Exercises, Page 647

1. If you like to paint, then you are an artist. **3.** If you are not an artist, then you do not draw landscapes. **5.** If you like to paint and you are an artist, then you draw landscapes. **7.** If you draw landscapes or you are an artist, then you like to paint. **9.** $b \rightarrow k$ **11.** $(\sim b \vee \sim k) \rightarrow s$ **13.** $\sim(b \rightarrow s)$ **15. a.** Yes; no **b.** Yes; yes **17.**

p	q	$p \rightarrow q$	$\sim(p \rightarrow q)$
T	T	T	F
T	F	F	T
F	T	T	F
F	F	T	F

19. $\sim(p \rightarrow q)$ and $p \wedge \sim q$

Exercises, Page 649

1. 1. Given 2. Step 1, Simplification 3. Given 4. Steps 2, 3, Modus Ponens **5.** 1. $a \wedge b$ (Given) 2. a (Step 1, Simplification) 3. $a \rightarrow \sim c$ (Given) 4. $\sim c$ (Steps 2, 3, Modus Ponens) 5. $c \vee d$ (Given) 6. d (Steps 4, 5, Disj. Syllogism) **7.** Given: $w \rightarrow g$; $g \rightarrow p$; $w \wedge y$. Prove: p.

Exercises, Pages 650–651

1. a. T, T, F, T **b.** T, T, F, F **c.** T, T, T, T (tautology) **d.** T, T, T, F **5. a.** The sandwich costs \$3.50. **b.** Perhaps it's not true that if I have enough money I'll buy milk. Maybe I'm allergic to milk. Or maybe the statement that milk costs a dollar is wrong.

Exercises, Page 652

1. 1. Given 2. Step 1, Double Neg. 3. Given 4. Steps 2, 3, Modus Tollens **5.** 1. $p \vee \sim q$ (Given) 2. $\sim q \vee p$ (Step 1, Comm. Rule) 3. q (Given) 4. $\sim(\sim q)$ (Step 3, Double Neg.) 5. p (Steps 2, 4, Disj. Syllogism) **9.** Given: $c \rightarrow t$; $\sim c \rightarrow \sim s$; s. Prove: t

Exercises, Page 654

1. $p \wedge r$ **3.** $s \wedge (t \vee p)$ **5.** $(t \vee s) \wedge (\sim t \vee s)$ **7.** Electricity passes through $p \vee \sim p$ but never through $p \wedge \sim p$.

Handbook

Exercises, Pages 658–659

1. The sum is 360. **3. b.** Vert. $\measuredangle$ are $\cong$. **c.** Opp. $\measuredangle$ of a $\square$ are $\cong$. **5. b.** 360 **7.** 360; Thm. 3-14

Exercises, Pages 659–660

5. c. $\angle A \cong \angle B$ because the 2 $\measuredangle$ overlap exactly. **7. a.** A trans. maps fig. I to fig. III. **b.** The distance bet. corr. pts. in figures I and III is twice the distance bet. l and m.

Exercises, Pages 661–662

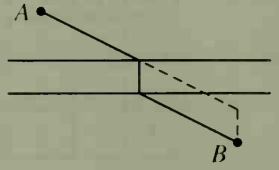
3. No **5.** $S(3, 2)$ **7. b.** $M(1, 3)$, $N(3, 4)$ **c.** slope of $\overline{MN}$ = slope of $\overline{OI} = \frac{1}{2}$; $\overline{MN} \parallel \overline{OI}$; $OMNI$ is a trap.

9. a. slope of $\overline{AB}$ = slope of $\overline{DC} = -\frac{3}{4}$, slope of $\overline{AD}$ = slope of $\overline{BC} = \frac{4}{3}$; Thm. 13-4 **b.** rect.

11. a. $DE = EF = FG = GD = \sqrt{40} = 2\sqrt{10}$ **b.** slope of $\overline{DF} = 1$, slope of $\overline{EG} = -1$ **13–33.** Refer to Sel. Ans. of specified pages.

Exercises, Pages 663–664

1.



3. Construct the bridge between (3, 3) and (4, 3). **7.** $\sqrt{5}$