

Board Game Design Challenge 1 (Version for the Making Things Move Kit)

Note to Volunteers on the GoldieBlox Making Things Move kit:

This version of the badge uses the GoldieBlox Making Things Move kit. Each kit includes 6 sets of GoldieBlox parts for the badge, (i.e. you can create 6 of any Daisy Design Challenge badge from one kit). Inside the kit are six sets of GoldieBlox parts that allow girls to earn all 3 Daisy Design Challenge badges. Two to four girls can use each set. So, if you have 12 girls, you will need one kit for them to work in pairs.

The kit is no longer available to purchase, but you can find a full parts list at the end of this handout if you want to pull together the GoldieBlox for the badges. If you do not have the GoldieBlox, we recommend completing the badge using the DIY instructions now included as the Meeting Plan on VTK.

Materials List

As Girls Arrive: Paper Games

- Paper
- Pencils
- Optional: Find and print out puzzles, mazes and other simple paper games

Opening Ceremony: All About Games

- Flag
- Optional: Poster Board with the Girl Scout Promise and Law

Step One: Come Up with an Idea for Your Board Game

- Paper
- Markers and/or crayons

Step Two: Design a Spinner for Your Game

- GoldieBlox Making Things Move kit (one set for each pair or small team.) Feel free to add additional pieces from personal GoldieBlox kits that you or your Girl Scouts may own.

Closing Ceremony: Flash Chat

- **Spinner Paper Pieces** (one for each Spinner created)

Awards

Girls do not receive any awards in this meeting.

Board Game Design Challenge 1 (Version for the Making Things Move Kit)

Detailed Activity Plan

As Girls Arrive: Paper Games (10 minutes)

Materials

- Paper
- Pencils
- Optional: Find and print out puzzles, mazes and other simple paper games

Steps

Welcome Daisies, and have them play common paper games in pairs. This could include: Tic Tac Toe, Dots and Boxes (girls take turns forming lines to create boxes on a dotted grid), Pictionary, or any other games you know.

Optional: Hand out puzzles, mazes or other paper games for Daisies.

SAY:

- *Today, we're going to start designing our own board games.*
- *To get ready, play your favorite paper games with your partner!*
- *Maybe you like Tic Tac Toe or perhaps you like Pictionary?*

Opening Ceremony: All About Games (10 minutes)

Materials

- Flag
- Optional: Poster Board with the Girl Scout Promise and Law

Steps

Recite the Pledge of Allegiance and the Promise and Law.

Conduct any troop business.

Introduce Daisies to the Board Game Design Challenge.

SAY:

- *Today, we're starting the Board Game Design Challenge badge!*
- *You're going to learn how to invent new board games and create things like an engineer.*
- *Engineers are people who like to know how things work. They design and build things people use every day, like computers, phones, roads, bridges and cars.*
- *Engineers use their imaginations to solve problems and create new products. You'll do the same thing today!*

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Board Game Design Challenge 1 (Version for the Making Things Move Kit)

Step One: Come Up with an Idea for Your Board Game (15 minutes)

Materials

- Paper
- Markers and/or crayons

Steps

Daisies learn about inventors and brainstorm their own board games for Step One of the Board Game Design Challenge.

SAY:

- *Who can name a board game you love to play?*
Girls may say: Chutes and Ladders, Peaceable Kingdom games, Candyland, etc. (Let girls name their favorite games, even though not all of them involve spinners.)
- *If you were making up a new game, what would it be like?*

Let girls toss out ideas for new board games.

If they need help getting started, ask questions such as:

- *Would you have characters in your game?*
- *What would they be trying to do?* **Girls may say:** Get to the enchanted forest, get to the end of the road first, collect the most of some object, etc.
- *What would the name of your game be?*
- *Does someone win the game? What do they have to do to win?*

SAY:

- *Those sound like fun games. Some inventors make up new games!*
- *People who make up new things are called inventors. They often brainstorm many ideas at first then draw their ideas so they can show them to others.*
- *Has anyone ever heard of brainstorming? What is it? (Answer: Brainstorming is when people come together to think of new ideas and solutions.)*
- *You are all inventors, so why don't we take a few minutes for you to brainstorm and draw your board game ideas?*

Hand out paper and crayons/markers.

Give girls 10 minutes to draw their game ideas.

They may want to work alone or in pairs.

Board Game Design Challenge 1 (Version for the Making Things Move Kit)

Step Two: Design a Spinner for Your Game (15 minutes)

Materials

- GoldieBlox Making Things Move kit (one set for each pair or small team.) Feel free to add additional pieces from personal GoldieBlox kits that you or your Girl Scouts may own.

Steps

Daisies brainstorm and build spinners for Step Two of the Board Game Design Challenge.

SAY:

- *In a lot of games, you figure out how many moves you can make by using dice. We don't have any dice. What else could we use? (Answer: A spinner.)*
- *Do you have a favorite game that uses a spinner? How does it work?*
- *Engineers are inventors who know how to design and build all kinds of things. One of the things they might want to design is a game spinner.*
- *Do you think you could design something with pieces from the kit that would work the same way? What would it need to do? (Answer: Spin and point.)*
- *In pairs (or small teams), work together to create a spinner that can turn in a circle and point to something, just like a spinner.*
- *See what you can put together. Take turns trying to make your design better. Engineers always try more than one idea.*

Divide girls into pairs or small teams.

Give each team a set from the GoldieBlox Making Things Move kit to build their spinner.

Float around the room, watching girls try out different designs. If they are having problems, avoid offering them a solution. Instead, ask questions, such as, "Why do you think your spinner isn't working yet? What else could you try?"

Keep It Girl-Led: By having girls reverse engineer the spinner, Daisies have a hands-on opportunity to learn about the different parts instead of following directions. If they're having trouble, ask them questions like, "What GoldieBlox parts could turn in a circle? How are they stuck together? What part would help the spinner to point?"

Circulate among the groups, asking questions to prompt further exploration.

If girls are having trouble, lead them to use the wheel parts to create a base. Axles can be added to help the spinner point.

Remind Daisies that their spinner needs to turn and point.

Board Game Design Challenge 1 (Version for the Making Things Move Kit)

Closing Ceremony: Flash Chat (10 minutes)

Materials

- **Spinner Paper Pieces** (one for each Spinner created)

Steps

Have Daisies form a Friendship Circle, and discuss with them how they designed their spinners.

SAY:

- *Different designs do different things. Good designs offer “features” that make them more useful. For example, a feature could be something like a sharp point that helps the spinner move faster.*
- *How will you use the spinner in your game? (**Answer: The spinner can tell us where or how far to move.**)*
- *What features does your spinner design include?*
- *What pieces did you start with? Why did you choose those? (**Note to Volunteers:** They may have started with a wheel and axle because they knew they would need them to spin.)*
- *What other pieces did you add? What about them made you use them? (**Note to Volunteers:** They may have used an axle or the crank to point or a washer to make it spin faster.)*
- *If we built a spinner with all the features we just came up with, how would we build it?*
- *How could we decide between two conflicting features? (**Answer: Whichever is most useful.**)*
- *How would we define “the best spinner”? (**Answers may vary. The one that is easiest to spin and spins the longest may be one answer.**)*

Show Daisies the **Spinner Paper Pieces**.

SAY:

- *Is there a design feature that works best to attach these to our spinners? What part could we use? (**Answer: Washers**)*
- *How do the washers help it spin faster? (**Answer: They are smoother than the pegboard or paper, so the wheel doesn’t get stuck on them.**)*
- *Next time, we’ll add these paper pieces on to our spinners before we create and play our board games!*

End the meeting with a Friendship Squeeze.

(Note to Volunteers: You may want to save the Daisies’ spinners for the next meeting, Board Game Design Challenge 2. If you are able to, label each spinner with the girl or group’s name(s) and put away until the next meeting. If you are unable to keep them together, don’t worry, the girls will have a chance to rebuild at the start of the next meeting.)

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Board Game Design Challenge 1 (Version for the Making Things Move Kit)

GoldieBlox Making Things Move kit – Parts Breakdown

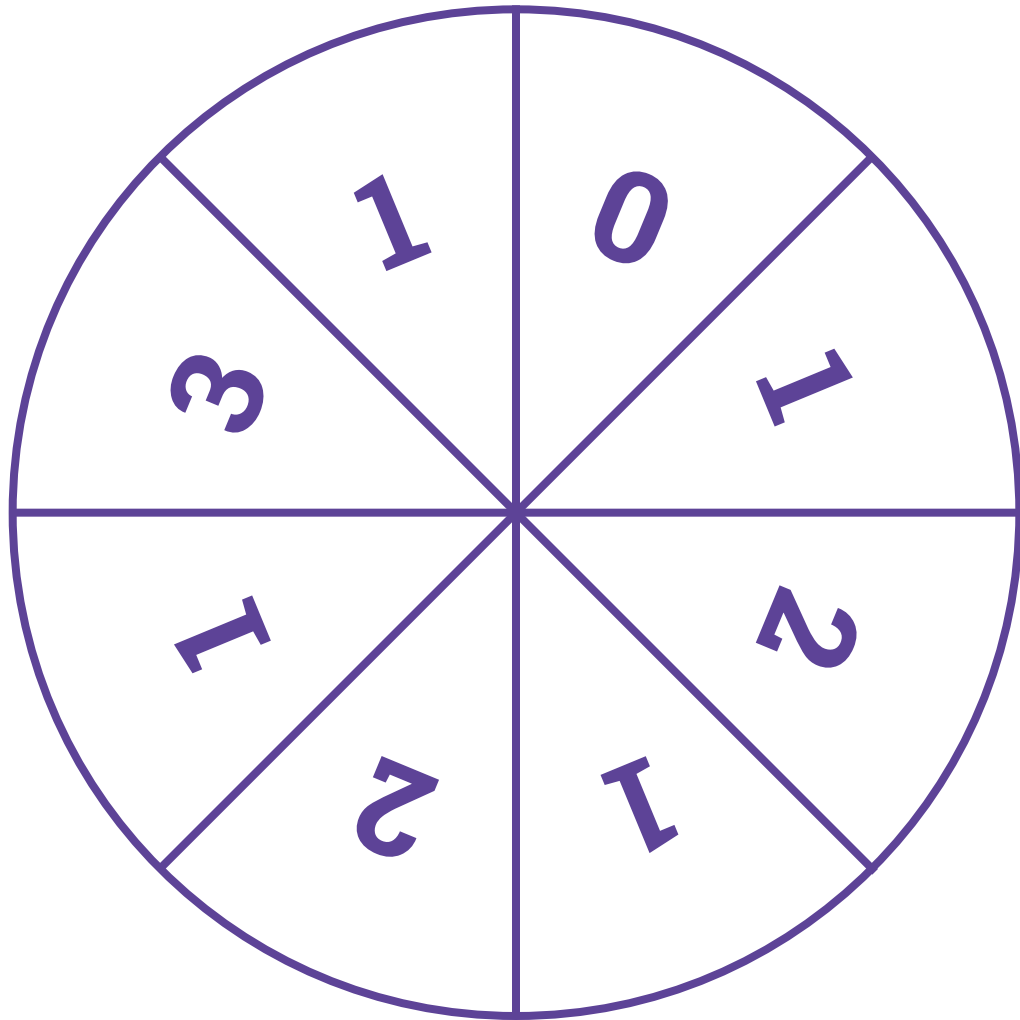
GoldieBlox	# in set	# in kit (6 sets)
Wheel	7	42
Blox (18 mm) 2.0	6	36
Short Axle	9	54
Long Axle	4	24
Spacer	4	24
Teal Ribbon	1	6
Elastic Band	1	6
Character – Nacho	1	6
Character – Flavio	1	6
Character – Katinka	1	6
Book – GoldieBlox and the Parade Float	1	6
Small Wheel Hub	4	24
Small Wheel End	8	48
Big Wheel End	2	12
Washer	8	48
Spacer	4	24
Tire	4	24

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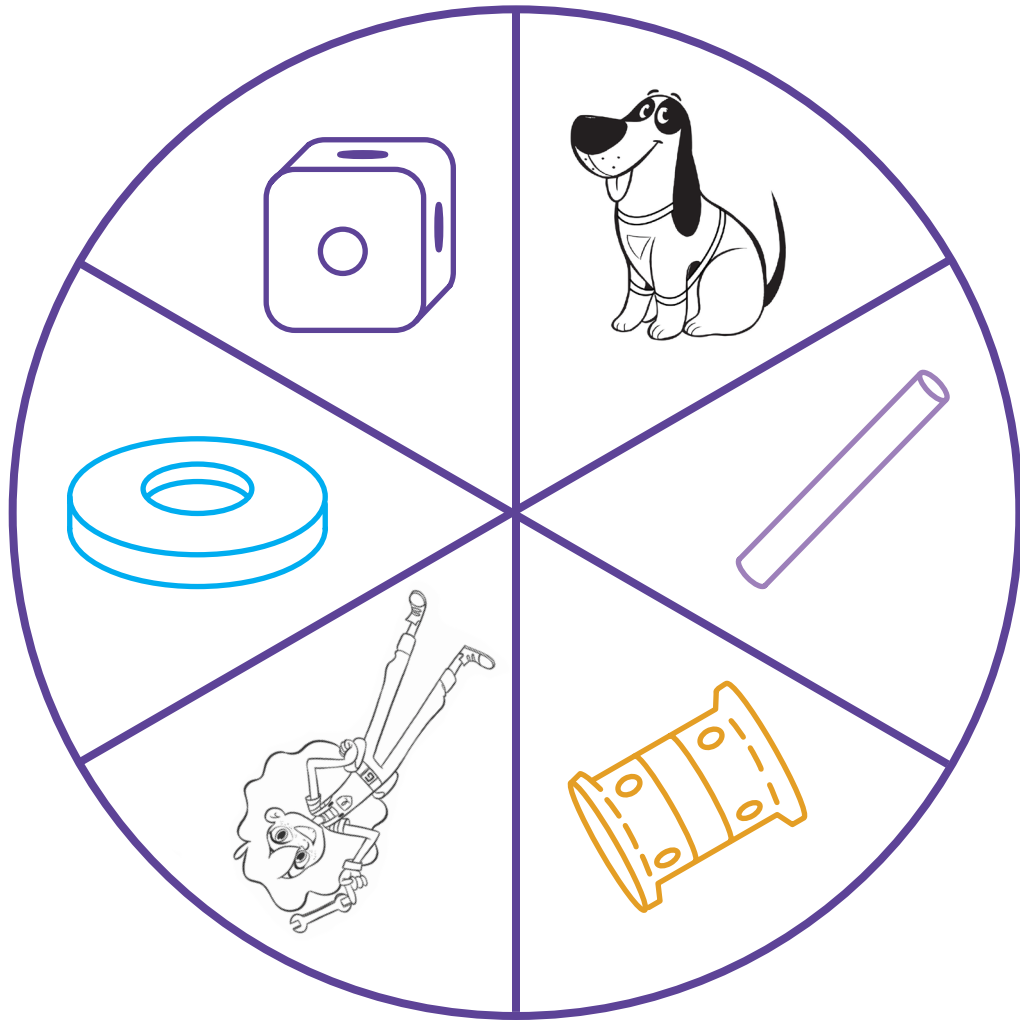
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NAME _____



NAME _____



Daisy Design Challenge Badges: Materials List

Board Game Design Challenge 1

As Girls Arrive: Paper Games

- Paper
- Pencils
- Optional: Find and print out puzzles, mazes and other simple paper games

Opening Ceremony: All About Games

- Flag
- Optional: Poster Board with the Girl Scout Promise and Law

Step One: Come Up with an Idea for Your Board Game

- Paper
- Markers and/or crayons

Step Two: Design a Spinner for Your Game

- GoldieBlox Making Things Move kit (one set for each pair or small team.) Feel free to add additional pieces from personal GoldieBlox kits that you or your Girl Scouts may own.

Closing Ceremony

- **Spinner Paper Pieces** (one for each Spinner created)

Board Game Design Challenge 2

As Girls Arrive: Create Your Game Board

- Spinners created in Board Game Design Challenge 1. (**Note to Volunteers:** If you were unable to save the spinner between meetings, Daisies can rebuild their spinners during this activity.)
- **Spinner Paper Pieces** (one for each Spinner created)
- Large paper, construction paper, or poster board
- Markers and/or crayons

Opening Ceremony: Share Your Game Board

- Flag
- Spinners and game boards created by Daisies
- Optional: Poster Board with the Girl Scout Promise and Law

Step Three: Test Your Game and Make It Better

- Spinners and game boards created by Daisies
- GoldieBlox Making Things Move kit (one set for each pair or small team)

Closing Ceremony: Awards

- Board Game Design Challenge award, one for each girl

(**Note to Volunteers:** You can buy these awards from your council shop or on the Girl Scouts' website.)

Daisy Design Challenge Badges: Materials List

Roller Coaster Design Challenge 1

Opening Ceremony: All About Roller Coasters

- Flag
- **Where Does the Roller Coaster Go Fastest?** handout
- Optional: Poster Board with the Girl Scout Promise and Law

Step One: Make a Simple Roller Coaster Car

- GoldieBlox Making Things Move kit (one set for each pair or small team.) (**Note to Volunteers:** A simple roller coaster car uses 2 wheels, 4 blocks, and 4 short axles, but girls can build upon this with the other pieces. Feel free to add additional pieces from personal GoldieBlox kits that you or your Girl Scouts may own.)
- **Simple Roller Coaster Car** handout

Step Two: Build a Model of a Roller Coaster

- Roller coaster cars created by girls in Step One: Make a simple roller coaster car
- Folders, poster boards, cardboard, etc., to lean against something to create a ramp
- Books, boxes, tables, etc. to create the height and top of a ramp

Roller Coaster Design Challenge 2

As Girls Arrive: Prepare for Testing

- Roller coaster cars created by girls in Roller Coaster Design Challenge 1. (**Note to Volunteers:** If you were unable to save the roller coaster cars between meetings, Daisies can rebuild their cars during this activity.)
- Folders, poster boards, cardboard, etc., to lean against something to create a ramp
- Books, boxes, tables, etc. to create the height and top of a ramp

Opening Ceremony: Engineers Work Together!

- Flag
- Optional: Poster Board with the Girl Scout Promise and Law

Step Three: Test Your Roller Coaster

- Roller coaster cars created by girls in Roller Coaster Design Challenge 1 or rebuilt in As Girls Arrive: Prepare for Testing
- Ramps created in As Girls Arrive: Prepare for Testing
- Leftover materials from As Girls Arrive: Prepare for Testing for girls to build on ramps
- Leftover parts from the GoldieBlox Making Things Move kit for girls to build on their roller coaster cars

Closing Ceremony: Awards

- Roller Coaster Design Challenge award, one for each girl

(**Note to Volunteers:** You can buy these awards from your council shop or on the Girl Scouts' website.)

Daisy Design Challenge Badges: Materials List

Model Car Design Challenge 1

As Girls Arrive: Playing with Force and Friction

- Sports and game balls (one for each pair of girls). Bring different types of balls for girls to roll and observe friction. For example, you might bring a marble, tennis ball, basketball, ping pong ball, baseball, etc.
- Create two lines with masking tape on the floor. Each Daisy should sit on the line, facing their partner.

Opening Ceremony: All About Friction

- Flag
- Optional: Poster Board with the Girl Scout Promise and Law
- Optional: Print out pictures of a bicycle wheel (including brake pads), a golf ball on a putting green, a baseball player sliding, and a sled loaded with supplies (or other examples of friction)

Step One: Design and Build Model Cars

- GoldieBlox Making Things Move kit (one set for each pair or small team.) (**Note to Volunteers:** Depending on what model car Daisies decide to build, pieces will vary. Feel free to add additional pieces from personal Goldieblox kits that you or your Girl Scouts may own.)
- “GoldieBlox and the Parade Float” or **GoldieBlox Parade Floats** handout

Step Two: Use Model Cars to Test the Friction of Different Surfaces

- Floats created in Step One: Design and Build Model Cars
- 2+ Friction stations for girls to test their cars (including a different surface at each station). See Prepare Ahead for more information on how to create the stations.
- Optional: Yard sticks, rulers, or string for Daisies to measure how far their cars go at each station.
- Optional: Paper and pencils if Daisies can read/write to record data.

Model Car Design Challenge 2

As Girls Arrive: Build a Simple Ramp

- Model cars created by girls in Model Car Design Challenge 1. (**Note to Volunteers:** If you were unable to save the model cars between meetings, Daisies can rebuild their cars during this activity.)
- Folders, poster boards, cardboard, etc., to lean against something to create a ramp
- Books, boxes, tables, etc. to create the height and top of a ramp

Opening Ceremony: Reviewing Force and Friction

- Flag
- Optional: Poster Board with the Girl Scout Promise and Law

Step Three: Race Your Cars!

- Model cars created by girls in Model Car Design Challenge 1 or rebuilt in As Girls Arrive: Build a Simple Ramp
- Sample ramp or ramps created in As Girls Arrive: Build a Simple Ramp
- Leftover parts from the GoldieBlox Making Things Move kit for girls to rebuild their model cars
- Surface for bottom of ramp (towel, carpet, or asphalt)



Daisy Design Challenge Badges: Materials List

Model Car Design Challenge 2 (continued)

Closing Ceremony: Awards

- Model Car Design Challenge award, one for each girl

(**Note to Volunteers:** You can buy these awards from your council shop or on the Girl Scouts' website.)