17. a. $m\angle DAB = 64$, $m\angle KAB = 32$, $m\angle DKA = 32$ **b.** More information is needed **19.** $x = 30$, $y = 5$ **21.** 1. $k \parallel l$ (Given) 2. $\angle 1 \cong \angle 8$ or $m\angle 1 = m\angle 8$ (If 2 $\parallel$ lines are cut by a trans., then alt. int. $\measuredangle$ are $\cong$.) 3. $m\angle 8 + m\angle 7 = 180$ ($\angle$ Add. Post.) 4. $m\angle 1 + m\angle 7 = 180$ (Substitution Prop.) 5. $\angle 1$ is supp. to $\angle 7$ (Def. of supp. $\measuredangle$) **23. a.** 1. $\overline{AB} \parallel \overline{DC}$; $\overline{AD} \parallel \overline{BC}$ (Given) 2. $\angle A$ is supp. to $\angle B$; $\angle C$ is supp. to $\angle B$ (If 2 $\parallel$ lines are cut by a trans., then s-s. int. $\measuredangle$ are supp.) 3. $\angle A \cong \angle C$ (If 2 $\measuredangle$ are supp. of the same $\angle$, then the 2 $\measuredangle$ are $\cong$.) **b.** Yes, by the same reasoning as in part (a) **25.** 60

Mixed Review Exercises, Page 82

1. a. True **b.** If 2 lines form $\cong$ adj. $\measuredangle$, then the lines are $\perp$. **c.** True **2. a.** True **b.** If 2 lines are not skew, then they are $\parallel$. **c.** False **3. a.** True **b.** If two $\measuredangle$ are supp., then the sum of their meas. is 180. **c.** True **4. a.** True **b.** If 2 planes do not intersect, then they are $\parallel$. **c.** True

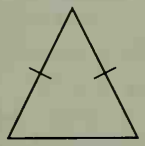
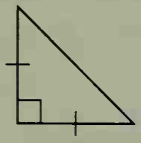
Written Exercises, Pages 87–88

1. $\overline{AB} \parallel \overline{FC}$ **3.** $\overline{AB} \parallel \overline{FC}$ **5.** none **7.** none **9.** $\overline{AE} \parallel \overline{BD}$ **11.** $\overline{AE} \parallel \overline{BD}$ **13.** $\overline{AE} \parallel \overline{BD}$ **15.** $\overline{FB} \parallel \overline{EC}$; $\overline{AE} \parallel \overline{BD}$ **17.** 1. Given 2. Vert. $\measuredangle$ are $\cong$. 3. Trans. Prop. 4. If 2 lines are cut by a trans. and corr. $\measuredangle$ are $\cong$, then the lines are $\parallel$. **19.** $x = 35$, $y = 20$ **21.** $\angle 1 \cong \angle 4$; $\angle 2 \cong \angle 5$ **23.** 1. $k \perp t$; $n \perp t$ (Given) 2. $m\angle 1 = 90$; $m\angle 2 = 90$ (Def. of $\perp$ lines) 3. $m\angle 1 = m\angle 2$ or $\angle 1 \cong \angle 2$ (Substitution Prop.) 4. $k \parallel n$ (If 2 lines are cut by a trans. and corr. $\measuredangle$ are $\cong$, then the lines are $\parallel$.) **25.** 1. $\overline{BE} \perp \overline{DA}$; $\overline{CD} \perp \overline{DA}$ (Given) 2. $\overline{CD} \parallel \overline{BE}$ (In a plane, 2 lines $\perp$ to the same line are $\parallel$.) 3. $\angle 1 \cong \angle 2$ (If 2 $\parallel$ lines are cut by a trans., then alt. int. $\measuredangle$ are $\cong$.) **27.** $m\angle RST = 110$ **29.** $x = 50$, $y = 20$ **31.** $x = 12$

Self-Test 1, Page 89

1. sometimes **2.** never **3.** always **4.** sometimes **5.** always **6.** $\angle 3$, $\angle 6$; $\angle 4$, $\angle 5$ **7.** Answers may vary; $\angle 1$, $\angle 5$; $\angle 2$, $\angle 6$; $\angle 3$, $\angle 7$; $\angle 4$, $\angle 8$ **8.** $\angle 3$, $\angle 5$ or $\angle 4$, $\angle 6$ **9.** $\angle 4$; $\angle 3$ **10.** $\angle 2$, $\angle 8$; $\angle 4$, $\angle 7$ **11.** $\angle 2$, $\angle 8$ **12.** 65, 115 **13.** $\overline{EB} \parallel \overline{DC}$ **14.** none **15.** $\overline{AE} \parallel \overline{BD}$ **16.** one, one

Written Exercises, Pages 97–99

1. a.  **b.**  **c.**  **3.** not possible **5.** 180

7. 95 **9.** 25 **11.** $x = 30$, $y = 80$ **13.** $x = 40$, $y = 50$ **15.** $x = 40$, $y = 50$ **17.** Yes, $n = 5$ **19.** 30, 60, 90 **21.** $m\angle C > 60$ **23. a.** 22 **b.** 23 **c.** $\angle ABD$ and $\angle C$ are comps. of $\angle CBD$. **25.** 1. $\angle ABD \cong \angle AED$ (Given) 2. $\angle A \cong \angle A$ (Refl. Prop.) 3. $\angle C \cong \angle F$ (If 2 $\measuredangle$ of one $\triangle$ are $\cong$ to 2 $\measuredangle$ of another $\triangle$, then the third $\measuredangle$ are $\cong$.) **27.** Given: $\triangle ABC$. Prove: $m\angle 1 + m\angle 2 + m\angle 3 = 180$. Proof: 1. Draw $\overrightarrow{CD}$ through $C \parallel$ to $\overleftrightarrow{AB}$. (Through a pt. outside a line, there is exactly 1 $\parallel$ to a given line.) 2. $\angle 2 \cong \angle 5$ or $m\angle 2 = m\angle 5$ (If 2 $\parallel$ lines are cut by a trans., alt. int. $\measuredangle$ are $\cong$.) 3. $\angle 1 \cong \angle 4$ or $m\angle 1 = m\angle 4$ (If 2 $\parallel$ lines are cut by trans., corr. $\measuredangle$ $\cong$.) 4. $m\angle ACD + m\angle 4 = 180$; $m\angle ACD = m\angle 3 + m\angle 5$ ($\angle$ Add. Post.) 5. $m\angle 1 + m\angle 2 + m\angle 3 = 180$ (Subst.) **29.** $x = 25$, $y = 5$ **31.** $\angle 1 \cong \angle 2 \cong \angle 5$; $\angle 3 \cong \angle 4 \cong \angle 6$

Written Exercises, Pages 104–105

1. 360; 360 **3.** 720; 360 **5.** 1440; 360 **7.** 360; yes **9.** 135 **11.** 120 **15.** not possible **17.** 24 **21.** $x = 36$; $\overline{AB} \parallel \overline{CD}$ **23.** 108 **25.** 14

27. a. Sketches may vary.

b. Yes