Written Exercises, Pages 216–217

1. Assume temp. that $m\angle B \neq 40$. **3.** Assume temp. that $a - b = 0$. **5.** Assume temp. that $\overleftrightarrow{EF} \parallel \overleftrightarrow{GH}$. **7.** Assume temp. that $\angle Y$ is a rt. $\angle$. Since $m\angle X = 100$, this contradicts Thm. 3-11 Cor. 3. The temp. assumption must be false. It follows that $\angle Y$ is not a rt. $\angle$. **11.** Assume temp. that planes P and Q do not intersect, that is, they are $\parallel$. The lines in which plane N intersects planes P and Q, $\overleftrightarrow{AB}$ and $\overleftrightarrow{CD}$, must be $\parallel$. This contradicts the given info. that $\overleftrightarrow{AB} \nparallel \overleftrightarrow{CD}$. The temp. assumption must be false. It follows that planes P and Q intersect. **15.** Assume temp. that n does not int. k. Since n and k are coplanar, n and k must be $\parallel$. Then P is on n and l, and n and l are both $\parallel$ to k. This contradicts the thm. which states that through a pt. outside a line there is exactly 1 line $\parallel$ to the given line. The temp. assumption must be false. It follows that n does int. k. **17.** Assume temp. that there is an n-sided reg. polygon with an interior $\angle$ of meas. 155. Then the meas. of each ext. $\angle$ is 25 and $25n = 360$. This contradicts the fact that there is no whole number n such that $25n = 360$. The temp. assumption must be false. It follows that there is no reg. polygon with an interior $\angle$ of meas. 155.

Self-Test 1, Page 218

1. True **2.** True **3.** False **4.** False **5.** If $\triangle ABC$ is not acute, then $m\angle C = 90$. False **6.** If $m\angle C = 90$, then $\triangle ABC$ is not acute. True **7.** C **8. a.** $ABCD$ is not a rhom. **b.** No concl. c. No concl. **d.** $GHIJ$ is a $\square$. **9.** Assume temp. that $AC \neq 14$. **10.** d, b, a, c

Written Exercises, Pages 222–223

1. 3, 15 **3.** 0, 200 **5.** $a - b$, $a + b$ **7.** $\angle 2$ **9.** $\angle 3$ **11.** $\overline{WT}$ **13.** $\overline{WY}$ **15.** $c > d > e > b > a$ **17.** $m\angle 2 > m\angle X > m\angle XZY > m\angle Y > m\angle 1$ **19.** 1. $EFGH$ is a $\square$; $EF > FG$ (Given) 2. $HG > EH$ (Thm. 5-1 and Subst.) 3. $m\angle 1 > m\angle 2$ (Thm. 6-2)

Written Exercises, Pages 231–232

1. $m\angle 1 > m\angle 2$; SSS Ineq. **3.** $>$; $>$ **5.** $<$; $>$ **7.** $<$ **9.** $>$ **11.** 1. $m\angle SUV > m\angle STU$ (Ext. $\angle$ Ineq. Thm.) 2. $\overline{TU} \cong \overline{US} \cong \overline{SV}$ (Given) 3. $m\angle SVU = m\angle SUV$ (Isos. $\triangle$ Thm.) 4. $m\angle SVU > m\angle STU$ (Subst.) 5. $ST > SV$ (Thm. 6-3) **13.** Key steps of proof: 1. $m\angle P > m\angle Q$ (SSS Ineq. Thm.) 2. $m\angle PCA + m\angle A + m\angle P = 180$; $m\angle QCB + m\angle QBC + m\angle Q = 180$ (Thm. 3-11) 3. $m\angle PCA = m\angle A$; $m\angle QCB = m\angle QBC$ (Isos. $\triangle$ Thm.) 4. $m\angle PCA < m\angle QCB$ (Subst.)

Self-Test 2, Page 233

1. $\overline{XY}$ **2.** $\overline{OD}$ **3.** $<$ **4.** $=$ **5.** $>$ **6.** 1, 11 **7.** cannot be **8.** must be **9.** may be

Chapter Review, Pages 235–236

1. $>$ **3.** $=$ **5.** $>$ **7.** No concl. **9.** Barbara is at least 18 years old. **11.** $m\angle T$ **13.** $<$ **15.** $>$ **17.** $=$

Algebra Review, Page 237

1. $\frac{1}{5}$ **3.** $\frac{a}{2}$ **5.** $\frac{1}{3}$ **7.** $-4y^2$ **9.** $\frac{ab}{2c}$ **11.** $3x - 2y$ **13.** $\frac{1}{3}$ **15.** $t + 1$ **17.** $\frac{b+5}{b-7}$ **19.** $\frac{3(x-4)}{3x-4}$

Preparing for College Entrance Exams, Page 238

1. A **2.** A **3.** B **4.** B **5.** B **6.** E **7.** E **8.** C

Cumulative Review, Page 239

1. 57 **3. a.** Yes; SAS **b.** Yes; ASA **c.** No **d.** Yes; AAS **5. a.** $\overline{YZ}$ **b.** $\overline{XZ}$ **7.** 109, 71 **9.** Assume temp. that $\angle Q$, $\angle R$, and $\angle S$ are all 120° angles. Then $m\angle P > 0$ and $m\angle Q + m\angle R + m\angle S + m\angle P > 360$. This contradicts the thm. that states the sum of the int. $\measuredangle$ of a quad. $= 360$. Therefore, the temp. assumption must be false. It follows that $\angle Q$, $\angle R$, and $\angle S$ are not all 120° angles.