

# Southern Maine Gearbots Junior League

## 2018-19 SEASON SCHEDULE – 11 WEEKS

### Season Schedule Overview

In August of each year, JrFLL announces the Annual Challenge; however, FLLjr programs may be conducted at any time during the year.

Southern Maine Gearbots holds our Jr. League Challenge each winter, starting in early January, running for eleven weeks, and culminating in our District Meet typically held the last Saturday of March or the first Saturday of April. This year our District Meet will be held April 6. The District Meet is a wonderful opportunity for teams to share what they have accomplished and see what other teams have done during the season. Also at the District Meet, Junior teams have an opportunity to see Senior Teams with their robots in action performing Senior Robotic Track Challenges. It is a great day for everyone to come together and share their accomplishments and challenges!

Most coaches find that team meetings run more smoothly with a bit of advanced planning. Southern Maine Gearbots provides a comprehensive [Junior League Schedule](#), for an 11 week season, with weekly meetings lasting approximately 1.5 hours.

Feel free to use this schedule as it is provided-or modify it to meet the needs of your team and the requirements of your meeting place. The following diagram shows an overview of what to expect for any given weekly Session.

*NOTE: Many of the referenced files are available online at: <http://www.smgearbots.org/coach-resources/>*

#### A Week at a Glance

#### Activities/Resources:

Lists activities for the session and resources needed for those activities. Resource references may be found in the footnotes.

#### Description/Comments:

Provides an outline of the activities and resources for the session. Includes detailed information on activities, approaches to using the materials in the Coaches' Guide, guidelines on how much time to spend on any particular task, and much more!

**Session Week, Time & Topic:** Sessions run each week for 1.5 hours.

#### Suggested Time:

Provides a suggestion for the amount of time to spend on a particular activity. You may choose to modify an activity, or adjust the time allowed, based on the needs of your team and season.

#### Footnotes:

Provides list of references for information and activities found in this weeks' session. Footnotes for later weeks may not continue to refer to materials already referenced.

| Week 1 – 1½ hours |   | Introductions  |
|-------------------|---|--|
| Time              | Activity/Resources  | Description/Comments   |
| 10-15 min.        | Introduction & Team Building Exercise<br><br><u>Jr. FLL Core Values</u> <sup>1</sup><br>Gracious Professionalism!<br><u>Session Warm-Ups</u> <sup>2</sup> | <ul style="list-style-type: none"> <li>Welcome children and parents to the Gearbots program. Introduce the concepts of the program, especially team work and working together to solve problems and build projects. Coaches should review the <u>Jr. FLL Core Values</u> from the <u>Coaches' Guide</u>.</li> <li>Get started with the <u>Circle Name Game</u> Team Warm-Up (i.e., sit in a circle and go around, tell us your name and something about yourself combined with an action, whether you've done Gearbots before, favorite color, or share your favorite LEGO element – a single piece!)</li> </ul> |
| 10 min.           | <u>Build to Express Challenge</u><br><u>What Makes a Good Team Member?</u>  | <ul style="list-style-type: none"> <li><b>BUILD:</b> Using the Build to Express kits, have the children put together a LEGO minifigure that represents what to them makes a good team member.</li> <li>Then, have them add more LEGO elements to tell something about how they could be a good team member.</li> </ul>   |

<sup>1</sup> Jr.FLL Core Values – Gracious Professionalism!

<sup>2</sup> Guide on the Side, Session Warm-Ups, Circle Name Game

<sup>3</sup> Challenge Coaches' Guide, Annual Seasonal Challenge

<sup>4</sup> Southern Maine Gearbots: LEGO Brick Terminology. Learn to speak LEGO! – BASIC TERMS, pgs 1-2

<sup>5</sup> SMGearbots Guide on the Side – Teambuilding

## Week 1 – 1½ hours

## Introductions

| Time       | Activity/Resources  | Description/Comments   |
|------------|---|--|
| 10-15 min. | Introduction & Team Building Exercise<br><br><u>FLLJr Core Values</u> <sup>1</sup><br>Gracious Professionalism!<br><u>Session Warm-Ups</u> <sup>2</sup> | <ul style="list-style-type: none"> <li>• Welcome children and parents to the Gearbots program. Introduce the concepts of the program, especially team work and working together to solve problems and build projects. Coaches should review the <u>FLLJr Core Values</u> from the <u>2018-19 MISSION MOON</u><sup>SM</sup> Coaches' Guide.</li> <li>• Get started with the <u>Circle Name Game</u> Team Warm-Up (i.e., sit in a circle and go around, tell us your name and something about yourself combined with an action, whether you've done Gearbots before, favorite color, or share your favorite LEGO element – a single piece!)</li> </ul> |
| 10 min.    | Build to Express Challenge<br><u>What Makes a Good Team Member?</u>   | <ul style="list-style-type: none"> <li>• <b>BUILD:</b> Using the Build to Express kits, have the children put together a LEGO minifigure that represents what to them makes a good team member.</li> <li>• Then, have them add more LEGO elements to tell something about how they could be a good team member.</li> </ul>   |
| 15 min.    | Discuss Team and Challenge<br><br><u>MISSION MOON Challenge</u> <sup>3</sup>  | <ul style="list-style-type: none"> <li>• <b>FOCUS:</b> Give an overview of what the <i>MISSION MOON</i> challenge will be like from the <u>2018-2019 FLLJr MISSION MOON Challenge</u> overview document. Children will be responsible for making decisions, building models by themselves, choosing a team name and colors, etc.</li> <li>• <b>DISCUSS:</b> From the <u>Coaches' Guide</u>, introduce the <i>MISSION MOON Challenge</i>, including <u>Explore</u>; <u>Create &amp; Test</u> with the model; the <u>Show Me</u> poster; and <u>Share</u> at the District Meet.</li> </ul>   |
| 5-10 min.  | <u>Lego Brick Terminology</u> <sup>4</sup><br>Learn to speak LEGO! – BASIC TERMS  | <ul style="list-style-type: none"> <li>• Ask the Children if they're familiar with how LEGO bricks are named, introduce concepts, the different elements and parts that will be used. Make it interactive!</li> <li>• There is a LOT here to cover. Take it slow. Do a little each week. Add new terminology as you add new components.</li> </ul>   |
| 35 min.    | Team Building Activities:<br><u>Guide on the Side – Teambuilding</u> <sup>5</sup>   | <ul style="list-style-type: none"> <li>• Select and work through <b>one</b> of the LEGO team building activities from <u>Guide on the Side – Teambuilding</u>. See how the Children do with it and have fun!</li> <li>• Work on using LEGO Terminology during activities.</li> </ul>   |
| 5 min.     | Wrap-Up and Review<br><br><u>FLLJr Core Values</u> <sup>1</sup><br>Gracious Professionalism!  | <ul style="list-style-type: none"> <li>• Team should put away all pieces and clean up area.</li> <li>• Members should be encouraged to close the team meetings with the <u>FLLJr Core Values</u>.</li> <li>• Coach can wrap up meeting activities and remind students of what they learned today.</li> </ul>   |

<sup>1</sup> FLLJr Core Values – Gracious Professionalism!<sup>2</sup> Guide on the Side, Session Warm-Ups, Circle Name Game<sup>3</sup> 2018-19 MISSION MOON Coaches' Guide, 2018-2019 FLLJr MISSION MOON Challenge<sup>4</sup> Southern Maine Gearbots: LEGO Brick Terminology, Learn to speak LEGO! – BASIC TERMS, pgs 1-2<sup>5</sup> SMGearbots Guide on the Side – Teambuilding

**Week 2 – 1½ hours**

**Team Building**

| Time    | Activity/Resources   | Description/Comments   |
|---------|--|--|
| 5 min.  | <u>Session Warm-Ups</u> <sup>6</sup> OR<br>Free play with B2E Kits   | <ul style="list-style-type: none"> <li>Join the team together for the <u>Moon Ball Toss</u>!</li> <li>B2E: Give the children an opportunity to explore Build to Express kits while waiting for team mates to show up.</li> </ul>   |
| 50 min. | Discuss Team and Challenge<br><u>Rocket Ship to the Moon</u> <sup>7</sup><br><br><u>Rocket Ship to the Moon</u><br>Team Building Challenge<br><br><u>Homework Ideas:</u><br><u>Rocket Ship to the Moon</u><br><u>Supply List</u> <sup>8</sup>  | <ul style="list-style-type: none"> <li><b>FOCUS:</b> You will begin introducing the challenge topic and concepts from Session 2 through 5.</li> <li><b>READ:</b> Read the EXPLORE section of “Rocket Ship to the Moon”</li> <li><b>DISCUSS:</b> As you read the story, ask the team if they can think of other differences between the Earth and the Moon. As you describe the supplies, ask them why they might need them. Ask the children what additional supplies they may need.</li> <li><b>BUILD:</b> Have the team tell the Rocket Ship to the Moon story using LEGOs! Have them take turns – calling/picking/building.</li> <li>The team should begin to build the <u>MISSION MOON Inspire Set</u>. Remind them that their model will need to include this for the District Meet.</li> <li><b>HOMEWORK/IN SESSION:</b> Have the team brainstorm additional supplies they may need for their trip to the moon.</li> </ul>   |
| 30 min. | <u>Introduction to Simple Machines</u> <sup>9</sup><br><br><u>LEGO Set Instructions</u><br><u>9689 A-D</u> <sup>10</sup><br>Recommended order:<br>B-Wheels – Wk 2<br>A-Gears – Wk 2/3<br>D-Pulleys – Wk 3<br>C-Levers – Wk 3/4<br><br><u>Lego Brick Terminology</u> <sup>11</sup><br><u>Technic Components</u> | <ul style="list-style-type: none"> <li>This is the time to introduce the concepts of simple machines as they relate to LEGOs.</li> <li>Brainstorm with Children about the different types of simple machines. What are they and how do they work? How many can you name? Review <b>ALL</b> types of simple machines.</li> <li><b>SHARE:</b> Each week, CHOOSE ONE (or TWO) simple machines from the LEGO Set Instructions 9689 A-D to use to illustrate a different machine. You may either pre-build this model and share it or build it during team-time.</li> <li>These simple machines models should be chosen in advance for consideration for the following week WeDo build activity. See the <u>Table: Simple Machine Instructionals, WeDo Getting Started Topics, and Model Activities</u><sup>12</sup> at the end of this Jr. Season Schedule for the recommended build order.</li> <li>Continue to build on <u>Lego Brick Terminology, Technic Components</u></li> </ul> |
| 5 min.  | Wrap-Up and Review<br><br><u>FLLJr Core Values</u> <sup>1</sup><br>Gracious Professionalism!   | <ul style="list-style-type: none"> <li>Team should put away all pieces and clean up area.</li> <li>Members should be encouraged to close the team meetings with the <u>FLLJr Core Values</u>.</li> <li>Coach can wrap up meeting activities and remind students of what they learned today.</li> </ul>   |

<sup>6</sup> Guide on the Side, Session Warm-Ups, Moon Ball Toss

<sup>7</sup> 2018-19 MISSION MOON Coaches' Guide, 2018-2019 FLLJr MISSION MOON Challenge, Rocketship to the Moon

<sup>8</sup> 2018-19 MISSION MOON Coaches' Guide, 2018-2019 FLLJr MISSION MOON Challenge, Rocketship Model Plans

<sup>9</sup> Introduction to Simple Machines, Wheels and Axles, Gears, Pulleys, and Levers

<sup>10</sup> LEGO Set Instructions 9689 A-D, A-Gears, B-Wheels, C-Levers, or D-Pulleys

<sup>11</sup> Southern Maine Gearbots: LEGO Brick Terminology, Lego Brick Terminology, Technic Components, pgs 3-6

<sup>12</sup> SMGearbots Junior League Season Schedule, Table: Simple Machine Instructionals, pg 13

**Week 3 – 1½ hours**

**Team Name/Be and Engineer**

| Time      | Activity/Resources  | Description/Comments   |
|-----------|---|--|
| 5 min.    | <u>Session Warm-Ups</u> <sup>13</sup> OR<br>Free play with B2E Kits   | <ul style="list-style-type: none"> <li>• Join the team together for <u>Silent Communication!</u></li> <li>• B2E: Give the children an opportunity to explore Build to Express kits while waiting for team mates to show up.</li> </ul>   |
| 20 min.   | Discuss Team and Challenge<br><br><u>Be an Engineer</u> <sup>14</sup><br><br><u>Homework Ideas: Move and Store</u> <sup>15</sup>  | <ul style="list-style-type: none"> <li>• <b>FOCUS:</b> Answer questions about the Challenge. Clarify what the Challenge means and how the children should approach it.</li> <li>• <b>HOMEWORK REVIEW:</b> What kinds of solutions did the team come up with?</li> <li>• <b>READ:</b> “Be an Engineer” – <i>skip the WeDo build suggestion.</i></li> <li>• <b>HOMEWORK/IN SESSION:</b> <i>photocopy or print ahead of session</i> Have the children think about and write down/draw how they would move supplies away from the Rocket Ship and where they would store them.</li> </ul>  |
| 10 min.   | <u>Introduction to Simple Machines</u> <sup>16</sup><br><br><u>LEGO Set Instructions 9689 A-D</u> <sup>17</sup>   | <ul style="list-style-type: none"> <li>• Continue instruction on simple machines.</li> <li>• <b>SHARE:</b> Choose ONE or TWO simple machine instructional builds to follow on from the instruction from last week. Your goal is to make it through Wheel &amp; Axle, Gears, and Pulleys (and maybe levers) for this week. Next week definitely levers!</li> </ul>  |
| 35 min.   | <u>WeDo Software</u><br><br><u>WeDo Discussion Guide</u> <sup>18</sup><br><u>WeDo Software: Getting Started</u> <sup>19</sup><br><br><u>Lego Brick Terminology</u> <sup>11</sup><br><u>Technic Components</u> | <ul style="list-style-type: none"> <li>• <b>PURPOSE:</b> To introduce team to the motorized parts and how they work with wheels &amp; axles, gears, pulleys, &amp; levers. To introduce team to the WeDo software.</li> <li>• Work on <u>WeDo Getting Started</u> and follow <u>WeDo Discussion Guide</u> related to the simple machines you have instructed above (7-8 min. each) – models build on each other as you go along, so don’t take them apart when you go to the next build.</li> <li>• <b>BUILD:</b> Split team into two groups, and build TWO models, one with USB hub, one with battery pack. Swap halfway through.</li> <li>• Assign navigators, finders, builders, and checkers – alternate.</li> </ul> |
| 5-15 min. | <u>Homework Ideas: What’s in a Name?</u> <sup>20</sup><br><br><u>Optional – Team Building: Lego Name Game</u> <sup>21</sup>   | <ul style="list-style-type: none"> <li>• <b>HOMEWORK:</b> <i>photocopy or print ahead of session</i> Have the children research the meanings of their own names. Have them think about the meanings of team names.</li> <li>• <b>Team Name and Color:</b> Have them bring back a team name and color for next week to share for voting.</li> <li>• Team-building activity, <u>Lego Name Game</u>, if desired.</li> </ul>   |
| 5 min.    | Wrap-Up and Review<br><u>FLLJr Core Values</u> <sup>1</sup><br>Gracious Professionalism!  | <ul style="list-style-type: none"> <li>• Team should put away all pieces and clean up area.</li> <li>• Members should be encouraged to close the team meetings with the <u>FLLJr Core Values</u>.</li> </ul>   |

<sup>13</sup> Guide on the Side, Session Warm-Ups, Silent Communication

<sup>14</sup> 2018-19 MISSION MOON Coaches' Guide, 2018-2019 FLLJr MISSION MOON Challenge, Be and Engineer

<sup>15</sup> Guide on the Side, Homework Ideas, Move and Store

<sup>16</sup> Introduction to Simple Machines, Wheel and Axle, Gears, Pulley, and Levers

<sup>17</sup> LEGO Set Instructions 9689 A-D, A-Gears, B-Wheels, C-Levers, or D-Pulleys

<sup>18</sup> WeDo Discussion Guide, Getting Started, pg 24 located in section 5 of the 2018-19 MISSION MOON Coaches' Guide

<sup>19</sup> WeDo Software: Getting Started Instructionals, on laptop, directions for access on pg 13 of this document

<sup>20</sup> Guide on the Side, Homework Ideas, What’s in a Name?

<sup>21</sup> Guide on the Side, Team Building, LEGO Name Game

## Week 4 – 1½ hours

## Idea Generation – I

| Time       | Activity/Resources   | Description/Comments   |
|------------|--|--|
| 5 min.     | <u>Mini-Build</u> with B2E Kits  | <ul style="list-style-type: none"> <li>Join the team together for a <u>Move and Store Mini-Build</u> using the B2E: Build a LEGO® model that shows one real or imaginary way that you could move and store supplies from the rocket.</li> </ul>  |
| 10-15 min. | Team Name<br><br>Vote!   | <ul style="list-style-type: none"> <li>Complete and discuss team build <u>Lego Name Game</u> from previous week, if more time is needed.</li> <li><b>DISCUSS:</b> and <u>vote</u> on team name and Color.</li> </ul>   |
| 25-40 min. | Discuss Team and Challenge<br><br><u>Water on the Moon</u> <sup>22</sup>   | <ul style="list-style-type: none"> <li><b>FOCUS:</b> Review the <u>Move and Store</u> from the team homework. If team members didn't get this done give them a few minutes to come up with a few ideas.</li> <li><b>READ:</b> "Water on the Moon"</li> <li><b>BRAINSTORM:</b> Ask the team: <b>1</b> where they will look for water; <b>2</b> how they might bring it to their moon base; <b>3</b> how they might store it; and, <b>4</b> how they might use it. Have the team record their ideas.</li> <li><b>BUILD:</b> Have the team break into two groups: Group 1 build a model showing how they will look for water and return it to the moon base; Group 2 build a model showing how they will store and use the water.</li> </ul>  |
| 10 min.    | <u>Introduction to Simple Machines</u> <sup>23</sup><br><u>LEGO Set Instructions 9689 C-Levers</u> <sup>24</sup>   | <ul style="list-style-type: none"> <li>Choose simple machine instructionals</li> <li><b>SHARE:</b> Levers should be covered if you haven't done them, otherwise move on to the Screw (part of the Worm Screw in the Technic Components), Wedge (an Axe in the B2E Kits), and Inclined Plane (any slope piece).</li> </ul>  |
| 20-30 min. | <u>WeDo Getting Started</u> <sup>40</sup><br><br><u>WeDo Model Activities</u> <sup>41</sup><br><br><u>LEGO Instructions 9580</u> <sup>25</sup><br>Roaring Lion (5)<br>Dancing Birds (1)<br>Hungry Alligator (4)<br>Giant Escape (11) | <ul style="list-style-type: none"> <li>If needed, continue <u>WeDo Getting Started</u> activities and follow <u>WeDo Discussion Guide</u><sup>18</sup> (7-8 min. each).</li> <li><u>WeDo Model Activities</u> – The Model Activities provide the best instruction in the use of the WeDo kits. They also are the most fun for the children in building. Begin with the <u>Lion (Gears)</u> and <u>one of the three that illustrate Pulleys</u>.</li> <li><b>BUILD:</b> Split team into two groups, and build TWO models, one with USB hub, one with battery pack. Swap and rebuild.</li> <li>Refer to the Table: <u>Simple Machine Instructionals, WeDo Getting Started Topics, and Model Activities</u><sup>26</sup> for selection.</li> <li>Continue to build on <u>Brick Terminology, Technic Components</u></li> </ul> |
| 5 min.     | Wrap-Up and Review<br><u>FLLJr Core Values</u> <sup>1</sup><br>Gracious Professionalism!   | <ul style="list-style-type: none"> <li>Team should put away all pieces and clean up area.</li> <li>Members should be encouraged to close the team meetings with the <u>FLLJr Core Values</u>.</li> <li>Coach can wrap up meeting activities and remind students of what they learned today.</li> </ul>   |

<sup>22</sup> 2018-19 MISSION MOON Coaches' Guide, 2018-2019 FLLJr MISSION MOON Challenge, Water on the Moon

<sup>23</sup> Introduction to Simple Machines, Levers, Screws, Wedges, and Inclined Planes

<sup>24</sup> LEGO Set Instructions 9689 A-D, C-Levers, if not yet covered

<sup>25</sup> LEGO Instructions 9580, WeDo Model Activities, as booklets in kits, as PDFs on the computers, and in the WeDo Software

<sup>26</sup> SMGearbots Junior League Season Schedule, Table: Simple Machine Instructionals, pg 13



**Week 5 – 1½ hours**

**Idea Generation – II**

| Time      | Activity/Resources   | Description/Comments   |
|-----------|--|--|
| 5 min.    | <u>Mini-Build with MISSION MOON Inspire Set Bag 2</u>  | <ul style="list-style-type: none"> <li>Join the team together for the <u>Energy Use Mini-Build</u> using the B2E: Think about how they use energy day to day. Build a LEGO model of that shows how they use energy, and have them talk about it. Have them think about how that might be different on the Moon.</li> </ul>   |
| 35 min.   | <p>Discuss Team and Challenge</p> <p><u>Energy on the Moon</u><sup>27</sup></p> <p>Homework Ideas:<br/><u>MISSION MOON: Interview</u><sup>28</sup></p> | <ul style="list-style-type: none"> <li><b>DISCUSS:</b> what they found through <u>MISSION MOON – My Water on the Moon</u> activity. What ideas do they have for using water on the Moon?</li> <li><b>READ:</b> “Energy on the Moon”</li> <li><b>BRAINSTORM:</b> Ask the team: <b>1</b> how they might collect energy; <b>2</b> how they might store it; <b>3</b> and, how they might use it. Have the team record their ideas.</li> <li><b>BUILD:</b> Go over the problem presented in the Read section with the team. Make sure they understand the goal: to collect, store, and use energy. Then, have the team create some Mini-Builds to illustrate their ideas.</li> <li><b>HOMEWORK:</b> <i>photocopy or print ahead of session</i> <u>MISSION MOON: Interview</u> – Have the children conduct the MISSION MOON interview with someone at home or in school, and bring back their information next session.</li> </ul> |
| 5-10 min. | <p><u>Introduction to Simple Machines</u><sup>29</sup></p> <p><u>Lego Brick Terminology</u><sup>11</sup></p> <p><u>Technic Components</u></p>          | <ul style="list-style-type: none"> <li><b>SHARE:</b> Finish up with the simple machine instructionals</li> <li>Provide a final recap of all the Simple Machines</li> <li>Refer to <u>Lego Brick Terminology, Technic Components</u> if needed</li> </ul>   |
| 35 min.   | <p><u>WeDo Getting Started</u><sup>40</sup></p> <p><u>WeDo Model Activities</u><sup>41</sup></p> <p><u>LEGO Instructions 9580</u><sup>30</sup></p>     | <ul style="list-style-type: none"> <li>Select one <u>WeDo Getting Started</u> activity, if needed</li> <li>Complete <u>WeDo Model Activity</u> from last session OR select a new WeDo Model Activity to continue to build upon the Simple Machines concepts.</li> <li>Note: Build can be completed at next meeting if extra time is needed</li> </ul>  |
| 5 min.    | <p>Wrap-Up and Review</p> <p><u>FLLJr Core Values</u><sup>1</sup></p> <p>Gracious Professionalism!</p>   | <ul style="list-style-type: none"> <li>Team should put away all pieces and clean up area.</li> <li>Members should be encouraged to close the team meetings with the <u>FLLJr Core Values</u>.</li> <li>Coach can wrap up meeting activities and remind students of what they learned today.</li> </ul>   |

<sup>27</sup> 2018-19 MISSION MOON Coaches' Guide, 2018-2019 FLLJr MISSION MOON Challenge, Energy on the Moon

<sup>28</sup> Guide on the Side, Homework Ideas, MISSION MOON – Interview

<sup>29</sup> Introduction to Simple Machines, Levers, Screws, Wedges, and Inclined Planes

<sup>30</sup> LEGO Instructions 9580, WeDo Model Activities, as hard copy booklets in kits, as PDFs on the computers, and in the WeDo Software

## Week 6 – 1½ hours

## Idea Generation – III

| Time    | Activity/Resources  | Description/Comments  |
|---------|---|---|
| 5 min.  | Free play with B2E Kits   | <ul style="list-style-type: none"> <li>This is the last day the kids have free play with the B2E kits.</li> <li>At this point we will start to focus on building and preparing for the challenge.</li> </ul>  |
| 45 min. | Discuss Team and Challenge<br><u>Warm-Up: Alarms</u><br><br><u>Air on the Moon</u> <sup>31</sup><br><br><u>Mini-Build:</u><br><u>Air on the Moon</u><br><br><u>Idea Generation</u><br>Team Building Challenge and Model Drawing | <ul style="list-style-type: none"> <li><b>DISCUSS:</b> the <u>MISSION MOON – Interview</u> homework.</li> <li>Let the team know that they will be building an alarm system for their Moon Base later in the session. Ask them to give some examples of alarms: clocks, doors, fire alarms, etc.)</li> <li><b>DISCUSS:</b> Why are alarms useful? To give reminders, warnings, alerts, etc.</li> <li><b>READ:</b> “Air on the Moon”</li> <li><b>BRAINSTORM:</b> Ask the team to think about how the astronauts could move safely from inside to the surface of the moon. An airlock is a small room where on door is open at a time, allowing the astronauts to pass from inside to outside and back safely while conserving air.</li> <li><b>BUILD:</b> Have the team break into two groups: Group 1 focus on building and programming an alarm using the WeDo software, Group 2 should focus on how they will find, collect, and breathe air on the Moon.</li> <li><b>FOCUS:</b> Talk with the team about how in the next couple weeks they will soon start building their Moon Base model. Their model will need to include the information that they have gathered so far, as well as more information to come.</li> <li><b>FOCUS:</b> You will help guide the children in planning the model around their Moon Base. Be there to capture the information and keep the discussion moving.</li> <li><b>SHOW ME:</b> Begin discussing the <u>Show Me</u> Poster. Review the rules and requirements as outlined in the <u>2018-2019 FLLJr MISSION MOON Challenge</u>.</li> <li>Ask students to begin bringing materials (photos, magazine clippings, writings, drawings, print-outs) to be used in the Show Me poster.</li> </ul> |
| 35 min. | <u>WeDo Getting Started</u> <sup>40</sup><br><u>WeDo Model Activities</u> <sup>41</sup><br><br><u>LEGO Instructions 9580</u> <sup>32</sup>  | <ul style="list-style-type: none"> <li><b>BUILD:</b> Select one <u>WeDo Getting Started</u> activity, if needed</li> <li>Complete <u>WeDo Model Activity</u> from last session OR select a new WeDo Model Activity based on what coaches think teams may need to consider when working on their own model.</li> <li>Note: Build can be completed at next meeting if extra time is needed</li> </ul>   |
| 5 min.  | Wrap-Up and Review<br><u>FLLJr Core Values</u> <sup>1</sup><br>Gracious Professionalism!  | <ul style="list-style-type: none"> <li>Team should put away all pieces and clean up area.</li> <li>Members should be encouraged to close the team meetings with the <u>FLLJr Core Values</u>.</li> </ul>  |

<sup>31</sup> 2018-19 MISSION MOON Coaches' Guide, 2018-2019 FLLJr MISSION MOON Challenge, Air on the Moon

<sup>32</sup> LEGO Instructions 9580, WeDo Model Activities, as hard copy booklets in kits, as PDFs on the computers, and in the WeDo Software

## Week 7 – 1½ hours

## Model and Poster Planning

| Time       | Activity/Resources   | Description/Comments  |
|------------|--|---|
| 5-10 min.  | Free play<br><u>Homework Ideas:</u><br><u>Team Interview</u> <sup>33</sup>               | <ul style="list-style-type: none"> <li>• <b>HOMEWORK:</b> <i>photocopy or print ahead of session</i><br/>While not really homework, The Team Interview is a great way to get the information you need for the Show Me poster.</li> <li>• As kids arrive, pair them up for interviews. If you have an odd number of kids, have some work in groups of three.</li> </ul>  |
| 20-30 min. | Discuss Team and Challenge<br><br><u>Solving Problems on the Moon</u> <sup>34</sup>      | <ul style="list-style-type: none"> <li>• <b>DISCUSS:</b> what you covered last session. You should review the <u>Air on the Moon</u> ideas that the team members completed last sessions. Also, cover any other model planning that you started.</li> <li>• <b>READ:</b> “Solving Problems on the Moon”</li> <li>• <b>BRAINSTORM:</b> What will the team do for fun on the Moon? What will they eat? How will they spend their time? How will they get around? Have the team come up with ideas!</li> <li>• <b>FOCUS:</b> Let your team know that they will begin planning their LEGO model for the MISSION MOON Challenge. Remind them that the basic parts of the Challenge are to <b>1)</b> include the Rocket Ship to the Moon as part of the Moon Base; <b>2)</b> show use of Water, Energy, and Air in Problem Solving on the Moon Base; and <b>3)</b> Show what they have learned through their LEGO model and Show Me poster. Ask team members to take turns sharing what they have learned about the Moon and planning to live in a Moon Base.</li> <li>• <b>SHOW ME:</b> The <u>Show Me</u> Poster has specific content requirements. Check to see that you have the bits and pieces needed to fill out the poster.</li> <li>• Gather together the materials the students have brought in. Help them organize the information in a way that makes sense.</li> <li>• See what you have and what is missing. Ask student to bring in more materials.</li> <li>• You may have students type their research information, interview responses, and other information into the computer. This can be printed out and attached to the Show Me poster.</li> </ul> |
| 35-45 min. | Lego Team Build<br><u>FLLJr Coach’s Guide to Building and More</u> <sup>35</sup>         | <ul style="list-style-type: none"> <li>• <b>OPTIONAL BUILD:</b> Choose one of the more complicated models (Crazy Floors Model OR Crane Model) from the <u>FLLJr Coach’s Guide to Building and More</u>. NOTE: These may take more than one meeting for the team to build.</li> <li>• <i>Coach should emphasize team work / working together to figure out any issues that arise.</i></li> </ul>   |
| 5 min.     | Wrap-Up and Review<br><u>FLLJr Core Values</u> <sup>1</sup><br>Gracious Professionalism! | <ul style="list-style-type: none"> <li>• Team should put away all pieces and clean up area.</li> <li>• Members should be encouraged to close the team meetings with the <u>FLLJr Core Values</u>.</li> </ul>  |

<sup>33</sup> Guide on the Side, Homework Ideas, Team Interview<sup>34</sup> 2018-19 MISSION MOON Coaches' Guide, 2018-2019 FLLJr MISSION MOON Challenge, Plan the LEGO Model<sup>35</sup> FLLJr Coach’s Guide to Building and More, Crazy Floors Model OR Crane Model



**Week 8 – 1½ hours****Build It! –I**

| Time    | Activity/Resources   | Description/Comments  |
|---------|--|---|
| 5 min.  | Get Ready  | <ul style="list-style-type: none"> <li>• Early arriving members can help get materials out and ready for the session. They can help lay out materials for the poster, get out the model for the build, and put out chairs.</li> </ul>   |
| 20 min. | Discuss Team and Challenge<br><br>FIRST Consent/Release Agreement <sup>36</sup>              | <ul style="list-style-type: none"> <li>• <b>DISCUSS:</b> final materials students brought in for <u>Show Me</u> poster. What is missing? Is there anything else to include?</li> <li>• <b>SHOW ME:</b> The Poster should be assembled during Weeks 9 through 11. Plan to have all materials ready for assembly during those weeks. Week 11 is used for last minute tweaks to the model and finishing touches on the poster.</li> <li>• <b>PHOTOS:</b> Take photos of team members for the <i>Show Me</i> Poster. Check with parents to see if it is OK to use children’s photos on the poster. If not, ask the child to draw a picture or pick a favorite picture of a minifigure to represent them on the poster. Take photos while children are working on the Team Build so as not to take up too much time.</li> </ul>  |
| 50 min. | Lego Team Build<br><br><u>Create Your Moon Base</u> <sup>37</sup>                            | <ul style="list-style-type: none"> <li>• Finish Lego build from previous meeting if extra time is needed, but the main focus for this session is to begin building the Challenge model.</li> <li>• <b>FOCUS:</b> Discuss how team will begin to build their challenge model.</li> <li>• <b>READ:</b> “Create Your Moon Base” It is time to bring everything together and start building! Have the team members review the design of the model that they decided on during the last session. Ask the team how they think they could work together to build the model. Remind them that it is important that everyone get a chance to build.</li> <li>• <b>BUILD:</b> What are Water, Energy, and Air solutions that the team members have chosen? Using Build to Express and the MISSION MOON Inspire Set Bag 2, have the team build a model that shows two or three things that they think should definitely be shown in the team’s <u>MISSION MOON</u> model. Discuss additional ideas that can be built to address the <u>MISSION MOON Challenge</u>.</li> <li>• <b>BUILD:</b> Work on team challenge model!</li> </ul> |
| 15 min. | Wrap-Up and Review<br><br><u>FLLJr Core Values</u> <sup>1</sup><br>Gracious Professionalism! | <ul style="list-style-type: none"> <li>• Team should review what worked and what didn’t, what the next steps are for model, what they would like to do and ideas to accomplish that. Some team members may investigate possible solutions to problems that arose during the week.</li> <li>• Members should be encouraged to close the team meetings with the <u>FLLJr Core Values</u>.</li> <li>• Team should put away all pieces and clean up area.</li> </ul>  |

<sup>36</sup> FIRST Consent/Release Agreement<sup>37</sup> 2018-19 MISSION MOON Coaches' Guide, 2018-2019 FLLJr MISSION MOON Challenge, Build the LEGO Model

**Week 9 – 1½ hours**

**Build It! –II**

| Time         | Activity/Resources  | Description/Comments   |
|--------------|---|--|
| 5 min.       | Get Ready   | <ul style="list-style-type: none"> <li>• Early arriving members can help get materials out and ready for the session. They can help lay out materials for the poster, get out the model for the build, and put out chairs.</li> <li>• If children are still waiting for members to arrive then you can have free play with B2E Kits</li> </ul>   |
| 15 min.      | Discuss Team and Challenge  | <ul style="list-style-type: none"> <li>• <b>DISCUSS:</b> Check in from last meeting. Where are we at? What's next?</li> </ul>  |
| 60 min.      | Lego Team Build   | <ul style="list-style-type: none"> <li>• <b>FOCUS:</b> Team should be focused on working on team model and improving it.</li> <li>• <b>SHOW ME:</b> Begin putting together the <u>Show Me</u> poster. Break the team into two groups, one to focus on the Poster, the other to focus on building the model.</li> <li>• <b>DISCUSS:</b> What improvements can be made to the team model? How does it show the Water, Energy, and Air problem solving for the Moon Base? Encourage the team to make sure their model is meeting the rules of the Challenge.</li> <li>• Team should work on ideas to solve the building challenge and be working on a model that meets that challenge.</li> </ul> |
| Coach's call | WeDo and Simple Machines review   | <ul style="list-style-type: none"> <li>• <b>BUILD:</b> If team is 'stuck' on one aspect of the model, coach may opt to revisit some of the earlier lessons (or introduce a new one) by reviewing Simple Machines instructional or doing another WeDo Model Activity.</li> <li>• <b>NOTE:</b> Coaches should never provide the 'answer' to the problem, but may present these kinds of activities as one way to get them thinking in a new direction.</li> </ul>  |
| 10 min.      | Wrap-Up and Review<br><br><u>FLLJr Core Values</u> <sup>1</sup><br>Gracious<br>Professionalism! | <ul style="list-style-type: none"> <li>• Team should review what worked and what didn't, what the next steps are for model, what they would like to do and ideas to accomplish that.</li> <li>• Some team members may investigate possible solutions to problems that arose during the week.</li> <li>• Members should be encouraged to close the team meetings with the <u>FLLJr Core Values</u>.</li> <li>• Team should put away all pieces and clean up area.</li> </ul>  |

**Week 10 – 1½ hours****Wrap Up –I**

| Time                | Activity/Resources  | Description/Comments  |
|---------------------|---|---|
| 5 min.              | Get Ready   | <ul style="list-style-type: none"> <li>• Early arriving members can help get materials out and ready for the session. They can help lay out materials for the poster, get out the model for the build, and put out chairs.</li> </ul>   |
| 25 min.             | Discuss Team and Challenge<br><br><u>Make Your Show Me Poster</u> <sup>38</sup>                 | <ul style="list-style-type: none"> <li>• <b>DISCUSS:</b> Check in from last meeting. Where are we at? What's next?</li> <li>• <b>SHOW ME:</b> You should now do the final assembly of the <u>Show Me</u> poster</li> <li>• <b>READ:</b> "Make Your Show Me Poster" and help guide the team in the final assembly. Half the team can work on the poster while the other half works on the model, then they can switch.</li> </ul>  |
| 50 min.             | Lego Team Build   | <ul style="list-style-type: none"> <li>• <b>FOCUS:</b> Continue working on team model.</li> <li>• <b>BUILD:</b> Team should be wrapping up model and resolving final complex issues. Does the model move? Did they program using the computer, or only use the battery box?</li> <li>• <b>PREPARE:</b> Teams should be thinking about the District Meet and what it will be like at the competition. They should practice with their models and be prepared to talk about their posters.</li> </ul> |
| <b>Coach's call</b> | WeDo and Simple Machines review   | <ul style="list-style-type: none"> <li>• <b>SHARE:</b> If team is 'stuck' on one aspect of the model, coach may opt to revisit some of the earlier lessons (or introduce a new one) by reviewing Simple Machines instructional or doing another WeDo Model Activity.</li> <li>• <b>NOTE:</b> Coaches should never provide the 'answer' to the problem, but may present these kinds of activities as one way to get them thinking in a new direction.</li> </ul>                                     |
| 10 min.             | Wrap-Up and Review<br><br><u>FLLJr Core Values</u> <sup>1</sup><br>Gracious<br>Professionalism! | <ul style="list-style-type: none"> <li>• Team should review what worked and what didn't, what the next steps are for model, what they would like to do and ideas to accomplish that.</li> <li>• Some team members may investigate possible solutions to problems that arose during the week.</li> <li>• Members should be encouraged to close the team meetings with the <u>FLLJr Core Values</u>.</li> <li>• Team should put away all pieces and clean up area.</li> </ul>                         |

<sup>38</sup> 2018-19 MISSION MOON Coaches' Guide, 2018-2019 FLLJr MISSION MOON Challenge, Make Your Show Me Poster

**Week 11 – 1½ hours**

**Wrap Up–II**

| Time    | Activity/Resources   | Description/Comments  |
|---------|--|---|
| 5 min.  | Get Ready  | <ul style="list-style-type: none"> <li>• Early arriving members can help get materials out and ready for the session. They can help lay out materials for the poster, get out the model for the build, and put out chairs.</li> </ul>   |
| 15 min. | Discuss Team and Challenge <a href="#">2018-19 MISSION MOON Coaches' Guide</a>                           | <ul style="list-style-type: none"> <li>• <b>SHOW ME:</b> Complete “Show me” poster, if not completed in Week 10.</li> <li>• <b>DISCUSS:</b> Check in from last meeting: Where are we at? What’s next?</li> </ul>  |
| 55 min. | Lego Team Build<br><br><a href="#">Practice Presentation Questions</a> <sup>39</sup>                     | <ul style="list-style-type: none"> <li>• <b>FOCUS:</b> Finish team challenge model.</li> <li>• <b>PREPARE:</b> Teams should be prepared for the District Meet and what it will be like at the competition. They should practice with their models and be prepared to talk about their posters.</li> <li>• <b>DISCUSS:</b> The whole project and the answers to the questions are equally important. Help your team members prepare to present their research and model with the following suggestions:                             <ul style="list-style-type: none"> <li>• Ask team members to gather around their completed poster and ask questions as if you were the Reviewer. Ask the team members to take turns presenting. Also allow them to play the role of Reviewer. Whoever is the reviewer can write and ask their own questions or choose from the ones listed in the <a href="#">Practice Presentation Questions</a>.</li> <li>• Give feedback on team members’ answers and ask them to evaluate their responses. Ask them to make the appropriate changes to prepare for the District Meet.</li> <li>• <b>HINT:</b> <i>Encourage team members to think about how to make their presentation stand out to Reviewers and/or other audience members.</i></li> <li>• Continue to have your team members practice their presentation skills. Prepare them for success by encouraging them to practice their presentation at home, too.</li> <li>• <b>SHARE:</b> Directions to the District Meet and double check with parents to make sure they know what time they should arrive.</li> </ul> </li> </ul> |
| 15 min. | Wrap-Up and Review<br><br><a href="#">FLLJr Core Values</a> <sup>1</sup><br>Gracious<br>Professionalism! | <ul style="list-style-type: none"> <li>• Coach should wrap up successful season</li> <li>• Members should be encouraged to close the team meeting and season with the <a href="#">FLLJr Core Values</a>.</li> <li>• Team should put away all pieces and clean up area.</li> </ul>   |

**Kit Turn In:** Kits should be sorted and inventoried. After the end of the season there will be two kit turn in days to be held in Windham and Saco where coaches can stop in to sort, inventory, and restock kits. Kits will need to be returned by the second of these turn in days.

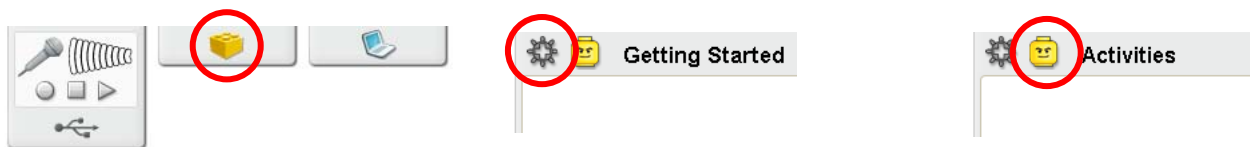
<sup>39</sup> [2018-19 MISSION MOON Coaches' Guide](#), 2018-2019 FLLJr MISSION MOON Challenge, Practice Presentation Questions

**Simple Machine Instructionals, WeDo Getting Started Topics, and Model Activities**

| <i>If you've covered the Simple Machine Instructional (during any session) for:</i>              | <i>Then you can choose to cover the following "Getting Started"<sup>40</sup> topics:</i> | <i>Suggestions for WeDo Model Activities<sup>41</sup> after "Getting Started" activities:</i> |
|--|--|---|
| Wheel and Axle   | 1. Motor and Axle  | (any with motor)  |
| Gears  | 2. Gears<br>3. Idler Gear<br>4. Gearing Down<br>5. Gearing Up                            | Roaring Lion (5)  |
| Pulleys  | 7. Pulleys and Belt<br>8. Crossed Belt<br>9. Decrease Speed<br>10. Increase speed        | Dancing Birds (1)<br>-or-<br>Hungry Alligator (4)<br>-or-<br>Giant Escape (11)                |
| Levers   | 14. Cam<br>15. Lever   | Kicker (7)<br>-or-<br>Drumming Monkey (3)<br>-or-<br>Cheerful Fans (9)                        |
| Wedges (A wedge is a type of inclined plane. There is no LEGO supplied instruction for a wedge.) |  |   |
| Inclined Plane   | 6. Tilt Sensor   | Sailboat Storm (12)   |
| Screw  | 12. Crown Gear<br>13. Worm Gear  | Smart Spinner (2)<br>-or-<br>Roaring Lion (5)   |

NOTE: You are not expected to cover all of the "Getting Started" topics or the WeDo model Activities. This table is intended as a guide to help you choose which ones to cover in your week by week sessions.

In the WeDo Software, click the Yellow Brick to access the Getting Started topics as well as model Activities.



<sup>40</sup> WeDo Getting Started topics are available within the WeDo software on your SMGearbots provided laptop.

<sup>41</sup> WeDo Model Activities are available within the WeDo software on your SMGearbots provided laptop.

## Ice Breakers with Build to Express Activities

### Week 1 – 25 min

### Introductions

|   |  |
|---|--|
| <p><b>15-25 min.</b> Build to Express (B2E):<sup>42</sup><br/>Metaphor Exercises<sup>43</sup><br/>Building Challenge Cards<sup>44</sup></p> | <ul style="list-style-type: none"> <li>• Briefly explain the <u>Purpose and Rules of Build to Express</u> to the students, write names on bags and hand out (5 min.)</li> <li>• Perform <u>B2E: Metaphor Exercises 1 &amp; 2</u> (5 min. each)</li> <li>• <u>B2E: Introduction Challenge: 1 &amp; 2 of 3</u>: (7-8 min. each)</li> </ul> |
|---|--|

### Week 2 – 25 min

### Team Building

|  |  |
|--|--|
| <p><b>15-25 min.</b> Build to Express:<br/>Metaphor Exercises<sup>45</sup></p> | <ul style="list-style-type: none"> <li>• Remind Students of the <u>Build to Express Process</u><sup>46</sup></li> <li>• Perform <u>B2E: Metaphor Exercise 3</u> (5 min.)</li> <li>• <u>B2E: Team Building: Challenges 1–3</u> (5-8 min. each)</li> </ul> |
|--|--|

### Week 3 – 20 min

### Team Name

|  |   |
|--|---|
| <p><b>15-25 min.</b> Build to Express:<br/>Metaphor Exercises<sup>47</sup><br/>Building Challenge Cards<sup>48</sup></p> | <ul style="list-style-type: none"> <li>• Remind Students of the <u>Build to Express Process</u></li> <li>• Perform <u>B2E: Metaphor Exercise 4</u> (5 min.)</li> <li>• <u>B2E: Our Team Name: Challenges 1 &amp; 2</u> (7-8 min. each)</li> </ul> |
|--|---|

### Week 4 – 25 min

### Idea Generation

|  |   |
|--|---|
| <p><b>15-25 min.</b> Build to Express:<br/>Building Challenge Cards<sup>49</sup></p> | <ul style="list-style-type: none"> <li>• Remind Students of the <u>Build to Express Process</u></li> <li>• <u>B2E: Idea Generation: Challenges 1–3</u> (7-8 min. each)</li> </ul> |
|--|---|

### Week 5 – 10 min

### What have we learned?

|   |   |
|---|---|
| <p><b>10 min.</b> Build to Express:<br/>Building Challenge Cards<sup>50</sup></p> | <ul style="list-style-type: none"> <li>• Remind Students of the <u>Build to Express Process</u><b>Error!</b><br/><b>Bookmark not defined.</b></li> <li>• <u>B2E: What have we learned?: Challenge 1</u> (8 min.)</li> </ul> |
|---|---|

### Week 6 – 10 min

### Model and Poster Planning –I

|   |   |
|---|---|
| <p><b>10 min.</b> Build to Express:<br/>Building Challenge Cards<sup>51</sup></p> | <ul style="list-style-type: none"> <li>• <u>B2E: Optional warm-up challenge: Challenge 1</u> (8 min.)</li> <li>• This OPTIONAL Challenge on the last page of the <u>FLLJr Coach’s Guide to BuildtoExpress</u> is available if children need an additional fun and creative activity to do.</li> <li>• You may choose to save this for a later session.</li> </ul> |
|---|---|

<sup>42</sup> FLLJr Coaches’ Guide to BuildtoExpress, Purpose and Rules of Build to Express, pgs. 5-6

<sup>43</sup> FLLJr Coaches’ Guide to BuildtoExpress, Appx. 2, Metaphor Exercises 1 & 2, pg 11-12

<sup>44</sup> FLLJr Coaches’ Guide to BuildtoExpress, Appx. 4, Building Challenge Cards: Introduction Challenge: 1 & 2 of 3, pg 16

<sup>45</sup> FLLJr Coaches’ Guide to BuildtoExpress, Appx. 2, Metaphor Exercise 3, pg 13

<sup>46</sup> FLLJr Coaches’ Guide to BuildtoExpress, Build to Express Process, pg. 15

<sup>47</sup> FLLJr Coaches’ Guide to BuildtoExpress, Appx. 2, Metaphor Exercise 4, pg 14

<sup>48</sup> FLLJr Coaches’ Guide to BuildtoExpress, Appx. 4, Building Challenge Cards: Our Team Name: Challenge 1–2, pg 19-20

<sup>49</sup> FLLJr Coaches’ Guide to BuildtoExpress, Appx. 4, Building Challenge Cards: Idea Generation: Challenges 1–3, pg 20-21

<sup>50</sup> FLLJr Coaches’ Guide to BuildtoExpress, Appx. 4, Building Challenge Cards: What have we learned?: Challenge 1, pg 21

<sup>51</sup> FLLJr Coaches’ Guide to BuildtoExpress, Appx. 4, Building Challenge Cards, Optional warm-up challenge:

Challenge 1, pg 24



