

Acknowledgments, continued

Staff Credits

The people who contributed to **Holt Physics** are listed below. They represent editorial, design, inventory, multimedia production, manufacturing, marketing, permissions, and production.

Brigitta Arden, Karen Arneson, Wes Bain, Kimberly Barr, Cynthia B. Brooks, Soojinn Choi, Eddie Dawson, Julie Dervin, Michelle Dike, Lydia Doty, James Foster, Jeff Galvez, Leigh Ann García, Mark Grayson, Jessica Gonzalez, Wilonda Ieans, Jevara Jackson, Stephanie Janda, Simon Key, Jane Kirschman, Cathy Kuhles, Denise Mahoney, Michael Mazza, Sean McCormick, Virginia Messler, Richard Metzger, Cathy Murphy, Mercedes Newman, Cathy Paré, Nanda Patel, Jenny Patton, Peter Reid, Mike Roche, Karen Ross, Teresa Ruiz, Kay Selke, Angela Senicz, Chris Smith, Dawn Marie Spinozza, Sherry Sprague, Jeff Streber, Jeannie Taylor, David Trevino, Bob Tucek, Kira Watkins, and Holly Whittaker.

Photo Credits

Abbreviations used: (t) top, (b) bottom, (c) center, (l) left, (r) right, (bkgd) background
CBL Calculator, Andy Christiansen/HRW

Front Cover: (c), Gusto/Photo Researchers, Inc.; (bl) Darren Garnier/Columbia University/Photo Researchers, Inc.; (bc) Mark Garlick/Photo Researchers, Inc.; (br) © Charles Orrico/SuperStock **Title Page:** 1 (c), Gusto/Photo Researchers, Inc. **Table of Contents:** v (tl), © Robert Harding World Imagery/Alamy Photos; v (bl), Courtesy of the Archives, California Institute of Technology; vi (tl), Mark Gallup/Pictor/Image State; vi (bl, bc), Michelle Bridwell/HRW Photo; vii (cl), © David Madison/Getty Images; viii (tl), Rafael Macia/Photo Researchers, Inc.; viii (bl), © RubberBall Productions; ix (cl), © Comstock Images/Alamy Photos; ix (bl, bc), Educational Development Center; x (tl), GmbH & Co./Alamy; x (bl), Sam Dudgeon/HRW; xii (tl), © Laguna Design/Photo Researchers, Inc.; xiii (br), © Zefa Visual Media - Germany/Index Stock Imagery, Inc.; xvi (tr), Victoria Smith/HRW **Chapter One:** 2–3 (all), © Philippe Psaila/Photo Researchers, Inc.; 4 (b), Sam Dudgeon/HRW; 5 (tr), © Roger Ressmeyer/CORBIS; 6 (b), Michelle Bridwell/HRW Photo; 7 (c), Michelle Bridwell/HRW Photo; 10 (bl), The National Institute of Standards and Technology; 11 (br), Stephen Dalton/Photo Researchers, Inc.; 13 (tr, br), Courtesy NASA/JPL-Caltech; 14 (t), Sam Dudgeon/HRW; 16 (all), Michelle Bridwell/HRW Photo; 17 (all), Michelle Bridwell/HRW Photo; 18 (tl), © Ron Thomas/Getty Images; 21 (br), Richard Megna/Fundamental Photographs, New York; 23 (br), © John P. Kelly/Getty Images; 28 (all), Sam Dudgeon/HRW; 35 (tr), Victoria Smith/HRW; 36 (all), Victoria Smith/HRW **Chapter Two:** 38–39 (c), © Robert Harding World Imagery/Alamy Photos; 40 (bl), Courtesy of New York Transit Museum Archives, Brooklyn; 41 (br), © VCG/Getty Images; 45 (br), Michelle Bridwell/HRW Photo; 50 (tl), Craig Lovell/CORBIS; 50 (br), Aaron Haupt/Photo Researchers, Inc.; 51 (r), Richard Megna/Fundamental Photographs, New York; 57 (tr), Michelle Bridwell/HRW Photo; 60 (bl), James A. Sugar/Black Star; 61 (tc, tr), Richard Megna/Fundamental Photographs, New York; 63 (tr), Victoria Smith/HRW; 64 (br), © Zefa Visual Media - Germany/Index Stock Imagery,

Inc.; 66 (tr, bc), Sam Dudgeon/HRW; 69 (cr), Courtesy of David Rogers; 70 (tr), Educational Development Center; 77 (b), Victoria Smith/HRW; 78 (tl), Mike Fager/HRW Photo **Chapter Three:** 80–81 (all), © Wendell Metzen/Index Stock Imagery; 82 (bl), Michelle Bridwell/HRW Photo; 95 (cr), © Dennis O'Clair/Getty Images; 96 (bl), Richard Megna/Fundamental Photographs, New York; 96 (c), Sam Dudgeon/HRW; 103 (br), © Philip Wallick/CORBIS; 106 (tr, bc), Sam Dudgeon/HRW; 117 (tr, cr), Victoria Smith/HRW **Chapter Four:** 118–119 (all), © Nicholas Pinturas/Getty Images; 120 (all), Michelle Bridwell/HRW Photo; 121 (br), Michelle Bridwell/HRW Photo; 123 (tr), age fotostock/Birgit Koch; 129 (tr), Tony Freeman/PhotoEdit; 130 (l, r), Michelle Bridwell/HRW Photo; 132 (bl), Michelle Bridwell/HRW Photo; 133 (cr), © Mark Richards/PhotoEdit; 135 (cr), George Hunter/SuperStock; 135 (cr), Photo Researchers, Inc.; 136 (all), Michelle Bridwell/HRW Photo; 138 (cl), Mark Gallup/Pictor/Image State; 140 (tr), Michelle Bridwell/HRW Photo; 142 (br), Goodyear Tire and Rubber Company; 153 (br), Victoria Smith/HRW **Timeline (1540–1690):** 156 (tc, bl), Image Select/Ann Ronan Picture Library; 156 (tr, br), CORBIS; 156 (tl), Giraudon/Art Resource, NY; 156 (c), © Kean Collection/Getty Images; 156 (cl), Erich Lessing/Art Resource, NY; 156 (bc), AKG Photo, London; 157 (tl), Scala/Art Resource, NY; 157 (tr), Image Select/Ann Ronan Picture Library; 157 (cl) (1644), Burstein/CORBIS; 157 (cr), AKG Photo, London; 157 (cl) (1669), J. Sowerby/The Art Archive; 157 (bl), University of California Press, Berkeley, California 1934; 157 (tc), © Kean Collection/Getty Images **Chapter Five:** 158–159 (all), Wayne Sorce; 160 (bl), Mavournea Hay/HRW Photo; 164 (b), Richard Megna/Fundamental Photographs, New York; 166 (bl), Pulse Productions/SuperStock/PictureQuest; 168 (br), Peter Van Steen/HRW Photo; 169 (tr), © George Schwartz/Getty Images; 173 (br), Robert Mathena/Fundamental Photographs, New York; 174 (bl), Sam Dudgeon/HRW; 176 (tr), Tony Freeman/PhotoEdit; 178 (tl), Robert Wolf; 179 (br), Werner H. Muller/Peter Arnold, Inc.; 180 (tl), Sam Dudgeon/HRW; 182 (tr), Courtesy Steve Okamoto; 182 (bc), Jeff Singer/HRW Photo; 184 (c), Leonard Lessin/Peter Arnold, Inc.; 186 (cl), © Harold & Esther Edgerton Foundation, 2006, Courtesy of Palm Press, Inc.; 193 (b), Victoria Smith/HRW