they can improve their designs, and then implement the modifications.
- Model the Mindset in your teaching. When you make a mistake, celebrate it! Tell the campers that your teaching or the project didn’t go as planned, and that you’ll learn from that and try it a different way in the next rotation.
- Help campers understand what it means to be a Galileo Innovator and strive to shape their self-images as such.
- Recognize campers as they exhibit the Innovator’s Mindset as relevant throughout the day—in addition to this focus during the Wrap Up. (E.g., I see that you’re BEING REFLECTIVE, thinking about what is and isn’t working with prosthetic hand design. That’s a great way to start developing an innovative solution!)
- Refer to the steps of the Innovator’s Process (and your Galileo Innovator’s Process Poster) as you describe the day’s activities and as campers work.

Finally, the curriculum supports your own innovations for how to integrate the GIA in your classroom. Please apply the Innovator’s Mindset and Process to this end and SHARE your learning with your colleagues!
Today’s maker inspiration comes from Paul Bischof and his Lotus E21 project.

**Today: Idea Generation & Paper Vehicle Parts**
Today campers will come up with ideas for their fantasy vehicles by combining parts of multiple vehicles, and learn basic paper crafting techniques while building 3D paper forms.

**What’s Next**
Tomorrow (Day 2) campers will learn about taping techniques, how to use tabs, and the importance of testing for stability. Then they will take the set of 3D paper forms they made today, make more forms as needed, and use all these parts to build their fantasy vehicles.
Today's Project: At-A-Glance

Make a paper cone

16 oz. paper cup traced on a quarter sheet of paper and cut out

Make paper boxes

2.25 x 4.25" sheets of paper folded and taped together
**Make a paper cylinder**

2.25 x 4.25" sheet of paper rolled and taped into a cylinder

**Make a tent fold**

2.25 x 4.25" sheet of paper folded into a tent

**Make an accordion fold**

2.25 x 4.25" sheet of paper folded into an accordion
Teaching the Lesson: Overview

OUR SECRET SAUCE: THE G.I.A.

KNOWLEDGE FOCUS

SKILLS AND TECHNIQUES: Paper Crafting Techniques
Campers learn and practice paper crafting techniques to build 3D paper forms.

Why? – Without taking the time to learn paper crafting techniques before tomorrow’s lesson, Stars won’t know how to start creating the amazing vehicles they imagine. Learning these techniques will give them the toolbox they need to turn their visions into reality. Paper crafting will also be an option for Days 2-4 this week, so this knowledge is key for success the rest of the week.

PROCESS FOCUS

GENERATE IDEAS: “Yes, and...”
Campers will generate initial ideas for their vehicles by building off other campers’ ideas, saying “Yes, and...” to suggest an idea of a different part of a vehicle to add.

Why? – Since campers won’t start building their fantasy vehicles until tomorrow, it may be hard for them to visualize how all this learning and practicing will help them with their final vehicles tomorrow. Giving campers time to generate ideas for their vehicles before learning paper crafting techniques will result in higher levels of “buy-in.” This will support campers staying determined and committed to do their best today so that their visions can come to life tomorrow.

MINDSET FOCUS

BE DETERMINED – I know that innovation and mastery require effort.
Campers are committed to putting in effort today to set themselves up for success, staying focused and determined to create excellent paper parts for their vehicle construction tomorrow.

Why? – Campers are making a lot of materials today but they won’t get to use them until tomorrow, which can make today’s work feel arbitrary. Today’s challenge supports campers in recognizing and trusting that their hard work today is connected to their final creations tomorrow! Additionally, practicing being determined today highlights how many art forms require a lot of preparation and pre-design before the final piece comes together.

Remember to include these special ingredients to transform today’s project into a Galileo, innovation-based lesson. Bam!
Lesson Breakdown & Camper Goals

<table>
<thead>
<tr>
<th>Activity</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Welcome to Art</td>
<td>10 min</td>
</tr>
<tr>
<td>Introduction</td>
<td>5 min</td>
</tr>
<tr>
<td>Guided Activity: “Yes, and...” Fantasy Vehicles</td>
<td>10 min</td>
</tr>
<tr>
<td>- Introduce different types of vehicles and their parts</td>
<td></td>
</tr>
<tr>
<td>- Facilitate a guided “Yes, and...” brainstorming activity</td>
<td></td>
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<tr>
<td>- Guide campers to visualize an idea for a fantasy vehicle</td>
<td></td>
</tr>
<tr>
<td>Guided Activity: Paper Crafting Techniques</td>
<td>30 min</td>
</tr>
<tr>
<td>- Briefly introduce different shapes in vehicles</td>
<td></td>
</tr>
<tr>
<td>- Demo and then have campers make cones, boxes, cylinders, tent folds, and accordion folds</td>
<td></td>
</tr>
<tr>
<td>Clean Up</td>
<td>5 min</td>
</tr>
<tr>
<td>Wrap Up</td>
<td>10 min</td>
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</tbody>
</table>

Timing Notes
Campers are on track so long as they have a set of 3D paper forms – at least one cone, box, cylinder, tent, and accordion.

If campers or groups are behind
- Skip teaching campers how to make accordion folds; these are one of the most common folds campers may already know how to make.

If campers or groups are ahead
- Give campers extra quarter sheets (4.25 x 5.5") of paper to practice making more of the forms they learned today, or to try and make new forms.
- If it’s not the 4th of July week, you may have campers sort foam letters for the Day 5 Onomatopoeia Ball lesson. This will make it easier for campers to find the letters they need during that activity.
# Teaching the Lesson: Play-by-Play

## Welcome to Art (10 min)

<table>
<thead>
<tr>
<th>Welcome campers, introduce the theme, and make a quick story connection</th>
<th>Ex: Did you hear a story about Lucy and Finn this morning? How are they doing? (Not great. EvilleMart stole their toy for ToyFest.) Oh no! Fortunately, there’s no shortage of innovative toy ideas in the world. Let’s use our artistic vision to bring some to life right now—maybe we can even inspire Lucy and Finn’s next project.</th>
</tr>
</thead>
</table>
| Set expectations about the space and materials | Important to set clear expectations for the whole week  
Go over daily procedures you’ll want campers to be familiar with; some ideas  
• What they do when they first come in  
• What materials they can and can’t touch  
• How they treat plastic (leave it on; don’t poke holes in it!)  
• How they treat materials  
Where they put finished projects |
| Set expectations about behavior in the classroom | Come up with agreements about  
• How everyone can stay safe  
• How campers can make sure they all have fun  
Emphasize respecting you, other staff, and each other |
| Introduce the GIA | Introduce the idea of being an innovator  
• Ex: We’ll be learning about art all week, and we’ll also be practicing being innovators. Being an innovator is a really important job. Innovators think of really great ideas and can make those ideas real!  
Point out your Innovator’s Process poster and quickly intro the Process  
• Don’t go over each step in detail now  
• Ex: These are the steps that good innovators follow to help them make amazing creations. They come up with a lot of ideas, test them out, and redesign to make them better.  
Point out your Innovator’s Mindset poster and intro the Mindset  
• Again don’t go over each Mindset element in detail now  
• Ex: This is how good innovators think and act. They try new ideas, they work together, and they don’t give up!  
Ask campers if they’re ready to innovate! |
| Introduction (5 min) | Announce this week is all about makers  
Makers are people who make things themselves  
• There are all kinds of makers  
• Game makers, tool makers, clothes makers, food makers, etc.  
This week campers will be toy makers who make their own toys!  
Makers know they don’t have to go to a toy store to get toys or be part of a big toy company; anyone can be a toy maker! |
### Build excitement and give an overview of today’s project

Today they will start a 2-day project making fantasy vehicles
- Will be completely unique, unlike any other vehicle
- Unlike plastic toys bought in stores
- Our vehicles will be made from paper
- Show the [Day 2 Fantasy Vehicle Project Sample](#) color copy to give campers a vision for the final project

![Day 2 Fantasy Vehicle Part 2](#)

Explain that in order to make amazing and unique vehicles, today we will learn paper folding and rolling techniques while building a basic set of parts for our vehicles
- Will use these parts tomorrow to build our actual vehicles

### ★ Introduce the Innovator’s Mindset: BE DETERMINED

Point to this on your Innovator’s Mindset poster

Define the Mindset element in the context of today’s lesson
- *Today we’re going to focus on being determined. This means staying committed to working hard, even when we don’t always get to see the end result right away. We won’t get to use all the paper shapes we make until tomorrow, so it’s important to remember that we are doing this work for our FUTURE SELVES! Tomorrow you will be very happy that you were so determined and focused today to make really good paper parts for your vehicle.*

### Introduce campers to a maker who created his own version of today’s project

Show today’s [Maker Connection](#) color copy for inspiration

![Maker Connection](#)

Read the maker’s name and quickly describe the project

Pick one of the Q&As and share it with campers now
- Explain these are things the maker wanted to share with campers to inspire them as they make toys all week
- If necessary rephrase or sum up in age-appropriate language
• You can read the other Q&A as campers work or if you have extra time later in the week

Have campers give a thumbs-up if they’re psyched to make their own toys like this maker!

Guided Activity
“Yes, and...” Fantasy Vehicles (10 min)

<table>
<thead>
<tr>
<th>Briefly introduce different parts of vehicles</th>
<th>Point to the Trains, Cars, Rocketships, Ships, and Airplanes color copies</th>
</tr>
</thead>
</table>

Explain that in order to create these vehicles out of paper, will need to break down into basic parts

Ask campers what parts they can identify in these vehicles:
- Wheels, chimneys, doors, noses, sails, hulls, wings, tails, etc....

Today, campers will learn how to make paper shapes that they can use as these parts

Discuss creating fantasy vehicles by combining different vehicle types together

Remind campers that they won’t be making just a train or a plane or a ship, but an entirely unique fantasy vehicle

This means it can have different parts from different kinds of vehicles

In fact, combining things that already exist is one way that artists come up with unique ideas

Support GENERATE IDEAS and introduce and demo the “Yes, and...” brainstorm activity

Tell campers that we are going to build on each other’s ideas through a “Yes, and...” game
- Campers will work in groups of 4-5
- Every vehicle will start with a box (show campers your sample vehicle again, pointing out how the body is made of a 2 x 2 x 4.5" box)
- One camper will start with an idea of how to add onto that box
• The next camper says: “Yes, and...” and adds an idea of something else to add to the vehicle

➤ Have TL help you demonstrate (you and the TL can just take turns for the example below):

You: Let’s add a cone to the front like the tip of a rocketship.
TL: Yes, and let’s add wings to the sides.
You: Yes, and let’s add sails to the top.
TL: Yes, and let’s give it a chimney like a steam train.

Support GENERATE IDEAS

Clump campers into groups of 4-5 and have them start the “Yes, and..” brainstorm

Campers can just work with whoever they are sitting next to
Form small groups for them for efficiency
Encourage campers to get going!
If campers are stumped and can’t come up with an idea, remind them to look at the color copies
It may be helpful for campers to actually hold one of the 2 x 2 x 4.5” boxes that will be the vehicle body to help with brainstorming
Groups can start over and do a few different versions of a “Yes, and...” vehicle
Give campers 1-2 minutes to work together
Give campers a 10-second warning before they should share their final ideas

Support GENERATE IDEAS

Have campers visualize an idea for their individual fantasy vehicles

Ask campers to give you a thumbs-up if they just came up with some really awesome fantasy vehicle ideas!
Now they will try to get clear on some ideas for their own vehicles
Have campers close their eyes, or put their hands over their eyes, whichever feels comfortable
  • Ask campers to think about which ideas they might want to use on their own fantasy vehicles
  • Ask campers to try to imagine a fantasy vehicle they’d be excited to create
  • Challenge them to try to think of 3 specific things on their vehicles
  • Have them give you a sign (touching their noses, etc.) when they have an idea
Tell campers to take a picture of the idea in their minds so they remember it tomorrow!

Guided Activity

Paper Crafting Techniques (30 min)

Briefly introduce how vehicle parts can be broken down into simple shapes

Now that we have some awesome ideas, let’s see how we can use paper to make all the things we just imagined
One thing that is going to help us create fantasy vehicles is having a really strong foundation of basic shapes
Point to the Trains, Cars, Rocketships, Ships, and Airplanes color copies
Ask campers to point out the basic shapes they see in these vehicles:
• Circles for wheels, rectangles for train cars, triangles for sails, etc.

Tell campers that they will learn how to make several basic shapes out of paper:

- Cones
- Boxes
- Cylinders
- Tent folds
- Accordion folds

For each one, campers will watch and listen first, and then you will guide them through doing the step on their own.

After they make each shape, they should write their initials or draw a little symbol on it, so they know it’s theirs!

Then they will go in a 16 oz. cup to keep them all together.

By the end of class, each camper will have a lot of parts to start building with tomorrow!

They don’t have to use all the parts for their final vehicles, and they will have time tomorrow to make more parts.

This may feel like a lot of steps and paying attention, especially if some techniques are new and are a little bit tricky.

However, sometimes artists need to put in a lot of work before they can even get to the real fun stuff.

If we are focused today, we can actually use the shapes we’re creating to make our vehicles tomorrow:
• They will be sturdy and look good
• Save ourselves time tomorrow

Give examples of not being determined; pretend to have this attitude:

- Ex: Eh, this cone looks all right but I’m just tired of making paper shapes. I don’t even know if I’m going to want a cone for tomorrow so I’m not going to try to make a better one.
- Ask: Will this attitude help us create a really good set of parts for constructing our vehicles tomorrow? (No!)

Remind that what will help is using their powers of determination:
• They’ll know their powers are on if they stay focused and try to make their 3D paper forms as well as they possibly can
• Pretend to turn on your determination powers

Model what it sounds/looks like to be determined:
• Emphasize paying attention, trying to make something well
• Ex: Folding this box was kind of hard! But it still looks a little crooked. I bet the next time I do it, it will be a little bit easier and look better. Let me try again.
| **Dismiss campers to tables** | Have campers head to table groups  
If you can, work with your TL to select table groups for campers so they won’t distract each other during the Guided Activity  
As this is Day 1, may be hard to know who should sit together and who should not  
Have campers show you they are ready by (putting their hands on their heads, in their laps, on the table, etc.) |
| **Demo how to make paper cones** | Hold up a cone  
Ask: *Where could we use a shape like this on a vehicle?*  
- The nose of a train, nose of a rocketship or airplane, top of a train chimney, rocketship thrusters, etc.  
Demo the steps to make a cone:  
- Start with a 4.25 x 5.5” sheet of paper  
- Trace the outside of an upside-down 16 oz. paper cup with a pencil  
- Cut out the circle  
- Fold the circle in into quarters, and then unfold it. Cut out one of the quarters  
- Grab 1” piece of Scotch tape  
- Pull the two open edges of the circle towards each other and tape them closed |
Have TL walk around and write campers’ names on their 16 oz. paper cups while they are completing the rest of the paper crafting techniques.

Give campers a few minutes to make a cone.

Remind campers to put their initials or symbol on it, and then put it in the 16 oz. paper cup; this cup will hold all their folded paper pieces.

Encourage campers to make another one if they want to improve.

Remind campers to be determined.

- Ex: Take your time, and really try to do this cone right. Pay attention to how it’s made in case you need to make a bunch tomorrow!

Have campers make cones

Demo how to make a paper box

Hold up a paper box.

Ask: Where could we use a shape like this on a vehicle?

- The body of a semi truck, second story for a double-decker bus, storage container on a cargo ship, etc.

Demo the steps to make a box:

- Start with a 4.25 x 5.5" sheet of paper
- Cut it roughly in half “hamburger style,” into two 4.25 x 2.25" sheets – this doesn’t need to be perfect!
- Fold one sheet in half “hotdog style,” and open the fold so it is like a long, skinny open book.
- Fold those halves in half again towards each other.
- When you gently open everything up, you should have 4 folds facing each other.
- Place 3 pieces of tape along the edge, bring the paper edges together, and fold the tape over.
• Cut the box into 3 smaller boxes, cutting between each piece of tape

Point out to campers that they could cut their boxes in half again to make even smaller boxes

★ Support BEING DETERMINED

Have campers make paper boxes

Give campers a few minutes to work
Repeat the steps if necessary
Remind campers to be determined
  • Ex: If you work hard to fold paper boxes today, you’ll be able to actually use these ones in your project tomorrow!
Encourage campers to make another box if they want to improve
Remind campers to put their initials or symbol on them and put their pieces in the 16 oz. paper cup

Demo how to roll a cylinder

Hold up a cylinder
Ask: Where could we use a shape like this on a vehicle?
  • Wheels, body of a plane, chimney on a train, engines of a plane, etc.

Demo the steps to make a cylinder:
  • Take your other 4.25 x 2.25" sheet (the half left over from the box)
  • Gently roll it into a tube
  • Use 2 pieces of tape to secure the edges
They should use the smaller piece of paper for the cylinder so it’s not too big for their vehicles.

Point out that campers can cut the cylinders to make smaller shapes (like the boxes) but this might squish the shape a little bit.

<table>
<thead>
<tr>
<th>★ Support BEING DETERMINED</th>
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</thead>
<tbody>
<tr>
<td>Have campers make a cylinder</td>
</tr>
<tr>
<td>Give campers a few minutes to work</td>
</tr>
<tr>
<td>Support being determined</td>
</tr>
<tr>
<td>• Ex. By having one or two really nice cylinders today, you’ll have a great start for tomorrow!</td>
</tr>
<tr>
<td>If campers want to make more cylinders, make sure they cut a quarter sheet in half to make 4.25 x 2.25” pieces</td>
</tr>
<tr>
<td>Remind campers to put their initials or symbol on it and put in the 16 oz. paper cup</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Demo how to make tent folds</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hold up a tent fold</td>
</tr>
<tr>
<td>Ask: Where could we use a shape like this on a vehicle?</td>
</tr>
<tr>
<td>• The tail of an airplane, the wings of a rocketship, etc.</td>
</tr>
<tr>
<td>Demo the steps to make a tent fold:</td>
</tr>
<tr>
<td>• Start with a 4.25 x 5.5” sheet of paper</td>
</tr>
<tr>
<td>• Cut it roughly in half “hamburger style,” into two 4.25 x 2.25” sheets – this doesn’t need to be perfect!</td>
</tr>
<tr>
<td>• Take one half and fold it in half to make a “V”</td>
</tr>
<tr>
<td>• In order to adhere the tent shape to another surface, you need to make little tabs, or feet</td>
</tr>
<tr>
<td>• Make a second small fold out on both sides of the “V” to create a flat surface for adhering</td>
</tr>
</tbody>
</table>

**Support being determined**

Give campers a few minutes to work

Support being determined
• Ex: Remember, you’re setting your future self up for success by carefully making a tent fold today!

Remind campers to put their initials or symbol on it and put it in the 16 oz. paper cup

Hold up an accordion-folded piece of paper

Ask: Where could we use a shape like this on a vehicle?
• Stairs for getting on an airplane/train, convertible roof for car, etc.

Acknowledge that accordion folds are also called pleated folds or zigzag folds, and many campers may have made them before

Demo the steps to make an accordion fold:
• Take your other 4.25 x 2.25” sheet (left over from the tent fold)
• Fold one edge of the paper over
• Flip the paper back and fold to the same edge
• Flip the paper back and forth, making a crease each time, until the accordion is complete

They should use the smaller piece of paper for the accordion fold so it’s not too big for their vehicles

Give campers a few minutes to work

Support being determined
• Ex. Make sure you crease all your folds really well today, so your accordion fold stays nice and crisp for tomorrow!

Remind campers to put their initials or symbol on it and put in the 16 oz. paper cup

Campers that are quick can take another quarter sheet of paper (4.25 x 5.5”) and use it to make more of the shapes they learned today

Now they know how to make so many awesome shapes with paper!

Remind campers that they want to be able to use these shapes tomorrow on their projects, and they want to feel confident that they’ll be able to make more if they need to

Give campers a few minutes to redo anything that could use some improvement or to try some of the techniques that felt challenging for them
### Clean Up (5 min)

| Clean Up | ➤ Have your TL write campers’ names on their 16 oz. cups if not already done  
Have campers collect all reusable paper scraps from tables and floors, and put them in a box for campers to use tomorrow  
Use your discretion – scraps of paper that are too small to reuse should be put in recycling  
➤ Have your TL and campers help you reset the classroom for your next rotation |

### Lesson Wrap Up (10 min)

| ★ Summarize the importance of BEING DETERMINED and have campers recall if/how they practiced this today | Recognize just how many 3D paper forms were made in class today (5 per camper times the class size, etc.)  
Highlight effect of practicing being determined during today’s project  
   • Ex: One thing that helped us make so many things in a short period of time is that we used our powers of determination to stay focused and committed to setting our future selves up for success.  
Have campers flex their muscles if they practice being determined today by:  
   • Staying focused and paying attention to instructions on how to make all the paper forms  
   • Redoing something when they made a mistake  
   • Spending extra time and effort making sure they did a really good job  
Ask a few campers to talk about what they did today to set their future selves up for success tomorrow  
Review why being determined is important for innovation  
   • Ex: Many art forms require a lot of determination, preparation, and pre-design before the final piece comes together! |
| Revisit today’s maker connection | Remind campers about the toy maker they learned about earlier  
Ask: Do you think this maker had to be visionary when making his toy? How?  
If there’s a relevant Q&A read/revisit it now |
| ★ Invite campers to recognize each other for BEING DETERMINED | Can recognize teammates they saw being determined or who helped them be more determined  
Encourage specificity about how person was determined  
You and TL can recognize campers as well |
Lesson Materials

* (starred) materials appear multiple times in this list

**Copies**
- copy, color, Trains (2 per classroom)
- copy, color, Cars (2 per classroom)
- copy, color, Airplanes (2 per classroom)
- copy, color, Rocketships (2 per classroom)
- copy, color, Ships (2 per classroom)
- copy, color, Maker Connection (2 per classroom)

**General/Adhesives/Tools**
- tape, Scotch, 0.75" wide, *for taping cylinders, cones, and boxes closed* (6" per camper)
- scissors, medium, 5", pointed, *for cutting paper* (1 per camper)
- pencil, #2, *for tracing cone* (1 per camper)
- cutter, utility, *for advance prep: cutting paper* (1 per classroom)
- pan, pie, aluminum, 9", *for holding pieces of tape* (1 per 4 camper)

**Required Materials**
- Paper crafting techniques
  - paper, cardstock, brights, asst. colors, 8.5 x 11", *for practicing paper techniques* (four 4.25 x 5.5" sheets per camper)
  - cup, paper, 16 oz., *for tracing cone & storing materials* (1 per camper)

**Spotlight Prep**

Lucky you! A prep fairy will be doing the following prep for you. You need to be ready to hand off the materials listed below when your prep fairy arrives.

Prep fairies have these materials and directions listed in their prep guide. They are listed here for you as well so you can double-check that your prep fairy understands what to do and has everything s/he needs.

**Materials:**
- paper, cardstock, brights, asst. colors, 8.5 x 11"
- cutter, utility

**Directions:**
Cut cardstock sheets into quarters so they are 4.25 x 5.5". Cut enough for Day 1 and Day 2 (a total of 8 quarter sheets per camper). Use the paper cutter to cut 2-3 sheets at once.

**Materials Preparation**

- Pre-rip about six 1" pieces of tape per camper and hang them off the edges of pie pans (1 per 4 campers) (see Materials and Prep for the Summer for details).

Make a finished sample of all the paper techniques so you can show them during class (cone, box, cylinder, tent fold, accordion fold).
Setting Up the Space

Set the paper crafting materials at camper tables:
- pencils (1 per camper)
- scissors (1 per camper)
- 4.25 x 5.5" sheets of cardstock (4 per camper) – make sure you give each table a variety of colors
- 16 oz. paper cups (1 per camper)
- pie pans (1 per 4 campers) with Scotch tape hanging off the edges (six 1" pieces per camper)

Set out an empty box for campers to put unwanted paper and 3D paper structures into during clean up time. There will be a lot of scraps left over tomorrow too. These scraps can be used for the Roly Poly project later this week, so plan on having this box out for most of the week.

Gather a set of materials for yourself for the Paper Crafting Techniques Guided Activity
- One set of already-folded paper shapes (cylinder, cone, box, accordion, and tent)
- One set of all the materials needed to fold the above – three 4.25 x 5.5" sheets of cardstock (per rotation), 1 pencil, one 16 oz. paper cup, 6" of Scotch tape (per rotation), and 1 pair of scissors

Put up the following color copies on your copies display board:
- Trains
- Cars
- Airplanes
- Rocketships
- Ships

Notes

Materials Management
Take the time to explain to campers that large paper scraps can be saved and put in the box you have set out, to be used tomorrow. Small scraps should simply be recycled.

If you have a lot of scraps of paper on the floor, consider making one of them a “magic scrap” that campers must find!

Suggestions for Large Classes
Make a large central place for campers to take tape from if/when the table’s pie pan runs out of tape. This could be a chair, the edge of your white board’s metal tray, a table, etc. as long as it can hold many pieces of tape! Campers can bring a pie pan over to the tape and put more pieces on for the table instead of waiting for you or the TL.

On the Board

Mindset of the Day
BE DETERMINED – I know that innovation and mastery require effort.

Check In With Your TL

➤ Make sure your TLs are clear about their role in helping today’s lesson run smoothly. Specific things your TL can help with today:
- Helping you demo the “Yes, and...” activity
- Writing camper names on their 16 oz. cups
- Helping any campers who are struggling with the paper crafting techniques
- Making sure campers don’t run out of Scotch tape pieces; refilling as necessary
- Helping reset your classroom for the next rotation
Today: Building Fantasy Vehicles
Today campers build their fantasy vehicles, combining the paper parts they made yesterday using tape and paper tabs. Campers will make sure their vehicles can pass a series of tests, staying committed to their two goals for today:

- My vehicle matches my vision
- My vehicle is sturdy and won’t fall apart
Today’s Project: At-A-Glance

Build vehicle using tape and tabs to add 3D paper forms

3D paper forms are attached with tape and paper tabs to the 2 x 2 x 4.5” box with wheels.

Give the project a shake test each time 4 new paper pieces are added

Making sure nothing is too floppy or falling off while holding vehicle in air and shaking

Try a mini zoom after passing the shake test

Vehicle gets rolled in a designated zone on the floor to test for stability
Keep adding pieces and testing

More paper shapes added to vehicle

Add embellishments

Thin strips of paper added to the back to create the "illusion of movement"; can decorate vehicle with markers

Optional: Try a big zoom

Vehicle gets rolled in a larger designated zone on the floor to test for stability
Teaching the Lesson: Overview

OUR SECRET SAUCE: THE G.I.A.

KNOWLEDGE FOCUS

SKILLS AND TECHNIQUES: Supporting 3D Structures Using Tabs
Campers learn and practice ways to use small paper tabs for attachment and support so their 3D paper structures will maintain shape and usability.

Why? – It’s likely that Stars will not come to the conclusion to use tabs for attachments or have the technical skills/understanding of how to bend tabs into structural supports on their own. As the goal for this project is for campers to have a toy to play with, it’s important to support campers by giving them techniques for reinforcing their vehicles so they won’t fall apart while moving.

PROCESS FOCUS

TEST, EVALUATE & REDESIGN: Testing in Stages
Campers test the quality of their construction by putting their vehicles through a shake test and a mini zoom test as they add elements to their paper vehicles. If any elements fall off or come apart, they redesign before adding a new component.

Why? – Campers may get so excited about creating vehicles that match their visions that they forget to think about making them useable. But in the end, the fantasy vehicles won’t be any fun for campers if they fall apart when they play with them! By testing in stages, campers can ensure that each addition they make to their vehicles is sturdy and secure, so that the vehicle will stay together when they play with it after camp.

MINDSET FOCUS

BE DETERMINED – I persevere until I achieve my goal.
Campers stay committed to creating vehicles that are both sturdy and match their visions by working through any challenges instead of changing their designs.

Why? – It can be hard to translate an awesome idea into a paper structure that campers can actually play with. Challenging campers to be determined will support them in using the skills and techniques they’ve learned to follow through on their visions, instead of just changing their designs when they run into challenges.

Remember to include these special ingredients to transform today’s project into a Galileo, innovation-based lesson. Bam!
Lesson Breakdown & Camper Goals

<table>
<thead>
<tr>
<th>Activity</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction</td>
<td>5 min</td>
</tr>
<tr>
<td>Demo &amp; Discussion: Taping, Tabs, and Testing</td>
<td>15 min</td>
</tr>
<tr>
<td>□ Demo and discuss taping techniques</td>
<td></td>
</tr>
<tr>
<td>□ Demo and discuss making and using tabs for attachment and support</td>
<td></td>
</tr>
<tr>
<td>□ Demo and discuss testing in stages</td>
<td></td>
</tr>
<tr>
<td>□ Discuss using embellishments</td>
<td></td>
</tr>
<tr>
<td>Independent Work Time: Building Fantasy Vehicles</td>
<td>35 min</td>
</tr>
<tr>
<td>□ Tape paper parts created yesterday onto vehicle bodies, and create more parts</td>
<td></td>
</tr>
<tr>
<td>□ Test the vehicle with a shake test and mini zoom each time 4 new parts are added</td>
<td></td>
</tr>
<tr>
<td>□ Add embellishments with strips of paper and markers</td>
<td></td>
</tr>
<tr>
<td>□ Optional: Test the vehicle in a big zoom</td>
<td></td>
</tr>
<tr>
<td>Clean Up</td>
<td>5 min</td>
</tr>
<tr>
<td>Wrap Up</td>
<td>10 min</td>
</tr>
</tbody>
</table>

Timing Notes
Campers are on track so long as they have a vehicle with a few paper parts that can pass a mini zoom test.

If campers or groups are behind
• They don’t have to add all their paper parts.

If campers or groups are ahead
• Encourage them to add lots of details to their vehicles with markers; have them look at color copies for inspiration.
• If it’s not the 4th of July week, you may have campers sort foam letters for the Day 5 Onomatopoeia Ball lesson. This will make it easier for campers to find the letters they need during that activity.
## Teaching the Lesson: Play-by-Play

### Introduction (5 min)

| Build excitement and give an overview of today’s project | Today they will use the pieces they created and the techniques they learned yesterday to build fantasy vehicles that look awesome *and* are fun to play with  
  - Will first discuss taping techniques and the importance of tabs to keep things on  
  - Will test the vehicles as they go to make sure they won’t fall apart when they play with them |

| ★ Introduce the Innovator’s Mindset: BE DETERMINED | Point to this on your Innovator’s Mindset poster  
  Define the Mindset element in the context of today’s lesson  
  - *Today we’re going to focus on being determined. This means committing to keeping working on something until it’s exactly how we want it. Sometimes we might want to change our ideas when they turn out to be hard to create, but good innovators know that the best ideas often require hard work, which might mean testing and redesigning several times.* |

### Demo & Discussion

#### Taping, Tabs, and Testing (15 min)

| Have campers recall the ideas they had for their fantasy vehicles yesterday | Before we jump into the details of how we’re going to make awesome vehicles, let’s remember what we wanted to make!  
  Ask campers to think back to their ideas for their fantasy vehicles yesterday  
  Have campers close their eyes or put their hands over their eyes  
  Ask:  
  - *What kind of vehicle do you want to create?*  
  - *What vehicle parts do you want to combine?*  
  - *What kinds of shapes will you use?*  
  When campers have a clear picture in their heads, they can open their eyes  
  Ask for 1-2 volunteers to share something about the vehicles they want to create  
  Explain that it’s important for them to have a solid idea they will stick to as they are creating today |

| Introduce the opportunity to BE DETERMINED while creating a fantasy vehicle that meets today’s goals | Tell campers that they have 2 goals for today (point to the board):  
  1. My vehicle matches my vision  
  2. My vehicle is sturdy and won’t fall apart  
  We want our vehicles to look amazing, just like we pictured in our minds, but we also want to be able to play with them!  
  We’ll need to be determined to make both those things happen today  
  Give examples of not being determined; pretend to have this attitude |
• Ex: I want my fantasy vehicle to have flames coming out of the back, but they keep falling off. Oh well, I guess I don’t need flames like that, it seems hard. I’ll just draw them on…. or maybe I won’t have them at all.
• Ask: Will this attitude help us innovate and help us come up with the most unique fantasy vehicles? (No!)

Remind that what will help is using their powers of determination
• They’ll know their powers are on if they are trying their hardest to make their favorite ideas come to life, and if they aren’t giving up if they need to redesign some of them after testing
• Pretend to turn on your determined powers

Model what it sounds/looks like to be determined
• Emphasize being confident and excited to try something new, in order to make an idea into a reality
• Emphasize being solution-oriented and committed to getting their ideas to work
• Ex: I want my fantasy vehicle to have flames coming out of the back, but they keep falling off. But I’m not going to give up! Maybe I need to add more tape, or cut the paper pieces shorter so they don’t drag on the ground. I’ll try that and then test it again!

Demo taping using a tent fold as an example

You’ll demo some techniques that will help campers create sturdy vehicles they can play with

Good taping techniques are especially important so that the vehicles don’t fall apart while they are being used

Demo taping a tent fold to the top of one of the 2 x 2 x 4.5” boxes

• Point out that the fold of the tent is laid flat on the top of the box
• Take a strip of tape and carefully hold it over the paper and the edge of the box to find the right position
• Place the tape down on one end and press/rub until it’s smooth everywhere
• Have campers notice how you used the tape

Review tape tips to remember when taping any part of the vehicle

Explain some of the tips to remember when working with tape:
• Tape goes in the same direction as the paper (tape follows the edge of the paper, instead of crossing over it)
• Tape is smooth (need to rub it)
• No gaps between paper pieces

This will ensure a tight connection and will keep the pieces flat where they are connected

Hold up a cylinder and a preassembled vehicle body
Ask: How could I add this cylinder to the back of my vehicle? I can’t put the tape in the same direction as the paper on something like this, because it doesn’t even have a flat edge!

Explain that this is an example of when you’d want to make and use a tab; tabs can be used to attach objects that don’t have the same kind of edges

Demo adding the cylinder onto the back of the 2 x 2 x 4.5" box
• Cut a small strip of paper from a 4.25 x 5.5" sheet of cardstock
• Tape one end of the strip to the inside of the cylinder
• Bend the strip out to make an “L” foot at the base of the cylinder
• Tape the “L” foot to the box, right next to the bend

Another way to attach the cylinder is to cut tabs right into the shape itself!
• Demo cutting slits all the way around the tube and then folding them up to create tabs.
• The tabs can be attached to any surface

Hold up 2 paper triangles (introduce them as plane wings)
• Ask: How could I make these into wings sticking out of my vehicle?
• Point out that it doesn’t have a flat edge with the side of the box (like the cylinder)
• Just like with the cylinder, they can make their own flat edge; this is like a kind of tab
Fold the short side of the triangle at a right angle so it will lay flat with the box, and tape that edge to the side of the box.

**Review tips to remember when using tabs for attachment**

Tell campers about the “tips” to remember when using tabs for attachment:
- Tab should be at least a fingertip long on both sides
- Tabs can be added to the object or created on the object itself
- Tape right next to the bend

**Demo and discuss how to fold tabs for support using the triangle wings**

Explain that tabs can also be used to hold things up or make them pop out if you fold them like a box

Point out that now the wings are attached, but they are floppy and don’t stick straight out; they need more support

Demo how to fold a tab into a box for support
- Cut another small strip of paper from the 4.25 x 5.5” sheet
- Fold the strip using the same techniques as making a box yesterday – fold in half, then fold each side in half again
- Tape this tab under a plane wing to support it

Explain that this same technique can be used to lift something up off the surface, make it pop out more

**Review tips to remember when using tabs for support**

Tell campers about the “tips” to remember when using tabs for support:
- Tab is folded into a box
- Tab is big enough for the object it is supporting
Following these tape and tab techniques will help them out, but they also need to check their work along the way to make sure it’s really as strong as they think.

After each time they add 4 new parts to the vehicle, they need to stop and test it! This is called testing in stages.

Will go through two kinds of testing to evaluate if it is sturdy, the taping is strong, and it won’t fall apart.

They will need to be determined and commit to making necessary changes in order to end up with a vehicle they can actually play with.

The first stage of testing is the shake test.

Demo shaking a sample vehicle (can be the one you demoed adding tabs to)

Check to see if anything is really floppy or falls off; make sure something does.

Verbalize what you notice:
- Where it’s sturdy
- Where part may need to be re-taped or given more support

Remind campers that if they need to redesign, they should still stick with their plans for their vehicles, and find a way to make it work.
- Ex: Oops, looks like I have lots of really tall and skinny cylinders that aren’t very stable. Maybe I will make them a little bit thicker so it’s easier for me to add tabs.

If the vehicle is sturdy after a shake test, it’s time to try a mini zoom.

Show campers the area you’ve taped off as the mini zoom area; campers will do one test and then keep working.

Demo doing a mini zoom test (again, make sure something will fall off your vehicle)
- Demo pushing the car forward lightly, noting how you didn’t have to push very hard for the car to go pretty far
- Model being determined when a part falls off your vehicle
- Emphasize staying positive, and thinking about how to fix the problem instead of giving up
- Ex: It’s okay that my ___ fell off, I’ll just try adding more tape or a tab and see if that helps! Then I’ll test it again.
- Demo fixing the problem and trying a mini zoom again

If the vehicle is sturdy after a mini zoom, they can go back to add 4 new parts to the vehicle, and then test again.

Once they have made sure the vehicle is sturdy and strong, they may have more time to add embellishments.

They can even use paper embellishments to make the vehicle look like it’s moving faster!

Demo adding paper embellishments to show movement
- Cut 2 thin strips of paper from a 4.25 x 5.5” sheet
• Curl one by wrapping around a pencil
• Make an accordion fold with the other
• Add the strips to the edge of the cylinder you added on your sample earlier
• Point out that this can be fire, wind, smoke, steam, or “zoom” lines
• Paper embellishments can be added to a variety of places on their vehicles

Campers can also use markers once they’re finished with all paper additions
They need to be gentle and thoughtful when they draw with the markers, making sure not to crush their paper structures

<table>
<thead>
<tr>
<th>Remind campers to test after adding embellishments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Remind campers that any time they add 4 new things to the vehicle, they should test it; so even embellishments need to be tested with a shake test and a mini zoom</td>
</tr>
<tr>
<td>They don’t need to test after adding marker</td>
</tr>
<tr>
<td>Optional: If you have set up a big zoom testing station, let campers know that they can test their vehicles at this station at the very end</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>★ Review the Mindset Challenge: BE DETERMINED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Have campers turn on their determined powers</td>
</tr>
<tr>
<td>Challenge campers to use their determined powers to reach their 2 goals for today (point to the board):</td>
</tr>
<tr>
<td>1. My vehicle matches my vision</td>
</tr>
<tr>
<td>2. My vehicle is sturdy and won’t fall apart</td>
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</tbody>
</table>
Independent Work Time

Building Fantasy Vehicles (35 min)

<table>
<thead>
<tr>
<th>What campers will do: Create and test a fantasy vehicle</th>
<th>CREATE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Tape paper parts (created yesterday) onto vehicle bodies according to the vision for a fantasy vehicle.</td>
<td></td>
</tr>
<tr>
<td>2. Create more paper parts as needed.</td>
<td></td>
</tr>
<tr>
<td>TEST, EVALUATE &amp; REDESIGN</td>
<td></td>
</tr>
<tr>
<td>3. After adding 4 parts to the vehicle, test with a shake test and mini zoom.</td>
<td></td>
</tr>
<tr>
<td>4. Make any needed adjustments.</td>
<td></td>
</tr>
<tr>
<td>CREATE</td>
<td></td>
</tr>
<tr>
<td>5. Continue to add paper parts to create the fantasy vehicle, testing each time 4 new parts are added.</td>
<td></td>
</tr>
<tr>
<td>6. When the vehicle is finished, add embellishments with strips of paper or markers.</td>
<td></td>
</tr>
<tr>
<td>TEST, EVALUATE &amp; REDESIGN</td>
<td>7. Optional: Test the vehicle in a big zoom.</td>
</tr>
</tbody>
</table>

Facilitate CREATE

➤ Have your TL help you pass out campers’ 16 oz. paper cups with their paper shapes from yesterday
Help campers with tape and tab techniques as necessary
➤ Have your TL help with Scotch tape refilling as needed

★ Facilitate TEST, EVALUATE & REDESIGN and support BEING DETERMINED

Congratulate campers who need to redesign; their vehicles will be better off because of it!
Watch out for vehicles that are looking extra fragile and help facilitate testing and redesigning
Ask guiding questions that support testing, evaluating, and redesigning, and being determined
  • How else might you tape that part on, so it stays on next time?
  • What do you notice about your vehicle when you shake it?
  • Why do you think that part keeps falling off?
  • What are you doing to make sure your vehicle matches your vision?

Recognize determined campers; be specific about how they are being determined
➤ Have TL help facilitate the mini zoom areas, making sure campers are taking turns and helping campers come up with solutions to their problems
Optional: If you have set up a big zoom, campers should try it in the last 5 minutes of camper Work Time if they haven’t already
Clean Up (5 min)

Clean Up

Have campers collect all reusable paper scraps from tables and floors, and put them in a box for campers to use tomorrow. Use your discretion – scraps of paper that are too small to reuse should be put in recycling.

➤ Have your TL and campers help you reset work tables for the next rotation, refilling four 4.25 x 5.5" sheets of paper per camper, and twelve 1" pieces of Scotch tape per camper.

➤ Your TL can help make sure campers’ names are written on their boxes or on the bottom of the craft stick that attaches wheels to the vehicle body.

Choose a few vehicles made by campers who struggled but were determined to reach today’s 2 goals to show during the Wrap Up.

Lesson Wrap Up (10 min)

★ Summarize the importance of BEING DETERMINED and have campers recall if/how they practiced this today

Recognize how amazing all the fantasy vehicles turned out, and roll the samples you collected to admire their uniqueness and sturdiness.

Highlight effect of practicing Mindset during today’s project

- Ex: One thing that helped us create so many amazing vehicles is that we used our powers of determination to make our vehicles exactly as we wanted them, even if it required some redesigning!

Have campers pretend to be a racecar if they practiced being determined today by:

- Sticking to their ideas for their vehicles from yesterday
- Trying a couple of different ways to make something
- Fixing something after doing a shake test or mini zoom

Ask a few campers to share what they did if they found that their vehicles weren’t sturdy enough during testing, and what they did to fix them.

Campers can give a “me-too” signal if they had a similar experience.

Review why determination is important for innovation

- Ex: It’s important for innovators to have big ideas, but it’s just as important that innovators know how to be determined and bring those ideas to life!

★ Invite campers to recognize each other for BEING DETERMINED

Can recognize teammates they saw being determined or who helped them be more determined.

Encourage specificity about how person was determined.

You and TL can recognize campers as well.
## Get Ready!

### Lesson Materials

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<th>General/Adhesives/Tools</th>
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<tbody>
<tr>
<td>☐ glue gun, mini, low temp, for materials prep: assembling vehicle bodies (3 per classroom)</td>
</tr>
<tr>
<td>☐ glue stick, melt, mini, for materials prep: assembling vehicle bodies (1 per 8 campers)</td>
</tr>
<tr>
<td>☐ tape, scotch, 0.75&quot; wide, for adhering paper parts (12&quot; per camper)</td>
</tr>
<tr>
<td>☐ scissors, medium, 5&quot;, pointed, for cutting paper parts (1 per camper)</td>
</tr>
<tr>
<td>☐ pencil, #2, for curling paper (1 per 2 campers)</td>
</tr>
<tr>
<td>☐ marker, washable, asst, color, set of 8, for decorating vehicles (1 set per 4 campers)</td>
</tr>
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<td>☐ pan, pie, aluminum, 9&quot;, for holding tape (1 per 2 campers)</td>
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</tbody>
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<td>☐ cup, paper, 16 oz., with campers’ paper parts from yesterday (1 per camper)</td>
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<tr>
<td>☐ paper, cardstock, brights, asst. colors, 8.5 x 11&quot;, for creating vehicle parts (four 4.25 x 5.5&quot; sheets per camper)</td>
</tr>
<tr>
<td>☐ motor, w/ 3.9 x 1.3 cm wheels, preassembled, for materials prep: assembling vehicle bodies (1 per camper)</td>
</tr>
<tr>
<td>☐ craft stick, large, 3/4 x 6&quot;, for assembling vehicle bodies (1 per camper)</td>
</tr>
<tr>
<td>☐ box, cardboard, green, 2 x 2 x 4.5&quot;, for vehicle bodies (1/2 box per 3 campers)</td>
</tr>
<tr>
<td>☐ box, cardboard, red, 2 x 2 x 4.5&quot;, for vehicle bodies (1/2 box per 3 campers)</td>
</tr>
<tr>
<td>☐ box, cardboard, blue, 2 x 2 x 4.5&quot;, for vehicle bodies (1/2 box per 3 campers)</td>
</tr>
</tbody>
</table>

### Materials Preparation

- Assemble vehicle bodies. Use hot glue to attach the motor and wheel assembly to the bottoms of 2 x 2 x 4.5" boxes (1 per camper).
  - Open up red, blue, and green 2 x 2 x 4.5" boxes into two halves, top and bottom (1/2 box per camper).
  - Flip boxes upside down, open side up.
  - Gently squeeze some hot glue onto the top edges of the short sides of the box.
  - Place a large craft stick across the top length of the box, pressing it gently into the hot glue.
• Repeat for all boxes
• Get out vehicle motor and wheel parts; make sure the side of the motor with the big bump is facing down.
• Squeeze two dots of hot glue onto the top of the motor structure, at the peaks of the two smaller bumps.

• Gently press the large craft stick (with box on top) onto the hot glue, adhering it to the motor and wheels.

If the prep fairies did not cut enough cardstock for today, cut more cardstock sheets into quarters, or 4.25 x 5.5” sheets (4 per camper).

Pre-rip about twelve 1” pieces of Scotch tape per camper and hang them off the edges of pie pans (1 per 2 campers) (see Materials and Prep for the Summer for details).
Find/make a set of paper shapes to use during the demo:
- cylinder
- tent fold
- 2 triangles cut from a quarter sheet to use as wings

## Setting Up the Space

Mark off areas on the floor for the “mini zoom” testing lanes with blue tape.
- There should be several mini zoom zones (try for 1 per 4 campers) that are roughly 2 feet wide and 3 feet long.
- These should be facing toward a wall or large stable object (back of a shelf or bin) so that the vehicles stop at the end of the zone and don’t shoot across the classroom.

Optional: If you have room, you can create one big zoom area for testing. Campers can get a chance at the big zoom at the end of class once they are totally finished with their vehicles.

The big zoom should be 3 feet wide and at least 6 feet long.
- Most campers’ cars will be able to go much further, so if you have space, feel free to make this area bigger!
- Again, make sure the end of this zone is also facing towards a wall (or box, etc.) that will stop vehicles from going any further.

Make sure campers’ paper cups with their paper shapes from yesterday are clearly labeled and sorted by Team Color so you can pass them out quickly during Independent Work Time. If you want, you can choose campers’ seats by placing the cups at individual spots.

Set the 3D paper structure building materials at table groups:
- 4.25 x 5.5” cardstock sheets, assorted colors (4 per camper)
- preassembled vehicle bodies, in red, blue, or green (1 per camper)
- scissors (1 per camper)
- pencils (1 per 2 campers)
- pie pans (1 per 2 campers) with 1” pieces of Scotch tape hanging off the edges (12 pieces of tape per camper)
  - To save space on tables, you can place cardstock sheets, scissors, and/or pencils inside the pie pans too
- markers, set of 8 (1 set per 4 campers)

Set out an empty box for campers to put unwanted paper and 3D paper structures in during clean up time. These scraps can be used for the Roly Poly project, so keep this box out for the next 2 days.
Gather materials for the Demo & Discussion:
- Scotch tape (about 6" per rotation)
- one 4.25 x 5.5" sheet of cardstock, for making tabs and thin strips for the embellishment demo
- 2 triangles, to use as wings
- 1 tent fold and 1 cylinder (can reuse from demo yesterday)
- one 2 x 2 x 4.5" box with wheels and motor attached

Put up the following color copies on your copies display board:
- Trains
- Cars
- Airplanes
- Rocketships
- Ships

Notes

Materials Management
The biggest challenge today will be setting up the testing stations and having campers use them appropriately. Encourage campers to cheer each other on while they wait for a turn. Stop any campers who attempt to test their vehicles outside of a testing zone, as their vehicles could easily be stepped on by another camper or otherwise get damaged.

Suggestions for Large Classes
Make a large central place for campers to take tape from if/when a table’s pie pan runs out of tape. This could be a chair, the edge of your white board’s metal tray, a table, etc. as long as it can hold many pieces of tape! Campers can bring their pie pans over to the tape and put more pieces on for their tables instead of waiting for you or the TL.

If needed/available, consider setting up some testing stations outside as long as you have enough adult supervision/support.

On the Board

Mindset of the Day
BE DETERMINED – I persevere until I achieve my goal.

Goals
1. My vehicle matches my vision
2. My vehicle is sturdy and won’t fall apart

Check In With Your TL

➢ Make sure your TLs are clear about their role in helping today’s lesson run smoothly. Specific things your TL can help with today:
  - Refilling 1" Scotch tape pieces on pie pans, as needed
  - Monitoring the testing zones, making sure campers wait their turns, and helping them problem-solve as issues arise
  - Resetting your classroom for the next rotation (refilling tape, cardstock, vehicle bodies)
  - Making sure camper names are visible on their vehicles
Day 3: Roly Polys, Part 1 of 2

Today: Creating an Expressive Face for a Roly Poly
Today campers start working on the faces of their roly polys, picking a particular animal and facial expression to convey with Woodsie shapes and adding details with markers and paper.

What’s Next
Tomorrow (Day 4) campers will balance the body of the roly poly and continue to push the unique personality of the roly poly character through adding outfits and accessories.
Today’s Project: At-A-Glance

Try making 2 different animal faces out of Woodsies

Examples of possible Woodsie faces on first row of Facial Expressions Exploration sheet

Try making 2 different facial expressions using Woodsies and markers

Selected animal face created twice more, with the addition of marker for eyebrows and mouth

Try 2 different ways to make 1 facial expression

Example of trying the same expression two different ways on the third row of the Facial Expressions Exploration sheet
Color in the face and collar Woodsies with tempera paint sticks.

Tempera paint sticks cover the entire XXL and XL circle Woodsies.

Use tempera paint sticks or markers to add facial detail Woodsies.

Small Woodsies from the exploration colored with tempera and/or marker, attached with glue stick.

Add paper embellishments.

Paper embellishments added to expression.
Teaching the Lesson: Overview

OUR SECRET SAUCE: THE G.I.A.

KNOWLEDGE FOCUS

SKILLS and TECHNIQUES: Creating Facial Expressions
Campers learn how simply changing the shapes and lines in a face can express different emotions, and they experiment with creating several versions of different faces in this way.

Why? – At first, Stars might feel limited by having to use the set of Woodsie shapes and markers to create facial expressions. Additionally, they may underestimate the power that a few small changes can have to completely change an expression. However, by understanding what an impact changing a shape or line can make, campers will be more creative and confident in how they are using Woodseys and markers to capture the unique expressions they are imagining.

PROCESS FOCUS

DESIGN: Sketching with Materials
Campers start the project by “sketching” their ideas with small Woodseys on a test sheet in a guided exploration activity.

Why? – Translating a drawn sketch of a face into a 3D sculpture would be hard for Stars. By starting out “sketching” with the actual materials they will use in the end, Stars will have more success with their final designs. Additionally, having time to refine their designs in a guided process will support being reflective, allowing campers to be more intentional about what they are creating.

MINDSET FOCUS

BE REFLECTIVE – I take time to think about what is and isn’t working in my design.
Campers are careful to notice how the changes they are making to the facial features of the character bring it more or less towards the expression they want, and thoughtfully consider how each element contributes to the overall expression.

Why? – Without being challenged to really consider how they are creating the character’s face and facial expression, it’s possible that campers could just assemble Woodseys and draw in details randomly without being intentional or trying different possibilities. Today’s Mindset Challenge ensures that campers will be thoughtful about creating and tweaking their designs, which will make them more likely to create a character that really has an animated expression.

Remember to include these special ingredients to transform today’s project into a Galileo, innovation-based lesson. Bam!
# Lesson Breakdown & Camper Goals

<table>
<thead>
<tr>
<th>Activity</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Introduction</strong></td>
<td>5 min</td>
</tr>
<tr>
<td><strong>Guided Activity: Facial Expressions Exploration</strong></td>
<td>20 min</td>
</tr>
<tr>
<td>- Discuss breaking down animal faces into simple shapes</td>
<td></td>
</tr>
<tr>
<td>- Try making 2 different animal faces out of Woodsies</td>
<td></td>
</tr>
<tr>
<td>- Discuss how to make facial expressions with simple lines and changes in shape</td>
<td></td>
</tr>
<tr>
<td>- Try making 2 different facial expressions using Woodsies and markers</td>
<td></td>
</tr>
<tr>
<td>- Try 2 different ways to make the same expression with Woodsies and markers</td>
<td></td>
</tr>
<tr>
<td><strong>Demo &amp; Discussion: How to Create the Roly Poly’s Face</strong></td>
<td>10 min</td>
</tr>
<tr>
<td>- Demo using tempera paint sticks to color in the background on the face and collar Woodsies</td>
<td></td>
</tr>
<tr>
<td>- Demo adding facial details with markers</td>
<td></td>
</tr>
<tr>
<td>- Demo adding paper embellishments</td>
<td></td>
</tr>
<tr>
<td><strong>Independent Work Time: Creating the Roly Poly’s Face</strong></td>
<td>20 min</td>
</tr>
<tr>
<td>- Color the background of face and collar Woodsies using tempera paint sticks</td>
<td></td>
</tr>
<tr>
<td>- Fill in facial details on smaller Woodsies with tempera paint sticks and markers</td>
<td></td>
</tr>
<tr>
<td>- Glue Woodsies together to build a face</td>
<td></td>
</tr>
<tr>
<td>- Once tempera is dry, draw with marker on top as needed</td>
<td></td>
</tr>
<tr>
<td>- Add paper embellishments</td>
<td></td>
</tr>
<tr>
<td><strong>Clean Up</strong></td>
<td>5 min</td>
</tr>
<tr>
<td><strong>Wrap Up</strong></td>
<td>10 min</td>
</tr>
</tbody>
</table>

## Timing Notes

Campers are on track so long as they have colored their collar and face Woodsies with tempera paint sticks, and started on facial details using other Woodsies and/or markers.

If campers or groups are behind
- They can add paper embellishments and finish their facial details tomorrow.

If campers or groups are ahead
- Use markers to decorate paper embellishments.
- If it’s not the 4th of July week, you may have campers sort foam letters for the Day 5 Onomatopoeia Ball lesson. This will make it easier for campers to find the letters they need during that activity.
## Teaching the Lesson: Play-by-Play

### Introduction (5 min)

<table>
<thead>
<tr>
<th>Welcome campers and make a quick story connection</th>
<th>Ex: What’s the latest from Lucy and Finn? (They’re working with their friends on a new toy for ToyFest, but Mr. Eville is out to steal their supplies.) That’s too bad, but supplies aren’t the only things you need to make a great toy. Let’s inspire the makers with our VISIONARY mindset and artistic ideas.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Give context for today’s project: Introduce roly polys</td>
<td>Point to Roly Poly Toys color copy</td>
</tr>
<tr>
<td>Ask: Have you seen these toys before? Do you know what they do?</td>
<td></td>
</tr>
<tr>
<td>• They are called roly poly toys, and they are balanced just right so that even though they wobble, they won’t fall down!</td>
<td></td>
</tr>
<tr>
<td>Show campers a sample roly poly you’ve made in action to demonstrate the movement</td>
<td></td>
</tr>
<tr>
<td>Build excitement and give an overview of today’s project</td>
<td>This is going to be a two-day project</td>
</tr>
<tr>
<td>Each day we will focus on one of the two main parts of the roly poly – the head and the body</td>
<td></td>
</tr>
<tr>
<td>Today we will focus on creating the head and face</td>
<td></td>
</tr>
<tr>
<td>• It’s really important to have a dynamic head/face – that’s where most of the personality of the toy comes out!</td>
<td></td>
</tr>
<tr>
<td>• Our roly polys will be animal characters</td>
<td></td>
</tr>
<tr>
<td>• Will use Woodsie shapes to make it more 3D</td>
<td></td>
</tr>
<tr>
<td>Tomorrow, we will build our bodies and make sure our roly polys are balanced</td>
<td></td>
</tr>
<tr>
<td>★ Introduce the Innovator’s Mindset: BE REFLECTIVE</td>
<td>Point to this on your Innovator’s Mindset poster</td>
</tr>
<tr>
<td>Define the Mindset element in the context of today’s lesson</td>
<td></td>
</tr>
<tr>
<td>• Today we’re going to focus on being reflective. This means noticing how each change we make affects the design. We want to make sure that each detail we add to the character’s face captures the expression we want, and pay attention to what we want to change if it doesn’t.</td>
<td></td>
</tr>
</tbody>
</table>
**Guided Activity**

**Facial Expressions Exploration (20 min)**

<table>
<thead>
<tr>
<th>Discuss breaking down animal faces into simple shapes</th>
<th>Explain that instead of drawing animal faces, we will build faces out of simple wooden shapes</th>
</tr>
</thead>
<tbody>
<tr>
<td>All objects can be broken down into simple shapes</td>
<td>• Many artists start complicated pieces with just a few basic shapes</td>
</tr>
<tr>
<td></td>
<td>• Some objects are easy to break down into shapes, like an ice cream cone</td>
</tr>
<tr>
<td></td>
<td>• Draw an ice cream cone (circle and triangle) on the board</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Demo breaking down a cat face into simple shapes with Woodsies</th>
<th>Show <em>Cat Heads</em> color copy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ask: <strong>What simple shapes do you see in a cat’s face?</strong></td>
<td><img src="image" alt="Cat Heads" /></td>
</tr>
<tr>
<td>• Draw a circle on the board as the cat’s face</td>
<td><img src="image" alt="Cat Heads" /></td>
</tr>
<tr>
<td>• Take camper suggestions</td>
<td><img src="image" alt="Cat Heads" /></td>
</tr>
<tr>
<td>• Use jumbo Woodsie shapes with rolls of tape on the backs to place shapes in/around the circle to demo</td>
<td><img src="image" alt="Cat Heads" /></td>
</tr>
<tr>
<td>• Ex: circles for eyes, heart for nose, triangles for ears, etc.</td>
<td><img src="image" alt="Cat Heads" /></td>
</tr>
</tbody>
</table>

Explain that they will draw mouths on with markers after, so for now they just need to focus on eyes, nose, ears
Demo breaking down a shark face into simple shapes with Woodsies

Show Shark Heads color copy

Ask: What simple shapes do you see in a shark face? This one is a little more difficult.

- Again draw a circle for the shark face; their characters will be from the front
- Take camper suggestions if they have any, or just start demoing if they are stuck
- Ex: triangle for nose, teardrops/circles/triangles for eyes
- Draw the mouth/teeth in if campers are having a hard time visualizing a shark without the mouth

Support DESIGN and introduce “sketching with objects” on the Facial Expressions Exploration sheet

Hold up a copy of the Facial Expressions Exploration sheet

Will use this sheet to “sketch” several different versions of animal faces with Woodsies

Will use the real materials instead of drawing and trying to recreate with 3D objects

Using this sheet will help them do lots of experimenting and brainstorming before picking a final animal face and expression

Support DESIGN

Have campers make two different animal faces with Woodsies on the sheet

First everyone will experiment with making two different animal faces with simple shapes using the Woodsies

Use the top row of the sheet
Keep the Woodsies on each face; will have two faces right next to each other when they are finished

Have campers think of two animals; when most campers are ready, pass out materials

➤ Have the TL help you pass out the Facial Expressions Exploration sheets and Woodsies

Give campers a minute or two to pick their animals and make simple faces

Remind campers that they don’t have to add a shape for the mouth yet

Campers who are done early can continue to experiment with switching shapes

Discuss facial expressions

Congratulate campers on being off to a great start; but now they need to think about adding personality to their animal faces!

Ask: How do we know how someone is feeling?
• Facial expressions, body language, or they might tell you

Ask: What are facial expressions? Can you guys show me some?
• Have campers “try on” some emotions: sad, happy, surprised, etc.

Show Facial Expressions I and Facial Expressions II color copies

Point out that we mostly change our expressions in the eyes, eyebrows, and mouth

Our noses and ears, for example, don’t really change

Going to experiment with ways to add facial expressions to their faces
The first way they will add expression is by changing the directions of the Woodsie shapes.

Demo changing Woodsies to create expression
- Use one of the circles you’ve drawn or make a new one
- Using triangles as eyes, rotate their direction to show how they can look happy, angry, or sad

The other way to add expression is by drawing in eyebrows and mouths.

Demo eyebrows on the board:
- Using a whiteboard marker, draw a few different eyebrows for the same simple eyes, and see how that changes them
- Can keep the mouth the same for added effect
Don’t necessarily have to demo the mouth; but can do the same kind of demo as
the eyebrows if you want
Should keep in mind that their animals probably have specific kinds of mouths
they’d want to try to capture
Will eventually draw eyes and eyelids, etc. on the Woodsies, but for now they will
keep them blank

Adding expression to the character’s face will really bring it to life
Must be willing to experiment and try lots of things
Noticing and thinking about how each little change you make affects the
expression will help you make the best design choices and end up with an
expression that is exactly what you wanted
Give examples of not being reflective; pretend to have this attitude
• Ex: I think I’ll just change the eyebrows, I don’t think changing the shape
  of the eyes is going to do anything. They look good enough.
• Ask: Will this attitude help us innovate and help us come up with the most
  expressive faces possible? (No!)

Remind that what will help is using their powers of reflection
• They’ll know their powers are on if they are stopping to think about how
  to express an emotion
• Making changes/trying out different ways to get the best combination
• Pretend to turn on your reflective powers
Give examples of being reflective while adding facial expressions
• Emphasize noticing various things to change
• Ex. Hmm…I drew in some surprised-looking eyebrows but now I bet the
  eyes could look even more surprised. What could I try? Maybe bigger
  Woodsies will make them look more surprised. Also maybe I can try tilting
  the direction of the eyes a little bit and see what that does.

They will now pick which animal face they like best from the first row
Will use the 2nd row of the test sheet to try out two different expressions on that
animal’s face
Will give them a chance to practice creating expressions
Will put the same Woodsies down first, then experiment with changing the
shape/size of the Woodsies
Next will experiment with adding eyebrows and mouths
Have campers pick the animal face and the two expressions they want to try to create

Have campers select the animal face they want to experiment with; can point to it

This will be the animal character they create for the roly poly

Have campers think about what two kinds of expressions they want to create

Ask campers to make those expressions themselves to show they are ready

★ Support DESIGN and BEING REFLECTIVE

Have campers try making two different expressions with one kind of animal face on the sheet

Give campers a minute or two to design

Help campers find shapes in other pie pans if needed

Remind campers they might want to find different size Woodsies or even different shapes to better express the two emotions they chose

Ask guiding questions to support being reflective:

- What happens if you try changing the direction of the Woodsies? Does this look more or less like the emotion you want?
- What happens if you choose a bigger/smaller Woodsie? Does this look more or less like the emotion you want?
- What other Woodsie shapes might capture your emotion better?
- (Once most campers have chosen their Woodsies) How should your eyebrows look to match the emotion you want?
- What can you do to show that you have a (happy, scared, friendly) (shark, cat, dog) mouth?

➤ Have your TL help you pass out markers once most campers have stopped experimenting with Woodsies

Support DESIGN and discuss trying the same expression two different ways

Now campers should choose one expression to be the one they want to create on the roly poly character

They will now use the 3rd row in the Facial Features Exploration sheet to try out two different ways to make the same kind of expression

- Ex: two ways to make a sleepy bear face, two ways to make an angry cat face
Support DESIGN and BEING REFLECTIVE as you demo thinking about each part of the face and making adjustments

This final row on the Facial Features Exploration sheet is a great chance to be super reflective

- Need to make sure every part of the face expresses the emotion you chose
- Need to be thoughtful and try several combinations until you get the right one

Model going through some of the things you might try/think about to make a sleepy bear face:

- Ex: I already tried circle eyes but I wonder if oval eyes would look more sleepy.
- Hmm...what if I tilt them to look extra sleepy? That’s more like it.
- Now I’ll try adding eyebrows. Which way should they go? Maybe just flat.
- What about a mouth? How could I show that my bear is sleepy?

Have campers help you reflect to notice what things are looking more or less sleepy

Support DESIGN and BEING REFLECTIVE

Have campers try out two different ways to make the same expression on their Facial Features Exploration sheets

Give campers a minute or two to design and experiment

Help campers find shapes in other pie pans if needed

If campers don’t need the shapes from their first few designs they can put them back in the pie pans

Encourage campers to make the expressions they are trying to create themselves for more ideas of what kinds of shapes and lines they want to use

Ask guiding questions to support being reflective:

- Does each part of your animal face add to the expression?
- What parts of your animal face could look more (happy, sleepy, confused, etc.)?
- What kinds of small changes can you make?
- What can you do differently the second time?

Support DESIGN and BEING REFLECTIVE

Have campers reflect on both versions and choose the best one

Give campers a 30-second warning when they should be finalizing their two different “sketches” for the same emotion

Final step is to pick the version that they think best captures the expression they want for the roly poly character
Ask campers to compare both designs; may be able to pick and choose from both:

- Which eyebrows capture the expression the best?
- Which eye shape?
- Which direction for the eyes?
- Which nose?
- Which mouth?

Give campers a few final seconds to do any final switching/adjusting to end up with the best expression.

Transition to the upcoming Demo & Discussion

Except for the Woodsies on their final expressions, campers can put all the other Woodsies back in the pie pans.

Tell campers you will explain the next steps and then they can get working!

Will keep their exploration sheets in front of them for the next Demo & Discussion; keep hands off.

Have your TL help collect markers and bring them to table groups to avoid further distraction.

Demo & Discussion

How to Create the Roly Poly’s Face (10 min)

Demo using tempera paint sticks to color the face and collar Woodsies

Hold up XXL and XL circle Woodsies.

Explain that the larger circle is the face and the smaller one is a “collar.”

Point to the collar on your sample roly poly.

First step is to add a background color to the face and collar before adding any expressions or details.

Will use tempera paint sticks; like big crayons with solid paint.

Demo using tempera paint sticks

- Press lightly when coloring.
- Use paper towel to smooth it out over whole surface/help it dry faster.
- Very important: can’t draw on it with marker until it’s all the way dry (should take about 5 minutes).
- Can test to see if it’s dry by rubbing your finger on it and seeing if any color comes off.
<table>
<thead>
<tr>
<th><strong>Discuss using tempera paint sticks for face parts that will be a solid color</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Tempera paint sticks can also be used for any Woodsie shapes that will be a solid color, with no details drawn on top.</td>
</tr>
<tr>
<td>Demo covering a small Woodsie with tempera paint stick to be a nose.</td>
</tr>
<tr>
<td>Can get glued to the circle face with a glue stick once face is dry.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Demo and discuss using markers for facial details on Woodsies</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>They will use marker only for Woodsies that they want detail on (like eyes), because you can’t add marker to wet tempera.</td>
</tr>
<tr>
<td>Demo drawing eyelids and eyes on a set of Woodsies with marker.</td>
</tr>
</tbody>
</table>

These parts can also get added to the circle face with a glue stick once is dry.

<table>
<thead>
<tr>
<th><strong>Discuss drawing eyebrows and mouths on the face with marker once tempera is dry</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Once the tempera paint on the Woodsie face is dry, they can draw eyebrows, mouths, etc. on it with markers.</td>
</tr>
<tr>
<td>Demo testing the circle Woodsie by rubbing your finger on it.</td>
</tr>
<tr>
<td>(It will probably not be dry.)</td>
</tr>
<tr>
<td>Explain you’ll need to wait a few more minutes.</td>
</tr>
<tr>
<td>Drawing with marker on the wet tempera will ruin the marker.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Discuss adding paper embellishments</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>If they need to wait for their tempera to dry, or they have more time, they can use paper to add embellishments to the roly poly head.</td>
</tr>
<tr>
<td>Remind campers about the skills and techniques they learned in the last two days: folding, curling, etc.</td>
</tr>
<tr>
<td>Quickly brainstorm some ideas for how to use paper embellishments:</td>
</tr>
<tr>
<td>Ears, hair, whiskers, hat, jewelry, facial hair, etc.</td>
</tr>
<tr>
<td>Will have a chance to add more embellishments tomorrow.</td>
</tr>
<tr>
<td>Embellishments can match the kind of expression/personality the roly poly has.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Review the next steps</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Will carefully take their paper and chosen Woodsies to table groups.</td>
</tr>
<tr>
<td>Paint the face and collar Woodsies with tempera paint sticks.</td>
</tr>
<tr>
<td>Face is XXL and collar is XL.</td>
</tr>
<tr>
<td>While they are waiting for those 2 circles to dry, use tempera or markers to add to the facial expression Woodsies.</td>
</tr>
<tr>
<td>After gluing them onto the face Woodsie, use marker to draw in eyebrows and mouths (if the tempera is dry!) or start working on paper embellishments.</td>
</tr>
</tbody>
</table>
**Review the Mindset**

**Challenge: BE REFLECTIVE**

Challenge campers to continue to be reflective as they create the final version of the character’s expression, making sure each part adds to the expression.

Can continue to make little adjustments as they go.

Can continue to test on the exploration sheet if they want.

---

**Independent Work Time**

**Creating the Roly Poly’s Face (20 min)**

<table>
<thead>
<tr>
<th>What campers will do: Create the roly poly face</th>
<th>CREATE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Paint one XXL circle and one XL circle Woodsie with tempera paint sticks for the head and collar.</td>
<td></td>
</tr>
<tr>
<td>2. Color smaller facial feature Woodsies with markers or tempera paint sticks.</td>
<td></td>
</tr>
<tr>
<td>3. When the background tempera paint is dry, use glue sticks to add smaller Woodsies to the face.</td>
<td></td>
</tr>
<tr>
<td>4. Use markers to draw in mouths and eyebrows on the circle face.</td>
<td></td>
</tr>
<tr>
<td>5. If time allows, add paper embellishments.</td>
<td></td>
</tr>
</tbody>
</table>

**Facilitate CREATE**

➤ Have TL help you bring markers from floor up to tables

- Watch out for campers putting a lot of heavy tempera paint on their Woodsies.
- Encourage campers to use a paper towel to wipe some of the extra paint off, so the tempera will dry quickly.
- Remind campers not to draw with marker on wet tempera.
- After about 7 minutes of work time, remind campers to check and see if their tempera is dry by rubbing a finger over it.
- If no color comes off on a finger, they can now add marker on top of it.
- Make sure campers write their names on the backs of both their face and collar Woodsies!

➤ Have TL help with writing names

**Support BEING REFLECTIVE**

Remind campers to continue to be careful about how they are arranging their shapes to make sure they are capturing the expressions they wanted.

Recognize reflective campers; be specific about how they are being reflective.

Ask guiding questions that support being reflective:

- *What kinds of details could you draw in that would add to your expression?*
- *How can your color choices add to your character’s emotion?*
# Clean Up (5 min)

**Clean Up**

- Throw away all dirty paper towels
- Make sure all unused Woodsies go back in pie pans, and all paper scraps are either thrown away or saved to be reused by future rotations
- Have campers help you reset their table stations for the next rotation
- Have campers wash their hands if they have a lot of tempera on them
- Make sure campers’ names are written on the back of both their face and collar Woodsies
- Choose work from a few campers who used a difficult/interesting animal or expression, or whose faces turned out particularly expressive, for the Wrap Up

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# Lesson Wrap Up (10 min)

**★ Summarize the importance of BEING REFLECTIVE and have campers recall if/how they practiced this today**

- Recognize campers for their really expressive faces
- Highlight effect of practicing Mindset during today’s project
  - Ex: *One thing that helped us create so many interesting expressions is that we used our powers of reflection to stop and notice how each element of our faces was, or wasn’t, adding to our roly polys’ expressions.*
  - noticing how changing the direction of their eyes changed their expressions
  - trying at least 2 different eyebrow designs
  - Thinking about each part of the character’s face could show emotion
- Have campers make a silly face if they practiced being reflective today by:
  - noticing how changing the direction of their eyes changed their expressions
  - trying at least 2 different eyebrow designs
  - thinking about each part of the character’s face could show emotion
- Ask a few campers to talk about what they noticed as they were making changes to their Facial Expressions Exploration sheets
- Review why reflection is important for innovation
  - Ex: *When you use your powers of reflection you can discover what doesn’t work and what works best. This allows you to create better and better designs!*
- ★ Invite campers to recognize each other for BEING REFLECTIVE
  - Can recognize teammates they saw being reflective or who helped them be more reflective
  - Encourage specificity about how person was reflective
  - You and TL can recognize campers as well
Get Ready!

Lesson Materials

* (starred) materials appear multiple times in this list

Copies
- copy, color, Roly Poly Toys (2 per classroom)
- copy, color, Cat Heads (2 per classroom)
- copy, color, Shark Heads (2 per classroom)
- copy, color, Facial Expressions I (2 per classroom)
- copy, color, Facial Expressions II (2 per classroom)
- copy, b&w, Facial Expressions Exploration (1 per camper)

General/Adhesives/Tools
- pan, pie, aluminum, 9”, for holding assorted Woodsies (1 per 4 campers)
- marker, washable, asst. color, set of 8, for adding facial expression details on Woodsies (1 set per 4 campers)
- tape, blue, 1” wide, Uline, for back of jumbo Woodsies, facial elements demo, LI use only (2 ft. per LI)
- marker, dry erase, set (1 per classroom)
- glue stick, washable, for gluing Woodsies together and adding paper embellishments (1 per camper)
- towel, paper, roll, for rubbing tempera paint onto Woodsies and drying clean hands (2 sheets per camper)
- scissors, medium, 5”, pointed, for cutting paper embellishments (1 per 2 campers)
- bucket, 5 gal., snap top, for hand washing (1 per classroom)

Required Materials

Facial Expressions Exploration and roly poly face activities
- Woodsies, jumbo, teardrop, oval, circle, XL & XXL circles for face & collar (2 per camper, plus 1 pack for LI demo)
- Woodsies, asst. shapes, circle, oval, teardrop, for facial elements (roughly 10 per camper)
- Woodsies, asst. shapes, star, heart, square, triangle, for facial elements (roughly 10 per camper)
- Woodsies, jumbo, stars, hearts, squares, triangles, for facial elements demo on board, LI use only (1 pack for LI demo)
- paint sticks, tempera, standard colors, set of 12, for coloring facial elements (1 set per 4 campers)
- paper, cardstock, brights, asst., 8.5 x 11”, for paper embellishments (one 4.25 x 5.5” sheet per camper)

Materials Preparation

Make a sample roly poly so campers can envision the final project and you can demo how a roly poly works.

Sort XXL and XL circle Woodsies from the teardrop, oval, circle Woodsie pack (1 XXL and 1 XL circle per camper).
- XXL circle for roly poly face
- XL circle for roly poly “collar”

Cut 8.5 x 11” cardstock into quarters (one 4.25 x 5.5” piece per camper).

Roll pieces of blue tape on the back of some of the jumbo Woodsies for your demo on the board. A recommended demo set could (roughly) include:
- 2 circles, 2 ovals, 2 teardrops, 2 triangles, 1 heart, 1 square, and 1 star – all jumbo size

Advance Materials Prep

Heads-up: You won’t be able to start the most intensive prep for tomorrow (assembling roly poly heads) until today’s lesson is done.
### Setting Up the Space

Set the Guided Activity materials on the floor near the front of your classroom, or wherever you do instruction:
- **Facial Expressions Exploration sheets** (1 per camper)
- **pie pans** (1 per 4 campers) with both bags of asst. Woodsies mixed together (roughly 18 woodsies per camper)
- **markers** (1 set per 4 campers)

Set up your materials for the Guided Activity:
- Draw a circle (roughly 10" diameter) on the board for demoing with jumbo Woodsies
- Gather a set of “sketching” materials for the Guided Activity – Facial Expressions Exploration sheet, jumbo Woodsies with blue tape rolls on the back, whiteboard marker
- A sample of each of the Independent Work Time materials to demo using tempera paint sticks

Set up tables for Independent Work Time:
- XXL & XL circle Woodsies (1 Woodsie of each size per camper)
- glue sticks (1 per camper)
- tempera paint sticks (1 set per 4 campers)
- paper towels (1 sheet per camper)
- scissors (1 per 2 campers)
- 4.25 x 5.5" pieces of cardstock (1 per camper) – provide variety of colors at each table

Set out the box with paper scraps from the vehicles project. These scraps can be used today and tomorrow.

### Morning Of Preparation

Fill up bucket with water for hand washing.

### Notes

**Materials Management**
If you feel that the desks are too crowded, you can have scissors and paper at another station where campers can get them after they are done assembling their face Woodsies.

Some of the Woodsies in the assorted bags are too large for campers to use. Most campers should realize they are too big as they are exploring their facial expressions, but if you notice your campers are using these pieces, it might be a good idea to pull out the biggest Woodsies from your pie pans.

**Suggestions for Large Classes**
Set up two buckets for hand washing.
On the Board

Mindset of the Day
BE REFLECTIVE – I take time to think about what is and isn’t working in my design.

Facial Expressions Exploration
Draw a (roughly 10" diameter) circle for you to tape jumbo Woodsies in/around during your exploration sheet demos.

Check In With Your TL

➤ Make sure your TLs are clear about their role in helping today’s lesson run smoothly. Specific things your TL can help with today:
  • Help pass out Facial Expressions Exploration sheets to campers
  • Help pass out pie pans filled with Woodsies to campers
  • Help pass out markers to campers
  • Help you bring markers from floor up to tables for Independent Work Time
  • Watch for campers who are using too much tempera paint, or are mixing wet tempera paint with markers
  • Help campers write their names on the backs of their face and collar Woodsies
Today: Balancing and Building the Roly Poly’s Character
Today campers balance the body of the roly poly and continue to push the unique personality of the roly poly character through adding outfits and accessories.
Today’s Project: At-A-Glance

Add a washer to the bottom half of the capsule

Using poster tack, make sure washer is bottom and centered

Brainstorm professions and locations for roly polys

Examples of professions and locations

Brainstorm outfits and accessories for roly polys

Examples of outfits and accessories
Add the head onto the top half of the capsule

Head is glue dotted onto the center top of the capsule

Use paper, pompons, and pipe cleaners to add outfits and accessories to the roly poly

Details added to top half of capsule only

Put both halves of the capsule together and see if it's balanced!

Balanced roly poly
Teaching the Lesson: Overview

OUR SECRET SAUCE: THE G.I.A.

KNOWLEDGE FOCUS

CONCEPTS AND FACTS: Balancing the Roly Poly
Campers learn that a roly poly works because its weight is centered and at the bottom, and that the head needs to remain centered and light.

Why? – Campers need to understand how a roly poly works so they can appreciate the importance of paying attention to balance, and can understand a little bit about how to troubleshoot. If the roly poly is off-center or poorly balanced, they won’t be able to play with it!

PROCESS FOCUS

GENERATE IDEAS: Mix-n-Match Brainstorm
Campers generate ideas for professions, locations, clothes and accessories for their roly polys, and then combine ideas from all categories to create a unique character.

Why? – It might be hard for Stars to make the jump of turning an animal face into a full, cohesive character with interesting details. This brainstorm activity helps get their ideas flowing in categories that will direct character development, and ensures they will have a vision for the roly poly before starting to work.

MINDSET FOCUS

BE VISIONARY – I imagine things that don’t exist yet.
After generating lots of ideas, campers home in on a clear idea for a unique roly poly toy and have a plan for how they’ll use materials to create their one-of-a-kind designs.

Why? – If campers don’t take the time to set a clear vision for the character before starting to build outfits and accessories, they may struggle to come up with innovative ideas for how to use the materials. By taking the time to conceptualize specific details about their characters, campers will have a direction for Independent Work Time that will allow them to use all the materials at their disposal to bring their characters to life.

Remember to include these special ingredients to transform today’s project into a Galileo, innovation-based lesson. Bam!
Lesson Breakdown & Camper Goals

<table>
<thead>
<tr>
<th>Activity</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction</td>
<td>5 min</td>
</tr>
<tr>
<td>Guided Activity: Balancing</td>
<td>15 min</td>
</tr>
<tr>
<td>- Introduce how a roly poly is balanced by having its weight in the bottom and centered</td>
<td></td>
</tr>
<tr>
<td>- Facilitate adding a washer weight to the bottom of the roly poly capsule</td>
<td></td>
</tr>
<tr>
<td>- Demo how to adjust the washer for balance</td>
<td></td>
</tr>
<tr>
<td>Guided Activity: Mix-n-Match Brainstorm</td>
<td>10 min</td>
</tr>
<tr>
<td>- Brainstorm ideas for professions, locations, outfits and accessories</td>
<td></td>
</tr>
<tr>
<td>- Choose a profession, location, outfit, and accessories for their roly polys</td>
<td></td>
</tr>
<tr>
<td>- Brainstorm how to use the materials options to make outfits and accessories</td>
<td></td>
</tr>
<tr>
<td>- Demo adding the head/collar to the top half of the capsule</td>
<td></td>
</tr>
<tr>
<td>Independent Work Time: Finishing Roly Polys</td>
<td>25 min</td>
</tr>
<tr>
<td>- Attach the roly poly head to the top half of the capsule</td>
<td></td>
</tr>
<tr>
<td>- Add outfits and accessories to the top half of the capsule</td>
<td></td>
</tr>
<tr>
<td>- Snap the top and bottom halves of the capsule together with an adult’s help</td>
<td></td>
</tr>
<tr>
<td>- Test the roly poly for balance and make adjustments as needed</td>
<td></td>
</tr>
<tr>
<td>- Continue making outfits and accessories</td>
<td></td>
</tr>
<tr>
<td>Clean Up</td>
<td>5 min</td>
</tr>
<tr>
<td>Wrap Up</td>
<td>10 min</td>
</tr>
</tbody>
</table>

Timing Notes
Campers are on track so long as they have a washer in the bottom of the roly poly capsule and a head (created yesterday) on the top of the capsule, and the roly poly is balanced.

If campers or groups are behind
- They can continue adding clothes and accessories at home.

If campers or groups are ahead
- Campers can draw on the capsule body of the roly poly with Sharpies.
- Campers can create more outfits and accessories for the roly poly that are for different occasions, locations, and activities.
- If it’s not the 4th of July week, you may have campers sort foam letters for the Day 5 Onomatopoeia Ball lesson. This will make it easier for campers to find the letters they need during that activity.
# Teaching the Lesson: Play-by-Play

## Introduction (5 min)

| Build excitement and give an overview of today’s project | Today we are going to create the bodies of our roly polys!
| Need to make sure they are balanced just right so that even when they get pushed over, they bounce right back up; will do this part together as a class
| Then, we will brainstorm ways to make the roly poly character even more unique, and will work to add outfits, accessories, hair, wings, arms, horns, or anything else you imagine! |

**★ Introduce the Innovator’s Mindset: BE VISIONARY**

| Point to this on your Innovator’s Mindset poster | Define the Mindset element in the context of today’s lesson

*Today we’re going to focus on being visionary. This means imagining things that don’t yet exist! Today you’ll get to imagine and create a totally unique roly poly toy that’s of your own design. We’re going to work on having a clear vision so we know how to use materials to create our special characters.*

## Guided Activity

### Balancing (15 min)

| Discuss how a roly poly is balanced by having its weight centered in the bottom | Ask: *Who knows what it means for something to be balanced?*

*It won’t fall over, its weight is equally distributed*

| Explain to campers that a roly poly’s balance is unique, because it WILL fall over, but then it comes right back up
| *Tap your sample roly poly to show its rebalancing action* |

A roly poly is able to come right back up because the weight in the bottom is heavier than the weight at the top

| Open up the capsule of your sample and show campers the washer inside
| Take the washer out, put the capsule back together, and try knocking the roly poly over now; it won’t bounce back up!
| Tell campers that’s because now the head weighs more than the bottom |

| Explain to campers that a roly poly also comes right back up because all of its weight is centered
| Both the bottom washer and the head are in the center of the body
| Open up the capsule again and put the washer back in, but this time don’t put it in the center of the bottom
| Explain this to campers and hold up the capsule so they can see how the washer is off-center
| Put the capsule back together and try knocking the roly poly over
| It will lean way over and not bounce back up |

| Summarize for campers the 2 most important things to remember when balancing a Roly poly: |
• All the weight needs to be in the “bottom and centered”
Do a hand motion for “bottom and centered” every time you say it

Hold up both halves of a capsule: top and bottom
They will be adding weight to the bottom half of the capsule with a washer and poster tack
After they add the head, outfits, and accessories to the top half, they will put the whole capsule together

Discuss using the washer
• Will use a washer as weight
• Has a hole in the middle so they can center it better
• Point out the “bubble” in the inside of the bottom half of the capsule

• Tell campers that they can use this bubble like a target, and center the washer over it

Discuss using the putty
• Will use poster tack to stick the washer into the capsule
• Easy to adjust, will probably need to make changes to make sure the weight is at the bottom and centered

Campers will follow along for this part
➤ Your TL can help you pass out the bottom halves of capsules, washers, and poster tack to campers
Divide the poster tack stick into 2
Divide those halves into 2 again (so you have 4 pieces)
Put 2 pieces of poster tack across from each other on the edges of the washer
Take the washer and press it down into the center bottom of the capsule, lining it up like a target so you can see the bubble through the center of the washer.

Take the last two pieces of poster tack, and press them down on top of the washer so that the 4 dots make an X.

Make sure you can still see the bubble through the center of the washer.

Remind campers that they should be able to shoot an arrow straight down the center of the washer’s hole and hit the center of the bubble, just like a target.
If not, they need to adjust the washer so it’s perfectly centered.
Shift your washer so it isn’t quite centered over the bubble now; but you can still see part of it.

Hold up your capsule, facing out so the campers can see your washer.

Ask: *Can you see the bubble in the center of the target?*
• You can see the bubble, but it’s not right in the middle.

Demo pressing down on the side of the washer that is farther from the center, until the target moves back to the center.

Hold up the capsule again for campers to see.

Ask: *Now can you see the bubble in the center of the target?*
• Yes!

Tell campers that they need to get a “target check” from one other camper, who confirms that s/he can see the bubble right in the middle of the washer.
Remind campers that the weight needs to be “bottom and centered.”

Once they have gotten a target check, they can take the capsules and place them behind them so they won’t distract them during the brainstorm activity.

➤ Ask your TL to watch for any campers who are being distracted by their capsules during the following activity; they can take those campers’ capsules and hold them until Independent Work Time.
### Guided Activity

#### Mix-n-Match Brainstorm (10 min)

| Introduce the opportunity to practice BEING VISIONARY while imagining what kinds of characters they want to create | Completing their roly polys today is a chance to create something super unique and one-of-a-kind  
Up to them to create all the details; toy that’s just for them!  
In order to create something amazing, we have to have a clear idea of what we want to create  
Give examples of not being visionary; pretend to have this attitude  
  - Ex: *I think I want my roly poly to be sporty, but I don’t really know what that should look like. I dunno, maybe I’ll just add a blue hat because I like blue. I’ll just see how that looks and then decide...maybe I’ll change my idea later.*  
  - Ask: *Will this attitude help us innovate and help us create a super unique and fantastic roly poly toy? (No!)*  
Remind them that what will help is using their powers of being visionary  
  - They’ll know their powers are on if they are brainstorming lots of ideas, picking one idea and getting really clear on it, thinking about details, having a picture of what they want their roly polys to look like  
  - Pretend to turn on your visionary powers  
Model what it sounds/looks like to be visionary  
  - Emphasize having a clear vision, knowing what you’re going to make and why  
  - Ex: *I’ve thought through a bunch of ideas and now I know exactly what I want my roly poly to look like! I’m super excited about my idea and I know just where to start and why. I’ve got a plan for how to use all the materials to have them match my idea.* |
| --- | --- |
| Introduce the Mix-n-Match Brainstorm activity | Brainstorming can help us come up with lots of ideas and can help us get really clear about our ideas  
This Mix-n-Match Brainstorm helps us generate lots of ideas and then combine them in different ways to get fun possibilities  
We’ll start as a class and then brainstorm about our individual projects |
| Have campers recall the animal face and expression they created yesterday | They started their characters yesterday  
Can continue to build off the personality and expression they chose  
Have campers recall the animal and specific emotion they created yesterday  
Can keep this in mind during the brainstorm |
| ★ Support GENERATING IDEAS and BEING VISIONARY | First category they will brainstorm about is professions, or jobs  
Ask campers to give you suggestions for professions for their roly polys  
Can start with just calling out ideas  
Then ask campers to think about their animals’ expressions and envision what kinds of jobs they might be in with those expressions/personalities  
  - Ex: *Well, I made a happy cat yesterday... I wonder why my cat is happy? Maybe she loves eating fish and just got a job as a sushi chef!* |
★ Support GENERATING IDEAS and BEING VISIONARY

Lead campers through a brainstorm of different kinds of locations

Write the suggestions on the board under PROFESSIONS

Next they’ll think about locations; where could their roly polys be?

Again ask campers for suggestions

Support being visionary by having campers imagine where their particular animals could be that would make them ____ (happy, tired, bored, etc.)

Write the suggestions on the board under LOCATIONS

Finally they’ll generate ideas about what kinds of clothes and accessories their characters could be wearing

- Can reference the professions and locations ideas for inspiration
- Can include uniforms, jerseys, costumes, etc.
- Encourage campers to be more specific/descriptive
- Ex: sparkly bellbottoms vs. pants

Remind campers that accessories can mean things their characters are wearing or carrying

- Ex: bow tie, crown, umbrella, sword, parrot could all be considered “accessories”

If campers have some ideas about what kinds of accessories their animals might have they can share those as well

Write the suggestions on the board under CLOTHES and ACCESSORIES

★ Support GENERATING IDEAS and BEING VISIONARY

Lead campers through a brainstorm of clothes and accessories

Camper will select one profession and one location to narrow their ideas about their roly poly characters

Picking a specific job and location will help them visualize what they want their roly polys to look like

Can use ideas generated during the brainstorm or come up with their own

Reread the ideas on the board for Stars who can’t read, and for efficiency

Have everyone pick their professions and locations and give you a signal (finger on the nose, thumbs-up, etc.) when they are ready

★ Support GENERATING IDEAS and BEING VISIONARY

Have campers choose a profession and location for their roly polys

Getting even more specific now

Have campers imagine what kinds of clothes or accessories their characters would need in their selected jobs and locations

Have a few campers share out some of the things they thought of

★ Support GENERATING IDEAS and BEING VISIONARY as you discuss available materials and how they could be used

Recognize campers for generating so many ideas and getting clear on their own

Remind campers that the next part of being visionary is figuring out how to create their ideas

Show campers the materials options for creating outfits and accessories:

- paper, markers, pompoms, pipe cleaners, glue dots

Discuss how they could use paper

- Hair, facial hair, hats, ties, bows, purses, etc.
- Remind campers that they can use all the paper-folding techniques they learned earlier this week
- Markers can be used to draw on paper elements; they are not for drawing directly on the roly poly capsules (they will smear)

Discuss how they could use pipe cleaners
- Arms, wings, ears, hair, tails, purse straps, etc.
- Quickly demo how to bend the very tip of a pipe cleaner to create a “tab” (just like the ones they learned how to make out of paper!) that can be glue-dotted to the surface of the capsule

Remind campers how to use glue dots
- Scratch the back for 10 seconds before gently peeling the paper back

Discuss how they could use pom poms
- Hair, fur, ears, tails, decorative collars, etc.

**Demo attaching the head/collar to the center of the top half of the capsule**

Tell campers that their first step (before adding any other outfits or accessories) will be to put the head from yesterday onto the top half of the capsule

They may notice that you put their collars and heads together for them last night!

Explain that the head WILL affect the balance a lot, so it’s super important that it is centered on the top half of the capsule!

Put the top half of your capsule down, dome side up

Take your roly poly’s head/collar and put a glue dot underneath it, in the center of the collar
Attach the roly poly head right over the center of the capsule (right over the preexisting circle shape on the capsule)

Now they can start adding clothes and accessories to that same top half

**Explain how the materials can affect the roly poly’s balance**

All the materials they are using to add details to their roly polys were chosen because they are super light and won’t affect its balance very much.

It is possible that if a camper puts a lot of materials on only one side of a roly poly it could become imbalanced.

In particular, campers should watch out for adding details to the bottom half of the capsule.

This can block the roly poly’s ability to roll and bounce back upright.

All details should be on the top half of the capsule.

**Explain attaching the top and bottom of the capsule and testing for balance**

Tell campers that when half of Work Time is over (10 minutes), you and your TL will help them attach the top and bottom halves of their capsules.
At that point, campers should test the roly poly for balance by gently tapping it and seeing if it will bounce back up after falling over.

If the roly poly isn’t working, they will need to adjust to make sure the washer weight and the head are centered; can get help from an adult.

If the roly poly is working, they should place it in an 8 oz. container so it doesn’t roll away and they can continue working.

★ Review the Mindset
Challenge: BE VISIONARY

Challenge campers to use their visionary powers to keep their ideas in mind and use the materials available to make the roly poly's unique character come to life!

Have campers turn on their visionary powers

Dismiss campers to tables, where they can find their spots by finding their roly poly heads from yesterday

Remind campers to bring the bottom half of the capsule with them

➤ Have your TL help campers find their seats with yesterday’s project

Independent Work Time
Finishing Roly Polys (25 min)

<table>
<thead>
<tr>
<th>What campers will do: Attach the head to the top half of the capsule, and then build and add outfits and accessories</th>
<th>CREATE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Add a glue dot in the center of the bottom of the collar (on the head).</td>
<td></td>
</tr>
<tr>
<td>2. Press the head/collar onto the top of the capsule.</td>
<td></td>
</tr>
<tr>
<td>3. Create clothes and accessories on the top half of the capsule using pipe cleaners, paper, and pom poms.</td>
<td></td>
</tr>
<tr>
<td>4. Have an adult help snap the top half of the capsule onto the bottom half.</td>
<td></td>
</tr>
<tr>
<td>5. Test and make sure the roly poly is balanced; adjust if needed.</td>
<td></td>
</tr>
<tr>
<td>6. Place the assembled roly poly in an 8 oz. deli container; continue working.</td>
<td></td>
</tr>
</tbody>
</table>
### Facilitate CREATE

Make sure everyone starts with attaching the head to the top half of the capsule.

Keep an eye out for any campers who have clearly attached the head off-center.

➤ About 10 minutes into Independent Work Time, you and your TL should go around and start snapping the tops of the capsules onto the bottoms.

Have campers test their roly polys right away so you can help adjust anything if they aren’t balanced.

Make sure campers put their roly polys in 8 oz. containers to continue working so they don’t roll away.

Remind campers to keep their character additions to the top half of the capsule.

➤ Your TL can help you refill glue dot gardens as needed.

➤ Your TL can help campers write their names on the bottoms of their capsules with Sharpie.

### ★ Support BEING VISIONARY

Remind campers to keep their visions for their roly poly toys in mind as they create.

Assist campers who are having a hard time imagining how to use materials to create what they want.

Call out any visionary ideas for different outfits and accessories, and also visionary ways of using the materials.

Recognize visionary campers; be specific about how they are being visionary.

Ask guiding questions that support being visionary:

- *Tell me about your roly poly character.*
- *How can you use these materials to create _____ detail?*
- *What other details could you include on your character? How would you do that?*
- *What’s unique about your character? How can you show that with the details you are adding?*

### Clean Up (5 min)

#### Clean Up

Make sure materials are reset on tables for the next rotation and all leftover materials are gathered up and put back in containers.

All roly polys should have camper names on the bottom and should be placed in an 8 oz. deli container so they don’t roll away.

Reset capsules, washers, and poster tack at the front of the class for easy distribution in the next rotation.

Choose a few campers’ roly polys that have really visionary outfits, accessories, or background stories for their characters to discuss during Wrap Up.
**Lesson Wrap Up (10 min)**

| ★ Summarize the importance of BEING VISIONARY and have campers recall if/how they practiced this today | Recognize how many amazing, unique characters were created for roly polys Highlight effect of practicing Mindset during today’s project  
- Ex: One thing that helped us create so many interesting characters for our roly polys was that we used our visionary powers to get clear on totally, new original ideas for our characters and then used materials in different ways to bring them to life!  
Have campers circle their hands around their eyes if they practiced being visionary today by:  
- Imagining what kind of a profession or location the animal might be in  
- Visualizing what they wanted the roly poly to look like before starting  
- Having a clear idea of how they wanted to use certain materials to make their visions happen  
Ask a few campers to talk about why they chose a certain profession/location/outfit/accessory for the roly poly  
Review why being visionary is important for innovation  
- Ex: When you use your visionary powers, you imagine what your perfect project might look like in the end, so you can make adjustments to get exactly what you want. |

| ★ Invite campers to recognize each other for BEING VISIONARY | Can recognize teammates they saw being visionary or who helped them be more visionary  
Encourage specificity about how person was visionary  
You and TL can recognize campers as well |
Lesson Materials

* (starred) materials appear multiple times in this list

Copies
- copy, color, Roly Poly Toys (2 per classroom)

General/Adhesives/Tools
- glue dots, 1/2", for sticking roly poly head on body and adding accessories (8 per camper)
- glue gun, mini, low temp, for advance prep: attaching head components together (4 per classroom)
- glue stick, melt, mini, for advance prep: attaching head components together (0.5 per 4 campers)
- scissors, medium, 5", pointed, for cutting paper embellishments (1 per camper)
- marker, washable, asst. color, set of 8, for decorating paper embellishments (1 set per 4 campers)
- container, plastic, deli, 16 oz., for holding assembled capsule so it won’t roll away (1 per camper)

Required Materials
- Easter egg, plastic, asst. colors, for advance prep: attaching face and collar Woodsies (1/2 per camper)
- capsule, sphere, plastic, 2-piece, asst. solid colors, 100 mm, for roly poly body (1 per camper)
- washer, flat, thick, 3/4" id, 2" od, for weight in bottom of capsule (1 per camper)
- poster tack, stick, for sticking washer into capsule (1 stick per camper)
- container, plastic, deli, 8 oz., for holding assembled capsule so it won’t roll away (1 per camper)

Camper Choice Materials
-Campers will choose some of these materials, but not all of them. You have not been supplied with enough choice materials for every camper to use each option. Choice materials are supplied for variety under the assumption that not every camper will choose every material.)
- pompom, glitter (3 per camper)
- pompom, 1", asst. colors (3 per camper)
- pipe cleaner (3 per camper)
- paper, cardstock, brights, asst., 8.5 x 11", for paper embellishments (two 4.25 x 5.5" sheets per camper)
Materials Preparation

- Hot glue campers’ faces and collars (the XXL and XL circle Woodsies) with ½ a plastic egg between them, to create the final heads needed for today’s project (1 per camper).

If a camper’s name is no longer visible after this assembly, make sure you rewrite the name on the egg or collar so it is visible.

- Prepare 8 glue dots per camper. Make sure to have a solution for campers to easily dispose of glue dot backing trash. If you’ve received glue dots in rolls prepare glue dot gardens with strips of 8 glue dots. (See Prep and Materials for the Summer for details.) If you’ve received glue dots in sheets just cut strips of 8 glue dots and place them in a container (1 container per 4 campers).

Cut 8.5 x 11" brights cardstock into quarters for paper details (two 4.25 x 5.5" pieces per camper).

Recommended: Prepare the Guided Activity materials to be handed out quickly:
  - plastic capsule, bottom half (1 per camper)
  - washer (1 per camper)
  - poster tack (1 stick per camper)
  - place washer and 1 stick of poster tack inside of the bottom half of the capsule (1 set per camper)
  - put sets on trays or in pie pans so they can be passed around by you and the TL
## Setting Up the Space

Set the Guided Activity materials at the front of the classroom:
- bottom half of the plastic capsule with washer and poster tack inside (1 per camper)

Set the Independent Work Time materials in the center of each table:
- plastic capsule, top half (1 per camper)
- 8 oz. deli container (1 per camper)
- scissors (1 per camper)
- 16 oz. container (1 per 4 campers) filled with a mixture of both types of pompoms (6 per camper)
- pipe cleaners (3 per camper)
- 4.25 x 5.5" pieces of cardstock (2 per camper) – provide variety of colors at each table
- glue dot garden (1 per 4 campers)
- markers, set of 8 (1 set per 4 campers)

At each camper’s spot, also set out the head/collar pieces from yesterday that you glued together for them.

Set out the box with paper scraps from the vehicles project and yesterday’s lesson, for campers to use today.

Gather materials for teaching the lesson:
- Set of Guided Activity materials – capsule, washer, poster tack
- Sample roly poly head/collar, glue dots, scissors, and 8 oz. deli container
- Sample of Independent Work Time materials (pompoms, pipe cleaners, paper, markers)

Put up the following color copies on your copies display board:
- Roly Poly Toys

## Notes

**Materials Management**
The capsules can be tricky to open and close! Try to avoid opening them after they have been closed by making sure campers’ washers are held securely with poster tack. If you do need to open a closed one, try twisting and squeezing it slightly while trying to open it.

If you feel that tables are too crowded, set out glue dot gardens on a separate table where campers can easily access them.
On the Board

Headers for Mix-n-Match Brainstorm
PROFESSIONS
LOCATIONS
CLOTHES
ACCESSORIES

Check In With Your TL

➤ Make sure your TLs are clear about their role in helping today’s lesson run smoothly. Specific things your TL can help with today:
• Pass out the bottom halves of capsules, washers, and poster tack to campers during the Guided Activity
• Take any campers’ capsules that are distracting them during the brainstorm activity; hold them until Independent Work Time
• Help campers find their spots (where their heads are already set on the tables) when they are released for Independent Work Time
• Keep glue dot gardens full
• Snap the top halves of campers’ capsules onto their bottom halves during Independent Work Time
• Help campers write their names on the bottoms of their capsules
Ball and paddle toys are a classic.

Today campers make a two-person paddle ball game. Each paddle is decorated with an onomatopoeia word with a matching shape background.
Today’s Project: At-A-Glance

Spell the chosen word with foam letters

Foam letters glued onto 9 x 9” construction paper

Draw and cut a shape around the word

Shape inspired by “splat” being cut

Repeat for a second paddle

Each paddle can have the same word or a different one.
Add a concentric border (optional)

Second sheet of paper glued to first shape then cut to create a concentric shape

Glue words to paddles

Words glued onto 9" cardboard circles

Add handles

Giant pipe cleaner looped through pre-punched holes
Teaching the Lesson: Overview

OUR SECRET SAUCE: THE G.I.A.

KNOWLEDGE FOCUS

CONCEPTS AND FACTS: Onomatopoeia and Comic Art
Campers learn what onomatopoeia is and how it is represented graphically in comic art.

Why? – In order to choose an onomatopoeia to represent on their paddles, campers need to know what an onomatopoeia is. In addition, seeing examples of how other designers have visually represented sound will help campers understand and get excited about what they’re doing today.

PROCESS FOCUS

GENERATING IDEAS: Guided Visualization
As a group, campers are guided to imagine how three specific sounds (splat, pop, and zap) can be interpreted as shapes based upon what type of object or action would make that sound.

Why? – The idea of representing an invisible sound visually through shape is a complex one. The questions provided as part of this process provide a scaffold to help campers go from the abstract (sound) to the concrete (objects, movement, shape). In addition, having campers collectively generate ideas helps ensure everyone understands this idea and feels comfortable and excited about coming up with their own shape ideas.

MINDSET FOCUS

BE VISIONARY – I imagine things that don’t exist yet.
Campers are open to thinking about sound in a totally different way and commit to coming up with a clear visual image in their heads that is based on the sound they’re brainstorming around.

Why? – Because sound can’t be seen, campers are literally imagining something that doesn’t exist today, making this a great opportunity for campers to exercise their vision. However, campers may not immediately have a clear idea of what their sounds might look like or may feel unsure how to approach this task. Embracing this Mindset Challenge ensures they get the most out of the guided visualization and enables them to keep pushing to come up with novel and interesting connections between sound and shape.

Remember to include these special ingredients to transform today’s project into a Galileo, innovation-based lesson. Bam!
Lesson Breakdown & Camper Goals

<table>
<thead>
<tr>
<th>Activity</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Introduction</strong></td>
<td>5 min</td>
</tr>
<tr>
<td><strong>Guided Activity: Visualizing Onomatopoeias</strong></td>
<td>15 min</td>
</tr>
<tr>
<td>- Introduce comic book art and onomatopoeias</td>
<td></td>
</tr>
<tr>
<td>- Have campers visualize shapes that match onomatopoeias</td>
<td></td>
</tr>
<tr>
<td>- Facilitate picking an onomatopoeia and sketching a shape for it</td>
<td></td>
</tr>
<tr>
<td><strong>Demo &amp; Discussion: Paddle Design</strong></td>
<td>5 min</td>
</tr>
<tr>
<td>- Discuss adding foam letters</td>
<td></td>
</tr>
<tr>
<td>- Demo drawing and cutting shapes and gluing them to the paddle</td>
<td></td>
</tr>
<tr>
<td><strong>Independent Work Time: Decorating Paddles</strong></td>
<td>30 min</td>
</tr>
<tr>
<td>- Add foam letters</td>
<td></td>
</tr>
<tr>
<td>- Draw, cut, and glue shapes</td>
<td></td>
</tr>
<tr>
<td>- Have an adult add handles</td>
<td></td>
</tr>
<tr>
<td><strong>Clean Up</strong></td>
<td>5 min</td>
</tr>
<tr>
<td><strong>Wrap Up</strong></td>
<td>10 min</td>
</tr>
</tbody>
</table>

**Timing Notes**
Campers are on track so long as they have two paddles that have an onomatopoeia and some sort of paper background on them. It's important that campers get to making 2 paddles so that they can play their games with friends at home!

If campers or groups are behind
- You can skip having campers brainstorm and sketch a second shape. They can just do the same word and shape on the second paddle as the first.
- They can skip over adding a larger concentric shape border and just focus on getting two paper shapes with onomatopoeia words ready to put on two paddles.
- Campers can put the onomatopoeia word without any paper background on the second paddle.
- Campers can just write entire words or some letters with markers instead of finding the foam letters.

If campers or groups are ahead
- They can outline the edges of their letters and paper shapes with marker.
- They can take the leftover pieces of paper from the shapes that they cut out, and incorporate parts of it into their designs (around edges, etc.).
- Let campers play their game with other campers who are also done. Pass out 2" pompoms.
# Teaching the Lesson: Play-by-Play

## Introduction (5 min)

<table>
<thead>
<tr>
<th>Welcome campers and make a quick story connection</th>
<th>Ex: ToyFest is today! That means we'd better finish up the last of this week's artistic, one-of-a-kind toys and make sure we're ready to lend our innovative support to Lucy, Finn and the makers.</th>
</tr>
</thead>
</table>
| Build excitement and give an overview of today's project | Announce making a paddle ball game  
- Demo playing the game with the TL using your sample set  
- Make onomatopoeia sounds as you play!  
Will get to use imagination to transform fun sounds into exciting-looking words |

★ Introduce the Innovator’s Mindset: BE VISIONARY

| Point to this on your Innovator’s Mindset poster | Define the Mindset element in the context of today’s lesson  
- Today we’re going to focus on being visionary. This means imagining things that don’t yet exist. Our challenge today will be to imagine what different sounds might look like. We will all have to be really visionary to imagine how to transform a sound into something we can see! |

## Guided Activity

### Visualizing Onomatopoeias (15 min)

<table>
<thead>
<tr>
<th>Introduce action words in comic book art</th>
<th>Show Onomatopoeias in Comic Books and Roy Lichtenstein color copies</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><img src="image1.png" alt="Onomatopoeias in Comic Books" /> <img src="image2.png" alt="Roy Lichtenstein" /></td>
</tr>
</tbody>
</table>

Ask campers what they notice  
- Bright colors  
- Words are also sounds  
- Shapes match the word/sound  

Words like these are used in comic books and other art  
- Helps reader “hear” actions in the story  
- Looks fun and exciting
| Introduce onomatopoeias and brainstorm some examples | Tell campers that these words are called onomatopoeia (on-oh-mah-toe-PEE-uh)  
- A word that imitates the natural sound of something  
- Have campers say "onomatopoeia" twice  
Point to your list of onomatopoeias on the board: splat, pop, zap  
With campers, brainstorm another 5-7 onomatopoeias; examples include:  
- Bang  
- Wham  
- Crack  
- Bonk  
- Thud  
Ensure campers are not relating words to violent actions (Ex: The bang of a gun) |
| Introduce the upcoming guided visualization brainstorm | Explain for this project they’ll pick an onomatopoeia and make a shape around it that represents that sound  
Point out they can’t see sounds, so they’ll have to use their visionary powers to really imagine what a sound might look like  
Will take some time to warm up these visionary muscles by doing a brainstorm where they imagine what a few sounds might look like  
- As a group will think about what objects/actions might make the sound  
- Then will try to envision some shapes they can draw inspired by those objects/actions |
| ★ Introduce the opportunity to practice BEING VISIONARY during the upcoming guided visualization | Give examples of not being visionary; pretend to have this attitude  
- Ex: What if I don’t try to get a clear picture in my head for each sound during this brainstorm? What if I just think about nothing because I don’t think it’s possible to make a shape that looks like a sound?  
- Ask: Will this attitude help us innovate and help us come up with the best ideas possible? (No!)  
Remind that what will help is using their powers of vision  
Pretend to turn on your visionary powers  
Model what it sounds/looks like to be visionary  
- Emphasize really trying to get a clear picture and being open to trying to imagine something that doesn’t exist!  
- Ex: I’ve never thought about what a sound might look like, but it sounds like a fun thing to imagine. I’m going to try to come up with a really specific shape for each sound during this brainstorm! |
| ★ Support GENERATING IDEAS and BEING VISIONARY | Throughout brainstorm try to solicit answers from different campers/campers not raising hands to help ensure they’re all actively visualizing  
Ask: What objects make a “splat” sound?  
- Wet and soft objects: like water, ice cream, mud  
- If brainstorming starts slow, contrast with objects that do not go “splat”  
- Ex: Do rocks go splat? (No, they go “crack”!)  
Ask: What is the object doing when it goes “splat”? How is it moving?  
- It hits the ground; it’s falling down |
Ask campers to make the movement that they imagine goes with “splat” with their hands.

Ask: What shapes do you think falling water/ice cream/mud make when you imagine that movement? Can you trace those shapes in the air with your hands?
- Ex: Lines falling down, and then maybe jumping out in a spray once the “splat” hits the ground
- Ex: A large wavy shape, as if a glob of green goo has been dropped on the ground.

Directly ask campers who are not tracing any shapes in the air about the shapes they’re envisioning.

Recognize campers for using visionary powers to transform a sound into a shape!

Draw an example of this shape on the board, such as:

★ Support GENERATING IDEAS and BEING VISIONARY

Ask: What objects make a “pop” sound?
- Things that explode: popped balloons, fireworks

Ask: What is the object doing when it goes “pop”? How is it moving?
- It’s exploding; expanding fast

Ask campers to make the movement that they imagine goes with “pop” with their hands.

Ask: What shapes do you think popped balloons/fireworks make when you imagine that movement? Can you trace those lines in the air with your hands?
- Ex: Hands are scrunched together, then fingers quickly spread apart

Draw an example of this shape on the board, such as:

★ Support GENERATING IDEAS and BEING VISIONARY

Ask: What objects make a “zap” sound?
- Electricity/lightning

Ask: What is the object doing when it goes “zap”? How is it moving?
- Fast; zigzag

Ask campers to make the movement that they imagine goes with “zap” with their hands.

Ask: What shapes do you think electricity/lightning make when you imagine that movement? Can you trace those lines in the air with your hands?
- Ex: Tracing jagged lines in the air
Draw an example of this shape on the board, such as:

★ Support BEING VISIONARY

Have campers pick an onomatopoeia and visualize the object and action that are creating it

Give campers about 30 seconds to decide on a word
- Can choose any word, not just the ones you brainstormed about
- Have everyone say it out loud at once when finished

Ask campers to close their eyes and visualize the shape to match the word

Remind them to keep being visionary and to try to get a really clear picture

Ask guiding questions that support generating ideas and being visionary:
- What objects make your sound?
- What is the object doing when it makes that sound? How is it moving?
- What shapes do you imagine when you imagine that action/movement?

Have campers open their eyes

All at once, have campers use their hands to show what shapes they want to make

Have TL help pass out newsprint and pencils

Have campers draw the shapes they just imagined

Let them know this is just for practice/reference; will redraw this shape on colored paper later for the final paddle

Use the same guiding questions listed previously

Have campers turn newsprint over to write and sketch second shape

If you’re running short on time you can skip this and just have campers do the same word/shape for both paddles

At end, have campers put down pencils and put hands in lap so not distracted

➤ Have TL help by collecting pencils and sketches of campers who keep getting distracted by them

Demo & Discussion

Paddle Design (5 min)

Explain finding the letters for their words and adding them to the 9 x 9” construction paper

Now they’ve designed words and shapes they’re ready to create final paddle toys

To do this will first spell out their words using foam letters

Review helpful tips for finding letters they need quickly
- Help each other find letters they need
- Can cut letters to make them what they need; Ex: cut off part of an “R” to make a “P”
• Can turn/combine letters; Ex: turn a “V” upside down and draw a line to make an “A” or put two “Vs” together to make a “W”
• Can draw letters with markers as an alternative

Will use glue stick to adhere letters onto middle of 9 x 9” construction paper

Invite campers to think about choosing construction paper colors they feel match their words
• Ex: Maybe pink if they’re imagining a pink ice cream scoop splat or blue if they’re imagining water drips

Demo drawing and cutting a large shape on the construction paper

Next will redraw the shape they designed on newsprint around the word

Demo drawing a shape on the construction paper (don’t need to have a word for your demo)
• Emphasize making shape big
• Should take up most of the paper
• Reiterate they will redraw the shapes they came up with already

Cut out the shape you just drew

Discuss creating the word and shape for the second paddle

Explain they’ll repeat these exact steps for a second paddle

If you had campers skip over doing a second sketch due to time they will just do the same word and shape again
• Can pick different colors for second word
• Can also modify shape slightly if they want

Discuss adding another concentric shape around the first

Show how they can make design pop more by adding a different color border around the shape

Demo how to do this by gluing first shape to second sheet of construction paper

Then trace around shape, but don’t trace exactly around the edge so the second shape is larger than the first

Cut the second shape out

Point out it’s okay if they don’t have time to do this; this is optional

Discuss gluing the final word designs onto the cardboard circle paddles

Remind campers of the best way to use glue sticks:
• Don’t roll glue up too far
• Put glue around edges of paper
• Press and rub to make sure it sticks

Discuss having an adult add handles

Instruct campers to raise hands when they’re done and you or TL will add pipe cleaner handles so they can wear paddles around their hands
### Independent Work Time

#### Decorating Paddles (30 min)

<table>
<thead>
<tr>
<th>What campers will do: Cut shapes that match their words</th>
<th>CREATE (word shapes)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Find the letters for the first chosen onomatopoeia word.</td>
<td></td>
</tr>
<tr>
<td>2. Use a glue stick to adhere them to the center of a 9 x 9” construction paper sheet.</td>
<td></td>
</tr>
<tr>
<td>3. Redraw the shape they drew on newsprint around the word.</td>
<td></td>
</tr>
<tr>
<td>4. Cut the shape out.</td>
<td></td>
</tr>
<tr>
<td>5. Repeat steps 1-4 for the second word.</td>
<td></td>
</tr>
</tbody>
</table>

Optional: CREATE (border)

| 6. If time allows, glue the first shape onto another sheet of construction paper. |
| 7. Loosely trace around the edge of the first shape to create a larger shape. |
| 8. Cut it out. |

CREATE (final paddles)

| 9. Use a glue stick to adhere each word shape to a 9” cardboard circle. |
| 10. Raise hands to have an adult add giant pipe cleaners to the paddles. |

Extension

Draw on the paddle with markers to emphasize shape lines.

---

**Facilitate CREATE (word shapes)**

Help campers who are having trouble finding the letters they need quickly

- Can make announcements to rest of class (Ex: *Jake is looking for an “A” if anyone finds one!*)
- Remind about modifying letters or using markers instead

Watch for campers who are drawing their shapes too small; encourage them to make their shapes bigger so they fill most of the paddle

**Facilitate CREATE (final paddles)**

Add handles to camper’s paddles as shown below when they’re ready

- Place giant pipe cleaners through holes in cardboard circles
- If you didn’t do this as prep, punch holes with an awl now

- Fold pipe cleaner over to keep it in place
Clean Up (5 min)

<table>
<thead>
<tr>
<th>Clean Up</th>
</tr>
</thead>
<tbody>
<tr>
<td>Make sure campers put their names on the backs of their paddles</td>
</tr>
<tr>
<td>Have campers pick up all pieces of paper from the tables and floors and place them in recycling</td>
</tr>
<tr>
<td>Have campers help you reset stations for the next rotation</td>
</tr>
</tbody>
</table>

Lesson Wrap Up (10 min)

| ★ Summarize the importance of BEING VISIONARY and have campers recall if/how they practiced this today |
| Highlight effect of practicing Mindset during today’s project |
| • Ex: We created super fun designs by using our visionary powers to imagine something that no one can see – a sound! |
| Have campers use their hands to show how they imagine something “poof”-ing, if they practiced being visionary today by: |
| • Really concentrating on getting a clear picture in their minds of an object, movement, and shape while brainstorming |
| • Being excited about imagining something that no one can see in real life |
| Ask a few campers to talk about how they came up with the shape ideas for their final paddle designs |
| Review why being visionary is important for innovation |
| • Ex: Innovators don’t just remake things that already exist; they know how important it is to think outside of the box and imagine things that don’t exist yet! |

| ★ Invite campers to recognize each other for BEING VISIONARY |
| Can recognize teammates they saw being visionary or who helped them be more visionary |
| Encourage specificity about how person was visionary |
| You and TL can recognize campers as well |
Get Ready!

**Lesson Materials**

* (starred) materials appear multiple times in this list

### Copies
- copy, color, *Onomatopoeias in Comic Books* (2 per classroom)
- copy, color, *Roy Lichtenstein* (2 per classroom)
- copy, color, *Complementary Colors* (2 per classroom)

### General/Adhesives/Tools
- awl, metal, *for punching holes in paddles* (2 per classroom)
- cutter, paper, guillotine, 12", *for cutting 9 x 12" paper into 9 x 9" squares* (1 per classroom)
- scissors, medium, 5", pointed, *for cutting shapes* (1 per camper)
- glue stick, washable (1 per camper)
- marker, washable, asst. color, set of 8, *for decorating paddles* (1 set per 4 campers)
- pan, pie, aluminum, 9", *for holding foam letters* (1 per 4 campers)
- pencil, #2, *for sketching on newsprint* (1 per camper)

### Required Materials
- paper, newsprint, 9 x 12", *for sketching* (1 per camper)
- cardboard, corrugated, circle, white, 9", *for paddle* (2 per camper)
- pipe cleaner, asst. colors, giant, *for paddle handles* (2 halves per camper)
- paper, construction, brights, asst. colors, 9 x 12", *for word shapes* (4 per camper)
- foam, ABC shapes, bucket, 0.5 lb. (roughly 8 per camper)
- pom pom, 2", asst. color, *for paddle ball* (1 per camper)

### Materials Preparation

**Cut 9 x 12" construction paper into 9 x9" squares (4 per camper)**

**Cut giant pipe cleaners in half (2 halves per camper).**

\[\text{Using an awl, punch each 9" cardboard circle (2 per camper) with 2 holes. The 2 holes should be roughly 4" apart, centered. Note: If you want you can have you or your TL do this during the rotation once campers are ready to add handles, instead of prepping it ahead of time.}\]
Optional: Sort letters into pie pans to make them easier for campers to find. This is not required, but it will cut down on the time campers have to spend looking for letters. If you have enough containers, you can separate each letter into its own container. Otherwise, you can sort groups of 4 letters into each pie pan. Ex: A, B, C, & D are sorted into one pan.

Advance Materials Preparation

Preview the Materials Prep for the Week Ahead (at the start of each theme), especially Monday’s prep, which needs to be completed by the end of the day Friday.

Review the essential resources for your upcoming theme in your Telescope Library and complete any tasks prescribed there including highlighting key points in lessons, creating samples, and/or watching videos. If this is your second time teaching the theme make sure to check the curriculum updates section even if you've already looked at the other resources previously.

Setting Up the Space

Set the paddle materials at each desk
- 9" cardboard circles
- 9 x 9" squares of construction paper, in a variety of colors (4 per camper)
- scissors (1 per camper)
- markers (1 set per 4 campers)
- Sharpies (1 per 2 campers)
- glue stick (1 per camper)

Set Guided Activity sketching materials at the front of the classroom, to be passed out to campers on the floor:
- 9 x 12" newsprint (1 per camper)
- pencils (1 per camper)
- erasers (1 per camper)

Dump letters onto lunch trays and/or into pie pans to make it easier for campers to sort through them, if they are not presorted.

Gather materials for the Demo & Discussion and Guided Activity:
- your example onomatopoeia paddles
- 9 x 9" construction paper squares of different colors
- glue stick
- selection of foam letters to spell onomatopoeic word in demo

Put up the following color copies on your copies display board:
- Onomatopoeias in Comic Books
- Roy Lichtenstein
- Complementary Colors
Notes

Materials Management
Running out of letters
• Based on how many of each letter is provided in your foam tubs, and the preselected onomatopoeias, you will probably run out of Ps first. Remind campers they can use Rs and cut off the diagonal legs so they look like Ps.
• Similar “hacks” can be made to turn Zs/Ns onto their sides so they look like each other, flip Vs upside-down to use them as As, cut Qs into Os, etc.
• Also remind campers they can opt to just write the letters with markers instead of using the foam letters.

On the Board

Mindset of the Day
BE VISIONARY – I imagine things that don’t exist yet.

Onomatopoeias
Write these words plainly:
• Splat
• Pop
• Zap

Check In With Your TL

➤ Make sure your TLs are clear about their role in helping today’s lesson run smoothly. Specific things your TL can help with today:
• Adding giant pipe cleaner handles to camper paddles
• Making sure campers write their names on the backs of their paddles
• Resetting for your next rotation