

## 4-H PEI LEGO® Project

*Creativity and Visible Thinking with Building Blocks*

### Leader Info

LEGO® are blocks that, on their own, are an inert building material. Once you add creativity to the blocks, they can become anything you can dream of. Harvard Project Zero has been developing thinking routines that help people of all ages show and share their thinking and develop habits that enhance creativity and deep thinking skills, useful for all aspects of life. When you put these two elements together, leaders can unleash a whole world of creativity and innovation for 4-H members.

### Project Completion Requirements (PCR)

- Explore and record 5 Thinking Routines with 5 Lego® challenges
- A journal with evidence of Thinking Routine, designs and picture or drawing of final Lego® product for each completed challenge
- Exhibition Requirement
- Document all activities or project meeting topics on the **Project (1) Page specific to Home Economic or Life Skill Projects**

### Exhibition Requirements

Members will choose the product of one challenge to display, whether as an actual structure of blocks, or through photos or video. Their visible thinking before the build and reflection on the build must also be displayed.

**Members are strongly encouraged to participate in the 4-H Classes at PEI Fairs & Exhibitions.**  
Please check with your Project Leader or visit [www.pei4h.ca](http://www.pei4h.ca) for more Exhibition information.

### 4-H Year Completion

**In order to complete the 4-H year members are required to:**

- Complete the **PCR's (Project Completion Requirements)** as outlined above
- Complete a **Communication** (public speaking) Project
- Complete a **Community Service** Activity
- Complete an **Agriculture Awareness** Activity
- Complete the **Member Documentation** (4) pages found in member's Portfolio or on the website
- Compile all documentation and PCRs to have on display at Club Achievement Day

**Note:** As the project leader you are only responsible for facilitating the first requirement for the members of your group, the remaining requirements are the responsibility of the member.

# GETTING STARTED

\*The resources below can be found on 4-H PEI website ([www.pei4h.ca](http://www.pei4h.ca)) on the page dedicated to this project.

## What you need:

- ⇒ This **Leader Booklet**
- ⇒ A copy of the **Project Information Page**. This will give you the most up to date information on requirements for the project.
- ⇒ **Lego® Building Blocks** (can be borrowed from the Provincial 4-H office)
- ⇒ A journal or loose leaf for members to record their thinking, designs and products
- ⇒ **Exhibition Information**—this is updated 4-H PEI website in May of each year so be sure to review the information again at that time.

## Optional resources:

- ⇒ Sample **Educational Activity Plans** as well as a guide to creating your own
- ⇒ Various other resources as they become available, such as 4-H resources from other provinces, and links to online videos, articles, activities, and project related organizations, clubs, and events.

*\* Please do not feel obligated to cover everything in all of the provided optional resources. It is completely each leader's prerogative which of these resources, if any, they utilize if planning and leading their project meetings.*



## THE PROJECT LEADER'S JOB

To begin, thank you for volunteering your time to be a 4-H project leader! We appreciate your time and willingness to teach today's youth a new skill and share your knowledge.

Becoming a project leader can feel overwhelming at first, but we hope that this page will make your "job" clear and offer some tips to help you be successful.

### Responsibilities:

1. **Become a screened leader:** You may have already completed this step, but it is a very important one. The best place to go is to the 4-H PEI website and visit this page: <https://www.pei4h.ca/4-h-leaders>, to see if you have completed all the necessary requirements. Project meetings cannot begin until you have received a "conditional letter" from the Provincial 4-H Office.
2. **Set project meeting dates:** The amount and length of project meetings is determined by you, the project leader. That being said, you are responsible for covering **all the Project Completion Requirements** for this project with your group. You may decide that you'd like to have five meetings - covering one requirement per meeting, or you may decide to spend two 5 hour sessions with your group and cover multiple topics or activities in one meeting. This will also depend on the project you are leading. For instance, if you are leading a quilting project, then the member will be focused on one large item with multiple steps and skills involved. However, a rabbit project may require multiple meetings (and even locations) to cover different activities and topics. Meetings can begin anytime after November 15th.

Whatever the case, we highly recommend that Project Leaders **set dates in advance of members signing up for the project**. This method will ensure the members know what they are signing up for, or enable them to make a decision to not sign up if they cannot commit to the dates listed. We also hope that this will avoid a lot frustration for you, because working around multiple schedules is almost impossible!

3. **Choose topics and activities:** You may choose to work on this step before setting dates for project meetings. Some topics and activities may be able to be covered in one project meeting, while others may need their own meeting. Regardless, we ask that you document your project meetings and topics covered so that the 4-H Specialist can refer to this information at Achievement Day if necessary.
4. **Materials & supplies:** While you are responsible for determining what materials and supplies are needed, you **are not** responsible for covering these costs. Options to consider:
  - A) 4-H Canada has a FCC 4-H Club Fund that all leaders are welcome to apply to. These grants are valued at \$500 each. Applications are accepted August through to the end of October.
  - B) Asking for supplies. Depending on what project you are leading, just putting a call out for the supplies you need to friends, family, etc. may be successful.
  - C) Determine an estimate total for the materials and supplies needed and set a "project fee" that all members will pay to help cover the additional costs.
5. **4-H year completion and project completion requirements:** The project leader **is not** responsible for 4-H Year Completion (these components will be completed at the club level) though each member **must** complete these components. Project leaders should focus on the Project Completion Requirements, found on the front cover of this guide. These are the items that the 4-H Specialist will expect to see on display at the Club's Achievement Day (typically scheduled for June-July).
6. **Club meetings & events:** Project leaders are not expected to attend monthly club meetings, but are more than welcome to attend if they'd like to know what is going on at the club, provincial, or national levels of 4-H. Similarly, club events and activities are open to project leaders, but it is not necessary to attend. Project leaders are encouraged to attend Achievement Day. This is an event that wraps up the Club's 4-H year and a celebration of member success.

## 4-H LEADER POLICIES

To learn more about what being a 4-H leader please take a look at the [4-H in Canada Volunteer Leader Guide](https://bit.ly/3oldUaE) (<https://bit.ly/3oldUaE>). Of special importance are pages 46 through 51 which covers our Youth Safety and Risk Management Policy, and Code of Conduct.

**Rule of Two:** There must always be a least **one trained leader** present, plus at least **one other screened volunteer**, who are not spouses, at any 4-H gathering (including project meetings).

You can find the **Youth Safety at 4-H in Canada Policy Manual & FAQs**, and **Youth Safety Reporting System** (i.e. Activity Plan and Incident Report forms) on the [Youth Safety at 4-H in Canada](https://4-h-canada.ca/youth-safety) page > <https://4-h-canada.ca/youth-safety>

If you need guidance in completing your 4-H leader screening, understanding our policies, or at any point while leading a 4-H project, do not hesitate to reach out to your regional 4-H Specialist.

You can find their contact information on our website's Contact Us page:

<https://www.pei4h.ca/contact-us>



## Helpful Resources!

[https://www.gov.mb.ca/agriculture/industry-leadership/4h/pubs/building\\_block\\_%202.pdf](https://www.gov.mb.ca/agriculture/industry-leadership/4h/pubs/building_block_%202.pdf)

[www.youtube.com](http://www.youtube.com)

<https://ideas.lego.com>

<https://frugalfun4boys.com/lego-projects-for-kids>

[www.pinterest.com](http://www.pinterest.com)

<https://www.cfcsc.org/wp-content/uploads/2020/04/LEGO-Challenge.pdf>

<http://www.pz.harvard.edu/thinking-routines>

## Remember...

The multiple intelligence theory teaches us that people learn in at least 8 different ways. All individuals will be stronger in some ways of "intelligence" and weaker in others. It follows that the more ways we teach, the more members we will reach. Teaching projects using a broad blend of writing, reading, hands on work, artwork, self evaluation, discussion, and so on, will help increase the learning potential of all members.

Projects are designed to teach many skills. However, the 4-H member is always more important than the subject matter. Stress cooperation in the activities where possible to develop teamwork and cooperation skills. These are valuable skills that will assist them in a number of settings. Ensure the work is completed in a manner that members feel good about themselves and their efforts. This can be done by assigning appropriate tasks or roles based on member's individual abilities. Modeling and expecting supportive behaviour (i.e. no "put-downs") amongst members, or by other adults, also contributes to a positive experience.

## EXHIBITIONS

It is suggested that members display one project for the exhibition. It would be nice to see the actual project at the exhibition, but this may not be feasible due to borrowed blocks, not having enough blocks to share or having a very delicate finished product. In this case, the member can take a photo of the build and use this as an exhibition product. The photo should be accompanied by a completed thinking routine, a design and a reflection after the build.

# THE PROJECT LEADER'S PLAN

After reviewing the Project Completion Requirements list on the front of this guide, review the Project Activity Ideas page/s. You can also pull ideas from past experiences, books, social media, online, or you can plan to join a tour, attend an event, or book a guest speaker. The sky is the limit! It might be a good idea to ask the 4-H members in your project group what they envision before making a concrete plan. In some cases, the project group members may depict what activities or topics based on what project item they have in mind.

## Topics and Activities:

1. \_\_\_\_\_

Supplies needed:

_____	_____
_____	_____
_____	_____

2. \_\_\_\_\_

Supplies needed:

_____	_____
_____	_____
_____	_____

3. \_\_\_\_\_

Supplies needed:

_____	_____
_____	_____
_____	_____

4. \_\_\_\_\_

Supplies needed:

_____	_____
_____	_____
_____	_____

5. \_\_\_\_\_

Supplies needed:

_____	_____
_____	_____
_____	_____

NOTES: \_\_\_\_\_

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## Project Completion Requirements—Thinking Routines

In this project, thinking routines will be suggested to start each challenge in order to give members time to develop their creative thinking and plan out what path they may want to follow. Thinking routines will be suggested for each challenge, but if leaders find a thinking routine that really works for their group, they can continue to reuse this routine for multiple projects, changing the focus as necessary.



### THINKING ROUTINES

Harvard Project Zero has created thinking routines under their research-based project of Visible Thinking (<https://pz.harvard.edu/projects/visible-thinking>). These routines were created to develop children's thinking in any subject. Routines are described in detail and PDF's can be downloaded with detailed instructions and examples.

Thinking Routines have been suggested for each challenge. However, if a leader or members enjoy a previously used routine and would like to reuse this routine in other challenges, they are free to do so.

Leaders can use the templates for the Thinking Routines in the Appendix, can write the responses out on large chart paper, or even type up responses electronically.

#### See, Think, Wonder

[https://pz.harvard.edu/sites/default/files/See%20Think%20Wonder\\_2.pdf](https://pz.harvard.edu/sites/default/files/See%20Think%20Wonder_2.pdf)

#### Imagine If...

[https://pz.harvard.edu/sites/default/files/Imagine%20if\\_0.pdf](https://pz.harvard.edu/sites/default/files/Imagine%20if_0.pdf)

#### Creative Hunt

[https://pz.harvard.edu/sites/default/files/Creative%20Hunt\\_1.pdf](https://pz.harvard.edu/sites/default/files/Creative%20Hunt_1.pdf)

#### Creative Questions

[https://pz.harvard.edu/sites/default/files/Creative%20Questions\\_0.pdf](https://pz.harvard.edu/sites/default/files/Creative%20Questions_0.pdf)

#### Options Explosion

[https://pz.harvard.edu/sites/default/files/Options%20Explosion\\_0.pdf](https://pz.harvard.edu/sites/default/files/Options%20Explosion_0.pdf)



### BEFORE STARTING—BRICK ORGANIZATION

Brick organization may help speed along building projects, depending on what members need.

If members are building for artistic purposes, colour may be a factor in which they use to organize. If they are building structures, they may need bricks organized by size and/or shape.

Spending a beginning session with members just talking about the shape, characteristics and sizes of the bricks and how best they could organize them for their purposes could be an inquiry session by itself. What patterns do they see in the bricks? Their wonderings might lead them to make connections to their multiplication facts (1×4, 2×4, etc) or primary and secondary colours. Leaders could use the See, Think, Wonder Chart to guide a discussion around this task and could count it as one challenge toward the 5 needed for project completion.

## LIGHT BOX

A light box allows photographers to take high quality photos of objects. If members are interested in photography, they may want to build a simple light box to get the best shots of their creations. Light boxes could also be used if members choose to make a stop-motion animation.

A tutorial with easily found materials is here <https://www.youtube.com/watch?v=T6fnHEvLyAE>  
Here is another one using dollar store materials <https://www.youtube.com/watch?v=nZ3VUoQqxf0>

## ADDITIONAL RESOURCES

The PEI Provincial Library has a wealth of printed material to use to spark creativity with building blocks. Here is a list of some:

**For Inspiration:**

- LEGO®: Architecture by Phillip Wilkinson
- LEGO® City Busy Word Book by Joseph Stewart
- LEGO®: Absolutely Everything you need to know by Simon Hugo
- LEGO® Space: Building the Future by Peter Reid and Tim Goddard
- Brick History by Warren Elsmore
- The LEGO® MindStorms Idea Book by Yoshihito Isogawa

**For Specific Instructions on Stop-Motion and Design:**

- The Art of LEGO® Design by Jordan Schwartz
- Brick Flicks by Sarah Herman

**For Step by Step Building Instructions:**

- Awesome LEGO® Creations with Bricks you already have by Sarah Dees
- Epic LEGO® Adventures with Bricks you already have by Sarah Dees
- Build It: Things That Go by Jennifer Kemmeter
- Build It: Race Cars by Jennifer Kemmeter
- Build It: Dinosaurs by Jennifer Kemmeter
- Build It: Medieval World by Jennifer Kemmeter
- Build It: Robots by Jennifer Kemmeter



## CREATIVE LEGO® JOBS

Believe it or not, being a LEGO® architect or a LEGO® artist could be a real job. Adam Reed Tucker (an actual architect) was the first person to be hired by LEGO® to build construction sets that allowed others to become home architects of miniature versions of famous buildings.

<https://www.smithsonianmag.com/arts-culture/LEGO®-architecture-studio-brings-modernism-to-the-play-room-41132>

Nathan Sawaya of the United States is one artist who uses LEGO® Blocks to create works of art. He has used his artistic talent for good, creating the Perniciem Collection ( <https://perniciemcollection.com/> ) with photographer Dean West to raise awareness of endangered species. He holds world records for the largest LEGO® Batmobile and a 20ft long tyrannosaurus rex skeleton made of LEGO®.



YouTuber Alexsplanet has earned more than 1 million dollars by creating original Stop-Motion YouTube videos. It takes him about one month to create and produce one 3 to 5 minute video. <https://www.tubefilter.com/2019/05/30/youtube-millionaires-alexplanet/#:~:text=And%20YouTuber%20Alexsplanet%20uses%20thousands,minute%20short%20film%20per%20month.>

You can watch his LEGO® Hulk Shark Attack Here <https://youtu.be/iQA4yzz--mc>

## PROJECT CHALLENGE IDEAS

### Challenge 1— See, Think, Wonder about Towers

- Wonder about different towers in the world, then design and build your own!

### Challenge 2—What if about Vehicles

- Think about how to redesign a vehicle to be more effective, efficient, ethical or beautiful then build it with blocks!

### Challenge 3— Creative Hunt with Lego®

- Wonder at the creativity that went into the creation of a Lego® block, then flex creative muscles to build a creation of your own.

### Challenge 4— Creative Questions about Making Games

- Think about the characteristics of some favourite games, then try to recreate them using Lego® blocks. Games can be shared with other club members!

### Challenge 5— See, Think , Wonder about Stop-Motion Animation

- Watch a stop-motion animation and try out some techniques, or a small video, yourself.

### Challenge 6—See, Think, Wonder about Mosaic

- Examine real-world mosaics and then create and build one of your own.

### Challenge 7—Creative Questions about Flags

- Examine different flags—flags from around the world or for different organizations. Create your own flag or re-design an existing flag with Lego® .

### Challenge 8—See, Think, Wonder about Telling Time

- Examine the mechanics of sundials and create one using Lego® . Then chart the path of the sun on a nice sunny day!

### Challenge 9—Creative Hunt with Shadow Play Figures

- Examine some intricate Lego® shadow art and prepare to get creative with a shadow play or shadow sculpture of your own!

### Challenge 10—Options Explosion and Design a Tiny Home

- Explore some different tiny home designs and think about what you would like in a tiny home. Then, build it!

### Challenge 11— Creative Questions Open Invitation to Create

- Examine any topic that piques your interest and then use your creativity to build anything in your imagination!

**TEMPLATES:** Find all of the templates for the different Thinking Routines at the end of the booklet.

## CHALLENGE #1- SEE, THINK, WONDER ABOUT TOWERS

**Step 1** - Have a few pictures of towers (online or paper) for members to look at (CN Tower, Eiffel Tower, other LEGO® towers online). Members could also be asked to take a picture of a tower that appeals to them.

On a See, Think, Wonder Chart (see resource in appendix), have members record their thoughts individually or as a group (with the leader scribing member thoughts) while looking at the pictures.

What do you see?      What do you think about it?      What does it make you wonder?



**Step 2** - Design a tower

Have members draw or write ideas about designing the tallest freestanding tower they can with the LEGO® blocks available to them. What are the characteristics? What ideas can they take from the other towers? (This can be done as an independent activity or as a group. If done independently, try to ensure each member gets the same amount of bricks).

**Step 3** - Build it

Have members build their towers.

**Step 4** - Reflect

What went well? Was your design a success? What would you do differently next time? What features of other towers did you use for your tower? If you did it again, what would you add or remove?



## CHALLENGE #2 - WHAT IF...VEHICLES

**Step 1** - Choose a style of vehicle and look at some pictures of different models with members (tractor, car, truck, planes, spaceship... anything that moves people from one place to another).

Have students answer the question on the thinking routine template (together or independently):

- ⇒ In what ways could it be made to be more **effective**?
- ⇒ In what ways could it be made to be more **efficient**?
- ⇒ In what ways could it be made to be more **ethical**?
- ⇒ In what ways could it be made to be more **beautiful**?



**Step 2** - Design your own vehicle that includes the features you have identified above.

**Step 3** - Build it

Use LEGO® Building blocks to construct the vehicle with the added features.

**Step 4** - Reflect

What was the level of difficulty to build this vehicle with your features? What would you change or do differently next time? What do you think this would be like in real life? Do you think these could actually work in real life?



## CHALLENGE #3 - CREATIVE HUNT... LEGO®

**Step 1** - Give members each a block of LEGO®. It doesn't matter what size or shape. They could all be different or all the same.

Have them complete the Creative Hunt Target Template, having a discussion about what they see:

- ⇒ What's the main purpose here?
- ⇒ What are the parts and their purposes?
- ⇒ Which are especially smart or creative? — star them!
- ⇒ Who is the audience for this?

After a lengthy discussion, or if discussion isn't overly active, members can watch a YouTube video on the history of LEGO®. Some are here:

[The LEGO® Story](#)

[The History of LEGO: 1932-2020 | Build Time Tuesday](#)

**Step 2** - Have members design or identify one creative item to build with LEGO®. It could be useful, artistic, colorful - anything that they identify as creative.

**Step 3** - Build it.

Use LEGO® and any other materials members need to create their creative projects.

**Step 4** - Reflect.

Give comments to others in the group about the creative features they used. If alone, reflect on their project or solicit comments from other members through display at a meeting.



## CHALLENGE #4 - CREATIVE QUESTIONS ... MAKING GAMES

**Step 1** - Members can bring a board game or brainstorm a list of games they play. Leaders can write questions on a large paper or discuss questions orally to challenge members to thinking about re-creating a game using LEGO® bricks or making up a new one using LEGO®.

- ⇒ Suppose that ... you remade these games with LEGO®?
- ⇒ What would change if... you made this game using LEGO®?
- ⇒ How would it look differently if... you made this game using LEGO®?

### **Step 2** - Plan a game

A quick search on Pinterest or Google will reveal numerous homemade LEGO® games, like tic-tac-toe, labyrinth, or Ludo.

Members can use a well-known game for inspiration, or come up with their own game - it can be as simple or as intricate as members want, depending on the level of skill. If written directions are needed, these can be drafted at this stage.

Labyrinth games using a LEGO® plate and a marble is a simple game that can be made if time is short.



### **Step 3** - Build it!

Use LEGO® to build the game. Different materials, other than LEGO®, may be required for things such as game boards.

### **Step 4** - Play games and reflect

Bring games to a 4-H meeting and have other members play the games or have members play their games with their families. Solicit feedback from other members or family members about the games.

- ⇒ How did they enjoy the games?
- ⇒ What modifications would the members make, if any?

Cards could be provided at the end of the game for members/family to write down comments or members can gather these comments orally.



## CHALLENGE #5 - SEE, THINK, WONDER... STOP-MOTION ANIMATION

**Step 1** - Watch a stop-motion animation using LEGO® and figures from YouTube. You can find stop-motion animations on a wide variety of subjects, so choosing one that is of interest to members should be simple. Here is a link to one about school: [https://www.youtube.com/watch?v=AoT-dsy\\_PEc](https://www.youtube.com/watch?v=AoT-dsy_PEc)

After watching, complete a See, Think, Wonder with members.

What did you see when watching the video?

What did that make you think?

What do you wonder?

Alternatively, you could use the Creative Hunt Target template for a thinking routine.

After the thinking routine, members might have an idea of trying a few of the techniques with stop-motion animation, or even have a simple story-line in mind.

### **Step 2** - Design

Depending on member engagement and interest, plan how the individuals or group would like to try stop-motion animation.

Do they have a story-line in mind? Do they want to play around with a few techniques? Whatever level they have, the first place to help can be with YouTube tutorial videos or books.

#### Books

Brick Flicks by Sarah Herman gives detailed instructions on how to tell a LEGO® stop-motion animation and lots of photos to illustrate what she is instructing.

Epic LEGO® Adventures with Bricks you already have by Sarah Dees is a good book to check out for storytelling ideas. She sets up scenes and illustrates them with LEGO® figures.

#### YouTube tutorials

<https://www.youtube.com/watch?v=Q0Lj3ha3XF8> - beginner tutorial on how to have your LEGO® Figure walk. Also talks about the set up for stop-motion filming.

[https://www.youtube.com/watch?v=e\\_4Y6yweI7g](https://www.youtube.com/watch?v=e_4Y6yweI7g) - teaches how to have your LEGO® Figure jump.

Planning out your project by dividing up tasks might be best in this planning stage - one person to build the set, one person to get camera/app ready, another to write a storyline or practice desired movements and another to set up lighting.

### **Step 3** - Film and Edit the motions

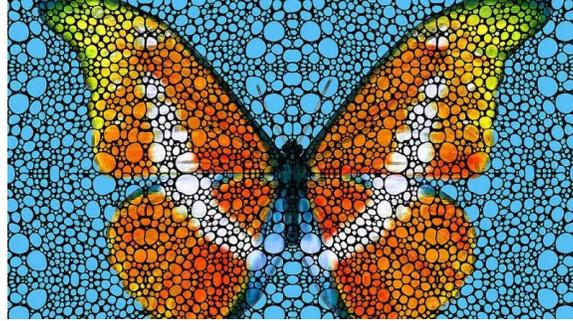
Use a phone with a stop-motion app or a camera set up on a tripod or other stable surface to record your photos.

Most smartphones have a basic program that members could use to begin to explore stop motion. On iPhones, the iMovie app is free and photos can be uploaded in sequence to make a movie. Other apps can be downloaded and used for free in their basic form.

### **Step 4** - Reflect on the product and process

What was the level of difficulty to film? What would members do differently next time? What ideas came up during production or as a result of filming?

## CHALLENGE #6 - SEE, THINK, WONDER ... MOSAIC



**Step 1-** Display a photo or a computer image of a mosaic. It can be as intricate or simple as desired by the level of the group, or tailored to the interests of the group.

Use the See, Think, Wonder template to discuss the mosaic of your choice with members. After discussion, and if the wondering doesn't come up relating the exercise to LEGO®, ask members how they could use LEGO® to make a mosaic.

### **Step 2 - Plan It**

Using graph paper (see appendix) and colours, have members chart out their own mosaic. The possibilities are endless - repeated patterns, simple pictures, colour fades... but they can keep the available LEGO® bricks and plates in mind as they are designing.

### **Step 3 - Build it**



Have each member take a plate (a large thin LEGO® surface) and use the blocks available to construct their mosaic.

### **Step 4 - Reflect**

What was their experience creating mosaics? What would they do differently next time? What other media could they use to create a mosaic?

#### Options

You can also watch these videos of mosaic artists for more information or to spark greater interest.

[Meet Jason Dussault And His Contemporary Mosaic Art](#)

[Gerald Davidson: Mosaic Artist](#)

[Beautiful Mosaic Art | WHERE TO SEE the World's Most Beautiful Mosaic Art](#)

## CHALLENGE #7 - CREATIVE QUESTIONS... FLAGS



**Step 1** -Have a variety of flags from different countries, provinces or organizations. This can be a book form, poster, or the flags themselves.

Start brainstorming some questions or noticing about flags.

Look over the list and transform some of the questions into questions that challenge the imagination.

You can use these question starters:

- What would it be like if...
- How would it change if...
- What would change if...
- How would it look differently if...
- Suppose that...

**Step 2** - Design your own

Using paper and colours (graph paper may work well here), design your own flag or re-design a flag you have examined based on your questions. What symbols would you include? What colours? Why?

**Step 3** - Build it.

Build your flag using LEGO® Blocks.

**Step 4** - Record it and Reflect

Take a picture of your flag. Reflect on the building process. Were you able to find all the pieces/shapes that you needed? Were you able to express everything you wanted to express? What was the process of creating your own flag like?

## CHALLENGE #8 - SEE, THINK, WONDER... TELLING TIME

**Step 1** - Introduce the subject of telling time to the members.

Show some images of sundials and ask the following questions and see what they come up with.

What do you see?

What does it make you think about?

What does it make you wonder?

**Step 2** - Introduce the idea that members will make a sundial out of Lego Blocks.

This activity will be done over a 12 hour period and on a sunny day, so members could prepare together and then take materials home to do on their own.

### Materials:

- 1 baseplate per participant
- 12+ 2 by 2 bricks for each hour and more to build a tower
- Dry erase marker

**Step 3:** - Follow directions (from <https://www.mombrite.com/how-to-make-a-lego-sundial/>)

1. Determine where the middle of your baseplate is by counting the studs.
2. Start building the gnomon, the part of the sundial that casts a shadow. We used 2x2 LEGO® bricks to make ours. Tip: I recommend putting a small plate down where the middle of the baseplate is to mark the spot. A few times, the gnomon got knocked over, and we had to recount the studs every time to find the center.
3. Choose a time to bring the LEGO® sundial outside. It's best to start at an exact hour. For example, 9:00, 10:00, etc. versus 9:15 or 10:15.
4. Choose a good, sunny spot for the LEGO® sundial. Make sure the spot is exposed to the sun all day with no shadows nearby.
5. Mark the time on a LEGO® block. Again, we used a 2x2 block.
6. Place the LEGO® block marked with the time where the gnomon casts the shadow.
7. Repeat every hour as many times as you can.
8. Place the rest of the LEGO blocks directly across the sundial to complete the entire "clock."

**Step 4** - Reflect

If the activity was done separately at home, come together as a group to reflect on what was learned, recognized or found challenging.



## CHALLENGE #9 - CREATIVE HUNT... SHADOW PLAY FIGURES

**Step 1** - Watch a video of LEGO® Shadow Art, or show some still images of Lego Shadow art from the Internet. Here are some links:

[Amazing LEGO shadow art | Brickworld Chicago 2016](#)

[Amazing LEGO Dragon Shadow Art | Brickworld Chicago 2019](#)

[Shadow Art Sculptures Made With Legos](#)

Have members reflect on the following questions. You can start them off by saying something like: "Let's look at this from a creative viewpoint. Creative things have jobs to do. They need to hit their target. So here is the target. Let's explore how this thing hits its target."

- ⇒ What's the main purpose here?
- ⇒ What are their parts and their purpose?
- ⇒ Which are especially creative or unique? Star them!!
- ⇒ Who is the audience for this?



**Step 2**- Plan it

Build a shadow show using LEGO® and a white sheet (<https://www.youtube.com/watch?v=1EhOhX15CeI>) and/or come up with a shadow challenge together. Can members make a shadow portrait using what they have? A shadow art piece? A shadow character?

Assemble any special pieces or furniture members will need (lamps, a dark space, etc).

**Step 3** - Create the shadow art that members have discussed.

**Step 4** - Reflect

What was the process like? What challenges did members face? What would they do differently the next time?

## CHALLENGE #10- OPTIONS EXPLOSION... DESIGN A TINY HOME

**Step 1** - Explain that members will be thinking about a tiny home. Leaders could gather pictures of different tiny homes, or show some how to videos from YouTube on how to build a tiny LEGO® home.

Once members have an idea of some features of tiny homes, start a discussion with the following questions:

- ⇒ What are the obvious things you need for a tiny home?
- ⇒ What are the 'hidden' options that could be possible in a tiny home? Be imaginative! Piggyback on ideas already up, combine ideas to get new ones, or look for ideas of a very different kind.
- ⇒ What have we learned about tiny living by exploring these options?

**Step 2** - Plan out a tiny home on grid paper. Members should only use as many squares on their paper as bumps on their Lego plate, so one 1x1 block = 1 graph square.

**Step 3** - Build it.

**Step 4** - Reflect.



How was the building process? Were members able to add all of the features they had planned? Once they began to build, were they able to see any additional features they could add? Would they see themselves living in this home?

## CHALLENGE #11 - CREATIVE QUESTIONS... OPEN INVITATION TO CREATE

This is one challenge that could be repeated multiple times with different topic choices.

**Step 1** - Choose a topic or everyday object and brainstorm a list of questions about it.

**Step 2** - Take the questions you have generated and transform them into questions that challenge the imagination.

Do this by transforming questions along the lines of:

- ⇒ What would it be like if...
- ⇒ How would it be different if...
- ⇒ What would change if...
- ⇒ How would it look differently if...
- ⇒ Suppose that ...

**Step 3** - Choose a question to imaginatively explore using LEGO® . In this instance, you might redesign the object, create a scene or just build the object/something about the topic with Lego. The sky's the limit!

**Step 4** - Reflect

What new ideas do you have about the topic, concept, or object that you didn't have before?



## SEE, THINK, WONDER TEMPLATE

What do you SEE?

What do you  
THINK about that?

What does it make you  
WONDER?

## Imagine If....? TEMPLATE

In what ways could it be made to be more EFFECTIVE?	In what ways could it be made to be more EFFICIENT?	In what ways could it be made to be more ETHICAL?	In what ways could it be made to be more BEAUTIFUL?

## CREATIVE HUNT TEMPLATE

<p>What's the main purpose here?</p>	<p>What are the parts and their purposes? Which are especially smart or creative? STAR THEM!</p>	<p>Who is the audience for this?</p>
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## CREATIVE QUESTIONS TEMPLATE

TOPIC: \_\_\_\_\_

<p>Brainstorm a list of creative questions.</p> <p>Possible starters: Why...? What if...? What is the purpose of...? How would it be different if...? Suppose that...? What if we knew...? What would change if...?</p>	<p>Select the most interesting questions from the first column.</p>	<p>Reflect: What new ideas do you have about the topic, concept, artwork or object that you didn't have before?</p>
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## OPTIONS EXPLOSION TEMPLATE

List the obvious options. There would not be a decision unless there were at least two or three obvious options.

Now brainstorm all sorts of different options to find the “hidden” options. Often there are hidden options that are the real best choices. Be imaginative! Piggyback on ideas already up, combine ideas to get new ones, look for ideas of a very different kind, imagine you are in different roles and suggest ideas from the perspective of those roles, etc.

Ask: What have we learned about the situation from finding these options? This is a way of understanding the situation better.