

# Key Vocabulary Index

Mathematical terms are best understood when you see them used and defined *in context*.

This index lists where you will find key vocabulary. A full glossary is available in your Record and Practice Journal and at *BigIdeasMath.com*.

- |  |                                   |                                    |
|--|-----------------------------------|------------------------------------|
| absolute value, 4                      | hemisphere, 689                   | reflection, 480                    |
| additive inverse, 10                   | hypotenuse, 640                   | regular polygon, 545               |
| adjacent angles, 272                   | image, 474                        | regular pyramid, 364               |
| angle of rotation, 486                 | independent events, 430           | relative frequency, 412            |
| base, 712                              | indirect measurement, 553         | repeating decimal, 46              |
| biased sample, 442                     | inequality, 126                   | rise, 574                          |
| center, 318                            | integer, 4                        | rotation, 486                      |
| center of dilation, 508                | interest, 254                     | run, 574                           |
| center of rotation, 486                | interior angles, 529              | sample, 440                        |
| circle, 318                            | interior angles of a polygon, 536 | sample space, 422                  |
| circumference, 319                     | irrational number, 648            | scale, 300                         |
| complementary angles, 278              | kite, 294                         | scale drawing, 300                 |
| complex fraction, 165                  | lateral surface area, 358         | scale factor, 301, 508             |
| composite figure, 326                  | legs, 640                         | scale model, 300                   |
| compound event, 424                    | like terms, 82                    | scientific notation, 738           |
| concave polygon, 543                   | line of reflection, 480           | semicircle, 320                    |
| congruent angles, 272                  | linear equation, 568              | similar figures, 496               |
| congruent figures, 468                 | linear expression, 88             | similar solids, 694                |
| congruent sides, 284                   | literal equation, 774             | simple interest, 254               |
| constant of proportionality, 200       | markup, 248                       | simplest form, 82                  |
| convex polygon, 543                    | opposites, 10                     | simulation, 436                    |
| corresponding angles, 468              | outcomes, 402                     | slant height, 364                  |
| corresponding sides, 468               | percent of change, 242            | slope, 194, 574                    |
| cross products, 173                    | percent of decrease, 242          | slope-intercept form, 592          |
| cross section, 388                     | percent error, 243                | solution of an inequality, 126     |
| cube root, 634                         | percent of increase, 242          | solution of a linear equation, 568 |
| dependent events, 431                  | perfect cube, 634                 | solution set, 126                  |
| diameter, 318                          | perfect square, 628               | sphere, 686                        |
| dilation, 508                          | pi, 319                           | square root, 628                   |
| direct variation, 200                  | point-slope form, 670             | standard form, 598                 |
| discount, 248                          | population, 440                   | supplementary angles, 278          |
| distance formula, 658                  | power, 712                        | terminating decimal, 46            |
| equivalent equations, 98               | principal, 254                    | theorem, 638                       |
| event, 402                             | probability, 408                  | theoretical probability, 415       |
| experiment, 402                        | proportion, 172                   | transformation, 474                |
| experimental probability, 414          | proportional, 172                 | translation, 474                   |
| exponent, 712                          | Pythagorean Theorem, 640          | transversal, 528                   |
| exterior angles, 529                   | radical sign, 628                 | unbiased sample, 442               |
| exterior angles of a polygon, 536      | radicand, 628                     | unit rate, 164                     |
| factoring an expression, 92            | radius, 318                       | vertical angles, 272               |
| favorable outcomes, 402                | rate, 164                         | x-intercept, 592                   |
| Fundamental Counting Principle,<br>422 | ratio, 164                        | y-intercept, 592                   |
| graph of an inequality, 127            | rational number, 46               |                                    |
|  | real numbers, 648                 |                                    |

# 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.

## A

### Absolute value, 2–7

- defined, 4
- error analysis, 6
- real-life application, 5

### Addition

- of expressions
  - linear, 86–91
  - modeling, 86–87
- of integers, 8–15
  - with different signs, 8–11
  - error analysis, 12
  - with the same sign, 8–11

### Property

- of Equality, 98
  - of Inequality, 132
  - real-life application, 99
- of rational numbers, 50–55
  - error analysis, 54
  - real-life application, 53
  - writing, 54, 55, 65
- to solve inequalities, 130–135

### Addition Property of Equality, 98

- real-life application, 99

### Addition Property of Inequality, 132

### Additive inverse

- defined, 10
- writing, 12

### Additive Inverse Property, 10

### Adjacent angles

- constructions, 270–275
- defined, 272

### Algebra

- equations
  - equivalent, 98
  - graphing linear, 566–567
  - literal, 774
  - modeling, 96–97, 102, 108–109
  - multi-step, 764–767
  - rewriting, 774–777
  - solving, 96–113
  - two-step, 108–113
  - with variables on both sides, 768–773
  - writing, 100, 106, 112

### expressions

- linear, 86–91
- modeling, 86–87, 91
- simplifying, 80–85
- writing, 84, 90

### formulas, *See* Formulas

### linear equations

- graphing, 566–567
- slope of a line, 572–581
- slope-intercept form, 590–607
- standard form, 596–601

### properties, *See* Properties

### Algebra tiles

- equations, 96–97, 102, 108–109
- expressions, 86–87

### Angle(s)

- adjacent
  - constructions, 270–275
  - defined, 272

### alternate exterior, 530

### alternate interior, 530

- classifying, 277–278
  - triangles by, 284

### complementary

- constructions, 276–281
- defined, 278

### congruent

- defined, 272
- reading, 284

### corresponding, 528–529

- defined, 468
- error analysis, 531

### exterior

- defined, 529
- error analysis, 539

### interior, defined, 529

- measures
  - of a quadrilateral, 295
  - of a triangle, 288–289

### naming, 272

- error analysis, 274

### of polygons, 542–549

- defined, 536
- error analysis, 547, 548
- reading, 544
- real-life application, 545
- similar, 550–555

### of rotation, 486

### sums

- for a quadrilateral, 295
- for a triangle, 288–289

### supplementary

- constructions, 276–281
- defined, 278

### of triangles, 534–539

- exterior, 536
- interior, 536
- real-life application, 537
- similar, 552

### vertical

- constructions, 270–275
- defined, 272

### Angle of rotation, defined, 486

### Area, *See also* Surface area

### of a circle, 332–337

- formula, 334

### of a composite figure, 338–343

### Area of similar figures, 500–505

- formula, 502

- writing, 504

## B

### Base, defined, 712

### Biased sample(s), defined, 442

## C

### Center, defined, 318

### Center of dilation, defined, 508

### Center of rotation, defined, 486

### Choose Tools, *Throughout. For example, see:*

### angles, 271

### circles and circumference, 321

### graphing linear equations, 567

### indirect measurement, 551

### probability, 406, 426

### scientific notation, 747

### slope, 578

### Circle(s)

### area of, 332–337

- formula, 334

### center of, 318

### circumference and, 316–323

- defined, 319

- formula, 319  
research, 323  
defined, 318  
diameter of, 318  
pi, 316, 319  
semicircle, 320
- Circumference**  
and circles, 316–323  
defined, 319  
formula, 319  
research, 323
- Common Error**  
inequalities, 141  
percent equations, 234  
Pythagorean Theorem, 658  
Quotient of Powers Property, 724  
scientific notation, 745  
transformations  
    rotations, 487  
    similar figures, 496
- Complementary angles**  
constructing, 276–281  
defined, 278
- Complex fraction**, defined, 165
- Composite figure(s)**  
area of, 338–343  
defined, 326  
perimeters of, 324–329  
error analysis, 328
- Compound event(s)**, *See also Events, Probability*  
defined, 424  
error analysis, 426  
writing, 425
- Concave polygon**, defined, 543
- Cone(s)**  
volume of, 678–683  
error analysis, 682  
formula, 680  
real-life application, 681  
writing, 682
- Congruent angles**  
defined, 272  
reading, 284
- Congruent figures**, 466–467  
corresponding angles, 468  
corresponding sides, 468  
defined, 468  
error analysis, 471  
identifying, 468  
naming parts, 468  
reading, 468
- Congruent sides**  
defined, 284  
reading, 284
- Connections to math strands**  
Algebra, 13, 19, 27, 32, 643  
Geometry, 91, 101, 113, 599, 245, 366, 499, 505, 533, 549, 555, 571, 580, 581, 631, 637, 743
- Constant of proportionality**,  
defined, 200
- Constructions**  
angles  
    adjacent, 270–275  
    vertical, 270–275  
quadrilaterals, 292–297  
triangles, 282–289  
    error analysis, 286
- Convex polygon**, defined, 543
- Coordinate plane(s)**  
transformations in the  
    dilations, 506–513  
    reflections, 479–483  
    rotations, 485–491  
    translations, 473–477
- Corresponding angles**  
defined, 468  
naming, 468  
symbol, 468
- Corresponding sides**  
defined, 468  
error analysis, 471  
naming, 468  
symbol, 468
- Critical Thinking**, *Throughout. For example, see:*  
angle measures, 533  
circles, area of, 337  
composite figures  
    area of, 343  
    perimeter of, 329  
cube roots, 637  
cylinders, 372  
discounts, 251  
exponents, 715  
    Product of Powers Property, 720, 721  
    Quotient of Powers Property, 727  
    zero, 732  
inequalities, 129  
interest, 257  
linear equations, 594  
    graphing, 595, 601
- in slope-intercept form, 595, 607  
in standard form, 601  
writing, 607
- multi-step equations**, 767
- percent**  
of change, 245  
of decrease, 245  
of increase, 245
- prisms**, 381
- probability**, 411
- proportional relationships**, 587
- proportions**, 599, 191  
    direct variation, 203
- pyramids**, 366
- rates**, 169
- rational numbers**, 49  
    dividing, 69
- ratios**, 168, 599
- samples**, 444, 445
- scale drawing**, 303
- scale factor**, 304
- scientific notation**, 741, 753
- similar triangles**, 555  
simplifying expressions, 85  
slant height, 366  
slope, 197, 577, 578, 579  
slope-intercept form, 594  
solids, 677  
solving equations, 101, 107  
square roots, 630  
surface area, 366, 372, 380  
transformations  
    congruent figures, 471  
    dilations, 513  
    reflections, 483  
    rotations, 491  
    similar figures, 498, 499  
triangles, 287
- volume**, 380, 381  
    of cones, 683  
    of cylinders, 677
- Cross products**, defined, 173
- Cross Products Property**, 173
- Cross section(s)**  
defined, 388  
of three-dimensional figures, 388–389
- Cube(s)**, surface area of, 358
- Cube root(s)**  
defined, 634  
finding, 632–637  
    real-life application, 635

perfect cube, 634  
**Cylinder(s)**  
cross section of, 388–389  
surface area of, 368–373  
    error analysis, 372  
    formula, 370  
    real-life application, 371  
volume of, 672–677  
    formula, 674  
    modeling, 677  
    real-life application, 675

## D

**Decimal(s)**  
comparing  
    fractions with, 220–225  
    percents with, 220–225  
    real-life application, 222  
ordering  
    with fractions, 220–225  
    with percents, 220–225  
    real-life application, 223  
percents as, 214–219  
    error analysis, 218  
    modeling, 214–215  
    real-life application, 217  
repeating, 654–655  
    defined, 46  
    error analysis, 48  
    writing, 48  
terminating  
    defined, 46  
    writing, 48  
writing  
    as fractions, 47  
    as percents, 215–216  
    rational numbers as, 46

**Dependent events**, *See also Events*, Probability  
defined, 431  
error analysis, 434  
formula, 431  
writing, 433

**Diameter**, defined, 318  
**Different Words, Same Question**,  
*Throughout. For example, see:*  
adding rational numbers, 54  
angles of polygons, 547  
area of a circle, 336  
constructing triangles, 286  
direct variation, 202

exponents, 732  
inequalities, 128  
linear expressions, 90  
percent equations, 236  
probability, 433  
rotations, 489  
solving equations, 776  
subtracting integers, 18  
surface area of a prism, 359  
triangles, 642  
volume of cylinders, 676

**Dilation(s)**, 506–513

center of, 508  
in the coordinate plane, 506–513  
defined, 508  
error analysis, 512  
scale factor, 508

**Direct variation**, 198–203, *See also*

    Proportional relationships  
constant of proportionality, 200  
defined, 200  
error analysis, 202  
modeling, 203  
real-life application, 201  
writing, 202

**Discount(s)**, 246–251

defined, 248  
writing, 250

**Distance formula**, 657–661

defined, 658  
error analysis, 660  
real-life application, 659

**Distributive Property**

    equations with variables on both sides, 768  
    multi-step equations, 765

**Division**

    equations  
        modeling, 102  
        real-life application, 105  
        solving by, 102–107

    of integers, 28–33

        with different signs, 28–30  
        error analysis, 32  
        reading, 32  
        real-life application, 31  
        with the same sign, 28–30  
        writing, 32

    Property

        of Equality, 104  
        of Inequality, 140–141

real-life application, 105  
of rational numbers, 64–69  
    error analysis, 68  
    real-life application, 67  
    writing, 65, 68  
to solve inequalities, 138–145  
**Division Property of Equality**, 104  
**Division Property of Inequality**, 140–141  
    error analysis, 144

## E

**Equality**

    Addition Property of, 98  
    Division Property of, 104  
    Multiplication Property of, 104  
    Subtraction Property of, 98

**Equation(s)**, *See also Linear*

    equations  
        addition, 96–101  
        error analysis, 100  
        modeling, 96–97  
        writing, 100  
    division, 102–107  
        modeling, 102  
        real-life application, 105

    equivalent, 98

    literal, 774  
    multiplication, 102–107  
        error analysis, 106  
        writing, 106  
    multi-step, 764–767  
        error analysis, 766  
        real-life application, 765

    percent, 232–237  
        error analysis, 236  
        real-life application, 235

    percent proportions, 226–231

        error analysis, 230  
        real-life application, 229  
        writing, 230  
    rewriting, 774–777  
        error analysis, 776  
        real-life application, 775

    solving  
        multi-step, 764–767  
        by rewriting, 774–777  
        two-step, 764  
    with variables on both sides,  
        768–773  
    with variables on both sides,  
        768–773

- error analysis, 771, 772  
 real-life application, 770  
 writing, 771  
 subtraction, 96–101  
   modeling, 96–97  
   real-life application, 99  
 two-step  
   error analysis, 112  
   modeling, 108–109  
   real-life application, 111  
   solving, 108–113  
   writing, 112, 113
- Equivalent equations**  
 defined, 98  
 writing, 100
- Error Analysis, *Throughout. For example, see:*
- absolute value, 6
  - angles
    - corresponding, 531
    - exterior, 539
    - of polygons, 547, 548
  - classifying triangles, 286
  - congruent figures, 471
  - corresponding sides, 471
  - decimals, as percents, 218
  - direct variation, 202
  - distance formula, 660
  - equations
    - multi-step, 766
    - rewriting, 776
    - solving, 100, 106
    - two-step, 112
    - with variables on both sides, 771, 772
  - exponents
    - evaluating expressions, 714
    - negative, 732
  - expressions
    - like terms of, 84
    - linear, 91
  - inequalities
    - solving, 134, 143, 144, 150
    - writing, 128
  - integers
    - adding, 12
    - dividing, 32
    - multiplying, 26
    - subtracting, 18
  - linear equations
    - graphing, 570
    - in slope-intercept form, 594, 606
  - namings
    - in standard form, 600
  - outcomes, 404
  - parallel lines, 531
  - percent
    - equations, 236
    - of increase, 244
    - proportions, 230
  - perimeter of a composite figure, 328
  - powers
    - Product of Powers Property, 720
    - Quotient of Powers Property, 726
  - prisms
    - surface area, 360
    - volume of, 380
  - probability, 410
    - dependent events, 434
    - Fundamental Counting Principle, 426
    - outcomes, 404
  - proportions
    - direct variation, 202
    - percent, 230
    - solving, 190
    - writing, 182
  - Pythagorean Theorem, 642, 660
  - rational numbers
    - adding, 54
    - decimal representation of, 48
    - dividing, 68
    - multiplying, 68
    - subtracting, 62
  - scale drawings, 303
  - scientific notation
    - operations in, 752
    - writing numbers in, 746
    - writing in standard form, 740
  - simple interest, 256
  - slope, 196, 578
  - square roots, 651
    - finding, 630
  - surface area
    - of a cylinder, 372
    - of a prism, 360
  - transformations
    - dilations, 512
  - triangles
    - exterior angles of, 539
  - volume
    - of cones, 682
    - of a prism, 380
    - of similar solids, 698
  - Event(s), *See also* Probability**  
 compound, 420–427  
   defined, 424
  - defined, 402
  - dependent, 428–435  
   defined, 431  
   error analysis, 434  
   writing, 433
  - independent, 428–435  
   defined, 430  
   writing, 433
  - outcomes of, 402
  - probability of, 406–411  
   defined, 408  
   error analysis, 410
  - Example and non-example chart, 290, 540
  - Experiment(s)**  
 defined, 402  
 outcomes of, 400–405  
 project, 453  
 reading, 402  
 simulations, 436–437  
   defined, 436
  - Experimental probability**, 412–419  
 defined, 414  
 formula, 414
  - Exponent(s)**  
 defined, 712  
 evaluating expressions, 710–715  
   error analysis, 714  
   real-life application, 713
  - negative, 728–733  
   defined, 730  
   error analysis, 732  
   real-life application, 731  
   writing, 732
  - powers and, 710–721  
   error analysis, 720, 726  
   real-life application, 725  
   writing, 726
  - properties of
    - Power of a Power Property, 718
    - Power of a Product Property, 718
    - Product of Powers Property, 716–721

**Quotient of Powers Property,** 722–727

quotients and, 722–727

scientific notation

defined, 738

error analysis, 740, 746, 752

operations in, 748–753

project, 753

reading numbers in, 736–741

real-life applications, 739,

745, 751

writing numbers in, 742–747

zero, 728–733

defined, 730

**Expression(s)**

algebraic

error analysis, 84

like terms, 82

modeling, 85

real-life application, 83

simplest form of, 82

simplifying, 80–85

writing, 84

evaluating exponential, 710–715

error analysis, 714

real-life application, 713

factoring, 92–93

defined, 92

linear

adding, 86–91

defined, 88

error analysis, 91

modeling, 86–87, 91

real-life application, 89

subtracting, 86–91

writing, 90

**Exterior angle(s)**

alternate, 530

angle sum of, 546

real-life application, 545

defined, 529, 536

of triangles, 534–539

error analysis, 539

**Exterior angles of a polygon,**

defined, 536

**F**

**Factoring an expression,** 92–93

defined, 92

**Favorable outcome(s),** defined, 402

**Formula(s)**

angles

sum for a quadrilateral, 295

sum for a triangle, 288

area

of a circle, 334

of a parallelogram, 341

of a rectangle, 341

of a semicircle, 341

of similar figures, 502

of a triangle, 341

circumference, 319

distance, 658

pi, 316

perimeter of similar figures, 502

probability

dependent events, 431

of an event, 408

experimental, 414

independent events, 430

relative frequency, 412

theoretical, 415

**Pythagorean Theorem,** 640

rewriting, 774–777

slope, 572, 574

surface area

of a cube, 358

of a cylinder, 370

of a prism, 357

of a pyramid, 364

of a rectangular prism, 356

of similar solids, 695

temperature conversion, 775

volume

of a cone, 680

of a cube, 378

of a cylinder, 674

of a hemisphere, 689

of a prism, 378

of a pyramid, 384

of similar solids, 696

of a sphere, 688

**Formula triangle,** 684

**Four square,** 94, 644

**Fraction(s)**

comparing

decimals with, 220–225

percents with, 220–225

real-life application, 222

**complex,** defined, 165

decimals as

error analysis, 48

writing, 47

ordering

with decimals, 220–225

with percents, 220–225

real-life application, 223

repeating decimals written as,

654–655

**Fundamental Counting Principle**

defined, 422

error analysis, 426

writing, 425

**G**

**Geometry**

angles, 526–539, 542–555

adjacent, 270–275

complementary, 276–281

congruent, 272

constructing, 270–281

corresponding, 468

error analysis, 274

exterior, 529, 536

interior, 529, 536

of polygons, 542–549

of rotation, 486

supplementary, 276–281

vertical, 270–275

area of similar figures, 500–505

circles

area of, 332–337

center of, 318

circumference, 316–323

diameter, 318

radius, 318

semicircles, 320

composite figures

area of, 338–343

perimeter of, 324–329

constructions and drawings,

270–289, 292–305

line of reflection, 480

parallel lines, 526–533

perimeter of similar figures,

500–505

pi, 316

polygons

angles of, 542–549

concave, 543

convex, 543

**Pythagorean Theorem,** 638–643

converse of, 658

defined, 640

using, 656–661

quadrilaterals, 294

constructing, 292–297

defined, 292

- kite, 294  
 parallelogram, 294, 341  
 rectangle, 294, 341  
 rhombus, 294  
 square, 294  
 trapezoid, 294  
 sides, corresponding, 468  
 solids  
     cones, 678–683  
     cylinders, 672–677  
     similar, 692–699  
     spheres, 686–691  
     surface area of, 692–699  
     volume of, 672–683, 686–699,  
     692–699  
 surface area  
     of a cylinder, 368–373  
     of a prism, 354–361  
     of a pyramid, 362–367  
     of a rectangular prism, 356  
 tessellation, 472–473  
 transformations  
     congruent figures, 466–467  
     dilations, 506–513  
     reflections, 478–483  
     rotations, 484–491  
     similar figures, 494–505  
     translations, 48–53  
 transversals, 526–533  
 trapezoids, 294  
 triangles  
     angles of, 534–539  
     area of, 341  
     classifying, 284  
     congruent, 466–468  
     congruent sides, 284  
     constructing, 282–287  
     hypotenuse, 640  
     legs, 640  
     right, 640  
     similar, 550–555  
     volume of a prism, 376–381
- Graph of an inequality**, defined, 127
- Graphic Organizers  
 example and non-example chart, 290, 540  
 formula triangle, 684  
 four square, 94, 644  
 idea and examples chart, 20  
 information frame, 374  
 information wheel, 184, 434  
 notetaking organizer, 438
- process diagram, 56, 588  
 summary triangle, 238, 492  
 word magnet, 330  
 Y chart, 136
- Graphing**  
 inequalities, 124–129  
     defined, 127  
 proportional relationships, 176–177
- Graphs**  
 linear, 566–571  
     defined, 568  
     error analysis, 570  
     of horizontal lines, 568  
     real-life application, 569  
     in slope-intercept form, 590–595  
     solution of, 568  
     in standard form, 596–601  
     of vertical lines, 568
- proportional relationships, 582–587
- slope, 572–581  
     defined, 572, 574  
     error analysis, 578  
     formula, 572, 574  
     reading, 574
- H**
- Hemisphere(s)**  
 defined, 689  
 volume formula, 689
- Hypotenuse**, defined, 640
- I**
- Idea and examples chart, 20
- Image(s)**  
 defined, 474  
 reading, 474
- Independent events**, *See also Events, Probability*  
 defined, 430  
 formula, 430  
 writing, 433
- Indirect measurement**, 551–553  
 defined, 553  
 modeling, 551  
 project, 551
- Inequality**  
 Addition Property of, 132  
 defined, 126  
 Division Property of, 140–141
- graphing, 124–129  
     defined, 127
- Multiplication Property of**, 140–141
- solution of  
     defined, 126  
     reading, 133
- solution set of**  
     defined, 126
- solving two-step, 146–151  
     error analysis, 150  
     real-life application, 149  
     writing, 150
- solving using addition, 130–135  
     error analysis, 134  
     real-life application, 133  
     writing, 130
- solving using division, 138–145  
     error analysis, 144  
     project, 145  
     writing, 139
- solving using multiplication, 138–145  
     error analysis, 143  
     project, 145  
     writing, 139, 143
- solving using subtraction, 130–135  
     error analysis, 134  
     writing, 130
- Subtraction Property of**, 132
- symbols, 126  
     reading, 133
- writing, 124–129  
     error analysis, 128  
     modeling, 129
- Information frame, 374  
 Information wheel, 184, 734
- Integer(s)**  
 absolute value of, 2–7  
     error analysis, 6  
     real-life application, 5
- adding, 8–15  
     with different signs, 8–11  
     error analysis, 12  
     with the same sign, 8–11
- additive inverse of, 10  
     writing, 12
- defined, 4
- dividing, 28–33  
     with different signs, 28–30  
     error analysis, 32  
     reading, 32

real-life application, 31  
with the same sign, 28–30  
writing, 32  
multiplying, 22–27  
    with different signs, 22–24  
error analysis, 26  
modeling, 27  
real-life application, 25  
with the same sign, 22–24  
writing, 26  
subtracting, 14–19  
    error analysis, 18  
real-life application, 17  
writing, 18

### Interior angle(s)

alternate, 530  
defined, 529, 536  
of triangles, 534–539  
    real-life application, 537

### Interior angles of a polygon,

defined, 536  
**Interest**  
defined, 254  
principal, 254  
simple, 252–257  
    defined, 254  
        error analysis, 256  
writing, 256

### Irrational number(s), defined, 648

## K

**Kite**, defined, 294

## L

**Lateral surface area**, defined, 358

**Leg(s)**, defined, 640

### Like terms

combining to solve equations, 764  
defined, 82  
error analysis, 84  
writing, 84

### Line(s)

graphing  
    horizontal, 568  
    vertical, 568  
parallel, 526–533  
    defined, 528  
error analysis, 531  
project, 532  
slope of, 580  
symbol, 528

perpendicular  
    defined, 528  
    slope of, 581  
    symbol, 528  
of reflection, 56  
slope of, 572–581  
transversals, 526–533  
x-intercept of, 592  
y-intercept of, 592  
**Line of reflection**, defined, 480  
**Linear equation(s)**, *See also Equations, Proportional relationships*  
defined, 568  
graphing, 566–571  
    error analysis, 570  
    horizontal lines, 568  
    real-life applications, 569, 599  
    in slope-intercept form, 590–595  
    in standard form, 596–601  
    vertical lines, 568  
point-slope form  
    defined, 610  
    real-life application, 611  
    writing, 612  
    writing in, 608–613  
slope of a line, 572–581  
    defined, 572, 574  
    error analysis, 578  
    formula, 572, 574  
    reading, 574  
slope-intercept form  
    defined, 592  
    error analysis, 594, 606  
    real-life applications, 593, 605  
    writing in, 593–607  
    x-intercept, 592  
    y-intercept, 592  
solution of, 568  
standard form, 596–601  
    defined, 598  
    error analysis, 600  
modeling, 601  
real-life application, 599  
writing, 600  
**Linear expression(s)**  
adding, 86–91  
    modeling, 86–87, 91  
    writing, 90  
factoring, 92–93  
subtracting, 86–91  
    error analysis, 91

modeling, 87  
real-life application, 89  
writing, 90

### Literal equation(s), defined, 774

*Logic, Throughout. For example, see:*

absolute value, 3  
angles, 281  
    interior, 534  
    measures, 532  
circles, 323  
circumference, 323  
constructing a triangle, 287  
cube roots, 637  
inequalities  
    solving, 145  
    writing, 129  
linear equations  
    graphing, 566, 601  
    in slope-intercept form, 591  
linear expression, 91  
percent equations, 237  
prisms, 381  
probability  
    dependent events, 434  
    experimental, 417  
    independent events, 434  
    theoretical, 417  
rewriting equations, 777  
samples, 445  
transformations  
    similar figures, 499

## M

### Markup(s), 246–251

defined, 248  
writing, 250

### Meaning of a Word

adjacent, 270  
dilate, 506  
opposite, 10  
proportional, 170  
rate, 162  
rational, 44  
reflection, 478  
rotate, 484  
translate, 472  
transverse, 526

*Mental Math, Throughout. For example, see:*

integers  
    adding, 13  
    subtracting, 19

- proportions, 181  
rotations, 489
- Modeling, Throughout. For example, see:*
- decimals as percents, 214–215
  - direct variation, 203
  - expressions
    - algebraic, 85
    - linear, 86–87, 91
  - indirect measurement, 551
  - inequalities, 129
  - linear equations
    - in standard form, 601
  - multiplying integers, 27
  - percents as decimals, 214–215
  - probability, 418
  - Pythagorean Theorem, 638
  - scale models, 305
  - solutions of equations, 96–97, 102
  - volume of a cylinder, 677
- Multiplication**
- equations, solving by, 102–107
  - inequalities, solving by, 138–145
  - of integers, 22–27
    - with different signs, 22–24
    - error analysis, 26
    - modeling, 27
    - real-life application, 25
    - with the same sign, 22–24
    - writing, 26
  - Property**
    - of Equality, 104
    - of Inequality, 140–141
  - of rational numbers, 64–69
    - error analysis, 68
    - writing, 65, 68
- Multiplication Property of Equality**, 104
- Multiplication Property of Inequality**, 140–141
- error analysis, 143
- N**
- Notetaking organizer, 438
- Number(s)**
- irrational, 648–653
  - defined, 648
  - rational, 648
  - real, 648–653
    - classifying, 648
    - defined, 648
- O**
- Number Sense, Throughout. For example, see:*
- adding rational numbers, 55
  - angles
    - exterior, 538
    - of a polygon, 547
  - cube roots, 637
  - exponents, 714, 727, 732
  - fractions
    - comparing percents with, 224
    - ordering percents and, 225
  - inequalities, 135, 145
  - integers
    - adding, 12
    - dividing, 33
    - multiplying, 27
  - percents
    - comparing fractions with, 224
    - of increase, 244
    - ordering fractions and, 225
    - proportions, 230
  - probability, 418
  - proportions, 190, 230
  - real numbers, 653
  - reciprocals, 68
  - scientific notation, 741, 752
  - similar solids
    - surface area of, 697
    - volume of, 697
  - slope, 197
  - solving equations, 107
  - square roots, 630
  - statistics, 453
  - surface area of a prism, 361
  - transformations
    - reflections, 483
    - similar figures, 504
- Open-Ended, Throughout. For example, see:**
- absolute value, 7
  - angles, 275, 281
  - area of a composite figure, 342
  - composite figures, 328
  - dilations, 513
  - equations
    - linear, 594
    - multi-step, 766
    - with variables on both sides, 771, 772
  - exponents, 733
- inequalities, 143, 150
- integers, 7
- adding, 13
  - dividing, 32
  - multiplying, 26
  - opposite, 18
  - subtracting, 19
- inverse operations, 106
- parallel lines, 531
- percents as decimals, 218
- probability, 410
  - compound events, 425
  - theoretical, 417
- proportions**
- solving, 190
  - writing, 174, 182
- rates, 167
- rational numbers**
- adding, 54
  - decimal representation of, 49
  - multiplying, 69
  - subtracting, 63
- ratios, 174
- scale factor, 304
- similar solids, 697
- similar triangles, 555
- slope, 577
- solving equations, 107
- square roots, 653
- surface area of a prism, 360
- volume
  - of a prism, 381
  - of a pyramid, 386, 387
- Opposites**, defined, 10
- Outcomes**, *See also Events, Probability*
- counting, 403
- error analysis, 404
- defined, 402
- experiment, 402
- favorable, 402
- reading, 402
- writing, 404
- P**
- Parallel line(s)
- defined, 528
  - slope of, 580
  - symbol, 528
- and transversals, 526–533
- error analysis, 531
  - project, 532

- Parallelogram(s)**  
 area of, 341  
 defined, 294
- Patterns, Throughout. For example, see:**  
 dividing integers, 33
- Percent(s)**  
 of change, 242  
 comparing  
   decimals with, 220–225  
   fractions with, 220–225  
   real-life application, 222
- as decimals, 214–219  
 error analysis, 218  
 modeling, 214–216  
 real-life application, 217
- of decrease, 240–245
- equation**, 232–237  
 error analysis, 236  
 real-life application, 235
- error, 243
- of increase, 240–245
- ordering  
   with decimals, 220–225  
   with fractions, 220–225  
   real-life application, 223
- proportions, 226–231  
 error analysis, 230  
 real-life application, 229  
 writing, 230
- research, 219
- Percent of change**  
 defined, 242  
 formula, 242
- Percent of decrease**  
 defined, 242  
 formula, 242  
 writing, 244
- Percent error**  
 defined, 243  
 formula, 243
- Percent of increase**  
 defined, 242  
 error analysis, 244  
 formula, 242
- Perfect cube**, defined, 634
- Perfect square**, defined, 628
- Perimeter(s)  
 of composite figures, 324–329  
 error analysis, 328
- of similar figures, 500–505  
 formula, 502  
 writing, 504
- Perpendicular line(s)  
 defined, 528  
 slope of, 581  
 symbol, 528
- Pi**  
 defined, 319  
 formula, 316
- Point-slope form**  
 defined, 610  
 writing equations in, 608–613  
   real-life application, 611  
   writing, 612
- Polygon(s)  
 angles, 542–549  
   error analysis, 547, 548  
   exterior, 536  
   interior, 536  
   measures of interior, 544  
   real-life application, 545  
   sum of exterior, 546
- concave, 543  
 convex, 543  
 defined, 544
- kite, 294
- parallelogram, 294
- quadrilateral, 292–297
- reading, 544
- rectangle, 294, 341
- regular, 545
- rhombus, 294
- square, 294
- trapezoid, 294
- triangle(s), 282–289, 534–539  
   error analysis, 539  
   modeling, 551  
   project, 551  
   similar, 550–555  
   writing, 554
- Population(s)**, 440–453  
 comparing, 448–453  
   project, 453  
   writing, 452
- defined, 440
- research, 441
- samples, 440–447  
   biased, 442  
   defined, 440  
   unbiased, 442
- Power(s)**, *See also* Exponents  
 base of, 712  
 defined, 712  
 exponent of, 712  
 of a power, 718
- of a product, 718
- product of, 716–721  
 error analysis, 720
- Product of Powers Property**, 718
- quotient of, 722–727  
 error analysis, 726
- Quotient of Powers Property**, 724
- real-life application, 725  
 writing, 726
- scientific notation  
 defined, 738  
 error analysis, 740, 746, 752  
 operations in, 748–753  
 project, 753  
 reading numbers in, 736–741  
 real-life applications, 739, 745, 751  
 writing numbers in, 742–747
- Power of a Power Property**, 718
- Power of a Product Property**, 718
- Precision, Throughout. For example, see:**  
 angles of a triangle, 539  
 constructing angles, 275, 281  
 equations with variables on both sides, 772, 773  
 exponents, 733  
 indirect measurement, 551  
 inequalities  
   graphing, 128  
   solving, 143
- linear equations  
 graphing, 566, 570  
   in slope-intercept form, 606
- ordering fractions, decimals, and percents, 225
- outcomes, 405
- percents  
   of change, 245
- prisms, 381
- Product of Powers Property**, 720
- Pythagorean Theorem**, 643
- rates, 169
- rational numbers  
 dividing, 69  
 multiplying, 65
- similar solids, 699
- square roots, 631
- transformations  
 rotations, 485  
 translations, 473

- P**rices  
 discounts and markups, 246–251  
 defined, 248  
 writing, 250
- Principal**, defined, 254
- Prism(s)**  
 cross section of, 388  
 surface area of, 354–361  
   error analysis, 360  
   formula, 357  
   real-life application, 358  
   rectangular, 356  
   writing, 359  
 volume of, 376–381  
   error analysis, 380  
   formula, 378  
   real-life application, 379  
   rectangular, 376  
   writing, 386
- Probability**, 406–419  
 defined, 408  
 error analysis, 410  
 events, 400–405  
   compound, 420–427  
   dependent, 428–435  
   error analysis, 434  
   independent, 428–435  
   writing, 433  
 of events  
   defined, 408  
   formula for, 408  
 experimental, 412–419  
   defined, 414  
   formula, 414  
 experiments  
   defined, 402  
   reading, 402  
   simulations, 436–437
- Fundamental Counting Principle**, 422  
 error analysis, 426
- outcomes**, 400–405  
 defined, 402  
 error analysis, 404  
 favorable, 402  
 reading, 402  
 writing, 404
- project, 419
- research, 427
- sample space, 422
- theoretical, 412–419  
 defined, 415  
 formula, 415
- modeling, 418  
 writing, 425
- Problem Solving**, *Throughout. For example, see:*  
 adding integers, 13  
 angles, 281  
 angles of a polygon, 548  
 area and perimeter, 505  
 circumference, 323  
 decimals as percents, 219  
 equations, two-step, 113  
 equations with variables on both sides, 773  
 inequalities, two-step, 151  
 linear equations  
   graphing, 571  
   in point-slope form, 613  
 percent proportions, 231  
 probability, 427, 435  
 proportions, 191  
 proportional relationships, 587  
 Pythagorean Theorem, 639  
 rational numbers, 49  
 simple interest, 257  
 solids, 677  
 surface area, 367  
 transformations  
   dilations, 513  
   translations, 477  
 volume, 387  
   of a cylinder, 677
- Process diagram**, 56, 588
- Product of Powers Property**, 716–721  
 defined, 718  
 error analysis, 720
- Properties**  
 Addition Property of Equality, 98  
   real-life application, 99  
 Addition Property of Inequality, 132  
 Additive Inverse Property, 10  
 Cross Products Property, 173  
 Division Property of Equality, 104  
 Division Property of Inequality, 140–141  
   error analysis, 144  
 Multiplication Property of Equality, 104  
 Multiplication Property of Inequality, 140–141  
   error analysis, 143
- Power of a Power Property, 718  
 Power of a Product Property, 718
- Product of Powers Property**, 716–721
- Quotient of Powers Property**, 722–727
- Subtraction Property of Equality**, 98
- Subtraction Property of Inequality**, 132  
 real-life application, 133
- Proportion(s)**, 170–599  
 cross products, 173  
 Cross Products Property, 173  
 defined, 173  
 percent, 226–231  
   error analysis, 230  
   real-life application, 229  
   writing, 230  
 scale and, 300  
 similar figures, 494–505  
 solving, 186–191  
   error analysis, 190  
   real-life application, 189  
   writing, 190  
 writing, 178–183  
   error analysis, 182
- Proportional**  
 defined, 172  
 relationship  
   constant of proportionality, 200  
   direct variation, 198–203, 160  
   error analysis, 202  
   graphing, 176–177, 582–587  
   modeling, 203  
   reading, 172  
   real-life application, 201  
   writing, 202
- Pyramid(s)**  
 cross section of, 388  
 regular, 364  
 slant height, 364  
 surface area of, 362–367  
   formula, 364  
   real-life application, 365  
 volume of, 382–387  
   formula, 384  
   real-life application, 385  
   writing, 386
- Pythagorean Theorem**, 638–643  
 converse of, 658  
 defined, 640

error analysis, 642  
modeling, 638  
project, 643  
real-life applications, 638, 659  
using, 656–661  
    distance formula, 658  
    error analysis, 660  
    writing, 660

## Q

Quadrilateral(s), 292–297  
    classifying, 294  
    constructions, 292–297  
        reading, 294  
    defined, 292  
    kite, 294  
parallelogram, 294, 341  
rectangle, 294, 341  
rhombus, 294  
square, 294  
sum of angle measures, 295  
trapezoid, 294  
Quotient of Powers Property,  
    722–727  
    defined, 724  
    error analysis, 726  
    real-life application, 725  
    writing, 726

## R

Radical sign, defined, 628  
Radicand, defined, 628  
Radius, defined, 318  
Rate(s)  
    defined, 164  
    ratios and, 162–169  
research, 169  
unit rate  
    defined, 164  
    writing, 167  
Ratio(s), *See also* Proportions,  
    Rates  
complex fraction, 165  
defined, 164  
proportions and, 170–189  
    cross products, 173  
    Cross Products Property, 173  
    error analysis, 182, 190  
    proportional, 172  
    real-life application, 189  
    solving, 186–191  
    writing, 178–183

rates and, 162–169  
    complex fractions, 165  
    writing, 167  
scale and, 300  
similar figures  
    areas of, 502  
    perimeters of, 502  
slope, 192–197  
    error analysis, 196

**Rational number(s), *See also***

Fractions, Decimals  
adding, 50–55  
    error analysis, 54  
    real-life application, 53  
    writing, 54, 55, 65  
defined, 44, 46, 648  
dividing, 64–69  
    error analysis, 68  
    real-life application, 67  
    writing, 65, 68  
multiplying, 64–69  
    error analysis, 68  
    writing, 65, 68  
ordering, 47  
repeating decimals  
    defined, 46  
    error analysis, 48  
    writing, 46  
subtracting, 58–63  
    error analysis, 62  
    real-life application, 61  
    writing, 62  
terminating decimals  
    defined, 46  
    writing, 46  
writing as decimals, 46  
Reading  
    congruent angles, 284  
    congruent sides, 284  
experiments, 402  
images, 474  
inequalities  
    solving, 133  
    symbols of, 126  
outcomes, 402  
polygons, 544  
proportional relationship, 172  
quadrilaterals, 294  
slope, 574  
symbol  
    congruent, 466  
    prime, 474  
    similar, 496

**Real number(s), 648–653**  
classifying, 648  
defined, 648  
error analysis, 651  
Real-Life Applications, *Throughout*.

*For example, see:*

absolute value, 5  
angles of triangles, 537  
cube roots, 635  
decimals, 217, 222, 223  
direct variation, 201  
distance formula, 659  
equations  
    multi-step, 765  
    rewriting, 775  
    with variables on both sides,  
        770  
exponents  
    evaluating expressions, 713  
    negative, 731  
Quotient of Powers Property,  
    725  
expressions  
    linear, 89  
    simplifying, 83  
fractions, 217, 222, 223  
integers  
    dividing, 31  
    multiplying, 25  
    subtracting, 17  
interior angles of a polygon, 545  
linear equations  
    graphing, 569  
    in point-slope form, 611  
    in slope-intercept form, 593,  
        605  
    in standard form, 599  
    writing, 605  
percent, 217, 222, 223  
    equations, 235  
    proportions, 229  
proportions, 189, 229  
Pythagorean Theorem, 638, 659  
rational numbers  
    adding, 53  
    dividing, 67  
    subtracting, 61  
scientific notation  
    operations in, 751  
    reading numbers in, 739  
    writing numbers in, 745  
similar figures, 497  
solving equations, 99, 105, 111

- solving inequalities, 133, 149  
 square roots  
     approximating, 650  
     finding, 629  
 surface area  
     of a cone, 681  
     of a cylinder, 371, 675  
     of a prism, 358  
     of a pyramid, 365  
 volume  
     of a prism, 379  
     of a pyramid, 385  
**Reasoning, Throughout. For example, see:**  
 absolute value, 7  
 angle measures, 532, 539, 548  
 angles  
     adjacent, 280  
     complementary, 280, 281  
     congruent, 275  
     constructing, 275  
     supplementary, 280, 281  
 circles, 322  
 circumference, 322  
 composite figures  
     area of, 342  
     perimeter of, 328  
 cones, 389  
 congruent figures, 471  
 cross sections  
     of a cone, 389  
     of a prism, 388  
 cube roots, 633, 636  
 direct variation, 203  
 distance formula, 661  
 exponents, 733  
 expressions  
     linear, 91  
     simplifying, 81, 84, 85  
 exterior angles of polygons, 548  
 indirect measurement, 554  
 inequalities, 128  
     solving, 134, 135, 151  
 integers  
     multiplying, 27  
     subtracting, 19  
 linear equations  
     in point-slope form, 613  
     in slope-intercept form, 595  
 markups, 250  
 percents  
     discount and markups, 250  
     equations, 236
- of increase, 245  
 proportions, 231  
 perfect squares, 631  
 probability, 410  
     experimental, 417, 419  
     simulations, 437  
     theoretical, 419  
 Product of Powers Property, 720  
 proportional relationships, 586, 587  
 proportions  
     proportional relationships, 177, 203  
     solving, 191  
     writing, 183  
 Pythagorean Theorem, 661  
 quadrilaterals, 293, 296  
 rational numbers  
     adding, 55  
     subtracting, 63  
 rewriting equations, 777  
 scale factor, 303  
 scale models, 304  
 scientific notation  
     operations in, 748  
     reading numbers in, 741  
     writing numbers in, 746, 747  
 simple interest, 256, 257  
 slope, 196, 577, 579  
 solving equations, 107, 113  
 square roots, 630  
 statistics  
     comparing populations, 452  
     samples, 445, 447  
 surface area, 367  
     of a cylinder, 373  
     of a prism, 355  
     of a pyramid, 363  
 transformations  
     congruent figures, 483  
     dilations, 511, 513  
     reflections, 482, 483  
     rotations, 491  
     similar figures, 499, 505  
     translations, 477  
 triangles  
     angle measures of, 289  
     constructions, 283  
     exterior angles of, 539  
     similar, 550, 554, 555  
 volume  
     of a cone, 682, 683  
     of a cylinder, 338, 691
- of a prism, 387  
 of a pyramid, 386, 387  
 of a sphere, 691  
**Rectangle(s)**  
     area of, formula, 341  
     defined, 294  
**Reflection(s), 478–483**  
     in the coordinate plane, 479–483  
     defined, 480  
     line of, 480  
     writing, 545  
**Regular polygon(s), defined, 545**  
**Regular pyramid, defined, 364**  
**Relative frequency, See also Probability**  
     defined, 412  
     formula, 412  
**Repeated Reasoning, Throughout. For example, see:**  
     adding rational numbers, 55  
 circles  
     area, 337  
     circumference, 337  
 cube roots, 652  
 cylinders, 373  
 equations, 777  
 exponents, 710  
     negative, 729  
     zero, 728  
 polygons  
     angles of, 535, 542, 543  
 probability, 427  
 repeating decimals, 654, 655  
 similar solids  
     surface area of, 693  
     volume of, 693, 699  
 slope, 193, 573  
 solving equations, 109  
 surface area, 373  
**Repeating decimal(s)**  
     defined, 46  
     error analysis, 48  
     writing, 48  
     writing as fractions, 654–655  
**Rhombus, defined, 294**  
**Rise, defined, 574**  
**Rotation(s), 484–491**  
     angle of, 486  
     center of, 486  
     in the coordinate plane, 485–491  
     defined, 486  
     rotational symmetry, 490  
**Run, defined, 574**

**Sample(s)**, 440–447

- biased, 442
- defined, 440
- research, 441
- unbiased, 442

**Sample space**, defined, 422**Scale**

- defined, 300
- research, 299

**Scale drawing**, 298–305

- defined, 300
- error analysis, 303
- research, 299
- scale, 300
- scale factor, 301

**Scale factor**

- defined, 301, 508
- finding, 301

**Scale model**

- defined, 300
- finding distance in, 301
- modeling, 305

**Semicircle(s)**

- area of, 341
- defined, 320

**Scientific notation**

- defined, 738
- operations in, 748–753
  - error analysis, 752
  - real-life application, 751
  - writing, 752

project, 753

reading numbers in, 736–741
 

- real-life application, 739
- writing, 740

writing numbers in, 742–747
 

- error analysis, 740, 746
- real-life application, 745
- standard form, 738–739
- writing, 746

**Side(s)**

- classifying triangles by, 284
- congruent, 284
  - defined, 284
  - reading, 284

corresponding, defined, 44

**Similar figures**, 494–505

- areas of, 500–505
  - formula, 502
  - writing, 504
- defined, 496
- perimeters of, 500–505
  - formula, 502
  - writing, 504
- reading, 496
- real-life application, 497

**Similar solids**

- defined, 356
- surface area of, 692–699
  - linear measures, 695
- volume of, 692–699
  - error analysis, 698
  - formula, 696

**Simple interest**, 252–257

- defined, 254
- error analysis, 256
- writing, 256

**Simplest form**, defined, 82**Simulation(s)**, 436–437

- defined, 436

**Slant height**, defined, 364

- Slope**, 192–197, 572–581
  - defined, 194, 572, 574
  - error analysis, 196, 578
  - formula, 572, 574
  - negative, 576
  - and parallel lines, 580
  - and perpendicular lines, 581
  - positive, 576
  - project, 578
  - reading, 574
  - rise, 574
  - run, 574
  - undefined, 576
  - zero, 576

**Slope-intercept form**, 590–595

- defined, 592
- graphing equations in, 590–595
  - error analysis, 594
  - real-life application, 593
- writing equations in, 593–607
  - error analysis, 606
  - real-life application, 605
  - writing, 606
- x*-intercept, 592
- y*-intercept, 592

**Solids**, *See also:* Surface area, Three-dimensional figures, Volume

**cone**

- real-life application, 681
- volume of, 678–683
- writing, 682

**cross section**, 388–389**cube**, 358

- cylinder**, 368–373
  - modeling, 677
  - real-life application, 675
  - volume of, 672–677

**hemisphere**, 689

- volume of, 689

**prism**, 354–361, 376–381

- pyramid**, 362–367, 382–387
- similar**

- defined, 694

- error analysis, 698

- linear measures, 695

- volume of, 692–699

**sphere**

- volume of, 686–691

**surface area of**, 692–699

- formula, 695

**volume of**, 672–683, 686–699

- error analysis, 682

- real-life applications, 675, 681

**Solution of an inequality**, defined, 126**Solution of a linear equation**, defined, 568**Solution set**, defined, 126**Sphere(s)**

- defined, 686

- volume of, 686–691

- formula, 688

**Square**, defined, 294**Square root(s)**

- approximating, 646–653

- real-life application, 650

- writing, 652

**defined**, 628

- error analysis, 651

- finding, 626–631

- error analysis, 630

- real-life application, 629

**perfect square**, 628**radical sign**, 628**radicand**, 628**Standard form of a linear equation**

- defined, 598

- graphing equations in, 596–601

- error analysis, 600

- modeling, 601

- real-life application, 599

- writing, 600

- Standard form of a number  
scientific notation and, 738–739
- Statistics, *See also* Probability  
populations, 440–453  
comparing, 448–453  
defined, 440  
project, 453  
research, 441  
writing, 452
- samples, 440–447  
biased, 442  
defined, 440  
research, 441  
unbiased, 442
- Structure, *Throughout. For example, see:*  
angles, 275  
angles of a polygon, 534, 543  
composite figures, 343  
direct variation, 199  
distance formula, 661  
exponents, 714, 729  
expressions  
factoring, 93  
linear, 91  
simplifying, 85
- integers  
adding, 9  
dividing, 29  
multiplying, 23  
subtracting, 15
- parallelograms, 297
- percent proportions, 231
- probability, 435
- Pythagorean Theorem, 661
- real numbers, 653
- repeating decimals, 654
- scientific notation, 748
- slope, 579
- solving equations, 97
- square roots, 646, 653
- subtracting rational numbers, 63
- surface area of a prism, 361
- transformations  
dilations, 512, 513  
similar figures, 505
- volume  
of a prism, 377  
of a pyramid, 383  
of solids, 683
- Study Tip  
additive inverse, 11  
amount of error, 243
- angles  
alternate exterior, 530  
alternate interior, 530  
corresponding, 528  
exterior, 537
- circumference, 319
- comparing populations, 450
- constructing triangles, 285
- cross products, 173
- decimal points, 216
- direct variation, 200, 584
- discounts, 248
- equations, 765
- exponents, 25, 718  
Quotient of Powers Property, 725
- expressions  
linear, 89  
simplifying, 82
- inequalities  
graphing, 127  
solving, 132
- linear equations, 592  
in point-slope form, 611  
in slope-intercept form, 592  
in standard form, 598  
writing, 604, 611
- opposites, 11
- ordering decimals and percents, 222
- percent proportions, 228
- powers, 25, 712
- prisms, 378
- probability, 408  
Fundamental Counting Principle, 422  
simulating outcomes, 436, 437
- proportional relationships, 177, 584
- pyramids, 384  
volume of, 384
- Pythagorean triples, 658
- quadrilaterals, 294
- radius, 319
- rational numbers, 47, 52
- ratios, 302
- real numbers, 648
- right triangles, 640
- scale, 300
- scale drawings, 302
- scientific notation, 738, 744, 750  
in standard form, 750
- simplifying equations, 110
- slope, 194, 574, 575, 584
- solids, 689  
cones, 680  
similar solids, 696
- squares, 294
- square roots  
approximating, 649  
of zero, 628
- transformations  
dilations, 509  
rotations, 486, 487
- transversals, 528, 530
- volume  
of a cone, 680  
of a cylinder, 674  
of a prism, 378  
of a pyramid, 384
- Subtraction  
of expressions  
error analysis, 91  
linear, 86–91  
modeling, 87  
real-life application, 89
- of integers, 14–19  
error analysis, 18  
real-life application, 17  
writing, 18
- Property  
of Equality, 98  
of Inequality, 132
- of rational numbers, 58–63  
error analysis, 62  
real-life application, 61  
writing, 62
- to solve inequalities, 130–135
- Subtraction Property of Equality, 98
- Subtraction Property of Inequality, 132  
real-life application, 133
- Summary triangle, 238, 492
- Supplementary angles**  
constructing, 276–281  
defined, 278
- Surface area  
of a cylinder, 368–373  
error analysis, 372  
formula, 370  
real-life application, 371
- formula, 357  
cylinders, 370  
prism, 357  
pyramid, 364  
rectangular prism, 356

lateral, defined, 358  
of a prism, 354–361  
cube, 358  
error analysis, 360  
formula, 357  
real-life application, 358  
rectangular, 356  
triangular, 357  
writing, 359  
of a pyramid, 362–367  
formula, 364  
real-life application, 365  
of similar solids, 692–699  
formula, 695  
linear measures, 695

**Symbols**  
congruent, 468  
of inequality, 126  
parallel lines, 528  
perpendicular lines, 528  
prime, 474  
similar, 496  
square root, 628  
Symmetry, rotational, 490

## T

**Term(s)**  
like, 82  
error analysis, 84  
writing, 84

**Terminating decimal**  
defined, 46  
writing, 48

**Theorem**, defined, 638

**Theoretical probability**, *See also Probability*

defined, 415  
formula, 415  
modeling, 418

**Three-dimensional figure(s)**,  
388–389

cross sections of, 388

**Transformation(s)**

congruent figures, 466–467  
corresponding angles of, 468  
corresponding sides of, 468  
defined, 468  
error analysis, 471  
identifying, 468  
reading, 468  
defined, 474  
dilations, 506–513

center of, 508  
in the coordinate plane,  
506–513  
defined, 508  
error analysis, 512  
scale factor, 508  
image, 474  
reflections, 478–483  
in the coordinate plane,  
479–481  
defined, 480  
line of, 480  
writing, 482  
rotations, 484–491  
angle of, 486  
center of, 486  
in the coordinate plane,  
485–491  
defined, 486  
rotational symmetry, 490  
similar figures, 494–505  
areas of, 500–505  
defined, 496  
perimeters of, 500–505  
reading, 496  
real-life application, 497  
writing, 504  
tessellations, 472–473  
translations, 472–477  
in the coordinate plane, 474  
defined, 528  
writing, 476

**Translation(s)**, 472–477  
in the coordinate plane, 473–477  
defined, 474  
tessellations, 472–473  
writing, 476

**Transversal(s)**, 526–533  
alternate exterior angles and,  
530  
alternate interior angles and,  
530  
corresponding angles and, 528

defined, 528  
exterior angles and, 529  
interior angles and, 529  
**Trapezoid**, defined, 294  
**Triangle(s)**  
acute, 284  
angles of, 534–539  
error analysis, 539  
exterior, 536  
interior, 536

real-life application, 537  
area of, formula, 341  
classifying  
by angles, 284  
error analysis, 286  
by sides, 284  
writing, 286  
congruent, 466–468  
congruent sides, 284  
constructing, 282–287  
equiangular, 284  
equilateral, 284  
isosceles, 284  
obtuse, 284  
Pythagorean Theorem, 638–643  
defined, 640  
error analysis, 642, 660  
project, 643  
real-life applications, 638, 659  
using, 656–661  
right, 284  
hypotenuse, 640  
legs, 640  
scalene, 284  
sum of angle measures, 288–289

**similar**, 550–555

angles of, 552  
modeling, 551  
project, 551  
writing, 554

**Two-step inequalities**, *See Inequality*

## U

**Unbiased sample(s)**, defined, 442

**Unit rate**

defined, 164  
writing, 167

## V

**Vertical angles**

constructions, 270–275  
defined, 272  
error analysis, 274

**Volume**

of a composite solid, 689  
of a cone, 678–683  
error analysis, 682  
formula, 680  
real-life application, 681  
writing, 682

of a cylinder, 672–677  
 modeling, 677  
 real-life application, 675  
 of a prism, 376–381  
 error analysis, 380  
 formula, 378  
 real-life application, 379  
 rectangular, 376  
 writing, 386  
 of a pyramid, 382–387  
 formula, 384  
 real-life application, 385  
 writing, 386  
 of similar solids, 692–699  
 error analysis, 698  
 formula, 696  
 of a sphere, 686–691  
 formula, 688

**W**

Which One Doesn't Belong?,  
*Throughout. For example, see:*  
 absolute value, 6  
 angle measures, 531  
 circles, 321  
 comparing fractions, decimals,  
 and percents, 218, 224  
 corresponding angles, 470  
 dividing integers, 32  
 exponents, 714  
 inequalities, 134  
 linear equations, 570  
 percent proportions, 230  
 polygons, 547  
 powers, 726  
 pyramids, 366  
 Pythagorean Theorem, 660  
 quadrilaterals, 296

rational numbers, 62  
 ratios, 174  
 scientific notation, 740  
 similar triangles, 554  
 solving equations, 100  
 square roots, 651  
 transformations  
   congruent figures, 470  
   reflections, 482  
 volume of solids, 690  
 Word magnet, 330  
**Writing, *Throughout. For example, see:***  
 comparing populations, 452  
 decimals  
   repeating, 48  
   terminating, 48  
 discounts, 250  
 equations  
   equivalent, 100  
   multi-step, 766  
   solving, 106  
   two-step, 112, 113  
   with variables on both  
     sides, 771  
 exponents, 732  
 expressions  
   algebraic, 84  
   linear, 90  
 integers  
   additive inverse of, 12  
   dividing, 32  
   multiplying, 26  
   subtracting, 18  
 interest rate, 256  
 linear equations  
   in point-slope form, 612  
   in standard form, 600  
   powers, 726  
 markups, 250  
 percents  
   of decrease, 244  
   proportions, 230  
 probability  
   events, 433  
   Fundamental Counting Principle, 425  
   outcomes, 404, 425  
 proportions, 182  
   solving, 190  
 Pythagorean Theorem, 660  
 rates, 167  
 rational numbers  
   adding, 54, 55, 65  
   dividing, 65, 68  
   multiplying, 65, 68  
   subtracting, 62, 65  
 scientific notation, 740, 746, 752  
 similar triangles, 554  
 solving inequalities, 139, 143, 150  
 square roots, 651, 652  
 surface area of a prism, 359  
 transformations  
   reflections, 482  
   similar figures, 504  
   translations, 476  
 triangles, classifying, 286  
 volume  
   of a prism, 386  
   of a pyramid, 386  
   of a solid, 682

**X**

**x-intercept**, defined, 592

**Y**

Y chart, 136

**y-intercept**, defined, 592