

Grade 4 - Science Curriculum Alignment
2022-23 FIRST LEGO League Explore Team Meeting Guide

Team Meeting Guide Outcomes	Strand	Specific Expectations	Addressed
<p>Session 1:</p> <p>Introduction - Let's Discover</p> <ul style="list-style-type: none"> Students discuss the Core Value of discovery and provide examples. <p>Team Outcomes</p> <ul style="list-style-type: none"> The team will use discovery to explore the SUPERPOWERED theme and explain what is an energy journey The team will identify different energy examples on the mat 	STEM Skills and Connections	<p>*A1.1 use a scientific research process and associated skills to conduct investigations</p> <p>*A1.3 use an engineering design process and associated skills to design, build, and test devices, models, structures, and/or systems</p> <p>*A1.4 follow established health and safety procedures during science and technology investigations</p> <p>*A1.5 communicate their findings, using science and technology vocabulary and formats that are appropriate for specific audiences and purposes</p> <p>*A3.1 describe practical applications of science and technology concepts in various occupations, including skilled trades, and how these applications address real-world problems</p> <p>*A3.2 investigate how science and technology can be used with other subject areas to address real-world problems</p>	<ul style="list-style-type: none"> • • • • • •
<p>Share</p> <ul style="list-style-type: none"> Students share what they did in the session Students explain what an energy journey is and its different parts Students show the different energy examples on the mat 	Understanding Life Systems		
	Understanding Structures and Mechanisms	<p>D1.1 assess the impacts of machines and their mechanisms on the daily lives of people in various communities</p> <p>D1.2 assess and compare the environmental impacts of using different machines designed for similar purposes</p> <p>D2.1 identify machines that are used in daily life, and describe their purposes</p>	<ul style="list-style-type: none"> • - -

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	Understanding Matter and Energy	C2.1 identify a variety of natural and artificial light sources C2.6 describe how different objects and materials interact with light and sound energy	- -
	Understanding Earth and Space Systems		

Team Meeting Guide Outcomes	Strand	Specific Expectations	Addressed
Session 2: Introduction – Go Team <ul style="list-style-type: none"> Students talk about what teamwork is and provide examples of this Core Value Team Outcomes <ul style="list-style-type: none"> The team will build the wind turbine and explore how it works The team will identify different energy sources Share	STEM Skills and Connections	*A1.1 use a scientific research process and associated skills to conduct investigations *A1.3 use an engineering design process and associated skills to design, build, and test devices, models, structures, and/or systems *A1.4 follow established health and safety procedures during science and technology investigations *A1.5 communicate their findings, using science and technology vocabulary and formats that are appropriate for specific audiences and purposes *A3.1 describe practical applications of science and technology concepts in various occupations, including skilled trades, and how these applications address real-world problems	<ul style="list-style-type: none"> • • • • •

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<p>Have the team:</p> <ul style="list-style-type: none"> ● share what they did in the session ● demonstrate how the wind turbine works ● explain what an energy source is and provide examples ● show the different energy sources on the mat 		*A3.2 investigate how science and technology can be used with other subject areas to address real-world problems	●
	Understanding Life Systems		
	Understanding Structures and Mechanisms	<p>D1.1 assess the impacts of machines and their mechanisms on the daily lives of people in various communities</p> <p>D1.2 assess and compare the environmental impacts of using different machines designed for similar purposes</p> <p>D2.1 identify machines that are used in daily life, and describe their purposes</p>	<p>●</p> <p>-</p> <p>-</p>
	Understanding Matter and Energy	<p>C1.1 assess the impacts on society of devices that use the properties of light or sound, or both</p> <p>C1.2 assess the impacts on the environment of light energy and sound energy produced by various technologies, while taking different perspectives into account</p> <p>C2.1 identify a variety of natural and artificial light sources</p>	<p>-</p> <p>-</p> <p>-</p>

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	Understanding Earth and Space Systems		
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Team Meeting Guide Outcomes	Strand	Specific Expectations	Addressed
<p>Session 3:</p> <p>Introduction – Let’s Have Fun</p> <ul style="list-style-type: none"> Teams talk about what fun is and provide examples of this Core Value <p>Team Outcomes</p> <ul style="list-style-type: none"> Teams will build the energy storage model and explore how it works Teams will identify different ways energy is stored and distributed <p>Share</p>	STEM Skills and Connections	<p>*A1.1 use a scientific research process and associated skills to conduct investigations</p> <p>*A1.3 use an engineering design process and associated skills to design, build, and test devices, models, structures, and/or systems</p> <p>*A1.4 follow established health and safety procedures during science and technology investigations</p> <p>*A1.5 communicate their findings, using science and technology vocabulary and formats that are appropriate for specific audiences and purposes</p> <p>*A3.1 describe practical applications of science and technology concepts in various occupations, including skilled trades, and how these applications address real-world problems</p> <p>*A3.2 investigate how science and technology can be used with other subject areas to address real-world problems</p>	<ul style="list-style-type: none"> • • • • • •

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<p>Have the team:</p> <ul style="list-style-type: none"> ● share what they did in the session ● demonstrate how the energy storage model works ● explain how energy is stored and distributed ● show the different energy connections on the mat 	Understanding Life Systems		
	Understanding Structures and Mechanisms	D1.1 assess the impacts of machines and their mechanisms on the daily lives of people in various communities D1.2 assess and compare the environmental impacts of using different machines designed for similar purposes	<ul style="list-style-type: none"> ● ●
	Understanding Matter and Energy	C1.1 assess the impacts on society of devices that use the properties of light or sound, or both C1.2 assess the impacts on the environment of light energy and sound energy produced by various technologies, while taking different perspectives into account C2.1 identify a variety of natural and artificial light sources	<ul style="list-style-type: none"> - - -
	Understanding Earth and Space Systems		

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Team Meeting Guide Outcomes	Strand	Specific Expectations	Addressed
<p>Session 4:</p> <p>Introduction – Let’s Innovate</p> <ul style="list-style-type: none"> Students talk about what innovation is and the team provides examples of this Core Value <p>Team Outcomes</p> <ul style="list-style-type: none"> The team will build the carousel and connect it to the energy storage model The team will identify different ways energy is consumed <p>Share</p> <p>Have the team:</p> <ul style="list-style-type: none"> share what they did in the session demonstrate how the carousel works explain what an energy consumer is and provide examples show different examples of energy consumption on the mat 	STEM Skills and Connections	<p>*A1.1 use a scientific research process and associated skills to conduct investigations</p> <p>*A1.3 use an engineering design process and associated skills to design, build, and test devices, models, structures, and/or systems</p> <p>*A1.4 follow established health and safety procedures during science and technology investigations</p> <p>*A1.5 communicate their findings, using science and technology vocabulary and formats that are appropriate for specific audiences and purposes</p> <p>*A3.1 describe practical applications of science and technology concepts in various occupations, including skilled trades, and how these applications address real-world problems</p> <p>*A3.2 investigate how science and technology can be used with other subject areas to address real-world problems</p>	<ul style="list-style-type: none"> • • • • • •
	Understanding Life Systems		
	Understanding Structures and Mechanisms	<p>D1.1 assess the impacts of machines and their mechanisms on the daily lives of people in various communities</p> <p>D1.2 assess and compare the environmental impacts of using different machines designed for similar purposes</p> <p>D2.1 identify machines that are used in daily life, and describe their purposes</p>	<ul style="list-style-type: none"> • • •

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	Understanding Matter and Energy	C1.1 assess the impacts on society of devices that use the properties of light or sound, or both C1.2 assess the impacts on the environment of light energy and sound energy produced by various technologies, while taking different perspectives into account	- -
	Understanding Earth and Space Systems		

Team Meeting Guide Outcomes	Strand	Specific Expectations	Addressed
Session 5: Introduction – Be Inclusive <ul style="list-style-type: none"> The team will talk about what inclusion is and provide examples of this Core Value Team Outcomes <ul style="list-style-type: none"> The team will build the LEGO model from the lesson and explore motor coding blocks The team will apply their coding and building skills to change the existing model 	STEM Skills and Connections	*A1.1 use a scientific research process and associated skills to conduct investigations *A1.3 use an engineering design process and associated skills to design, build, and test devices, models, structures, and/or systems *A1.4 follow established health and safety procedures during science and technology investigations *A1.5 communicate their findings, using science and technology vocabulary and formats that are appropriate for specific audiences and purposes *A3.1 describe practical applications of science and technology concepts in various occupations, including skilled trades, and how these applications address real-world problems *A3.2 investigate how science and technology can be used with other subject areas to address real-world problems	<ul style="list-style-type: none"> • • • • • •

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<p>into a wind turbine</p> <p>Share</p> <p>Have the team:</p> <ul style="list-style-type: none"> ● Share what they did in the session ● Show the motor coding skills they learned ● Demonstrate how they modified the model and code to capture the maximum amount of energy 		A2.1 write and execute code in investigations and when modelling concepts, with a focus on producing different types of output for a variety of purposes	●
	Understanding Life Systems		
	Understanding Structures and Mechanisms	<p>D1.1 assess the impacts of machines and their mechanisms on the daily lives of people in various communities</p> <p>D1.2 assess and compare the environmental impacts of using different machines designed for similar purposes</p>	<ul style="list-style-type: none"> ● ●
	Understanding Matter and Energy	<p>C1.1 assess the impacts on society of devices that use the properties of light or sound, or both</p> <p>C1.2 assess the impacts on the environment of light energy and sound energy produced by various technologies, while taking different perspectives into account</p>	<ul style="list-style-type: none"> - -

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Team Meeting Guide Outcomes	Strand	Specific Expectations	Addressed
<p>Session 6:</p> <p>Introduction – Have an Impact</p> <ul style="list-style-type: none"> ● Teams will talk about what impact is and provide examples of this Core Value <p>Team Outcomes</p> <ul style="list-style-type: none"> ● The team build the LEGO model from the lesson and explore light and sound blocks ● The team will build the motor and hub build and motorize the Explore model <p>Share</p> <p>Have the team:</p> <ul style="list-style-type: none"> ● Share what they did in the session ● Show the light and sound 	STEM Skills and Connections	<p>*A1.1 use a scientific research process and associated skills to conduct investigations</p> <p>*A1.3 use an engineering design process and associated skills to design, build, and test devices, models, structures, and/or systems</p> <p>*A1.4 follow established health and safety procedures during science and technology investigations</p> <p>*A1.5 communicate their findings, using science and technology vocabulary and formats that are appropriate for specific audiences and purposes</p> <p>*A3.1 describe practical applications of science and technology concepts in various occupations, including skilled trades, and how these applications address real-world problems</p> <p>*A3.2 investigate how science and technology can be used with other subject areas to address real-world problems</p> <p>*A2.1 write and execute code in investigations and when modelling concepts, with a focus on producing different types of output for a variety of purposes</p>	<ul style="list-style-type: none"> ● ● ● ● ● ● ●

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coding skills they learned <ul style="list-style-type: none"> Build and code the motor and hub build and motorize part of the Explore model 	Understanding Life Systems		
	Understanding Structures and Mechanisms	D2.1 identify machines that are used in daily life, and describe their purposes D2.2 identify the parts of various mechanisms and describe the purpose of each part D2.3 describe how different mechanisms transmit various types of motion, including rotary motion, from one system to another	- • •
	Understanding Matter and Energy	C1.1 assess the impacts on society of devices that use the properties of light or sound, or both C1.2 assess the impacts on the environment of light energy and sound energy produced by various technologies, while taking different perspectives into account C2.6 describe how different objects and materials interact with light and sound energy	• • •
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Team Meeting Guide Outcomes	Strand	Specific Expectations	Addressed
<p>Session 7:</p> <p>Introduction – Discovery Build</p> <ul style="list-style-type: none"> ● The team will provide examples of how they have used discovery throughout the sessions ● The team will create a build from the prototyping pieces represent this Core Value <p>Team Outcomes</p> <ul style="list-style-type: none"> ● The team will build the LEGO model from the lesson and code the robot to drive ● The team will apply their coding and building skills to change the existing robot into an electric car 	STEM Skills and Connections	<p>*A1.1 use a scientific research process and associated skills to conduct investigations</p> <p>*A1.3 use an engineering design process and associated skills to design, build, and test devices, models, structures, and/or systems</p> <p>*A1.4 follow established health and safety procedures during science and technology investigations</p> <p>*A1.5 communicate their findings, using science and technology vocabulary and formats that are appropriate for specific audiences and purposes</p> <p>*A3.1 describe practical applications of science and technology concepts in various occupations, including skilled trades, and how these applications address real-world problems</p> <p>*A3.2 investigate how science and technology can be used with other subject areas to address real-world problems</p> <p>*A2.1 write and execute code in investigations and when modelling concepts, with a focus on producing different types of output for a variety of purposes</p>	<ul style="list-style-type: none"> ● ● ● ● ● ●
<p>Share</p> <p>Have the team:</p> <ul style="list-style-type: none"> ● Share what they did in the session ● Show how they have applied coding skills learned in previous sessions to make a 	Understanding Life Systems		

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mobile robot • Demonstrate how their electric car drives on the mat	Understanding Structures and Mechanisms	D1.1 assess the impacts of machines and their mechanisms on the daily lives of people in various communities D1.2 assess and compare the environmental impacts of using different machines designed for similar purposes D2.1 identify machines that are used in daily life, and describe their purposes D2.2 identify the parts of various mechanisms and describe the purpose of each part D2.3 describe how different mechanisms transmit various types of motion, including rotary motion, from one system to another	• • • • •
	Understanding Matter and Energy		
	Understanding Earth and Space Systems		

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<p>Sessions 8 & 9:</p> <p>Introduction – Teamwork and Fun Builds</p> <ul style="list-style-type: none"> The team will provide examples of how they have used teamwork and fun throughout the sessions The team will create a build from the prototyping pieces representing this Core Value <p>Team Outcomes</p> <ul style="list-style-type: none"> The team will draw their team model design and labels its required parts The team will create their team model of a better energy journey for their community <p>Share</p> <p>Have the team:</p> <ul style="list-style-type: none"> Share what they did at the end of each session Explain the program and how it motorizes either the wind turbine or carousel Review the list of required parts and identify them on the team model Demonstrate how the team model works 	STEM Skills and Connections	<p>*A1.1 use a scientific research process and associated skills to conduct investigations</p> <p>*A1.3 use an engineering design process and associated skills to design, build, and test devices, models, structures, and/or systems</p> <p>*A1.4 follow established health and safety procedures during science and technology investigations</p> <p>*A1.5 communicate their findings, using science and technology vocabulary and formats that are appropriate for specific audiences and purposes</p> <p>*A3.1 describe practical applications of science and technology concepts in various occupations, including skilled trades, and how these applications address real-world problems</p> <p>*A3.2 investigate how science and technology can be used with other subject areas to address real-world problems</p>	<ul style="list-style-type: none"> • • • • • •
	Understanding Life Systems		
	Understanding Structures and Mechanisms	<p>D1.1 assess the impacts of machines and their mechanisms on the daily lives of people in various communities</p> <p>D1.2 assess and compare the environmental impacts of using different machines designed for similar purposes</p> <p>D2.1 identify machines that are used in daily life, and describe their purposes</p> <p>D2.2 identify the parts of various mechanisms and describe the purpose of each part</p> <p>D2.3 describe how different mechanisms transmit various types of motion, including rotary motion, from one system to another</p>	<ul style="list-style-type: none"> • • • •

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	Understanding Matter and Energy		
	Understanding Earth and Space Systems		

Team Meeting Guide Outcomes	Strand	Specific Expectations	Addressed
<p>Sessions 10 & 11:</p> <p>Introduction – Innovation and Inclusion Builds</p> <ul style="list-style-type: none"> The team will provide examples of how they have used innovation (Session 10) and inclusion (Session 11) The team will create a build from the prototyping pieces representing this Core Value <p>Team Outcomes</p> <ul style="list-style-type: none"> The team will create a plan for 	STEM Skills and Connections	<p>*A1.1 use a scientific research process and associated skills to conduct investigations</p> <p>*A1.3 use an engineering design process and associated skills to design, build, and test devices, models, structures, and/or systems</p> <p>*A1.4 follow established health and safety procedures during science and technology investigations</p> <p>*A1.5 communicate their findings, using science and technology vocabulary and formats that are appropriate for specific audiences and purposes</p> <p>*A3.1 describe practical applications of science and technology concepts in various occupations, including skilled trades, and how these applications address real-world problems</p> <p>*A3.2 investigate how science and technology can be used with other subject areas to address real-world problems</p>	<ul style="list-style-type: none"> • • • • • •

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<p>what they will include on their team poster</p> <ul style="list-style-type: none"> • The team will design and create their team poster <p>Share</p> <p>Have the team:</p> <ul style="list-style-type: none"> • Share what they did at the end of each session • Show their team poster design • Explain their team journey • Demonstrate how they will present their team poster 			
	Understanding Life Systems		
	Understanding Structures and Mechanisms		
	Understanding Matter and Energy		

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	Understanding Earth and Space Systems		
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Team Meeting Guide Outcomes	Strand	Specific Expectations	Addressed
<p>Session 12:</p> <p>Introduction – Impact Build</p> <ul style="list-style-type: none"> ● Have the team provide examples of how they have had an impact throughout the sessions ● Have the team create a build from the prototyping pieces representing this Core Value <p>Team Outcomes</p> <ul style="list-style-type: none"> ● The team will reflect on their SUPERPOWERED experience 	STEM Skills and Connections	<p>*A1.1 use a scientific research process and associated skills to conduct investigations</p> <p>*A1.3 use an engineering design process and associated skills to design, build, and test devices, models, structures, and/or systems</p> <p>*A1.4 follow established health and safety procedures during science and technology investigations</p> <p>*A1.5 communicate their findings, using science and technology vocabulary and formats that are appropriate for specific audiences and purposes</p> <p>*A3.1 describe practical applications of science and technology concepts in various occupations, including skilled trades, and how these applications address real-world problems</p> <p>*A3.2 investigate how science and technology can be used with other subject areas to address real-world problems</p>	<ul style="list-style-type: none"> ● ● ● ● ● ●

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<ul style="list-style-type: none"> The team will create a plan for what to share at their final event <p>Share</p> <p>Have the team:</p> <ul style="list-style-type: none"> Practice their team poster presentation Practice their team model presentation 	Understanding Life Systems		
	Understanding Structures and Mechanisms	D1.1 assess the impacts of machines and their mechanisms on the daily lives of people in various communities D1.2 assess and compare the environmental impacts of using different machines designed for similar purposes D2.1 identify machines that are used in daily life, and describe their purposes D2.2 identify the parts of various mechanisms and describe the purpose of each part D2.3 describe how different mechanisms transmit various types of motion, including rotary motion, from one system to another	<ul style="list-style-type: none">
	Understanding Matter and Energy	C1.1 assess the impacts on society of devices that use the properties of light or sound, or both C1.2 assess the impacts on the environment of light energy and sound energy produced by various technologies, while taking different perspectives into account	<ul style="list-style-type: none">
	Understanding Earth and Space Systems		

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