1st Grade Science in the Toy Box Unit
Unit Blueprint

Section	Essential & Unit Questions (for conceptual benchmarks)	Benchmarks (**Bolded** sections indicate portion of benchmark addressed)	Formative and Summative Assessments (Unless noted as a Summative Assessment, the assessments are formative and should be used to guide teaching and learning.)	Using Assessments to Monitor Student Learning
Set the Stage!	How do the parts of a system (toy) work together?	1A(K-2)#1: Most things are made of parts. 11A(K-2)#2: Something may not work if some of its parts are missing. 11A(K-2)#3: When parts are put together, they can do things that they couldn't do by themselves.	Class discussion of questions in *Guide* section (See bolded questions on page C8 in Teacher's Guide.)	• Do students recognize that toys are made of parts? • Do students know that some or all parts of a toy are necessary for it to work? • Do students understand that the parts work together to allow the toy to work? Do students understand that the parts alone will not work, but together they make a working toy?
Section 1, Lesson 1: Pushes and Pulls	How can we make something change the way it's moving? What are some ways to describe something?	4F(K-2)#2: The way to change how something is moving is to give it a push or a pull. 11B(K-2)#3: One way to describe something is to say how it is like something else.	Class list of and discussion about push words and pull words (See *Develop Science Processes* and *Assessment Tip* on page C13 in Teacher's Guide.)	• Do the students know the difference between a push and a pull? • Do students recognize that people can make things move with pushes and pulls? • Can the students use their own words (ones not found in the poem) to describe pushes and pulls?

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Section 1, Lesson 1: (continued) ***Make a Travois***	How can we make things easier to move? (create a tool to drag things instead of carrying them) How are model toys like the real thing? How are they different from the real thing? (relate to the model travois) Why are models helpful?	3A(K-2) #1: Tools are used to do things better or more easily and to do things that could otherwise not be done at all. 11B(K-2)#1: Many of the toys children play with are like real things only in some ways. They are not the same size, are missing many details, or are not able to do all of the same things. 11B(K-2)#2: A model of something is different from the real thing but can be used to learn something about the real thing.	Class construction, discussion, and demonstration of travois model (See *Make A Travois* on page C13 in Teacher's Guide.) *Note: A travois can be illustrated by pulling/dragging a stack of books on a blanket across the floor. The demonstration does not need to be elaborate. The goal is for students to see that they can move the stack of books that they couldn't ordinarily move without some type of tool.*	• Do students recognize that a tool can make it easier to move an object? • Can students generate examples of tools that can assist them in moving objects more easily? • Can students explain how the class travois is like the real thing and different from the real thing?

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Section 1, Lesson 2: Gentle Push, Hard Push	How do the parts of a system (toy) work together?	1A(K-2)#1: Most things are made of parts. 11A(K-2)#2: Something may not work if some of its parts are missing. 11A(K-2)#3: When parts are put together, they can do things that they couldn't do by themselves. 12C(K-2)#3: Make something out of paper, cardboard, wood, plastic, metal, or existing objects that can actually be used to perform a task.	Construction, discussion and demonstration of *Go for the Gold* game Note: Benchmarks not addressed in Teacher's Guide. Teachers must deliberately have a class discussion about the benchmarks and how they relate to the construction and playing of *Go for the Gold* game.	• Can students list the different parts that make up the Go for the Gold game? • Do students recognize that if they were missing a part of the game (the cap, the pencil, the colored target) they could not play it correctly? • Are students able to use the parts correctly to make the game?
	How can we change the way something is moving?	4F(K-2)#2: The way to change how something is moving is to give it a push or a pull. 11C(K-2)#3: **Things can change in different ways such as** size weight, color and **movement**. Some small things can be detected by taking measurements.	Class discussion and playing of *Go for the Gold* game	• Can students explain how they change the movement of the cap (gentle or hard push)? • Are students able to predict about how much of a push they will need to make the cap move to the gold area of the game?

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Section 1, Lesson 3: Wheel-a-Rama (Continued on next page)	How can we make things easier to move? (add wheels)	3A(K-2) #1: Tools are used to do things better or more easily and to do things that could otherwise not be done at all.	Class brainstorming list and class discussion of list (See *Introduce* and the last paragraph under *Guide* on page C16 in Teacher's Guide.) Class discussion about results of student experiment with model wheels during *Make it Roll* activity and *Reflect* section (See pages C16-17 in Teacher's Guide.)	• Do students know that adding wheels makes it easier for an object to move? • Can students explain how the pencils placed under the book in Step 2 of the activity are like wheels? • Do students conclude that without wheels it takes more force to push something? • Are students able to recognize that wheels are a tool used to move many things more easily?

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Section 1, Lesson 3: Wheel-a-Rama (Continued from previous page)	How are model toys like the real thing? How are they different from the real thing? Why are models helpful? (relate to the model car) How do the parts of a system (toy) work together? What are some ways to describe something? Why is it helpful to work in groups?	11B(0-2)#1: Many of the toys children play with are like real things only in some ways. They are not the same size, are missing many details, or are not able to do all of the same things. 11B(0-2)#2: A model of something is different from the real thing but can be used to learn something about the real thing 11A(K-2)#1: Most things are made of parts. 11A(K-2)#2: Something may not work if some of its parts are missing. 11A(K-2)#3: When parts are put together, they can do things that they couldn't do by themselves. 11D(K-2)#1: Things in nature and **things people make have very different sizes, weights, ages and speeds.** 12D(K-2)#1 Describe and compare things in terms of number, shape, texture, size, weight, color and motion. 1C(K-2)#2: **In doing science, it is often helpful to work with a team and to share findings with others.** All teams members should reach their own individual conclusion, however, about what the findings mean. 1C(K-2): Everybody can do science and invent things and ideas.	**Performance Assessment:** Drawing or plan of toy car student plans to build; building/construction of toy car; presentation and demonstration of toy to class *Note: Benchmarks not addressed in Teacher's Guide. Teachers must deliberately have a class discussion about the benchmarks and how they relate to the construction and functioning of the cars.*	• Can students use different materials to make a workable car? • Can students make model wheels that work like the real thing? • Do students know that certain parts must work together to make the car move? (Example: students need an axle and wheels) • Do students recognize that if they are missing essential parts of the car it will not operate properly? • Do students recognize groups made different types of workable cars (colors, sizes, speeds)? • Can students describe and compare each other's cars? • Do students recognize the value of working in a group?

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Section 2, Lesson 1: Air and Water	What makes things move? (Lesson emphasizes pushes by air and wind.)	Related to 4F(K-2)#2: The way to change how something is moving is to give it a push or a pull.	Discussion about air lifting (pushing) during the demonstration in *Develop Science Processes* (See page C23 in Teacher's Guide.)	Do students understand that air (example: blowing on something) and water can make things move?
Section 2, Lesson 2: Huff and Puff	What are the different ways things move? How can we change the way something is moving? How do the parts of a system (toy) work together?	4F(K-2)#1: **Things move in many different ways, such as** straight, zigzag, **round and round**, back and forth, **and fast and slow.** 4F(K-2)#2: The way to change how something is moving is to give it a push or a pull. 9B(K-2)#2: Sometimes changing one thing causes a change in something else. 1A(K-2)#1: Most things are made of parts. 11A(K-2)#3: When parts are put together, they can do things that they couldn't do by themselves.	*Blowing Around* activity and class discussion (See *Guide* on pages C24-25 in Teacher's Guide.) *Note: Many benchmarks are not addressed in Teacher's Guide. Teachers must deliberately have a class discussion about the benchmarks and how they relate to the pinwheels.*	• Do students know that different parts are needed to make a working pinwheel? • Do students recognize that if they are missing a part of the pinwheel it will not operate properly? • Do student know that moving air causes the pinwheel to turn? • Do students have some understanding of how changing the force of the blowing air changes the speed at which the pinwheel turns? • Do students understand that blowing in a different direction changes the direction the pinwheel is turning?

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Section 2, Lesson 3 Gone With the Wind **Teacher Resources:** 		11A(K-2)#1: Most things are made of parts. 11A(K-2)#3: When parts are put together, they can do things that they couldn't do by themselves.	Teacher observations of students constructing sail cars (See page *Activity Tips* on page C27 in Teacher's Guide.)	• Do students know that different parts are needed to make their cars with sails?
		9B(K-2)#2: Sometimes changing one thing causes a change in something else. 11C(K-2)#3: Things can change in different ways such as **size,** weight, color and **movement.** Some small things can be detected by taking measurements. 12B(K-2)#1: Use whole numbers and simple, everyday fractions in ordering, counting, identifying, measuring, and describing things and experiences.	*Sail My Car Data Sheet* (available under "Teacher Resources" on electronic curriculum) Discussion of experiment results, focusing on how changing the size of the sail affects the way the sail car moves.	• Do students understand that changing the size of the sail affects the distance the car travels? • Do students use the data to compare the different sails?
		Precursor to 12E(3-5)#2: Recognize when comparisons might not be fair because some conditions are not kept the same.	Class discussion about results and what makes a fair test (See *Develop Science Processes* on page C26 in Teacher's Guide)	• Do students recognize parts of the experiment that stayed the same (examples: fan, car, starting point, amount of clay)? • Do students understand why everything but the size of sail needs to stay the same?
Section 3, Lesson 1: Catch of the Day		Related to 4G(K-2)#2: Magnets can be used to make some things move without being touched.	Class discussion about student observations of the pull magnets can exert on objects in *Address Misconceptions* (See page C32 in Teacher's Guide.)	• Do students know that a magnet can move an object without touching it?
Section 3, Lesson 2: Magnet Puppet Show (Omit Lesson)		Lesson is so time consuming that it does not warrant teaching it.		

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Magnet Race (Omit lesson)		Lesson addresses 3-5 benchmarks		
Section 3, Lesson 3: Magnets in Surprising Places (Omit lesson)		Lesson addresses 3-5 benchmarks		
Section 4, Lesson 1: X Marks the Spot	What happens to an object if it is not fully supported or held up? When repeating an experiment, what should we expect to happen?	4G(K-2)#1: Things near the earth fall to the ground unless something holds them up. 1A(K-2)#1: When a science investigation is done the way it was done before, we expect to get a very similar result.	X Marks the Spot Activity and class discussion (See pages C44-45 in Teacher's Guide.)	• Do students know that an object will fall to the ground if nothing will hold it up? • Do students know that if the ball is released in the same manner it should land in the same spot?
Section 4, Lesson 2: Fingertip Balance (Omit lesson)		Lesson is taught in second grade.		

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Section 4, Lesson 3: Gravity Go-Cars **Teacher Resources:** 	What happens to an object if it is not fully supported or held up?	Application of 4G(K-2)#1: Things near the earth fall to the ground unless something holds them up.	Class discussion of what causes the car to move down the ramp	Do students understand that a human push is not necessary to make the car move? (Gravity and the ramp not fully supporting the car cause the car to move downward)
		9B(K-2)#2: Sometimes changing one thing causes a change in something else. 11C(K-2)#3: Things can change in different ways such as **size,** weight, color and **movement.** Some small things can be detected by taking measurements. 12B(K-2)#1: Use whole numbers and simple, everyday fractions in ordering, counting, identifying, measuring, and describing things and experiences.	*Gravity Go Cars Data Sheet* (available on under "Teacher Resources" on electronic curriculum) Discussion of experiment results, focusing on how changing the height of the ramp affects the distance the car moves	• Do students understand that changing the height of the ramp (number of books) affects the distance the car travels? • Do students use the data to compare the different ramps?
		Precursor to 12E(3-5)#2: Recognize when comparisons might not be fair because some conditions are not kept the same.	Class discussion about results and what makes a fair test (See *Develop Science Processes* on page C48 in Teacher's Guide)	• Do students recognize parts of the experiment that stayed the same (examples: car, starting point)? • Do students understand why everything but the angle of the ramp must stay the same?
Section 4: Lesson 4 Omit Lesson		Lesson deals extensively with gravity, which is a 3-5 benchmark.		
Section 5: Lessons 1-3 Omit Lessons		Lessons do not address benchmarks.		

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Summative Assessment **Teacher Resources:** 	How do the parts of a system (toy/game) work together? What makes things move? How can we change the way something is moving?	11A(K-2)#1: Most things are made of parts. 11A(K-2)#3: When parts are put together, they can do things that they couldn't do by themselves. 11A(K-2)#2: Something may not work if some of its parts are missing. 4F(K-2)#1: Things move in many different ways, such as straight, zigzag, round and round, back and forth, and fast and slow. 4F(K-2)#2: The way to change how something is moving is to give it a push or a pull. 9B(K-2)#2: Sometimes changing one thing causes a change in something else.	**Summative Assessment:** Jamboree/Toy Fair or Individual Interviews with students about the parts/functioning of a specific toy or game. *Note: The Jamboree/Toy Fair can be as simple or elaborate as the individual teacher or team chooses. The desired outcome of such an event is for students to demonstrate their knowledge of the benchmarks. An alternative to a jamboree/fair is to individually interview students about the parts and motion of a particular toy/game.* (A sample checklist is available under "Teacher Resources" on the electronic curriculum.)	• Can students identify the parts of the toy or game that are necessary for it to work? • Can students describe how the toy or moving parts in the game move? • Can students explain how to cause the toy or game to move and/or change the way it is moving?