

Problem solving

choosing a method of
solution, 103, 285, 317,
425, 442, 482, 545, 672–
673

open-ended; numerous
exercises, *see*, for example,
171 (Exs. 33, 34),
193 (Ex. 28),
223 (Exs. 20, 23),
230 (Exs. 1–8),
303 (Exs. 32–34),
348 (Exs. 23, 24, 26),
360 (Ex. 30),
361 (Exs. 31, 32)

See also Explorations

See also Applications and
Proof(s), strategies for

Products of mappings, 599–
602, 605–606

Projection, 571, 576
orthographic, 90

Proof(s)

by contrapositive,
215
coordinate geometry in,
556–563, 673
extraneous information in,
131 (Exs. 9, 10)
flow, 655–656
indirect, 214–215
key steps, 147
logical, 648–652
paragraph form, 147
parts of, 60
planning, 60–62
reasons used, 45
rules of inference, 648
strategies for, 61, 85, 94,
147, 172, 256
of theorems, 43–45
transformational geometry
in, 673
two-column, 38
with vectors, 542–543
See also Argument, making
a convincing

Properties

of algebra, 14 (Ex. 14),
37–39, 43 (Ex. 15), 204
of arcs and angles, 339–
340
of congruence, 37
of inequality, 204
of parallel lines, 78–79
of parallelograms, 167
of proportions, 245

of regular pyramids, 482
of similar solids, 508–509

Proportion, 242

extended, 242
extremes, 245
means, 245
properties of, 245
terms, 242, 245

Proportional lengths, 269–
270

Protractor, 17

Ptolemy's Theorem, 356

Pyramid(s), 8, 127, 294,
482–484

Great, 488
inscribed, 495
lateral area of, 482–484
parts of, 482
regular, 482
sketching, 485
step, 488
volume, 483–484, 517

Pythagoras, 290

Pythagorean Theorem, 290–

291, 294, 299,
438 (Ex. 34)
converse of, 295–296

Pythagorean triples, 299

Quadrants, 113, 523

Quadratic equations, 163

Quadrilateral, 101

inscribed, 351
skew, 181

Radical(s), 280, 287

Radius

of circle, 329
of cylinder, 490
of regular polygon, 441

Ratio(s), 241–242

of areas, 456–457
golden, 252, 253, 261
in similar figures, 264, 457
in similar solids, 508–509
trigonometric, 305–320

Ray(s), 11

endpoint of, 11
opposite, 11
parallel, 73
perpendicular, 56

Reading Geometry, xii–xiii

Reasoning

deductive, 45, 106
indirect, 214
inductive, 106
logical, 209, 644–654
valid and flawed, 649–
651

Reasoning backward, 61,
147

Rectangle, 184–185

area, 424
golden, 252, 253, 385
inscribed, 514

Rectangular solid, 475

diagonal of, 293

Reflection(s), 577–578, 659

composite of, 601–602
glide, 584–585
inverse of, 606
line of, 577
in a plane, 580
solution by, 225

Region, area of, 423–424

Regular polygon, 103

apothem of, 441
area of, 441, 445
center of, 441
central angle of, 441
inscribed, 440
perimeter, 445
radius of, 441

Relation, equivalence, 43,
538 (Ex. 22)

Replacement, rules of, 651

Reviews, *see* Algebra Review;
Chapter Review; Chapter
Test; College Entrance
Exams, Preparing for;
Cumulative Review;
Mixed Review Exercises;
and Self-Tests

Rhombus, 184–185

area of, 430

Right triangle(s), 93, 141,
285–325

angles of, 94
congruent, 141, 143
hypotenuse of, 141
midpoint of, 185
legs of, 141
Pythagorean Theorem, 290–
291, 294, 299,
438 (Ex. 34)
converse of, 295–296
similarity in, 285–287
special, 300–301
trigonometry, 305–320