

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, 268–273, 476–481

- defined, 270, 478
- error analysis, 272, 480
- real-life application, 271, 479

Addition

Associative Property of, 127–131

Commutative Property of, 126–131

of decimals, 78–83

- error analysis, 82
- real-life application, 81
- writing, 82

equations

- error analysis, 305
- real-life application, 304
- solving by, 300–307

of expressions

- linear, 560–565
- modeling, 560–561

of fractions, 42–43

inequalities

- solving by, 332–337

of integers, 482–485

- with different signs, 482–485
- error analysis, 486
- with the same sign, 482–485

Property

- of Equality, 303, 572
- error analysis, 130
- of Inequality, 334
- real-life application, 129, 573
- of Zero, 129

of rational numbers, 524–529

- error analysis, 528
- real-life application, 527
- writing, 528, 529, 539

whole numbers, 4

Addition Property of Equality, 303, 572

real-life application, 304, 573

Addition Property of Inequality, 334

Addition Property of Zero, 129

Additive inverse

- defined, 484
- writing, 486

Additive Inverse Property, 484

Algebra

equations

- equivalent, 572
- modeling, 570–571, 576, 582–583

in one variable, 294–299

solving, 300–313, 570–587

in two variables, 314–321

two-step, 582–587

writing, 574, 580, 586

expressions

- linear, 560–565
- modeling, 560–561, 565
- simplifying, 135–139, 554–559
- writing, 110–123, 558, 564

formulas, *See* Formulas

inequalities

- graphing, 324–331
- solving, 332–343
- writing, 326

Algebra tiles

equations, 570–571, 576, 582–583

expressions, 560–561

Algebraic expression(s), 110–117

defined, 112

error analysis, 115, 116

evaluating

- with two operations, 114
- with two variables, 113

factoring, 141

like terms

- combining, 136
- defined, 136

real-life application, 114

simplifying, 135

terms

- defined, 112
- like, 136

writing, 112–113

Area

of a composite figure, 172–173

real-life application, 173

of a parallelogram, 152–157

error analysis, 156

formula, 154

real-life application, 155

of a polygon

real-life application, 177

of a trapezoid, 166–171

error analysis, 170

formula, 168

real-life application, 169

writing, 167

of a triangle, 158–163

error analysis, 162

formula, 160

real-life application, 161

research, 163

writing, 163

Associative Property of Addition, 126–131

error analysis, 130

Associative Property of

Multiplication, 126–131

B

Base, defined, 12

Base ten blocks for modeling

- decimal addition, 78
- decimal division, 92–93
- decimal multiplication, 84
- decimal subtraction, 78

Box-and-whisker plot(s), 458–465

- defined, 460
- error analysis, 463
- five-number summary, 460

C

Choose Tools, *Throughout*.

For example, see:

data displays

- choosing, 465
- measures of center, 465
- variation of distribution, 465

decimals

- adding, 82
- ordering, 261
- subtracting, 82

equations in two variables, 315, 320

parallelograms, area of, 156

ratio tables, 215

ratios, graphing, 215

- Coefficient**, defined, 112
- Common Error
 percent equations, 670
 polygons in the coordinate plane, 177
 reflecting points in the coordinate plane, 283
 writing expressions, 120, 129
- Common factors**, defined, 32
- Common multiple(s)**, 36–41
 defined, 38
- Commutative Property of Addition, 126–131
 real-life application, 129
- Commutative Property of Multiplication, 126–131
- Comparing
 integers, 254–259
 ratios, 210–215
- Complex fraction**, defined, 601
- Composite figure(s)**
 area of, 172–173
 real-life application, 173
 defined, 172
- Concept circle, 410
- Connections to math strands
 Algebra, 116, 117, 138, 487, 493, 501, 506
 Geometry, 91, 99, 130, 139, 141, 195, 231, 283, 299, 306, 342, 373, 565, 575, 587, 611, 681
- Constant**, defined, 112
- Constant of proportionality**, defined, 636
- Conversion factor**, defined, 234
- Coordinate plane**
 defined, 276
 distances in, 277
 finding distances, 176
 graphing in, 274–283
 error analysis, 279
 ordered pairs, 276–277
 origin, 276
 polygons in the, 174–179
 error analysis, 178
 real-life application, 177
 writing, 178
 quadrant, 276
 real-life application, 278
 reflecting points in, 282–283
- Critical Thinking, *Throughout*.
For example, see:
 absolute value, 273
 area of a polygon, 163, 171
- data displays
 box-and-whisker plots, 465
 histograms, 445, 447
 shapes of distribution, 455
 stem-and-leaf plots, 439
- decimals, 83
- discounts, 687
- division, 9
- equations, solving, 307
- greatest common factor, 35
- inequalities
 graphing, 331
 solving, 343
- interest, 693
- least common multiples, 41
- mean absolute deviation, 423
- measures of center, 409
- percent of change, 681
- percent of decrease, 681
- percent of increase, 681
- percents, 223
 modeling, 223
- prime numbers, 29
- proportions, 611, 627
 direct variation, 639
- rates, 605
- rational numbers, 523
 dividing, 543
- ratios, 604, 611
- rectangular prism, volume and surface area, 378
- simplifying expressions, 559
- slope, 633
- solving equations, 575, 581
- statistical questions, 394
- surface area
 of a prism, 365
 of a pyramid, 373
- trapezoids, 171
- triangles, 162, 163, 171
- unit conversion, 237
- Cross products**, defined, 609
- Cross Products Property, 609
- Customary system, *See* U.S. customary system
- D**
- Data analysis, *See* Data displays; Statistics
- Data displays, *See also* Graphs and graphing
 box-and-whisker plots, 458–465
 defined, 460
- error analysis, 463
- five-number summary, 460
- shapes of, 462
- comparing, 444
- dot plots, 392–395
- frequency table, 441
- histograms, 440–447
 defined, 442
 error analysis, 445, 446
 modeling, 441
- shapes of distribution, 450–457
 appropriate measures of center and variation, 456–457
 box-and-whisker plots, 462
 skewed left, 452
 skewed right, 452
 symmetric, 452
- stem-and-leaf plots, 434–439
 defined, 436
 error analysis, 438
 leaf, 436
 stem, 436
 writing, 438
- Decimal(s)
 adding, 78–83
 error analysis, 82
 modeling, 78
 real-life application, 81
 writing, 82
- comparing
 fractions with, 656–661
 percents with, 656–661
 real-life application, 658
- dividing, 92–99
 by decimals, 95
 error analysis, 97, 98
 modeling, 92–93
 real-life application, 96
 by whole numbers, 94
 writing, 93
- graphing, 262–263
- multiplying, 84–91
 by decimals, 87
 error analysis, 89, 90
 modeling, 84–85
 real-life application, 88
 by whole numbers, 86
- ordering, 260–265
 with fractions, 656–661
 negative, 262
 with percents, 656–661
 real-life application, 659

- percents as, 650–655
 - error analysis, 654
 - modeling, 650–655
 - real-life application, 653
 - repeating
 - defined, 520
 - error analysis, 522
 - writing, 522
 - subtracting, 78–73
 - error analysis, 82
 - modeling, 78–79
 - real-life application, 81
 - writing, 82
 - terminating
 - defined, 520
 - writing, 522
 - writing
 - as fractions, 521
 - as percents, 651–652
 - rational numbers as, 520
 - Definition and example chart, 216
 - Denominator(s), least common, 42
 - Dependent variable**, defined, 316
 - Diagram(s)
 - double number line, 205
 - modeling, 191
 - tape, 191, 193
 - Venn, 30–31, 36, 37
 - defined, 30
 - Different Words, Same Question, *Throughout. For example, see:*
 - absolute value, 272
 - adding rational numbers, 528
 - box-and-whisker plots, 463
 - converting units, 236
 - direct variation, 638
 - fractions
 - dividing, 74
 - multiplying, 74
 - greatest common factor, 34
 - inequalities, 329
 - linear expressions, 564
 - measures of variation, 416
 - percent equations, 672
 - percents, 229
 - subtracting integers, 492
 - surface area of a prism, 364
 - triangles, 162
 - unit rates, 208
 - volume of a prism, 378
 - writing equations, 298
 - writing expressions, 122
 - Direct variation**, 634–639
 - constant of proportionality, 636
 - defined, 636
 - error analysis, 638
 - modeling, 639
 - real-life application, 637
 - writing, 638
 - Discount(s)**, 682–687
 - defined, 684
 - writing, 686
 - Distance formula, 318
 - Distributive Property, 132–141
 - error analysis, 137, 138
 - modeling, 132
 - real-life application, 135
 - writing, 137
 - Division
 - of decimals, 92–99
 - by decimals, 95
 - error analysis, 97, 98
 - modeling, 92–93
 - real-life application, 96
 - by whole numbers, 94
 - writing, 93
 - equations
 - modeling, 576
 - real-life application, 311, 579
 - solving by, 308–313, 576–581
 - of fractions, 62–69
 - error analysis, 67
 - by a fraction, 65
 - modeling, 63
 - reciprocals, 64
 - by a whole number, 66
 - inequalities
 - solving by, 338–343
 - of integers, 502–507
 - with different signs, 502–504
 - error analysis, 506
 - reading, 506
 - real-life application, 505
 - with the same sign, 502–504
 - writing, 506
 - of mixed numbers, 70–75
 - error analysis, 74
 - modeling, 70–71
 - real-life application, 73
 - Property
 - of Equality, 311, 578
 - of Inequality, 340
 - real-life application, 579
 - of rational numbers, 538–543
 - error analysis, 542
 - real-life application, 541
 - writing, 539, 542
 - whole numbers, 4–6
 - error analysis, 8
 - by a fraction, 65
 - real-life application, 6
 - Division Property of Equality, 311, 578
 - error analysis, 312
 - real-life application, 311
 - writing, 312
 - Division Property of Inequality, 340
 - real-life application, 341
 - Dot plot(s), 392–395
- 
- Edge**, defined, 356
 - Equality
 - Addition Property of, 303, 572
 - Division Property of, 578
 - Multiplication Property of, 310, 578
 - Subtraction Property of, 303, 572
 - Equation(s)**
 - addition, 570–575
 - error analysis, 574
 - modeling, 570–571
 - writing, 574
 - defined, 296
 - division, 576–581
 - modeling, 576
 - real-life application, 579
 - equivalent, 572
 - inverse operations, 303
 - multiplication, 576–581
 - error analysis, 580
 - writing, 580
 - in one variable
 - error analysis, 298
 - real-life application, 297
 - writing, 294–299
 - percent, 668–673
 - error analysis, 672
 - real-life application, 671
 - percent proportions, 662–667
 - error analysis, 666
 - real-life application, 665
 - writing, 666
 - solution, 302
 - solving
 - by addition, 300–307
 - by division, 308–313

- error analysis, 305, 312
 - by multiplication, 308–313
 - real-life application, 304, 311
 - by subtraction, 300–307
 - writing, 305, 312
- subtraction, 570–575
 - modeling, 570–571
 - real-life application, 573
- two-step
 - error analysis, 586
 - modeling, 582–583
 - real-life application, 585
 - solving, 582–587
 - writing, 586, 587
- Equation in two variables**, 314–321
 - defined, 316
 - dependent variable, 316
 - error analysis, 319
 - graphing, 317
 - independent variable, 316
 - real-life application, 318
 - solution of, 316
 - writing, 314–321
- Equivalent equations**
 - defined, 572
 - writing, 574
- Equivalent expressions**
 - defined, 128
 - identifying, 140
 - using properties to write, 128–129
- Equivalent rate(s)**, 205–209
 - defined, 206
 - finding, 207
- Equivalent ratios**
 - defined, 198
 - error analysis, 202
- Error Analysis, *Throughout*.
 - For example, see:*
 - absolute value, 272, 480
 - area
 - of a parallelogram, 156
 - of a trapezoid, 170
 - of a triangle, 162
 - Associative Property of Addition, 130
 - converting units, 236
 - coordinate plane, 279
 - data displays
 - box-and-whisker plots, 463
 - histograms, 445, 446
 - stem-and-leaf plots, 438
 - decimals
 - adding, 82
 - dividing, 97, 98
 - multiplying, 89, 90
 - as percents, 654
 - subtracting, 82
 - direct variation, 638
 - Distributive Property, 137, 138
 - equations
 - in one variable, 298
 - solving, 305, 312, 574, 580
 - in two variables, 319
 - two-step, 586
 - exponents, 14
 - expressions
 - algebraic, 115, 116
 - like terms of, 558
 - linear, 565
 - writing, 122
 - fractions
 - dividing, 67
 - multiplying, 59, 60
 - writing, 222
 - greatest common factor, 34
 - inequalities
 - graphing, 330
 - solving, 336, 342
 - integers
 - adding, 486
 - comparing, 258
 - dividing, 506
 - multiplying, 500
 - positive, 252
 - subtracting, 492
 - mixed numbers
 - dividing, 74
 - multiplying, 60
 - order of operations, 20
 - percent equation, 672
 - percent of increase, 680
 - percent proportion, 666
 - percents, 222
 - finding the whole, 230
 - of a number, 229
 - polygons in the coordinate plane, 178
 - powers, 14
 - prime factorization, 28
 - proportions
 - direct variation, 638
 - percent, 666
 - solving, 626
 - writing, 618
 - ratio tables, 202
 - rational numbers
 - adding, 528
 - decimal representation of, 522
 - dividing, 542
 - multiplying, 542
 - subtracting, 536
 - simple interest, 692
 - slope, 632
 - statistics
 - mean absolute deviation, 422
 - measures of center, 407
 - measures of variation, 416
 - whole numbers
 - dividing, 8
 - multiplying, 8
- Evaluate**, defined, 18
- Example and non-example chart, 322
- Exponent(s)**, 10–15
 - base of, 12
 - defined, 12
 - error analysis, 14
 - order of operations, 18
 - powers and, 10–15
 - writing, 11
- Expression(s)
 - algebraic, 110–117
 - defined, 112
 - error analysis, 115, 116, 558
 - evaluating, 113–114
 - factoring, 141
 - like terms, 136, 556
 - real-life application, 114, 557
 - simplest form of, 556
 - simplifying, 135, 554–559
 - terms, 112
 - writing, 112, 558
 - equivalent
 - defined, 128
 - identifying, 140
 - using properties to write, 128–129
 - evaluating, 18
 - error analysis, 20
 - factoring, 140–141, 566–567
 - defined, 140, 566
 - linear
 - adding, 560–565
 - defined, 562
 - error analysis, 565
 - modeling, 560–561, 565
 - real-life application, 563
 - subtracting, 560–561
 - writing, 564

numerical
defined, 18
factoring, 140
writing, 118–123
error analysis, 122
as powers, 12
real-life application, 121, 129

F

Face, defined, 356

Factor(s)

common, defined, 32
greatest common, 30–35
defined, 32
error analysis, 34
real-life application, 33
pairs, defined, 26
prime factorization, 24–29
error analysis, 28
writing, 27
repeated, 11

Factor pairs, defined, 26

Factor tree, defined, 26

Factoring an expression, 140–141,
566–567

defined, 140, 566

First quartile, defined, 414

Five-number summary, defined,
460

Formulas

area
of a parallelogram, 152–157
of a trapezoid, 168
of a triangle, 160
distance, 318
volume of a rectangular prism,
29, 374–376

Four square, 164, 568

Fraction(s)

adding, 42–43
comparing
decimals with, 656–661
percents with, 656–661
real-life application, 658
complex, defined, 601
decimals as
error analysis, 522
writing, 521
dividing, 62–69
error analysis, 67
by a fraction, 65
mixed numbers by, 72

modeling, 63
reciprocals, 64
a whole number by, 65
graphing, 262–263
least common denominator, 42
multiplying, 54–61
error analysis, 59, 60
modeling, 61
real-life application, 57, 58
writing, 59
ordering, 260–265
with decimals, 656–661
negative, 262
with percents, 656–661
real-life application, 263, 659
percents and, 218–223
subtracting, 42–43
writing
error analysis, 222
as percents, 218–223

Frequency, defined, 441

Frequency table, defined, 441

G

Geometry

coordinate plane, 174–179,
274–283
nets, 360–363, 368–371
parallelograms, 152–157
perimeter, 177–178
polygons, 152–157, 174–179
polyhedrons, 354–359
prisms, 356, 360–365, 374–379
project, 359, 379
pyramids, 356, 368–373
solids, 354–373
trapezoids, 166–171
triangles, 158–163

Graph(s) and graphing, *See also*

Data displays
in the coordinate plane, 274–283
error analysis, 279
ordered pairs, 276–277
origin, 276
quadrant, 276
real-life application, 278
of equations in two variables,
317
of inequalities, 324–331
of ratios, 210–215

Graph of an inequality

defined, 328

error analysis, 330
modeling, 330
real-life application, 328
writing, 329
Graphic Organizers
concept circle, 410
definition and example chart,
216
example and non-example
chart, 322
four square, 164, 568
idea and examples chart, 494
information frame, 22
information wheel, 124, 620
notetaking organizer, 76
process diagram, 366, 530
summary triangle, 266, 674
word magnet, 448

**Graphing proportional
relationships**, 612–613

Greatest common factor, 30–35

defined, 32
error analysis, 34
modeling, 30–31, 37
real-life application, 33
writing, 34

H

Histogram(s), 440–447

defined, 442
error analysis, 445, 446
frequency, 441
frequency tables, 441
modeling, 441

I

Idea and examples chart, 494

Independent variable, defined,
316

Inequalities

defined, 326
graphing, 324–331
defined, 328
error analysis, 330
modeling, 330
real-life application, 328
writing, 329
solution of, 327
solution set, 327
solving
by addition, 332–337
by division, 338–343

error analysis, 336, 342
 by multiplication, 338–343
 real-life application, 335, 341
 by subtraction, 332–337
 writing, 336, 338

writing, 324–331
 error analysis, 330
 modeling, 330
 real-life application, 328

Information frame, 22

Information wheel, 124, 620

Integer(s), 248–253
 absolute value of, 476–481
 error analysis, 480
 real-life application, 479

adding, 482–489
 with different signs, 482–485
 error analysis, 486
 with the same sign, 482–485

additive inverse of, 484
 writing, 486

comparing, 254–259
 error analysis, 258
 real-life application, 257
 writing, 258

defined, 478

dividing, 502–507
 with different signs, 502–504
 error analysis, 506
 reading, 506
 real-life application, 505
 with the same sign, 502–504
 writing, 506

graphing, 251

multiplying, 496–501
 with different signs, 496–498
 error analysis, 500
 modeling, 501
 real-life application, 499
 with the same sign, 496–498
 writing, 500

negative, defined, 250

opposites, 250

ordering, 254–259

positive
 defined, 250
 error analysis, 252
 writing, 250

real-life application, 251

subtracting, 488–493
 error analysis, 492
 real-life application, 491
 writing, 492

writing, 249

Interquartile range, 414–417
 defined, 414

Interest
 defined, 690
 principal, 690
 simple, 688–693
 defined, 690
 error analysis, 692
 writing, 692

Interval(s), 440–442

Inverse operations, defined, 303



Leaf, defined, 436

Least common denominator,
 defined, 42

Least common multiple, 36–41
 defined, 38
 modeling, 36–37, 40
 real-life application, 39
 writing, 40

Like terms
 combining, 136
 defined, 136, 556
 error analysis, 558
 writing, 558

Line plot, *See* Dot plot(s)

Linear expression(s)
 adding, 560–565
 modeling, 560–561, 565
 writing, 564

factoring, 566–567

subtracting, 560–565
 error analysis, 565
 modeling, 561
 real-life application, 563
 writing, 564

Logic, *Throughout. For example,*
see:
 absolute value, 477
 area of parallelograms, 157
 dividing mixed numbers, 75
 histograms, 447
 linear expression, 565
 mean absolute deviation, 419
 median, 447
 percent equations, 673
 reflecting points in the
 coordinate plane, 283
 relationship of operations, 8
 shapes of distribution, 455
 solids, 356

solving inequalities, 343

statistics, 319, 419

unit rates, 209

M

Markup(s), 682–687
 defined, 684
 writing, 686

Mean, 396–401
 defined, 398
 modeling, 397
 research, 408

Mean absolute deviation, 418–423
 defined, 420
 error analysis, 422
 finding, 420
 real-life application, 421

Meaning of a Word
 associate, 127
 commute, 126
 deviate, 418
 distribute, 132
 invert, 64
 opposite, 250, 484
 percent, 218
 proportional, 606
 rate, 598
 rational, 518
 skewed, 451

Measurement
 conversion factor
 defined, 234

metric system
 defined, 234

metric units
 converting to customary
 units, 232–237

unit analysis
 defined, 234
 writing, 236

unit conversion, 232–237
 error analysis, 236

U.S. customary system
 converting to metric units,
 232–237
 defined, 234

Measures of center, 396–409
 choosing, 405
 by shape of distribution,
 456–457
 defined, 404
 error analysis, 407

- mean, 396–391
 - defined, 398
 - median, 402–409
 - defined, 404
 - mode, 402–409
 - defined, 404
 - research, 408
 - Measures of variation**, 412–417
 - defined, 414
 - error analysis, 416
 - interquartile range, 414–417
 - defined, 414
 - quartiles, 414–417
 - defined, 414
 - first, 414
 - third, 414
 - range, 412–417
 - defined, 414
 - writing, 417
 - Median**, 402–409
 - defined, 404
 - error analysis, 407
 - research, 408
 - Mental Math, *Throughout*.
 - For example, see:*
 - Distributive Property, 132, 134
 - equations, 301
 - integers
 - adding, 487
 - subtracting, 493
 - multiplying decimals, 86
 - percents, 225
 - proportions, 617
 - using properties, 127
 - Metric system**
 - converting units, 232–237
 - error analysis, 236
 - defined, 234
 - Mixed number(s)
 - dividing, 70–75
 - error analysis, 74
 - by a fraction, 72
 - modeling, 70–71
 - real-life application, 73
 - multiplying, 57–58
 - error analysis, 60
 - subtracting, 43
 - Mode**, 402–409
 - defined, 404
 - research, 408
 - Modeling, *Throughout*. *For example, see:*
 - decimals
 - adding, 78
 - as percents, 650–655
 - subtracting, 78–79
 - diagrams, 191
 - direct variation, 639
 - Distributive Property, 132
 - expressions
 - algebraic, 559
 - linear, 560–561, 565
 - writing, 123
 - frequency tables, 441
 - greatest common factor
 - Venn diagram, 30
 - inequalities
 - graphing, 330
 - writing, 330
 - least common multiples, 36–37, 40
 - line graph, 280
 - line plots, 390
 - mixed numbers, dividing, 70–71
 - multiplying integers, 501
 - percents as decimals, 650–655
 - rates, 205
 - ratios, 191, 205
 - solutions of equations, 570–571, 576
 - statistics, 390
 - mean, 397
 - whole number operations, 9
 - Multiples**
 - least common, 36–41
 - modeling, 36–37, 40
 - real-life application, 39
 - writing, 40
 - Multiplication**
 - Associative Property of, 126–131
 - Commutative Property of, 126–131
 - of decimals, 84–91
 - by decimals, 87
 - error analysis, 89, 90
 - modeling, 84–85
 - real-life application, 88
 - equations, solving by, 576–581
 - of fractions, 54–61
 - error analysis, 59, 60
 - modeling, 61
 - real-life application, 57, 58
 - writing, 59
 - inequalities
 - solving by, 338–343
 - of integers, 496–501
 - with different signs, 496–498
 - error analysis, 500
 - modeling, 501
 - real-life application, 499
 - with the same sign, 496–498
 - writing, 500
 - of mixed numbers, 57–58
 - error analysis, 60
 - Property
 - of Equality, 310, 578
 - of Inequality, 340
 - of One, 129
 - of Zero, 129
 - of rational numbers, 538–543
 - error analysis, 542
 - writing, 539, 542
 - solving equations by, 308–313
 - whole numbers, 4
 - by decimals, 86
 - error analysis, 8
 - Multiplication Property of Equality, 310, 578
 - Multiplication Property of Inequality, 340
 - error analysis, 342
 - Multiplication Property of One, 129
 - Multiplication Property of Zero, 129
 - Multiplicative Inverse Property, 310
- 
- Negative number(s)**
 - defined, 250
 - Net**
 - defined, 362
 - of a prism, 360–363
 - rectangular, 362
 - triangular, 363
 - of a pyramid, 368–373
 - square, 370
 - triangular, 371
 - Notetaking organizer, 76
 - Number line
 - for graphing
 - decimals, 262–263
 - fractions, 262–263
 - integers, 251
 - for ordering
 - decimals, 260–267
 - fractions, 260–267
 - integers, 254–259
 - Number Sense, *Throughout*. *For example, see:*
 - adding rational numbers, 529
 - algebraic expressions, 115
 - box-and-whisker plots, 463

Commutative Property of Addition, 130

decimals

- dividing, 97
- multiplying, 89
- ordering, 264

division, 8

expressions

- writing, 123

fractions, 74

- comparing percents with, 660
- multiplying, 60, 61
- ordering, 264, 265
- ordering percents and, 661
- reciprocal of, 69

histograms, 447

integers, 253

- adding, 486
- dividing, 507
- multiplying, 501

least common multiple, 41

mixed numbers

- dividing, 74
- multiplying, 61

order of operations, 21, 115

ordered pairs, 281

percents, 222

- comparing fractions with, 660
- finding, 229
- of increase, 680
- ordering fractions and, 661
- proportions, 666

powers, 15

proportions, 626, 666

ratios, 194

- comparing and graphing, 214
- equivalent, 201

reciprocals, 542

slope, 633

solving equations, 312, 581

solving inequalities, 337

statistical questions, 394

statistics

- mean, 400
- measures of center, 407

Numerical expression(s)

- defined, 18
- writing, 20

O

Open-Ended, *Throughout*. For example, *see*:

- absolute value, 481
- area of a polygon, 163, 171

Associative Property of Addition, 130, 137

Associative Property of Multiplication, 130

box-and-whisker plots, 465

coordinate plane, 281

decimals

- adding, 83
- multiplying, 91

Distributive Property, 137

Division Property of Equality, 312

equations

- in one variable, 298
- in two variables, 321

factoring expressions, 141

fractions, 67

- multiplying, 60

greatest common factor, 35

inequalities, solving, 342, 343

integers, 252, 481

- adding, 487
- dividing, 506
- multiplying, 500
- opposite, 492
- subtracting, 493

inverse operations, 580

mixed numbers, 59

Multiplication Property of One, 130

order of operations, 21

percents

- as decimals, 654
- and fractions, 222

polygons in the coordinate plane, 179

proportions

- solving, 626
- writing, 610, 618

rates, 603

rational numbers

- adding, 528
- decimal representation of, 523
- multiplying, 543
- subtracting, 537

ratios, 610

reciprocals, 67

relating variables, 320

shapes of distribution, 457

solving equations, 581

statistics, 401

- measures of variation, 417

Subtraction Property of Inequality, 336

trapezoids, 171

triangles, 163

Operations

- choosing among, 2–3
- order of, 16–21
- defined, 18
- error analysis, 20
- real-life application, 19
- writing, 20
- whole numbers, 2–9

Opposites, defined, 250, 484

Order of operations, 16–21

- defined, 18
- error analysis, 20
- exponents, 18
- real-life application, 19
- writing, 20

Ordered pairs, 276–277

Ordering

- decimals, 260–265
- fractions, 260–265
- real-life application, 263
- integers, 254–259

Origin, defined, 276

Outlier(s)

- checking for, 415
- defined, 399

P

Parallelogram(s)

- area of, 152–157
- error analysis, 156
- formula, 154
- real-life application, 155

Patterns, *Throughout*. For example, *see*:

- dividing integers, 507
- exponents, 15
- powers, 15
- recognition of, 63
- writing expressions, 123

Percent(s), 218–223

- of change, 678
- comparing

 - decimals with, 656–661
 - fractions with, 656–661
 - real-life application, 658

- as decimals, 650–655
- error analysis, 654
- modeling, 650–652
- real-life application, 653

- of decrease, 676–681
 - defined, 220
 - equation, 668–673
 - error analysis, 672
 - real-life application, 671
 - error, 679
 - error analysis, 222
 - finding, 224–231
 - error analysis, 229, 230
 - of a number, 224–226
 - real-life application, 228
 - the whole, 227
 - fractions and, 218–223
 - of increase, 676–681
 - ordering
 - with decimals, 656–661
 - with fractions, 656–661
 - real-life application, 659
 - proportions, 662–667
 - error analysis, 666
 - real-life application, 665
 - writing, 666
 - real-life application, 221
 - research, 223, 655
 - writing, 222
 - error analysis, 222
 - as fractions, 218–223, 219
 - fractions as, 218–223
- Percent of change**
 defined, 678
 formula, 678
- Percent of decrease**
 defined, 678
 formula, 678
 writing, 680
- Percent error**
 defined, 679
 formula, 679
- Percent of increase**
 defined, 678
 error analysis, 680
 formula, 678
- Perfect square**
 defined, 13
 real-life application, 13
- Perimeter**
 of a rectangle
 - finding, 177
 - writing, 178
- Polygon(s)**
 area of, 152–157
 - error analysis, 156, 162, 170
 - real-life application, 155, 161, 169, 173, 177
 - research, 163
 - writing, 156, 163
- in the coordinate plane, 174–179
 - error analysis, 178
 - finding distances, 176
 - real-life application, 177
 - writing, 178
- defined, 152
- Polyhedron(s)**, *See also* Solids
 defined, 356
 edges of, 356
 faces of, 356
 project, 359
 research, 559
 vertices of, 356
- Positive number**, defined, 250
- Powers**, 10–15
 defined, 12
 error analysis, 14
 exponents and, 10–15
 writing, 11
- Precision**, *Throughout. For example, see:*
 absolute value, 269
 dividing decimals, 99
 equations in two variables, 319
 frequency tables, 441
 ordering fractions, decimals, and percents, 661
 percent of change, 681
 polygons in the coordinate plane, 179
 rates, 605
 rational numbers
 - dividing, 543
 - multiplying, 539
- ratios, 195
 - comparing, 211
 - graphing, 211
- statistics, 401
 surface area of a pyramid, 372
- Prices**
 discounts and markups, 682–687
 defined, 684
 writing, 686
- Prime factorization**, 24–29
 defined, 26
 error analysis, 28
 factor pairs, 26
 factor tree, 26
 modeling, 29, 31
- Principal**, defined, 690
- Prism(s)**
 defined, 356
 drawing, 357
 nets for, 360–363
 defined, 362
 - a rectangular, 362
 - a triangular, 363
- surface area of, 360–365
 - a rectangular, 362
 - a triangular, 363
- volume of rectangular, 374–379
- Problem Solving**, *Throughout. For example, see:*
 adding integers, 487
 decimals
 - dividing, 99
 - ordering, 265
 - as percents, 655
- dividing fractions, 69
- equations
 - in two variables, 321
 - two-step, 587
- greatest common factor, 35
- histograms, 446
- percent proportions, 667
- proportions, 627
- rational numbers, 523
- ratios, 203
- simple interest, 693
- statistics
 - mean absolute deviation, 423
 - measures of center, 408, 423
 - volumes of prisms, 379
- Process diagram**, 366, 530
- Properties**
 Addition Property of Equality, 303, 572
 real-life application, 573
- Addition Property of Inequality, 334
- Addition Property of Zero, 129
- Additive Inverse Property, 484
- Associative Property of Addition, 126–131
 error analysis, 130
- Associative Property of Multiplication, 126–131
- Commutative Property of Addition, 126–131
 real-life application, 129
- Commutative Property of Multiplication, 126–131
- Cross Products Property, 609
- Distributive Property, 132–141
 error analysis, 137, 138
 real-life application, 135
 writing, 137

Division Property of Equality, 311, 578

Division Property of Inequality, 340

Multiplication Property of Equality, 310, 578

Multiplication Property of Inequality, 340

Multiplication Property of One, 129

Multiplication Property of Zero, 129

Multiplicative Inverse Property, 310

Subtraction Property of Equality, 303, 572

Subtraction Property of Inequality, 334

Proportion(s), 606–611

cross products, 609

Cross Products Property, 609

defined, 609

percent, 662–667

error analysis, 666

real-life application, 665

writing, 666

solving, 622–627

error analysis, 626

real-life application, 625

writing, 626

writing, 614–619

error analysis, 618

Proportional

defined, 608

relationship

constant of proportionality, 636

direct variation, 634–639

error analysis, 638

graphing, 612–613

modeling, 639

reading, 608

real-life application, 637

writing, 638

Pyramid(s)

defined, 356

drawing, 357

net of, 368–371

a square, 370

a triangular, 371

square, 370

surface area of, 368–373

triangular, 371

Q

Quadrant(s), defined, 276

Quartile(s), 414–417

defined, 414

R

Range, 412–417

defined, 414

interquartile, 414

Rate(s), 204–209

defined, 206, 600

double number line diagrams, 205

equivalent

defined, 206

finding, 207

ratios and, 598–605

research, 605

unit

cost, 207

defined, 206, 600

finding, 206

writing, 208, 603

writing, 206

Ratio(s), *See also*

Proportions, Rates

comparing, 210–215

complex fraction, 601

defined, 192, 600

diagramming, 191, 193

equivalent

defined, 198

error analysis, 202

graphing, 210–215

modeling, 191

proportions and, 606–625

cross products, 609

Cross Products Property, 609

error analysis, 618, 626

proportional, 608

real-life application, 625

solving, 622–627

writing, 614–619

rates and, 204–209, 598–605

complex fractions, 601

slope, 628–633

error analysis, 632

writing, 192

Ratio table(s), 196–203

defined, 198

error analysis, 202

graphing, 210–211

writing, 214

Rational number(s), *See also*

Fractions, Decimals

adding, 524–529

error analysis, 528

real-life application, 527

writing, 528, 529, 539

defined, 518, 520

dividing, 538–543

error analysis, 542

real-life application, 541

writing, 539, 542

multiplying, 538–543

error analysis, 542

writing, 539, 542

ordering, 521

repeating decimals

defined, 520

error analysis, 522

writing, 520

subtracting, 532–537

error analysis, 536

real-life application, 535

writing, 536

terminating decimals

defined, 520

writing, 520

writing as decimals, 520

Reading

check for reasonableness, 317

coordinate plane, 277

inequalities, 328, 335

opposites, 251

proportional relationship, 608

symbols of, 302, 327

translating words to

equations, 297

quartiles, 414

Real-Life Applications, *Throughout.*

For example, see:

absolute value, 271, 479

algebraic expressions, 114

area

of composite figures, 173

of parallelograms, 155

of trapezoids, 169

of triangles, 161

Commutative Property of

Addition, 129

coordinate plane, 278

decimals, 653, 658, 659

adding, 81

dividing, 96

- multiplying, 88
 - subtracting, 81
 - direct variation, 637
 - Distributive Property, 135
 - equations
 - in one variable, 297
 - solving, 304, 311
 - in two variables, 318
 - writing, 297, 304, 317
 - expressions
 - linear, 563
 - simplifying, 557
 - fractions, 653, 658, 659
 - multiplying, 57, 58
 - ordering, 263
 - greatest common factor, 33
 - inequalities
 - graphing, 328
 - solving, 335, 341
 - integers, 251
 - comparing, 257
 - dividing, 505
 - multiplying, 499
 - subtracting, 491
 - least common multiple, 39
 - mean absolute deviation, 421
 - mixed numbers, dividing, 73
 - order of operations, 19
 - percent, 653, 658, 659
 - equations, 671
 - proportions, 665
 - percents, 221, 228
 - finding the whole, 228
 - perfect square, 13
 - polygons in the coordinate plane, 177
 - proportions, 625, 665
 - rational numbers
 - adding, 527
 - dividing, 541
 - subtracting, 535
 - solving equations, 573, 579, 585
 - whole numbers, division, 6
 - writing expressions, 121, 129
- Reasoning, *Throughout*. For example, see:
- absolute value, 272, 481
 - algebraic expressions, 117
 - area
 - parallelograms, 153
 - triangles, 163
 - coordinate plane, 274, 280
 - ordered pairs, 281
 - reflecting points in, 283
 - data displays
 - box-and-whisker plots, 465
 - histograms, 447
 - shapes of distribution, 455, 457
 - stem-and-leaf plots, 434, 439, 447, 455
 - decimals, multiplying, 90
 - direct variation, 639
 - Distributive Property, 138, 139
 - division, 9
 - expressions, 122, 123
 - factoring, 141
 - linear, 565
 - simplifying, 555, 558, 559
 - fractions
 - dividing, 67, 68, 69
 - multiplying, 59
 - as percents, 223
 - greatest common factor, 35
 - integers, 249, 257
 - comparing, 259
 - multiplying, 501
 - ordering, 258
 - subtracting, 493
 - least common multiple, 41
 - markups, 686
 - mixed numbers, dividing, 75
 - order of operations, 20
 - outliers, 445
 - parallelograms, dimensions of, 157
 - percents, 219, 231
 - discount and markups, 686
 - equations, 672
 - of increase, 681
 - proportions, 667
 - powers, 15
 - proportions
 - proportional relationships, 613, 639
 - solving, 627
 - writing, 619
 - rational numbers
 - adding, 529
 - subtracting, 537
 - ratios, 195, 203
 - rectangles, 171
 - simple interest, 692, 693
 - slope, 632
 - solids, 359
 - solving
 - equations, 131, 306, 581, 587
 - inequalities, 342
 - statistics, 390, 391, 395
 - mean, 397, 400, 401, 407, 457
 - mean absolute deviation, 419, 422, 423, 457
 - measures of center, 407
 - mode, 408
 - outliers, 417
 - statistical questions, 392
 - trapezoids, 170, 171
 - volumes of prisms, 378, 379
- Reciprocals**, defined, 64
- Rectangle(s), perimeter of, 177
- Reflecting points in the coordinate plane, 282–283
- Repeated Reasoning, *Throughout*. For example, see:
- adding rational numbers, 529
 - decimals, 91
 - Distributive Property, 132
 - integers, 253
 - measures of variation, 412
 - perfect squares, 15
 - ratio tables, 197
 - slope, 629
 - solving equations, 301, 583
 - writing expressions, 118
- Repeating decimal(s)**
- defined, 520
 - error analysis, 522
 - writing, 522
- 
- Shape of a distribution, 450–457
- box-and-whisker plots, 462
 - choosing appropriate measures, 456–457
 - skewed left, 452
 - skewed right, 452
 - symmetric, 452
- Simple interest**, 688–693
- defined, 690
 - error analysis, 692
 - writing, 692
- Simplest form**, defined, 556
- Slope**, 628–633
- defined, 630
 - error analysis, 632
- Solid(s)**
- defined, 356
 - drawing, 354–355, 357
 - edges of, 356
 - faces of, 356

- polyhedron(s), 354–359
 - defined, 356
 - edges of, 356
 - faces of, 356
 - project, 359
 - research, 559
 - vertices of, 356
 - prism(s)
 - defined, 356
 - drawing, 357
 - nets for, 360–363
 - defined, 362
 - a rectangular, 362
 - a triangular, 363
 - surface area of, 360–365
 - a rectangular, 362
 - a triangular, 363
 - volume of rectangular, 374–379
 - project, 359, 379
 - pyramid(s)
 - defined, 356
 - drawing, 357
 - net of, 368–371
 - a square, 370
 - a triangular, 371
 - square, 370
 - surface area of, 368–373
 - triangular, 371
 - research, 359
 - surface area of
 - defined, 362
 - prisms, 360–365
 - pyramids, 368–373
 - vertices of, 356
 - volume of, 374–375
- Solution**, defined, 302
- Solution of an equation in two variables**, defined, 316
- Solution of an inequality**, defined, 327
- Solution set**, defined, 327
- Square(s), perfect,
 - defined, 13
 - real-life application, 13
- Statistical question(s)**, 392–395
 - defined, 392
- Statistics**, *See also* Data displays
 - defined, 392
 - mean, 396–401
 - defined, 398
 - modeling, 397
 - research, 408
 - mean absolute deviation, 418–423
 - defined, 420
 - error analysis, 422
 - real-life application, 421
 - measures of center, 396–409
 - choosing, 456–457
 - defined, 404
 - error analysis, 407
 - research, 408
 - measures of variation, 412–417
 - defined, 414
 - error analysis, 416
 - writing, 417
 - median, 402–409
 - defined, 404
 - error analysis, 407
 - research, 408
 - mode, 402–409
 - defined, 404
 - research, 408
 - modeling, 390
 - outliers
 - defined, 399
 - writing, 407
 - quartiles, 414–417
 - defined, 414
 - first, 414
 - third, 414
 - range, 412–417
 - defined, 414
 - interquartile, 414
 - statistical questions, 392–395
 - defined, 392
- Stem**, defined, 436
- Stem-and-leaf plot(s)**, 434–439
 - defined, 436
 - error analysis, 438
 - leaf, 436
 - stem, 436
 - writing, 438
- Structure, *Throughout. For example, see:*
- adding decimals, 83
 - box-and-whisker plots, 465
 - coordinate plane, 274
 - reflecting points in, 283
 - exponents, 11
 - direct variation, 635
 - expressions
 - factoring, 141, 567
 - linear, 565
 - simplifying, 559
 - fractions
 - dividing by, 63
 - multiplying, 55
 - greatest common factor, 31
 - integers, 249
 - adding, 483
 - dividing, 503
 - multiplying, 497
 - subtracting, 489
 - interquartile range, 417
 - least common multiple, 37
 - percent proportions, 667
 - polygons in the coordinate plane, 175, 179
 - properties of multiplication, 131
 - ratio tables, 215
 - solving equations, 313, 571
 - subtracting rational numbers, 537
 - surface area of a pyramid, 373
- Study Tip**
- additive inverse, 485
 - algebraic expressions, 113
 - amount of error, 679
 - base of a triangular pyramid, 371
 - box-and-whisker plots, 462
 - check for reasonableness, 4
 - composite figures, 172
 - coordinate plane, 278
 - cross products, 609
 - data displays
 - box-and-whisker plots, 461, 462
 - shapes of distribution, 452, 462
 - decimal points, 652
 - decimals
 - adding, 80
 - dividing, 95, 96
 - subtracting, 80
 - direct variation, 636
 - discounts, 684
 - Distributive Property, 135
 - dot plots, 392
 - equivalent fractions and percents, 220
 - exponents, 499
 - expressions
 - algebraic, 112
 - equivalent, 128
 - factoring, 140
 - linear, 563
 - simplifying, 556
 - writing, 121

- finding the percent of a number, 226
 - fractions, 66
 - adding and subtracting, 43
 - multiplying, 56
 - simplest form, 42
 - graphing
 - equations in two variables, 317
 - ordered pairs from a ratio table, 213
 - greatest common factor, 32
 - inverse operations, 334
 - least common denominators, 66
 - measures of center, 404
 - Multiplicative Inverse Property, 64
 - opposites, 485
 - order of operations, 18
 - ordering decimals and percents, 658
 - ordering integers, 257
 - percent proportions, 664
 - polygons in the coordinate plane, 176, 177
 - powers, 499
 - prime factorization, 26, 27
 - proportional relationships, 613
 - ratio tables, 199, 200
 - rational numbers, 521, 526
 - reciprocals, 64
 - simplifying equations, 584
 - slope, 630
 - solving
 - equations, 303, 304
 - inequalities, 334
 - unit cost, 207
 - unit rates, 206
 - variable by itself, 112
 - variables, 121
 - volume of a cube, 376
 - Subtraction
 - of decimals, 78–83
 - error analysis, 82
 - real-life application, 81
 - writing, 82
 - equations
 - error analysis, 305
 - real-life application, 304
 - solving by, 300–307
 - of expressions
 - error analysis, 565
 - linear, 560–565
 - modeling, 561
 - real-life application, 563
 - of fractions, 42–43
 - inequalities, solving by, 332–337
 - of integers, 488–493
 - error analysis, 492
 - real-life application, 491
 - writing, 492
 - of mixed numbers, 43
 - Property of
 - Equality, 303, 572
 - Inequality, 334
 - of rational numbers, 532–537
 - error analysis, 536
 - real-life application, 535
 - writing, 536
 - whole numbers, 4
 - Subtraction Property of Equality, 303, 572
 - real-life application, 304
 - writing, 305
 - Subtraction Property of Inequality, 334
 - real-life application, 335
 - Summary triangle, 266, 674
 - Surface Area**
 - of prisms, 360–365
 - of pyramids, 368–373
 - of a solid, defined, 362
- T**
- Tables
 - frequency, 441
 - for graphing equations, 317
 - Tape diagram(s), 191, 193
 - Term(s)**
 - coefficient, 112
 - constant, 112
 - defined, 112
 - like, 556
 - error analysis, 558
 - variable, 112
 - writing, 558
 - Terminating decimal**
 - defined, 520
 - writing, 522
 - Third quartile**, defined, 414
 - Three-dimensional figures, *See* Solids
 - Trapezoid(s)
 - area of, 166–171
 - error analysis, 170
 - formula, 168
 - real-life application, 169
 - writing, 167
 - Triangle(s)
 - area of, 158–163
 - error analysis, 162
 - formula, 160
 - real-life application, 161
 - research, 163
 - writing, 163
- U**
- Unit analysis**, defined, 234
 - Unit cost, 207
 - Unit rate(s)**, 206–209
 - defined, 206, 600
 - finding, 206
 - unit cost, 207
 - writing, 208, 603
 - U.S. customary system**
 - converting units, 232–237
 - to metric units, 232–237
 - defined, 234
- V**
- Variable(s)**
 - coefficient of, 112
 - defined, 112
 - dependent, 316
 - equations in one, 294–299
 - error analysis, 298
 - real-life application, 297
 - equations in two, 314–321
 - defined, 316
 - dependent variable, 316
 - error analysis, 319
 - graphing, 317
 - independent variable, 316
 - real-life application, 318
 - solution of, 316
 - independent, 316
 - Venn diagram**
 - defined, 30
 - for identifying
 - factors, 30–31, 37
 - multiples, 36
 - Vertex**
 - of a solid, defined, 356
 - Volume**
 - defined, 374
 - of rectangular prisms, 374–379
 - formula, 29, 376

W

Which One Doesn't Belong?,
Throughout. For example,
see:

- absolute value, 480
 - algebraic expressions, 115
 - area, 170
 - comparing fractions, decimals,
 and percents, 654, 660
 - coordinate plane, 279
 - Distributive Property, 137
 - dividing integers, 506
 - equations in two variables, 319
 - equivalent ratios, 201
 - exponents, 14
 - factor pairs, 28
 - fractions, 67
 - measures of center, 407
 - percent proportions, 666
 - percents, 222
 - properties, 130
 - rational numbers, 536
 - ratios, 194, 610
 - solving equations, 574
 - statistics
 - mean absolute deviation, 422
 - measures of center, 407
- Whole number(s)
- adding, 4
 - dividing, 4–6
 - a decimal by, 94
 - error analysis, 8
 - by a fraction, 65
 - real-life application, 6
 - multiplying, 4
 - by decimals, 86
 - error analysis, 8

- operations, 2–9
 - choosing among, 2–3
 - modeling, 9
 - perfect square of, 13
 - defined, 13
 - real-life application, 13
 - subtracting, 4
- Word magnet, 448
- Writing, *Throughout. For example,*
see:
- area
 - of a trapezoid, 167
 - of a triangle, 163
 - converting units, 236
 - decimals
 - adding, 82
 - dividing, 93
 - repeating, 522
 - subtracting, 82
 - terminating, 522
 - discounts, 686
 - Distributive Property, 137
 - Division Property of Equality,
 312
 - equations, 297
 - equivalent, 574
 - solving, 580
 - in two variables, 314
 - two-step, 586, 587
 - expressions
 - algebraic, 112, 120–121, 558
 - error analysis, 122
 - linear, 564
 - modeling, 123
 - real-life application, 121
 - fractions, multiplying, 59
 - greatest common factor, 34
 - inequalities, 332, 338
 - graphing, 329

- integers, 249
 - additive inverse of, 486
 - comparing, 258
 - dividing, 506
 - multiplying, 500
 - subtracting, 492
- interest rate, 692
- least common multiples, 40
- markups, 686
- measures of center, 407
- measures of variation, 417
- numerical expressions, 20
- order of operations, 20
- percents, 222
 - of decrease, 680
 - proportions, 666
- perimeter of a rectangle, 178
- polygons
 - area of, 156
 - in the coordinate plane, 178
- proportions, 618
 - solving, 626
- rates, 206, 603
 - unit, 208
- ratio tables, 214
- rational numbers
 - adding, 528, 529, 539
 - dividing, 539, 542
 - multiplying, 539, 542
 - subtracting, 536, 539
- ratios, 192, 218
- solving
 - equations, 305
 - inequalities, 336
- stem-and-leaf plots, 438