Student Index

This student-friendly index will help you find vocabulary, key ideas, and concepts. It is easily accessible and designed to be a reference for you whether you are looking for a definition, real-life application, or help with avoiding common errors.



Addition Property of Equality, 4 Algebra equations graphing linear, 142-147 literal, 28 multi-step, 10–15 rewriting, 26-31 simple, 2–9 with variables on both sides, 18 - 25formulas, See Formulas functions linear, 256–263 nonlinear, 266-271 relations and, 242-247 representing, 245-255 linear equations graphing, 142-147 lines of fit, 378-383 slope of a line, 148–157 slope-intercept form, 166-183 standard form, 172-177 systems of, 202-229 properties, See Properties Angle(s) alternate exterior, 106 alternate interior, 106 corresponding, 104–105 defined, 44 error analysis, 107 exterior defined, 105 error analysis, 115 interior, defined, 105 of polygons, 118–125 defined, 112 error analysis, 123, 124 reading, 120 real-life application, 121 similar, 126–131 of rotation, 62 of triangles, 110–115 exterior, 112 interior, 112 real-life application, 113 similar, 128 Angle of rotation, defined, 62 Area of similar figures, 76-81 formula, 78 writing, 80

₿

Bar graphs, 394 **Base,** defined, 412 Box-and-whisker plots, 394

C

Center of dilation, defined, 84 Center of rotation, defined, 62 Choose Tools, Throughout. For example, see: graphing linear equations, 143 indirect measurement, 127 scientific notation, 447 slope, 154 systems of linear equations, 203 Circle graphs, 394 Common Error linear functions, 259 Pythagorean Theorem, 320 Ouotient of Powers Property, 424 scientific notation, 445 transformations rotations, 63 similar figures, 72 Comparison chart, 264 Concave polygon, defined, 119 Cone(s) volume of, 340–345 error analysis, 344 formula, 342 real-life application, 343 writing, 344 **Congruent figures,** 42–47 corresponding angles, 44 corresponding sides, 44 defined, 44 error analysis, 47 identifying, 44 naming parts, 44 reading, 44 Connections to math strands, Throughout. For example, see: Algebra, 305 Geometry, 24, 25, 75, 81, 109, 125, 131, 147, 156, 157, 293, 299,453 Convex polygon, defined, 119

Coordinate plane(s) transformations in the dilations, 82-89 reflections, 55-59 rotations, 61-67 translations, 49-53 **Corresponding angles** defined, 44 naming, 44 symbol, 44 **Corresponding sides** defined, 44 error analysis, 47 naming, 44 symbol, 44 Critical Thinking, Throughout. For example, see: angle measures, 109 cube roots, 299 equations multi-step, 15 simple, 9 exponents, 415 Product of Powers Property, 420, 421 Quotient of Powers Property, 427 zero, 432 linear equations, 170 graphing, 171, 177 in slope-intercept form, 171, 183 solving systems of, 207, 223 in standard form, 177 writing, 183 proportional relationships, 163 scientific notation, 441, 453 similar triangles, 131 slope, 153, 154, 155 slope-intercept form, 170 solids, 339 square roots, 292 transformations congruent figures, 47 dilations, 89 reflections, 59 rotations, 67 similar figures, 74, 75 volume of cones, 345 of cylinders, 339

Cube root(s) defined, 296 finding, 294–299 real-life application, 297 perfect cube, 296 Cylinder(s) volume of, 334–339 formula, 336 modeling, 339 real-life application, 337

D

Data, See also Equations; Graphs analyzing line of best fit, 381 writing, 382 displaying bar graph, 394 box-and-whisker plot, 394 choosing a display, 392-399 circle graph, 394 dot plot, 394 histogram, 394 line graph, 394 pictograph, 394 project, 393 scatter plot, 372–377, 394 stem-and-leaf plot, 394 two-way table, 386–391 writing, 398 identifying relationships, 375 linear, 375 negative, 375 nonlinear, 375 positive, 375 joint frequencies, 388 marginal frequencies, 388 misleading displays, 396 Decimal(s) repeating, 316–317 Different Words, Same Question, Throughout. For example, see: angles of polygons, 123 exponents, 432 functions, 253 rotations. 65 solving equations, 30 triangles, 304 volume of cylinders, 338 **Dilation(s)**, 82–89 center of. 84 in the coordinate plane, 82-89 defined, 84 error analysis, 88 scale factor, 84

Direct variation, *See also* Proportional relationships **Distance formula**, 319–323 defined, 320 error analysis, 322 real-life application, 321 Distributive Property equations with variables on both sides, 20 multi-step equations, 13 Division Property of Equality, 5 Dot plots, 394

Ε

Equality Addition Property of, 4 Division Property of, 5 Multiplication Property of, 5 Subtraction Property of, 4 Equation(s), *See also* Linear equations function rules, 250 literal. 28 multi-step, 10–15 error analysis, 14 real-life application, 13 rewriting, 26–31 error analysis, 30 real-life application, 29 simple, 2–9 error analysis, 8 modeling, 8 real-life application, 6 solving by addition, 4 by division, 5 by multiplication, 5 multi-step, 10–15 by rewriting, 26–31 simple, 2–9 by subtraction, 4 two-step, 12 with variables on both sides, 18 - 25with variables on both sides. 18 - 25error analysis, 23, 24 real-life application, 22 writing, 23 Error Analysis, Throughout. For *example*, *see*: angles corresponding, 107 exterior, 115 of polygons, 123, 124 congruent figures, 47

corresponding sides, 47 distance formula, 322 equations multi-step, 14 rewriting, 30 simple, 8 with variables on both sides, 23.24 exponents evaluating expressions, 414 negative, 432 functions graphing, 254 relations and, 246 linear equations graphing, 146 in slope-intercept form, 170, 182 solving systems of, 207, 213, 228 in standard form, 176 parallel lines, 107 powers Product of Powers Property, 420 Quotient of Powers Property, 426 Pythagorean Theorem, 304, 322 relations, 246 scientific notation operations in, 452 writing numbers in, 446 writing in standard form, 440 slope, 154 square roots, 313 finding, 292 systems of linear equations solving by elimination, 221, 222 solving by graphing, 207 solving special, 228 solving by substitution, 213 transformations dilations, 88 triangles exterior angles of, 115 Pythagorean Theorem, 304 volume of cones, 344 of similar solids, 360 Example and non-example chart, 116 Exponent(s) defined, 412 evaluating expressions, 410-415 error analysis, 414 real-life application, 413

negative, 428-433 defined, 430 error analysis, 432 real-life application, 431 writing, 432 powers and, 410-421 error analysis, 420, 426 real-life application, 425 writing, 426 properties of Power of a Power Property, 418 Power of a Product Property, 418 Product of Powers Property, 416-421 Quotient of Powers Property, 422-427 quotients and, 422-427 scientific notation defined, 438 error analysis, 440, 446, 452 operations in, 448-453 project, 453 reading numbers in, 436-441 real-life applications, 439, 445, 451 writing numbers in, 442-447 zero, 428-433 defined, 430 Expressions evaluating exponential, 410-415 error analysis, 414 real-life application, 413 Exterior angle(s) alternate, 106 angle sum of, 122 real-life application, 121 defined, 105, 112 of triangles, 110-115 error analysis, 115 Exterior angles of a polygon, defined. 112

F

Formula(s) area of similar figures, 78 distance, 320 perimeter of similar figures, 78 Pythagorean Theorem, 302 rewriting, 26–31 slope, 148, 150 surface area of similar solids, 357 temperature conversion, 29

volume of a cone, 342 of a cylinder, 336 of a hemisphere, 351 of similar solids, 358 of a sphere, 350 Formula triangle, 346 Four square, 306 Fraction(s) repeating decimals written as, 316-317 Function(s) defined, 245 function rules defined, 250 real-life application, 252 writing, 250-255 linear, 256-263 compared to nonlinear. 266-271 defined, 258 modeling, 271 real-life applications, 259, 269 writing, 261 nonlinear compared to linear, 266–271 defined, 268 real-life application, 269 relations and, 242-247 error analysis, 246 inputs, 244 mapping diagrams, 242–247 outputs, 244 research, 247 representing error analysis, 254 with graphs, 248–255 with input-output tables, 248-255 with mapping diagrams, 245-247.252 real-life application, 252 writing, 253 Function rule(s) defined, 250 real-life application, 252 writing, 250–255

G

Geometry angles, 102–115, 118–131 corresponding, 44 exterior, 105, 112 interior, 105, 112 of polygons, 118–125 of rotation, 62

area of similar figures, 76-81 line of reflection, 56 parallel lines, 102-109 perimeter of similar figures, 76-81 polygons angles of, 118-125 concave, 119 convex, 119 Pythagorean Theorem, 300-305 converse of, 320 defined, 302 using, 318–323 sides, corresponding, 44 solids cones, 340–345 cylinders, 334–339 similar, 354–361 spheres, 348-353 surface area of, 354-361 volume of, 334-345, 348-361, 354-361 tessellation, 48-49 transformations congruent figures, 42-47 dilations, 82-89 reflections, 54-59 rotations, 60-67 similar figures, 70-81 translations, 48-53 transversals, 102-109 triangles angles of, 110–115 congruent, 42-44 hypotenuse, 302 legs, 302 right, 302 similar, 126-131 **Graphic Organizers** comparison chart, 264 example and non-example chart, 116 formula triangle, 346 four square, 306 information frame, 384 information wheel, 434 notetaking organizer, 214 process diagram, 164 summary triangle, 68 Y chart, 16 Graphs analyzing, 272-277 bar graphs, 394 box-and-whisker plots, 394 circle graphs, 394 dot plots, 394 of functions, 248-255 error analysis, 254

histograms, 394 line graphs, 394 linear, 142-147 defined, 144 error analysis, 146 of horizontal lines, 144 real-life application, 145 in slope-intercept form, 166 - 171solution of, 144 in standard form, 172–177 of vertical lines, 144 misleading, 396 pictographs, 394 proportional relationships, 158-163 scatter plots, 372-377, 394 sketching, 272–277 slope, 148-157 defined, 148, 150 error analysis, 154 formula, 148, 150 reading, 150 stem-and-leaf plots, 394 used to solve linear equations, 230-231 real-life application, 231 used to solve systems of linear equations, 202-207 error analysis, 207 modeling, 207 real-life application, 205

ß

Hemisphere(s) defined, 351 volume formula, 351 Histograms, 394 Hypotenuse, defined, 302

Image(s) defined, 50 reading, 50 Indirect measurement, 127–129 defined, 129 modeling, 127 project, 127 Information frame, 384 Information wheel, 434 Input(s), defined, 244 Input-output tables using to represent functions, 248–255 Interior angle(s) alternate, 106 defined, 105, 112 of triangles, 110–115 real-life application, 113 Interior angles of a polygon, defined, 112 Irrational number(s), defined, 310



Joint frequency, defined, 388

L

Leg(s), defined, 302 Like terms, combining to solve equations, 12 Line(s) graphing horizontal, 144 vertical, 144 parallel, 102–109 defined, 104 error analysis, 107 project, 108 slope of, 156 symbol, 104 perpendicular defined, 104 slope of, 157 symbol, 104 of reflection, 56 slope of, 148–157 transversals, 102–109 x-intercept of, 168 *v*-intercept of, 168 Line of best fit, defined, 381 Line of fit, 378–383 defined. 380 line of best fit, 381 modeling, 378, 379, 383 writing, 382 Line graphs, 394 Line of reflection, defined, 56 **Linear equation(s)**, See also **Equations**, Proportional relationships defined, 144 graphing, 142-147 error analysis, 146 horizontal lines, 144 real-life applications, 145, 175, 231 in slope-intercept form, 166 - 171to solve, 230-231

in standard form, 172–177 vertical lines, 144 lines of fit, 378-383 modeling, 378, 379, 383 point-slope form defined, 186 real-life application, 187 writing, 188 writing in, 184–189 slope of a line, 148–157 defined, 148, 150 error analysis, 154 formula, 148, 150 reading, 150 slope-intercept form defined, 168 error analysis, 170, 182 real-life applications, 169, 181 writing in, 178–183 *x*-intercept, 168 y-intercept, 168 solution of, 144 standard form, 172-177 defined, 174 error analysis, 176 modeling, 177 real-life application, 175 writing, 176 systems of defined, 202, 204 error analysis, 207, 213, 221, 222, 228 modeling, 207 reading, 204 real-life applications, 205, 211,220 solution of a, 204 solving by elimination, 216-223 solving by graphing, 202–207 solving special, 224–229 solving by substitution, 208-213 writing, 206, 212, 221, 228 Linear function(s), 256–263 compared to nonlinear, 266-271 real-life application, 269 defined, 258 modeling, 271 real-life application, 259 writing, 261 Linear measures, 357 Literal equation(s), defined, 28 Logic, Throughout. For example, see: angles interior, 110 measures, 108

Student Index

cube roots, 299 equations rewriting, 31 simple, 9 linear equations graphing, 142, 177 in slope-intercept form, 167 solving systems of, 217, 223, 229 scatter plots, 376 systems of linear equations, 217, 223, 229 transformations similar figures, 75

M

Mapping diagram(s), 242-247 defined. 244 Marginal frequency, defined, 388 Meaning of a Word dilate, 82 reflection. 54 rotate, 60 translate, 48 transverse, 102 Mental Math, Throughout. For example, see: rotations, 65 Modeling, Throughout. For example, see: equations, 8 indirect measurement, 127 linear equations lines of fit, 378, 379, 383 solving systems of, 207 in standard form, 177 linear functions, 271 Pythagorean Theorem, 300 volume of a cylinder, 339 Multiplication Property of Equality, 5

N

Nonlinear function(s) compared to linear, 266–271 real-life application, 269 defined, 268 Notetaking organizer, 214 Number(s) irrational, 310–315 defined, 310 real, 310–315 classifying, 310 defined, 310 Number Sense, Throughout. For *example*, *see*: analyzing data, 382 angles exterior, 114 of a polygon, 123 cube roots, 299 exponents, 414, 427, 432 functions, 271 real numbers, 315 scientific notation, 441, 452 similar solids surface area of, 359 volume of, 359 square roots, 292 systems of linear equations solving by elimination, 221 solving by substitution, 212, 213 transformations reflections, 59 similar figures, 80

0

Open-Ended, Throughout. For example, see: data histograms, 397 misleading displays, 397 scatter plots, 377 two-way tables, 390 dilations, 89 equations linear, 170 multi-step, 14 simple, 9 with variables on both sides, 23, 24 exponents, 433 parallel lines, 107 similar solids, 359 similar triangles, 131 slope, 153 square roots, 315 Output(s), defined, 244

P

Parallel line(s) defined, 104 slope of, 156 symbol, 104 and transversals, 102–109 error analysis, 107 project, 108 **Perfect cube,** defined, 296 Perfect square, defined, 290 Perimeter of similar figures, 76-81 formula, 78 writing, 80 Perpendicular line(s) defined, 104 slope of, 157 symbol, 104 Pictographs, 394 **Point-slope form** defined, 186 writing equations in, 184-189 real-life application, 187 writing, 188 Polygon(s) angles, 118-125 error analysis, 123, 124 exterior, 112 interior, 112 measures of interior, 120 real-life application, 121 sum of exterior, 122 concave, 119 convex, 119 defined, 120 reading, 120 regular, 121 triangles, 110–115 error analysis, 115 modeling, 127 project, 127 similar, 126–131 writing, 130 **Power(s)**, See also Exponents base of, 412 defined, 412 exponent of, 412 of a power, 418 of a product, 418 product of, 416–421 error analysis, 420 Product of Powers Property, 418 quotient of, 422-427 error analysis, 426 Quotient of Powers Property, 424 real-life application, 425 writing, 426 scientific notation defined, 438 error analysis, 440, 446, 452 operations in, 448-453 project, 453 reading numbers in, 436-441 real-life applications, 439, 445, 451 writing numbers in, 442–447

Power of a Power Property, 418 Power of a Product Property, 418 Precision, Throughout. For example, see: analyzing data, 391 angles of a triangle, 115 equations with variables on both sides, 24, 25 exponents, 433 functions, 246 indirect measurement, 127 linear equations graphing, 142, 146 in slope-intercept form, 182 Product of Powers Property, 420 Pythagorean Theorem, 305 relations, 246 similar solids, 361 square roots, 293 systems of linear equations, 229 transformations rotations, 61 translations, 49 Problem Solving, Throughout. For example, see: angles of a polygon, 124 area and perimeter, 81 data displays, 377 equations with variables on both sides, 25 linear equations graphing, 147 in point-slope form, 189 solving systems of, 223 linear functions, 263 proportional relationships, 163 Pythagorean Theorem, 301 scatter plots, 377 solids, 339 transformations dilations, 89 translations, 53 volume of a cylinder, 339 Process diagram, 164 Product of Powers Property, 416-421 defined, 418 error analysis, 420 Properties Addition Property of Equality, 4 **Division Property of Equality**, 5 Multiplication Property of Equality, 5 Power of a Power Property, 418 Power of a Product Property, 418 Product of Powers Property, 416-421

Quotient of Powers Property, 422-427 Subtraction Property of Equality, 4 Proportional relationships direct variation, 160 graphing, 158–163 Proportions similar figures, 70–81 Pythagorean Theorem, 300–305 converse of, 320 defined, 302 error analysis, 304 modeling, 300 project, 305 real-life applications, 303, 321 using, 318-323 distance formula, 320 error analysis, 322 writing, 322

Q

Quotient of Powers Property, 422–427 defined, 424 error analysis, 426 real-life application, 425 writing, 426

R

Radical sign, defined, 290 Radicand, defined, 290 Ratio similar figures areas of, 78 perimeters of, 78 Rational number(s), defined, 310 Reading images, 50 polygons, 120 slope, 150 symbol congruent, 44 prime, 50 similar, 72 systems of linear equations, 204 **Real number(s),** 310–315 classifying, 310 defined. 310 error analysis, 313 Real-Life Applications, *Throughout*. *For example, see:* angles of triangles, 113 cube roots, 297 distance formula, 321

equations multi-step, 13 rewriting, 29 simple, 6 with variables on both sides, 22 exponents evaluating expressions, 413 negative, 431 Quotient of Powers Property, 425 functions graphing, 252 linear. 259 interior angles of a polygon, 121 linear equations graphing, 145 in point-slope form, 187 in slope-intercept form, 169, 181 solving systems of, 205, 211, 220 solving using graphs, 231 in standard form, 175 writing, 181 linear functions, 269 nonlinear functions, 269 Pythagorean Theorem, 303, 321 scientific notation operations in, 451 reading numbers in, 439 writing numbers in, 445 similar figures, 73 square roots approximating, 312 finding, 291 systems of linear equations, 205 solving by elimination, 220 solving by substitution, 211 volume of cones, 343 of cylinders, 337 Reasoning, Throughout. For example, see: analyzing graphs, 277 angle measures, 108, 115, 124 congruent figures, 47 cube roots, 295, 298 data analyzing, 387 displaying, 397, 399 scatter plots, 376, 377 two-way tables, 387, 391 distance formula, 323 equations rewriting, 31 simple, 9

exponents, 433 exterior angles of polygons, 124 functions graphing, 255 linear, 263 indirect measurement, 130 linear equations in point-slope form, 189 in slope-intercept form, 171 lines of fit, 382, 383 perfect squares, 293 Product of Powers Property, 420 proportional relationships, 162, 163 Pythagorean Theorem, 323 scientific notation operations in, 448 reading numbers in, 441 writing numbers in, 446, 447 slope, 153, 155 square roots, 292 systems of linear equations solving by elimination, 222, 223 solving by graphing, 207 solving special, 228, 229 solving by substitution, 212 transformations congruent figures, 59 dilations, 87, 89 reflections, 58, 59 rotations, 67 similar figures, 75, 81 translations, 53 triangles exterior angles of, 115 similar, 126, 130, 131 volume of cones, 344, 345 of cylinders, 338, 353 of spheres, 353 Reflection(s), 54–59 in the coordinate plane, 55-59 defined, 56 line of. 56 writing, 58 Regular polygon(s), defined, 121 **Relation(s)** defined, 244 functions and, 242-247 error analysis, 246 research, 247 inputs, 244 mapping diagrams, 242-247 defined, 244 outputs, 244

Repeated Reasoning, Throughout. *For example, see:* cube roots, 314 equations, 31 exponents, 410 negative, 429 zero, 428 inputs and outputs, 247 polygons angles of, 111, 118, 119 repeating decimals, 316, 317 similar solids surface area of, 355 volume of, 355, 361 slope, 149 systems of linear equations, 213 Repeating decimals writing as fractions, 316-317 Rise, defined, 150 Rotation(s), 60-67 angle of, 62 center of, 62 in the coordinate plane, 61–67 defined, 62 rotational symmetry, 66 Run, defined, 150

S

Scale factor, defined, 84 Scatter plot(s), 372–379, 394 defined, 374 identifying relationships, 375 linear, 375 negative, 375 nonlinear, 375 positive, 375 interpreting, 374–375 line of best fit, 381 lines of fit, 378–383 defined, 380 modeling, 378, 379, 383 writing, 382 Scientific notation defined, 438 operations in, 448–453 error analysis, 452 real-life application, 451 writing, 452 project, 453 reading numbers in, 436-441 real-life application, 439 writing, 440 writing numbers in, 442-447 error analysis, 440, 446 real-life application, 445

standard form, 438-439 writing, 446 Side(s) corresponding, defined, 44 Similar figures, 70–81 areas of, 76-81 formula, 78 writing, 80 defined, 72 perimeters of, 76-81 formula, 78 writing, 80 reading, 72 real-life application, 73 Similar solids defined. 356 surface area of, 354-361 linear measures, 357 volume of, 354-361 error analysis, 360 formula, 358 Slope, 148-157 defined, 148, 150 error analysis, 154 formula, 148, 150 negative, 152 and parallel lines, 156 and perpendicular lines, 157 positive, 152 project, 154 reading, 150 rise, 150 run, 150 undefined, 152 zero, 152 Slope-intercept form, 166–171 defined, 168 graphing equations in, 166-171 error analysis, 170 real-life application, 169 writing equations in, 178–183 error analysis, 182 real-life application, 181 writing, 182 x-intercept, 168 *v*-intercept, 168 Solids cones real-life application, 343 volume of, 340-345 writing, 344 cvlinders modeling, 339 real-life application, 337 volume of, 334-339 hemispheres, 351 volume of, 351

similar defined, 356 error analysis, 360 linear measures, 357 volume of, 354-361 spheres volume of, 348-353 surface area of, 354-361 formula, 357 volume of, 334-345, 348-361 error analysis, 344 real-life applications, 337, 343 Solution of a linear equation, defined, 144 Solution of a system of linear equations, defined, 204 Sphere(s) defined, 348 volume of, 348-353 formula. 350 Square root(s) approximating, 308-315 real-life application, 312 writing, 314 defined, 290 error analysis, 313 finding, 288-293 error analysis, 292 real-life application, 291 perfect square, 290 radical sign, 290 radicand, 290 Standard form of a linear equation defined, 174 graphing equations in, 172–177 error analysis, 176 modeling, 177 real-life application, 175 writing, 176 Standard form of a number scientific notation and, 438-439 Stem-and-leaf plots, 394 Structure, Throughout. For example, see: angles of a polygon, 110, 119 data displays, 399 distance formula, 323 equations, 3 exponents, 414, 429 linear equations solving using graphs, 230 linear functions, 261 Pythagorean Theorem, 323 real numbers, 315 repeating decimals, 316 scientific notation, 448 slope, 155

square roots, 308, 315 systems of linear equations, 213, 217 transformations dilations, 88, 89 similar figures, 81 volume of solids, 345 Study Tip analyzing graphs, 274 angles alternate exterior, 106 alternate interior, 106 corresponding, 104 exterior, 113 direct variation, 160 equations, 13 exponents, 418 Quotient of Powers Property, 425 linear equations, 168, 231, 268 line of best fit, 381 line of fit, 380 in point-slope form, 187 in slope-intercept form, 168 in standard form, 174 system of, 205 writing, 180, 187 powers, 412 proportional relationships, 160 Pythagorean triples, 320 real numbers, 310 right triangles, 302 scientific notation, 438, 444, 450 in standard form, 450 slope, 150, 151, 160 solids, 351 cones, 342 similar solids, 358 square roots approximating, 311 of zero, 290 systems of linear equations, 205, 211, 218, 219, 226 transformations dilations, 85 rotations, 62, 63 transversals, 104, 106 volume of cones, 342 of cylinders, 336 Substitution to solve systems of linear equations, 208-213 Subtraction Property of Equality, 4 Summary triangle, 68 Surface area of similar solids, 354-361 formula, 357 linear measures, 357

Symbols congruent, 44 parallel lines, 104 perpendicular lines, 104 prime, 50 similar, 72 square root, 290 Symmetry, rotational, 66 System of linear equations defined, 202, 204 reading, 204 solution of a defined, 204 solving by elimination, 216-223 error analysis, 221, 222 real-life application, 220 writing, 221 solving by graphing, 202–207 error analysis, 207 modeling, 207 real-life application, 205 writing, 206 solving special, 224-229 error analysis, 228 infinitely many solutions, 226 no solution, 226 one solution, 226 writing, 228 solving by substitution, 208-213 error analysis, 213 real-life application, 211 writing, 212

Student Index

Т

Theorem, defined, 300 Transformation(s) congruent figures, 42-47 corresponding angles of, 44 corresponding sides of, 44 defined, 44 error analysis, 47 identifying, 44 reading, 44 defined, 50 dilations, 82-89 center of, 84 in the coordinate plane, 82–89 defined, 84 error analysis, 88 scale factor, 84 image, 50 reflections, 54-59 in the coordinate plane, 55-57 defined, 56 line of, 56 writing, 58

rotations, 60-67 angle of, 62 center of, 62 in the coordinate plane, 61-67 defined, 62 rotational symmetry, 66 similar figures, 70-81 areas of, 76-81 defined, 72 perimeters of, 76-81 reading, 72 real-life application, 73 writing, 80 tessellations, 48-49 translations, 48–53 in the coordinate plane, 50 defined, 50 writing, 52 Translation(s), 48–53 in the coordinate plane, 49-53 defined, 50 tessellations, 48-49 writing, 52 Transversal(s), 102–109 alternate exterior angles and, 106 alternate interior angles and, 106 corresponding angles and, 104 defined, 104 exterior angles and, 105 interior angles and, 105 Triangle(s) angles of, 110–115 error analysis, 115 exterior, 112 interior, 112 real-life application, 113 congruent, 42-44 Pythagorean Theorem, 300-305 defined, 302 error analysis, 304, 322 project, 305 real-life applications, 303, 321 using, 318-323 right hypotenuse, 302 legs, 302

similar, 126–131 angles of, 128 modeling, 127 project, 127 writing, 130 **Two-way table(s),** 386–391 defined, 388 joint frequencies, 388 marginal frequencies, 388

V

Volume of composite solids, 351 of cones, 340–345 error analysis, 344 formula, 342 real-life application, 343 writing, 344 of cylinders, 334–339 modeling, 339 real-life application, 337 of similar solids, 354–361 error analysis, 360 formula, 358 of spheres, 348–353 formula, 350

W

Which One Doesn't Belong?, *Throughout. For example, see:* angle measures, 107 corresponding angles, 46 equations linear, 146 simple, 7 exponents, 414 functions, 270 polygons, 123 powers, 426 Pythagorean Theorem, 322 scientific notation, 440 similar triangles, 130

square roots, 313 systems of linear equations, 221 transformations congruent figures, 46 reflections, 58 volume of solids, 352 Writing, Throughout. For example, displaying data, 398 equations multi-step, 14 with variables on both sides, 23 exponents, 432 functions linear, 261 representing, 253 linear equations in point-slope form, 188 in standard form, 176 lines of fit, 382 powers, 426 Pythagorean Theorem, 322 scientific notation, 440, 446, 452 similar triangles, 130 square roots, 313, 314 systems of linear equations, 206 solving by elimination, 221 solving by graphing, 206 solving special, 228 solving by substitution, 212 transformations reflections, 58 similar figures, 80 translations, 52 volume of solids. 344



x-intercept, defined, 168



Y chart, 16 *y*-intercept, defined, 168