

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. \angle s are \cong . c. Opp. \angle s 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 \angle s 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. A 3. Construct the bridge between (3, 3) and (4, 3). 7. $\sqrt{5}$

