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Components: Student Edition (SE); Teacher Wraparound Edition (TWE); Reading Essentials (RE); Science Notebook (SN); Chapter Resource Books; CA Color Transparencies; CA 4-in-1 Lab Manual; CA Science Activities for Advanced Learners; CA Culturally Responsive Teaching: Activities for Teaching; CA Chapter Outlines for Teaching; CA Language Arts Support for Science; CA School-to-Home Connection Activities; CA Mathematics Skill Activities; CA Reading and Writing Skill Activities; Strategies for Success; CA Guide to Daily Intervention; Performance Assessment in the Science Classroom; Lab Management and Safety; ELL Strategies for Science; ActiveFolders; CA Student Tech Tools; CA Teacher Tech Tools; Super DVD; What's Science Got to do with It? DVD

Grade Level(s): 8

Standards Map – Basic Comprehensive Program
Science
Grade – Eight
Focus on Physical Sciences

			PUBLISHER CITATIONS		**IMAP/CRP USE ONLY** Meets Standard		
Grade	**Standard #**	**Text of Standard**	**Primary Citations**	**Supporting Citations**	**Y**	**N**	**IMAP/CRP Notes**
MOTION							
8	1	**The velocity of an object is the rate of change of its position. As a basis for understanding this concept:**					
8	1.a	*Students know* position is defined in relation to some choice of a standard reference point and a set of reference directions.	**SE:** **48–49**	**SE:** **51–52, 54, 55, 81** **TWE:** **48–50** **RE: Ch. 1, Less. 2** **SN: Ch. 1, Less. 2**			
8	1.b	*Students know* that average speed is the total distance traveled divided by the total time elapsed and that the speed of an object along the path traveled can vary.	**SE:** average speed **58** speed can vary **57**	**SE:** **61, 63, 66, 68, 80, 81, 83, 167** **TWE:** **57–59** **RE: Ch. 1, Less. 1, 2** **SN: Ch. 1, Less.**			

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				1, 2			
8	1.c	*Students know* how to solve problems involving distance, time, and average speed.	**SE:** **58, 62**	**SE:** **61, 63, 67, 80–83, 123** **TWE:** **58–59, 62** **RE: Ch. 1, Less. 2** **SN: Ch. 1, Less. 2**			
8	1.d	*Students know* the velocity of an object must be described by specifying both the direction and the speed of the object.	**SE:** **59**	**SE:** **61, 82, 83, 89, 107, 108, 110, 123, 167** **TWE:** **59–60** **RE: Ch. 1, Less. 2** **SN: Ch. 1, Less. 2**			
8	1.e	*Students know* changes in velocity may be due to changes in speed, direction, or both.	**SE:** **60**	**SE:** **61, 80–83, 92, 93, 107, 108, 109, 110, 167** **TWE:** **60** **RE: Ch. 1, Less. 2** **SN: Ch. 1, Less. 2**			
8	1.f	*Students know* how to interpret graphs of position versus time and graphs of speed versus time for motion in a single direction.	**SE:** position versus time graphs **64–68,** speed versus time graphs **69**	**SE:** **70–72, 80, 81, 83** **TWE:** **64–70** **RE: Ch. 1, Less. 3** **SN: Ch. 1, Less. 3**			

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FORCES							
8	2	**<u>Unbalanced forces cause changes in velocity</u>. As a basis for understanding this concept:**					
8	2.a	*Students know* a force has both direction and magnitude.	**<u>SE:</u> 88–91**	**<u>SE:</u> 94, 97, 98, 99, 100, 101, 102, 103, 105, 122–124** **<u>TWE:</u> 88–91** **<u>RE:</u> Ch. 2, Less. 1** **<u>SN:</u> Ch. 2, Less. 1**			
8	2.b	*Students know* when an object is subject to two or more forces at once, the result is the cumulative effect of all the forces.	**<u>SE:</u> 90, 91**	**<u>SE:</u> 92, 94, 99, 100, 102, 103, 105, 106–108, 122, 124, 163, 167** **<u>TWE:</u> 90–92** **<u>RE:</u> Ch. 2, Less. 1** **<u>SN:</u> Ch. 2, Less. 1**			
8	2.c	*Students know* when the forces on an object are balanced, the motion of the object does not change.	**<u>SE:</u> 92–93**	**<u>SE:</u> 94, 95, 99, 100, 101, 102, 103, 105, 112, 113, 122–125, 167, 462, 468** **<u>TWE:</u> 92–94** **<u>RE:</u> Ch. 2, Less. 1** **<u>SN:</u> Ch. 2, Less. 1**			

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8	2.d	*Students know* how to identify separately the two or more forces that are acting on a single static object, including gravity, elastic forces due to tension or compression in matter, and friction.	**SE:** gravity **96–98,** tension **101** compression **101–102** friction **99–100**	**SE:** **102–106, 116–117, 122–125, 163** **TWE:** **96–100, 102** **RE: Ch. 2, Less. 2** **SN: Ch. 2, Less. 2**			
8	2.e	*Students know* that when the forces on an object are unbalanced, the object will change its velocity (that is, it will speed up, slow down, or change direction).	**SE:** **92, 106–108**	**SE:** **96, 110, 114, 122–124, 167** **TWE:** **92, 106–109** **RE: Ch. 2, Less. 3** **SN: Ch. 2, Less. 3**			
8	2.f	*Students know* the greater the mass of an object, the more force is needed to achieve the same rate of change in motion.	**SE:** **109**	**SE:** **112–114, 122–124** **RE: Ch. 2, Less. 3** **SN: Ch. 2, Less. 3**			
8	2.g	*Students know* the role of gravity in forming and maintaining the shapes of planets, stars, and the solar system.	**SE:** **467–470**, **519–527**	**SE:** **96–98, 104, 122–124, 167, 501, 502, 534, 542, 545, 547** **TWE:** **467–469, 520–523, 525–526** **RE: Ch. 11, Less. 1, 2; Ch. 12, Less. 2, 3** **SN: Ch. 11, Less. 1, 2; Ch. 12, Less. 2, 3**			

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STRUCTURE OF MATTER							
8	3	**Each of the more than 100 elements of matter has distinct properties and a distinct atomic structure. All forms of matter are composed of one or more of the elements. As a basis for understanding this concept:**					
8	3.a	*Students know* the structure of the atom and know it is composed of protons, neutrons, and electrons.	**SE:** **175, 182–193**	**SE:** **171, 176–179, 180, 181, 194, 203–205, 210–213, 228, 246–249, 331, 373** **TWE:** **175, 182–193** **RE: Ch. 4, Less. 1, 2** **SN: Ch. 4, Less. 1, 2**			
8	3.b	*Students know* that compounds are formed by combining two or more different elements and that compounds have properties that are different from their constituent elements.	**SE:** forming compounds **218–222, 225, 227** properties of compounds **220, 222, 342**	**SE:** **215, 228, 229, 233, 235–237, 239, 246–249, 327, 350, 354, 356, 357, 372, 375, 381** **TWE:** **218–222, 225–227** **RE: Ch. 5, Less. 1, 2** **SN: Ch. 5, Less. 1, 2**			

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8	3.c	*Students know* atoms and molecules form solids by building up repeating patterns, such as the crystal structure of NaCl or long-chain polymers.	**SE:** NaCl **232–234** polymers **235–236**	**SE:** **228, 237, 240–241, 246–249, 327, 438–440** **TWE:** **232–236** **RE: Ch. 5, Less. 2** **SN: Ch. 5, Less. 2**			
8	3.d	*Students know* the states of matter (solid, liquid, gas) depend on molecular motion.	**SE:** **255–259, 264–269**	**SE:** **260, 261, 263, 273, 274, 282–285, 331** **TWE:** **255–259, 264–269** **RE: Ch. 6, Less. 1, 2** **SN: Ch. 6, Less. 1, 2**			
8	3.e	*Students know* that in solids the atoms are closely locked in position and can only vibrate; in liquids the atoms and molecules are more loosely connected and can collide with and move past one another; and in gases the atoms and molecules are free to move independently, colliding frequently.	**SE:** solids **256** liquids **257** gases **258–259**	**SE:** **251, 265, 266–269, 273, 275, 282–285** **TWE:** **256–259** **RE: Ch. 6, Less. 1, 2** **SN: Ch. 6, Less. 1, 2**			

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8	3.f	*Students know* how to use the periodic table to identify elements in simple compounds.	**SE: 195–196, 203, 290–294, 298**	**SE: 202, 211, 224, 247, 260, 287, 295–297, 299, 300, 328, 350** **TWE: 195–196, 203, 290–294, 298** **RE: Ch. 4, Less. 3; Ch. 5, Less. 1** **SN: Ch. 4, Less. 3; Ch. 5, Less. 1**			
EARTH IN THE SOLAR SYSTEM (EARTH SCIENCES)							
8	4	**The structure and composition of the universe can be learned from studying stars and galaxies and their evolution. As a basis for understanding this concept:**					
8	4.a	*Students know* galaxies are clusters of billions of stars and may have different shapes.	**SE: 528–537**	**SE: 542, 543, 545, 547** **TWE: 528–535** **RE: Ch. 12, Less. 1, 3** **SN: Ch. 12, Less. 1, 3**			
8	4.b	*Students know* that the Sun is one of many stars in the Milky Way galaxy and that stars may differ in size, temperature, and color.	**SE: 508–517** Milky Way galaxy **530**	**SE: 516, 519–527, 534, 542–545, 547** **TWE: 508–516** **RE: Ch. 12, Less. 1–3**			

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				SN: Ch. 12, Less. 1–3			
8	4.c	*Students know* how to use astronomical units and light years as measures of distances between the Sun, stars, and Earth.	**SE:** astronomical units **466** light years **509**, **531**, **535**	**SE:** **470, 479, 481, 491, 494–495, 500, 501, 503, 513–514, 520, 534, 542, 544, 545, 547** **TWE:** **466, 509** **RE: Ch. 11, Less. 1, 3; Ch. 12, Less. 1, 3** **SN: Ch. 11, Less. 1, 3; Ch. 12, Less. 1, 3**			
8	4.d	*Students know* that stars are the source of light for all bright objects in outer space and that the Moon and planets shine by reflected sunlight, not by their own light.	**SE:** Moon **474–477** planets **462** stars **508–517, 519–527**	**SE:** **470, 488, 500–503, 516, 542–545, 547** **TWE:** **462, 474–477, 508–514, 519–527** **RE: Ch. 11, Less. 2, 3; Ch. 12, Less. 1, 2** **SN: Ch. 11, Less. 2, 3; Ch. 12, Less. 1, 2**			
8	4.e	*Students know* the appearance, general composition, relative position and size, and motion of objects in the solar system, including planets, planetary satellites,	**SE:** objects in the solar system **462–468**	**SE:** **470–476, 488, 493, 500–503, 547**			

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		comets, and asteroids.	planets, planetary satellites **478–487** comets, and asteroids **489–492**	**TWE: 462–468, 478–487, 489–492** **RE: Ch. 11, Less. 1–4** **SN: Ch. 11, Less. 1–4**			
REACTIONS							
8	5	**Chemical reactions are processes in which atoms are rearranged into different combinations of molecules. As a basis for understanding this concept:**					
8	5.a	*Students know* reactant atoms and molecules interact to form products with different chemical properties.	**SE: 339, 341–342**	**SE: 335, 344, 345, 349, 354–355, 366–367, 372–375, 455** **TWE: 339, 341–342** **RE: Ch. 8, Less. 1–3** **SN: Ch. 8, Less. 1–3**			
8	5.b	*Students know* the idea of atoms explains the conservation of matter: In chemical reactions the number of atoms stays the same no matter how they are arranged, so their total mass stays the same.	**SE: 346–347, 351–355**	**SE: 177, 179, 348, 356, 357, 372–375, 415, 455** **TWE: 346–348, 351–355** **RE: Ch. 8, Less. 2** **SN: Ch. 8, Less. 2**			

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8	5.c	*Students know* chemical reactions usually liberate heat or absorb heat.	**SE:** liberate heat **360** absorb heat **362**	**SE:** **358–359, 361, 363, 364, 365, 372–375, 455** **TWE:** **360, 362** **RE: Ch. 8, Less. 3** **SN: Ch. 8, Less. 3**			
8	5.d	*Students know* physical processes include freezing and boiling, in which a material changes form with no chemical reaction.	**SE:** **314, 341, 343**	**SE:** **264–270, 272, 318, 329, 331, 344, 373** **TWE:** **314, 341, 343** **RE: Ch. 6, Less. 2** **SN: Ch. 6, Less. 2**			
8	5.e	*Students know* how to determine whether a solution is acidic, basic, or neutral.	**SE:** acids **395, 399–401** bases **396, 398, 402–404** neutralization **395, 399–400, 401–404**	**SE:** **394, 397, 405, 414–417, 455** **TWE:** **395–396, 399–404** **RE: Ch. 9, Less. 2** **SN: Ch. 9, Less. 2**			
CHEMISTRY OF LIVING SYSTEMS (LIFE SCIENCES)							
8	6	**Principles of chemistry underlie the functioning of biological systems. As a basis for understanding this concept:**					
8	6.a	*Students know* that carbon, because of its ability to combine in many ways with itself and other elements, has a central role in the chemistry of living organisms.	**SE:** **428–435**	**SE:** **436, 450–453, 455** **TWE:** **428–435** **RE: Ch. 10, Less. 1–3**			

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				SN: Ch. 10, Less. 1–3			
8	6.b	*Students know* that living organisms are made of molecules consisting largely of carbon, hydrogen, nitrogen, oxygen, phosphorus, and sulfur.	**SE: 422**	**SE: 419, 423–424, 427, 434–435, 436, 439–441, 450, 452, 453, 455** **TWE: 422** **RE: Ch. 10, Less. 1–3** **SN: Ch. 10, Less. 1–3**			
8	6.c	*Students know* that living organisms have many different kinds of molecules, including small ones, such as water and salt, and very large ones, such as carbohydrates, fats, proteins, and DNA.	**SE:** water **425, 426** salt **441** carbohydrates **440** fats **440** proteins **441** DNA **439**	**SE: 236, 427, 434–436, 442–445, 450–453, 455** **TWE: 425–426, 439, 440–441** **RE: Ch. 10, Less. 1–3** **SN: Ch. 10, Less. 1–3**			
PERIODIC TABLE							
8	7	**The organization of the periodic table is based on the properties of the elements and reflects the structure of atoms. As a basis for understanding this concept:**					
8	7.a	*Students know* how to identify regions corresponding to metals, nonmetals, and inert gases.	**SE:** metals **295** nonmetals **296**	**SE: 290–294, 299, 306–309, 310, 326–329, 373, 451**			

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			inert gases **297**	**TWE: 295–297** **RE: Ch. 7, Less. 1** **SN: Ch. 7, Less. 1**			
8	7.b	*Students know* each element has a specific number of protons in the nucleus (the atomic number) and each isotope of the element has a different but specific number of neutrons in the nucleus.	**SE:** atomic number **195–196** isotopes **197–198, 200, 301–302**	**SE: 199, 202, 210–213, 303–307, 310, 312, 326–329, 373** **TWE: 195–198, 200, 301–302** **RE: Ch. 4, Less. 3; Ch. 7, Less. 2** **SN: Ch. 4, Less. 3; Ch. 7, Less. 2**			
8	7.c	*Students know* substances can be classified by their properties, including their melting temperature, density, hardness, and thermal and electrical conductivity.	**SE:** melting temperature **314** density **315** hardness **315** conductivity **316**	**SE: 136, 230–232, 237, 249, 299, 313, 319–321, 326–329, 331, 338–340, 344, 372, 374, 375, 381, 387, 392, 393, 414–417, 451, 455** **TWE: 314–316** **RE: Ch. 7, Less. 3; Ch. 9, Less. 1, 2** **SN: Ch. 7, Less. 3; Ch. 9, Less. 1, 2**			

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DENSITY AND BUOYANCY							
8	8	**All objects experience a buoyant force when immersed in a fluid. As a basis for understanding this concept:**					
8	8.a	*Students know* density is mass per unit volume.	**SE: 130–133**	**SE: 137, 138, 162, 165, 167, 283** **TWE: 130–133, 138** **RE: Ch. 3, Less. 1** **SN: Ch. 3, Less. 1**			
8	8.b	*Students know* how to calculate the density of substances (regular and irregular solids and liquids) from measurements of mass and volume.	**SE: 134–136**	**SE: 137, 139, 162–165** **TWE: 134–138** **RE: Ch. 3, Less. 1** **SN: Ch. 3, Less. 1**			
8	8.c	*Students know* the buoyant force on an object in a fluid is an upward force equal to the weight of the fluid the object has displaced.	**SE: 146–147**	**SE: 127, 148, 149, 151, 162–165, 167** **TWE: 146–148** **RE: Ch. 3, Less. 2** **SN: Ch. 3, Less. 2**			
8	8.d	*Students know* how to predict whether an object will float or sink.	**SE: 150–151**	**SE: 152–157, 162, 163, 165, 283** **TWE: 150–151** **RE: Ch. 3, Less. 3** **SN: Ch. 3, Less. 3**			

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INVESTIGATION AND EXPERIMENTATION							
8	9	**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:**					
8	9.a	Plan and conduct a scientific investigation to test a hypothesis.	**SE:** **116, 240–241, 319 320–321, 366–367, 408–409, 494–495**	**SE:** **7–13, 18–19, 21, 28–33, 38–41**			
8	9.b	Evaluate the accuracy and reproducibility of data.	**SE:** **63, 406**	**SE:** **17, 32–33, 39–41, 20, 21, 32–33** **TWE:** **63**			
8	9.c	Distinguish between variable and controlled parameters in a test.	**SE:** **444–445**	**SE:** **29, 38–41**			
8	9.d	Recognize the slope of the linear graph as the constant in the relationship *y=kx* and apply this principle in interpreting graphs constructed from data.	**SE:** **67, 68, 73, 117**	**SE:** **72** **TWE:** **67, 68** **RE: Ch. 1, Less. 3**			
8	9.e	Construct appropriate graphs from data and develop quantitative statements about the relationships between variables.	**SE:** graphs **65, 74–75, 95, 117, 203, 239, 277, 312, 364, 393, 408–409,**	**SE:** **22–27, 331** **TWE:** **65–69, 95, 203,**			

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			443, 485 statements **66–67, 68, 69–71, 117, 203, 239, 485**	**393, 443** **RE: Ch. 1, Less. 3**			
8	9.f	Apply simple mathematic relationships to determine a missing quantity in a mathematic expression, given the two remaining terms (including speed = distance/time, density = mass/volume, force = pressure x area, volume = area x height).	**SE:** speed **58, 62** density **131, 138** pressure **142** volume **135**	**SE:** **115, 139, 157, 164** **TWE:** **62–63, 131–132, 134–135, 137–138, 142** **RE: Ch. 3, Less. 1, 2**			
8	9.g	Distinguish between linear and nonlinear relationships on a graph of data.	**SE:** **95, 274**	**SE:** **23**			
Appendix							