



Contents

NOTE: A PLUS (+) INDICATES MORE ADVANCED AND DIFFICULT MATERIAL.

Preface xvii

1 Introduction: Decision and Argument 1

Argument 2

Check-Ups 2

Check-Up 1A 3

Six Basic Elements in Critical Thinking: The FRISCO Approach 4

Focus 4

Reasons 5

Inference 6

Situation 7

Clarity 7

Overview 8

Writing a Position Paper Using Critical Thinking 10

Organization 10

Revision 11

Citations 11

Audience 11

A Checklist 12

Responsibility for the Wise Exercise of Your Knowledge	12
Chapter Summary	13
Check-Up 1B	13
Suggested Answers for Chapter 1	15

2 **Argument Analysis: Identifying Conclusions and Reasons** 17

The Murder Trial	17
Conclusions and Reasons	19
<i>Criteria (or Cues) for Identifying Conclusions</i>	19
<i>Conclusion-Suggesting Emphasis Terms: Must, Should, Etc.</i>	20
Check-Up 2A	20
<i>Reasons and Intermediate Conclusions</i>	22
<i>Nonindicators</i>	22
<i>The “Therefore” Test</i>	23
Check-Up 2B	25
Propositions with Two or More Parts	26
Figuring Out the Conclusion	27
<i>Three Criteria for Identifying Conclusions</i>	28
<i>Unstated Conclusions</i>	30
+ <i>Because</i> in Explanations that Try to Account for Something	31
Summary So Far	32
Check-Up 2C	33
An Alternative: Diagramming the Whole Argument	37
Check-Up 2D	40
Suggested Answers for Chapter 2	42

3 **The Credibility of Sources** 57

Four Basic Criteria for Credibility	58
1. <i>Background Experience and Knowledge</i>	58
2. <i>Lack of Apparent Conflict of Interest</i>	59
3. <i>Agreement with Others Equally Qualified</i>	60
4. <i>Reputation</i>	60
Tabulating the Results	61
Check-Up 3A	61

Further Criteria	62
5. <i>Established Procedures</i>	62
6. <i>Known Risk to Reputation</i>	63
7. <i>Ability to Give Reasons</i>	63
8. <i>Careful Habits</i>	64
<i>Summary</i>	64
Check-Up 3B	66
Fallacy Labels	66
<i>Transfer</i>	66
<i>Appeal to Authority</i>	67
<i>Testimonial</i>	67
<i>Personal Attack</i>	68
Chapter Summary	69
Check-Up 3C	69
Suggested Answers for Chapter 3	71

4 **Observation** 73

Credibility Criteria	73
Conclusions Versus Observations	74
<i>Why Distinguish Observations from Conclusions?</i>	74
+ <i>Making the Distinction Between Observations and Conclusions</i>	75
<i>Summary</i>	76
Check-Up 4A	76
The Process of Observing	77
<i>Appropriate Technology</i>	77
<i>Observation Conditions</i>	78
<i>Observer's Ability</i>	78
<i>Observer Attention, Lack of Bias, Care</i>	78
<i>Summary</i>	79
Observation Reports	79
<i>Hearsay</i>	79
<i>Records</i>	81
<i>Summary</i>	83
Check-Up 4B	83
Making an Overall Appraisal of an Observation Statement	84
Chapter Summary	87
Check-Up 4C	87
Suggested Answers for Chapter 4	88

5 Deduction: Class Logic 89

Deductive Validity and Invalidity	90
<i>Deductive Invalidity</i>	91
<i>Summary</i>	92
Check-Up 5A	93
A Basic Circle System	94
<i>Inclusion</i>	94
<i>The Basic Circle-System Validity Test</i>	95
<i>Summary</i>	97
Check-Up 5B	97
<i>Subject Class and Predicate Class</i>	98
<i>Specific Class Members and Universal Terms</i>	100
<i>Summary</i>	101
Check-Up 5C	101
<i>Exclusion</i>	103
<i>Nonmembership</i>	104
<i>Valid and Invalid: Terms of Condemnation and Commendation</i>	104
<i>Summary and Comment</i>	105
Check-Up 5D	105
Suggested Answers for Chapter 5	108

6 Deduction: Propositional Logic 119

Propositions	120
If-Then Reasoning	121
<i>Affirming the Antecedent</i>	121
<i>Antecedents and Consequents</i>	121
Summary	122
Check-Up 6A	123
Affirming and Denying the Antecedent and Consequent	124
Summary So Far	125
Check-Up 6B	126
<i>Conversion</i>	127
<i>Contraposition</i>	128
Negation	128
<i>Double Negation</i>	129
<i>Double Negation and Contraposition</i>	129
Summary	130

Check-Up 6C	130
Saving Time with Letters	135
<i>Summary</i>	137
Check-Up 6D	137
Conjunction, Alternation, and Embedded Complex Propositions	139
<i>Conjunction and Embedded Complex Propositions</i>	139
<i>Alternation</i>	141
<i>Summary</i>	142
Check-Up 6E	142
Suggested Answers for Chapter 6	144

7 Applications of Deductive Logic: Necessary and Sufficient Conditions, Straight Deduction, Loose Derivation, and Assumption Attribution 151

Necessary and Sufficient Conditions	151
Soundness in Deductive Logic	151
Three Cases of Deduction in Context	152
Applying Detailed Instructions About the Charge of Voluntary Manslaughter	153
Loose Derivation	157
Summary So Far	158
Check-Up 7A	159
Assumption Attribution and Identification	160
<i>Two Senses of the Word Assumption</i>	161
<i>Reasons for Attributing Assumptions to Arguments</i>	162
<i>A Basic Deductive Gap-Filling Move in Assumption Attribution</i>	163
<i>Presuppositions</i>	164
<i>Summary and Comment</i>	164
Check-Up 7B	165
Application of Deductive Logic in Writing Position Papers	167
<i>Deductive Logic and Loose Derivation</i>	167
<i>Straightforward Assumption Identification</i>	168
<i>Identifying Your Own Assumptions</i>	168
<i>Slippery Assumption Identification</i>	169
+ The Distinction Between Needed and Used Implicit Assumptions in Real Situations	170
<i>Needed Assumptions</i>	170
Summary	171

Check-Up 7C	172
Suggested Answers for Chapter 7	174

8 Experimentation, Diagnosis, and Troubleshooting 178

Control Group Experimentation	178
<i>Redi's Experiment with Meat</i>	179
<i>A Critical Thinking Experiment</i>	180
<i>Summary and Comment</i>	182
Check-Up 8A	182
Systematic Control of the Variables—Without Using a Separate Control Group	185
<i>Dependent and Independent Variables</i>	186
<i>Difficulty in Controlling the Possible Independent Variables</i>	186
<i>Importance of Knowledge in the Area of Investigation</i>	187
<i>Greater Complexity: Multiple Variables</i>	188
Check-Up 8B	189
Comparability	190
<i>Random Assignment to Experimental and Control Groups</i>	191
<i>Alternative Ways of Securing Comparability of Groups</i>	191
<i>Experiments Without a Separate Control Group</i>	192
Summary So Far	192
Check-Up 8C	193
Experimental Reasoning Assumptions	194
<i>The Assumption that the Experiment Was Carefully and Properly Done</i>	195
<i>Assumptions About the Way Things Happen</i>	195
<i>Summary and Comment</i>	196
The Reasoning Pattern in Rejecting Hypotheses	196
Accepting Hypotheses: Four Criteria	198
1. <i>The hypothesis would explain some facts.</i>	198
2. <i>All other explanations of these facts are inconsistent with some other facts, given reasonable assumptions.</i>	198
3. <i>The hypothesis is not inconsistent with any facts.</i>	199
4. <i>The hypothesis is plausible.</i>	199
Summary So Far—and Comment	200
Check-Up 8D	201
Diagnosis or Troubleshooting	202
<i>Do-It-Yourself Troubleshooting: The Inoperative Flashlight</i>	203
<i>Efficiency</i>	204

<i>Alternative Diagnostic and Troubleshooting Strategies</i>	204
<i>Cooperating with Maintenance Specialists: Troubleshooting the Inoperative Radio</i>	205
<i>Principles of Diagnosis and Troubleshooting</i>	206
<i>Summary and Comment</i>	207
Check-Up 8E	207
Writing about Your Results	209
<i>Reports About Experiments</i>	209
<i>Reporting the Results of Diagnosis and Troubleshooting</i>	209
Check-Up 8F	210
Chapter Summary	210
Suggested Answers for Chapter 8	211

9 **Best-Explanation and Causal Inference: Argument and Writing Strategy** 217

Best-Explanation Hypotheses	217
<i>Developing a Best-Explanation Hypothesis</i>	218
<i>Applying the Criteria to Be Satisfied in Accepting a Best-Explanation Hypothesis</i>	219
<i>The Reasoning Pattern in Rejecting a Best-Explanation Hypothesis</i>	220
<i>Details and General Knowledge</i>	221
<i>Other Types of Explanation</i>	222
<i>Explanation and Partial Explanation</i>	222
<i>The FRISCO Approach Applied to the Moderate Force Conclusion</i>	224
<i>Best-Explanation Reasoning in Figuring Out What Someone Believes or Thinks</i>	226
<i>Summary</i>	228
Check-Up 9A	229
Necessarily Following: Deductive Versus Best-Explanation Inference and General Argument Strategy	237
<i>A Possible Alternative: Transformation into a Deductively Valid Argument</i>	238
<i>Choosing Between the Best-Explanation Approach and the Deductive and Other Approaches</i>	238
<i>Complex Combinations</i>	239
<i>Not Necessarily</i>	240
<i>Summary</i>	240
Check-Up 9B	241
+ Causation	242

<i>A Distinction Between Singular Causal Statements and Causal Generalizations</i>	242
<i>Causal Generalizations</i>	242
<i>Singular Causal Statements</i>	247
<i>Summary and Comment</i>	252
Check-Up 9C	254
Best-Explanation and Causal Reasoning in Position Papers and Other Argumentative Writings	256
<i>General Writing Strategy</i>	257
<i>Summary</i>	259
Check-Up 9D	259
Suggested Answers for Chapter 9	259

10 Generalization: Meaning, Sampling, Typicality, Tables, Graphs, and Correlations 264

Types of Generalizations	264
<i>Limited-to-the-Data and Inferred Generalizations</i>	265
<i>Degree of Universality</i>	266
<i>Inference to Generalizations</i>	268
<i>Summary</i>	270
Check-Up 10A	270
Sampling and Typicality	272
<i>Random Sampling</i>	272
<i>Systematic Sampling</i>	274
<i>Stratified Random Sampling</i>	274
<i>Cluster Sampling</i>	275
<i>A Danger in Sampling, and the Case-Study Alternative</i>	276
<i>Inferring to a Broader Population</i>	277
<i>Summary</i>	278
Check-Up 10B	279
Interpretation of Data: Tables, Graphs, and Correlations	280
<i>Graphs</i>	282
<i>Positive and Negative Relationships</i>	284
<i>Correlations</i>	287
<i>Summary</i>	287
Check-Up 10C	288
Suggested Answers for Chapter 10	289

11 Making Value Judgments 293

The Distinction Between Value Statements and Factual Statements	293
Loose Derivation from Principles and Factual Statements	295
Summary	297
Check-Up 11A	297
Facts About the Past; Future Consequences	299
<i>Factual Claims</i>	299
<i>Unstated Facts</i>	299
<i>Consequences</i>	299
<i>Consequences of the Jurors' Judgments</i>	301
Weighing Reasons	301
<i>Decision Theory</i>	301
<i>The Ben Franklin System</i>	302
FRISCO	304
Writing a Value Argument	305
<i>Strategies</i>	305
<i>Analogical Argument</i>	306
Summary	308
Check-Up 11B	308
+ Relativism	310
<i>Cultural Relativism</i>	310
<i>Personal Relativism</i>	313
<i>Absolutism Versus Relativism</i>	314
<i>Summary</i>	316
Check-Up 11C	317
Suggested Answers for Chapter 11	318

12 Reported Definition and Definition Forms 320

Reported Definition	321
<i>Testing a Reported Definition</i>	322
<i>Using Circles to Exhibit Defects and Success in a Definition</i>	323
<i>Reported Definitions as Best-Explanation Hypotheses</i>	326
<i>Defining Terms Any Way We Please</i>	327
<i>Summary</i>	327
Check-Up 12A	328

The Classification Definition Form	329
<i>Rules for Classification Definition</i>	330
<i>Summary</i>	331
Check-Up 12B	331
Some Alternatives to Classification Definition	333
<i>Equivalent-Expression Definition</i>	333
<i>Range Definition</i>	336
<i>Other Forms of Definition</i>	338
<i>Summary</i>	339
Using Definitions in Your Writing	339
Check-Up 12C	340
Suggested Answers for Chapter 12	341

13 Arbitrary Stipulative Definition, Positional Definition, and Definition Strategy 344

Arbitrary Stipulative Definition and Positional Definition	345
<i>Arbitrary Stipulative Definition</i>	345
<i>Positional Definition</i>	346
<i>Summary</i>	349
Check-Up 13A	350
+ Definitional Strategy	350
<i>The Need for Defense of Positional Definitions</i>	351
<i>Introducing Confusion with a Stipulative Definition</i>	351
<i>Using a Positional Definition to Avoid the Issue</i>	352
<i>Equivocation: Shifting Meaning in Mid-Argument</i>	353
<i>Impact Equivocation</i>	355
<i>Considering Several Possible Meanings</i>	356
<i>A Simpler Strategy</i>	356
Summary	357
Check-Up 13B	359
Writing That Consciously Takes Account of Definitional Activities	360
Check-Up 13C	361
Suggested Answers for Chapter 13	362

14 Applying Critical Thinking: FRISCO, Overview, and Critical Thinking in Conversation and Presentation 364

Broad Critical Thinking Elements: FRISCO	364
<i>FRISCO in Making a Decision About What to Believe or Do</i>	365

<i>Inventing, Checking for Quality, Reformulating</i>	366
<i>Overview</i>	366
Check-Ups	369
Check-Up 14A	369
Thinking Critically When Discussing Things with Others	371
<i>General Advice</i>	372
<i>Seeking Clarification</i>	373
<i>Summary and Comment So Far</i>	375
Check-Up 14B	376
<i>Challenging a Position</i>	376
<i>Fallacy Labels</i>	381
<i>Summary and Comment</i>	381
Check-Up 14C	382
<i>Responding</i>	383
<i>Presenting Your Own Position</i>	388
Check-Up 14D	389
Summary	390
Suggested Answers for Chapter 14	391
You Have Reached the End of This Book	392
Epilogue	393
<i>Glossary</i>	394
<i>Index</i>	400