

CHECKLIST OF CA SCIENCE STANDARDS FOR GRADE 2

BALANCE AND MOTION

PURPOSE

The checklist is

- A sequential listing of instructional activities through each module.
- A place to document teaching and coverage of CA standards.
- A correlation tool showing where each CA standard is addressed.

Instructional sequence. The Checklist displays the sequence of instruction as the module progresses through 1) active investigation, 2) reading, and 3) assessment. The chart is broken out by investigation, part, and session number.

Most grade 2 sessions start with active investigation, which may include teacher demonstration, hands-on activity in small groups with guiding questions, class discussion, teacher explanation, and vocabulary reinforcement. At certain times in an investigation, students read (or are read to) and discuss the reading as a class. Students use their science notebooks to respond in words or drawings to review questions focusing on the key science concepts in the investigation. FOSS Teacher Guide and *Science Resources* book pages where CA standards are addressed are referenced through the instructional sequence.

Documentation of teaching and coverage. The Checklist helps teachers keep track of the class's progress through the module. Teachers can copy the Checklist and record the date of each instruction session. The completed Checklist can serve as a planning tool for teaching the module a second time.

Correlation with CA standards. The Checklist allows teachers to identify all the places in the teacher guide and *Science Resources* book where any specific CA standard is addressed. Teachers can quickly find the page references for any point in the instruction. The Checklist provides a table of evidence showing where the CA standards are addressed through multiple exposures and with a minimum of 20–25% hands-on activities integrated cohesively into the instruction.



FOSS AND CALIFORNIA STANDARDS

The **Balance and Motion Module** supports the following Physical Sciences Content Standards for grade 2.*

PS1 *The motion of objects can be observed and measured. As a basis for understanding this concept:*

- PS1a *Students know* the position of an object can be described by locating it in relation to another object or to the background.
- PS1b *Students know* an object's motion can be described by recording the change in position of the object over time.
- PS1c *Students know* the way to change how something is moving is by giving it a push or a pull. The size of the change is related to the strength, or the amount of force, of the push or pull.
- PS1d *Students know* tools and machines are used to apply pushes and pulls (forces) to make things move.
- PS1e *Students know* objects fall to the ground unless something holds them up.
- PS1f *Students know* magnets can be used to make some objects move without being touched.
- PS1g *Students know* sound is made by vibrating objects and can be described by its pitch and volume.

The **Balance and Motion Module** supports the following Investigation and Experimentation Content Standards for grade 2.*

INVESTIGATION AND EXPERIMENTATION

I&E4 *Scientific progress is made by asking meaningful questions and conducting careful investigations. As a basis for understanding this concept and addressing the content in the other three strands, students should develop their own questions and perform investigations. Students will:*

- I&E4a Make predictions based on observed patterns and not random guessing.
- I&E4b Measure length, weight, temperature, and liquid volume with appropriate tools and express those measurements in standard metric system units.
- I&E4d Write or draw descriptions of a sequence of steps, events, and observations.
- I&E4g Follow oral instructions for a scientific investigation.

* *Science Content Standards for California Public Schools: Kindergarten through Grade Twelve* (Sacramento: California Department of Education, 2000).



Checklist of CA Science Standards for Balance and Motion Investigation 1

Content Standard Focus	Investigation 1: The First Straw	Teacher Guide (Science Resources) pages
<i>I&E4b</i>	Part 1: <i>Finding a Standard</i>—2 sessions	43–50
DATE OF INSTRUCTION	SESSION 1	
	Teacher-led discussion and demonstration (measure, units, straws, length, width)	46
	Hands-on with straws and measuring desks	46
	Teacher-led class discussion and demonstration (results on chart, discrepant event, meter, distance, centimeters)	46–47
	Hands-on with meter tapes and straws	48
DATE OF INSTRUCTION	SESSION 2	
	Teacher demonstration and discussion (paper meter tapes, using meters or centimeters to measure)	49–50
	Hands-on with making paper meter tapes	49
	Vocabulary instruction and content review	50
<i>I&E4a, I&E4b</i>	Part 2: <i>Estimating and Measuring</i>—1 session	51–54
DATE OF INSTRUCTION	SESSION 1	
	Teacher-led class discussion (estimate)	53
	Hands-on with classroom items and paper meter tapes	53
	Writing in notebook (How Long Is It?)	53
	Embedded assessment (teacher observation)	53
	Teacher-led discussion (discuss results)	54
	Embedded assessment (notebook sheet)	54
	Vocabulary instruction and content review	54
<i>I&E4a, I&E4b</i>	Part 3: <i>Making Comparisons</i>—1 session	55–59
DATE OF INSTRUCTION	SESSION 1	
	Hands-on with measure height with partner, line up	57
	Teacher-led class discussion (line up, arm span, other comparisons, results)	57–59
	Writing in notebook (Making Comparisons)	58–59
	Vocabulary instruction and content review	59



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Checklist of CA Science Standards for Balance and Motion Investigation 2

Content Standard Focus	Investigation 2: Balance	Teacher Guide (Science Resources)
PS1a, I&E4g	Part 1: <i>Trick Crayfish</i>—1 session	72–77
DATE OF INSTRUCTION	SESSION 1	
	Teacher-led discussion and demonstration (balancing tagboard crayfish, clothespins)	74
	Hands-on with crayfish and clothespins	74
	Teacher-led class discussion and explanation (results, balance, counterweight)	75
	Hands-on with counterweights	75
	Teacher-led class discussion (results)	76
	Vocabulary instruction and content review	77
PS1a, I&E4a, I&E4g	Part 2: <i>Triangle and Arch</i>—1 session	78–82
DATE OF INSTRUCTION	SESSION 1	
	Teacher-led class discussion and demonstration (review, new shapes, craftsticks, tape)	80
	Hands-on with shapes, craftsticks	81
	Writing in notebook (Stable Positions)	81
	Embedded assessment (notebook sheet)	81
	Hands-on with materials	82
	Vocabulary instruction and content review	82
PS1a, I&E4a, I&E4d, I&E4g	Part 3: <i>The Pencil Trick</i>—2 sessions	83–89 (3–10)
DATE OF INSTRUCTION	SESSION 1	
	Teacher-led class discussion and demonstration (review, picture-balancing task, craftsticks, tape)	85
	Hands-on with pencil and clothespin balancing	85
	Teacher-led class discussion and demonstration (real-pencil balancing challenge, wire, clothespin, craftstick)	86
	Hands-on with pencil and clothespin balancing	86–87
	Teacher-led class discussion (results)	87
	Vocabulary instruction and content review	87
DATE OF INSTRUCTION	SESSION 2	
	Student reading, discussion, introduce glossary	88–89 (3–10)
PS1a, I&E4b, I&E4g	Part 4: <i>Mobiles</i>—1 session	90–94
DATE OF INSTRUCTION	SESSION 1	
	Teacher-led class discussion and demonstration (mobile, mobile materials, mobile posters)	93
	Hands-on with mobiles	93–94
	Vocabulary instruction and content review	94



Checklist of CA Science Standards for Balance and Motion Investigation 3

Content Standard Focus	Investigation 3: Spinners	Teacher Guide (Science Resources) pages
PS1a, PS1b, PS1c, I&E4a, I&E4g	Part 1: Tops—3 sessions	108–116 (11–15)
DATE OF INSTRUCTION	SESSION 1	
	Teacher introduction and demonstration (motion, tops, shaft, disks, force)	111–112
	Hands-on with top materials	111–112
DATE OF INSTRUCTION	SESSION 2	
	Teacher-led class discussion and demonstration (“designs on tops”)	112
	Hands-on with tops and Spinning Design sheet	113
	Embedded assessment (teacher observation)	113
	Teacher-led class discussion (results)	113
	Vocabulary instruction and content review	114
DATE OF INSTRUCTION	SESSION 3	
	Student reading with discussion questions	115 (11–15)
PS1a, PS1c, I&E4b, I&E4g	Part 2: Zoomers—1 session	117–122
DATE OF INSTRUCTION	SESSION 1	
	Teacher-led class discussion and demonstration (review spinning, rotate, zoomers, knot tying)	120
	Hands-on with zoomer materials	121
	Teacher explanation (force, speed, spin)	121
	Vocabulary instruction and content review	122
PS1a, PS1e, I&E4a, I&E4g	Part 3: Twirlers—3 sessions	123–130 (16–20)
DATE OF INSTRUCTION	SESSION 1	
	Teacher-led discussion and demonstration (review spinning, new challenge with straw and wings)	126
	Hands-on with twirler materials, Twirler Wings sheet	126–127
	Embedded assessment (teacher observation)	127
	Teacher-led class discussion (gravity, twirlers, shareresults)	127–128
DATE OF INSTRUCTION	SESSION 2	
	Teacher demonstration (twirly bird, paper clip)	128
	Hands-on with materials and Twirly Bird pattern	128
	Teacher-led class demonstration (twirly birds)	128
	Vocabulary instruction and content review	129
DATE OF INSTRUCTION	SESSION 3	
	Student reading and discussion questions	130 (16–20)
	Writing in notebook (review questions)	130



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Checklist of CA Science Standards for Balance and Motion Investigation 4

Content Standard Focus	Investigation 4: Rollers	Teacher Guide (Science Resources) pages
PS1a, PS1b, PS1c, PS1e, I&E4a	Part 1: Rolling Wheels—1 session	140–146
DATE OF INSTRUCTION	SESSION 1	
	Teacher-led class discussion and demonstration (review spinning, wheels, ramp, working with partners)	143
	Hands-on with rolling wheels materials	143
	Teacher-led class discussion and demonstration (results, axles, tricky rollers, small wheels)	143–144
	Hands-on with wheel-construction materials	144–145
	Teacher-led class discussion (results, show and tell)	144–145
	Vocabulary instruction and content review	146
PS1a, PS1b, PS1c, PS1e, I&E4a	Part 2: Rolling Cups—2 sessions	147–153 (21–27)
DATE OF INSTRUCTION	SESSION 1	
	Teacher-led class discussion and demonstration (review rolling, introduce cups and ramps)	149
	Hands-on with “cup-rolling” materials	149
	Teacher-led class discussion (park-the-car, fall-on-your-face, go straight, more cups, pennies)	149–150
	Hands-on with “cup-rolling” materials	150
	Embedded assessment (teacher observation)	151
	Teacher-led class discussion (show and tell, weight)	151
	Vocabulary instruction and content review	152
DATE OF INSTRUCTION	SESSION 2	
	Student reading and discussion questions	153 (21–27)
PS1a, PS1b, I&E4a, I&E4b	Part 3: Rolling Spheres—2 sessions	154–160
DATE OF INSTRUCTION	SESSION 1	
	Teacher introduction, demonstration, observation (sphere, marble, cup, lid, runways, challenges)	156–158
	Hands-on with runway materials	156–158
	Teacher-led class discussion (show and tell)	158
DATE OF INSTRUCTION	SESSION 2	
	Teacher-led class discussion (long runway)	159
	Hands-on with runway materials	159
	Embedded assessment (notebook sheet)	159
	Vocabulary instruction and content review	160



Checklist of CA Science Standards for Balance and Motion Investigation 5

Content Standard Focus	Investigation 5: Back and Forth	Teacher Guide (<i>Science Resources</i>) pages
PS1g	Part 1: Sound and Vibrations—1 session	171–181
DATE OF INSTRUCTION	SESSION 1	
	Teacher introduction (motion, cups, rubberband, stick)	176
	Hands-on with sound-vibration materials	176–177
	Teacher-led class discussion (kinds of motion, three observations, vibration, sound, door fiddle, spoon gong, tuning fork, summarize vibration, sound, motion)	176–180
	Hands-on with sound-vibration materials	180
	Vocabulary instruction and content review	181
PS1g, I&E4a, I&E4g	Part 2: Length and Pitch—2 sessions	182–190 (28–32)
DATE OF INSTRUCTION	SESSION 1	
	Teacher-led class discussion (review vibration, sound qualities)	185
	Hands-on with cups, rubberbands, sticks	185
	Teacher-led class discussion (door fiddle, pitch, comparative pitch, xylophone, kalimba, rules)	186–187
	Hands-on with xylophone and kalimba sound challenges	187
	Writing in notebook (Kalimba and Xylophone Sheets)	188
	Embedded assessment (notebook sheet)	188
	Vocabulary instruction and content review	189
DATE OF INSTRUCTION	SESSION 2	
	Student reading and discussion questions	190 (28–32)
	Writing in notebook (review questions)	190



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Checklist of CA Science Standards for Balance and Motion Investigation 6

Content Standard Focus	Investigation 6: Magnets and Tools	Teacher Guide (<i>Science Resources</i>) pages
PS1f, I&E4a, I&E4g	Part 1: Magnets—2 sessions	199–206 (33–37)
DATE OF INSTRUCTION	SESSION 1	
	Teacher demonstration (magnets, tongue depressors, rubber bands, string, straw, paper clips)	201
	Hands-on with magnets	201
	Teacher-led class discussion and demonstration (magnetic-force activities, posters, floating paper clip)	201–202
	Hands-on with magnets and paperclips	202–203
	Teacher-led class discussion (results, show-me, review magnet concepts, force, push and pull)	203–204
	Vocabulary instruction and content review	205
DATE OF INSTRUCTION	SESSION 2	
	Student reading with discussion questions	206 (33–37)
PS1d	Part 2: Tools and Machines—3 sessions	207–211 (38–42)
DATE OF INSTRUCTION	SESSION 1	
	Teacher-led class discussion (tools, machines)	209
	View and discuss video (<i>All about Simple Machines</i>)	209
	Vocabulary instruction and content review	210
DATE OF INSTRUCTION	SESSION 2	
	Student reading and discussion questions	211 (38–42)
	Writing in notebook (review questions)	211
	Embedded assessment (notebook sheet)	211
DATE OF INSTRUCTION	SESSION 3	
	End-of-Module Assessment	211