A Christian's Guide to

. . .with all your getting get understanding.

Proverbs 4:7

Learning Logic at Home

- Reasons to Study Logic
- Self-Teaching Logic Books
- Suggested Course of Study
- Suggestions for Children & Adults
- Frequently Asked Questions

Nathaniel Bluedorn

A Christian's Guide to Learning Logic at Home
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"Thou shalt not muzzle the ox that treadeth out the corn. And, The labourer is worthy of his reward." –First Timothy 5:18 (First Corinthians 9:9; Deuteronomy 25:4; and Luke 10:7; Matthew 10:10; Deuteronomy 24:15)

"Therefore, behold, I am against the prophets, saith the LORD, that steal my words every one from his neighbour." –Jeremiah 23:30

"…Thou shalt not steal,…Thou shalt love thy neighbour as thyself." –Romans 13:9 (Matthew 19:18; Mark 10:19; Luke 18:20; First Corinthians 6:8,10; Ephesians 4:28; Exodus 20:15; Leviticus 19:11,13; Deuteronomy 5:19 and Leviticus 19:18; Matthew 5:43; 7:12; 19:19; 22:39; Mark 12:31; Luke 10:27; Galatians 5:14; James 2:8)

"Render therefore to all their dues:…honour to whom honour." –Romans 13:7

"That no man go beyond and defraud his brother in any matter: because that the Lord is the avenger of all such, as we also have forewarned you and testified." –First Thessalonians 4:6 (Leviticus 19:13; Deuteronomy 32:35; Proverbs 22:22,23)

Table of Contents

Introduction

Our experience with logic

When I was about thirteen, my parents announced that we were going to study logic. What thoughts flitted through my anti-intellectual mind I can't rightly remember, but I imagine they weren't good. Back then, my father had not yet taken on much of the responsibility for our schooling, so the burden fell on my mother's shoulders. If you don't know what it is to learn logic with a woman, how can I describe it to you. My mother had never studied logic, but as it fell out, we spent some of our most enjoyable hours learning logic together. What I didn't understand, she explained to me, and what she couldn't grasp, I helped her understand – the latter taking the greater balance of our time.

Together we learned about "if, then" statements and how to reduce an argument to its premises and conclusion. We argued over whether a statement really does have the same truth value as its contra-positive, and we found that the text book was right after all. Our favorite subject was logical fallacies such as *circular reasoning*, the *straw man argument,* and *post hoc ergo propter hoc*.

Why did we study logic?

My parents wanted us to learn logic because their goal was to give us a Classical Liberal Arts Education, and because they desired to see us stand strong for the Christian faith. A child who can logically understand what he believes will hold fast to the truth and will defend it throughout his life. If we are able to clearly reason from the Bible, then we will be better equipped to give a proper defense of our faith. (I Peter 3:15) Also, the laws of logic, in one way or another, are fundamental to every academic discipline.

How we learned logic

Back in those days, having these goals was all well and good, but putting them into practice was another matter. My parents didn't know how to go about learning logic themselves, least of all how to teach it to their children. My father had taken logic in college, but the teacher was bored with the basic principles of practical logic and wanted to start right off with the higher realms of modern symbolic logic. This did no good for my father's education in logic, and he dropped out of that class. At first, all the text books my parents found were written for a college classroom where a teacher who already knows logic can make the subject digestible to his students. We needed a self-teaching text.

Then my mother stumbled across two series of books published by Critical Thinking Books & Software: the *Building Thinking Skills* pre-logic workbooks and the *Critical Thinking* introductory logic texts. Since that time, we have found other texts which I will explain later. These two sets were what my mother used with us children. In recent years, my father has recognized more of a role to play in our education, and has been using other logic books to continue improving our reasoning skills – especially with us boys.

In teaching logic to us, my parents illustrated one of the "undeniable truths of homeschooling," that homeschooling is for parents, also. They needed to learn logic just as much as we did.

What do I think of logic now?

Once I overcame my initial dislike for using my brain, logic became my favorite subject. Even though exercising my mind is often painful, the reward is worth the effort. My study of logic continues through today with the research I have done for this booklet. I still enjoy learning more about good reasoning skills, and I hope this love for learning continues all of my life. It seems to me that I have received more benefit

from learning good reasoning skills than from learning Algebra or Chemistry. Many of these subjects which I studied as a typical homeschool high school student I might draw on once in a month, whereas logic is something I use every day.

Why you should study logic

Perhaps you can't envision setting aside the time to learn logic. Then consider the time you've spent learning other things which you've used very little. You will find that learning logical reasoning will be time well spent. Throughout this booklet I'll try to show you this.

I have three objectives in this booklet: 1) To convince you that logic is something you should learn. 2) To give you an overview of what logic is. 3) To give you a course to follow. Let's see how well I accomplish all three.

"Contrariwise," continued Tweedledee, "If it was so, it might be; and if it were so, it would be; but as it isn't, it ain't. That's logic."
–Lewis Carroll, Through the Looking Glass

Reasons from the Bible to Study Logic

A little introduction to logic

When most people hear the word "logic" they conjure up the picture of an old dusty professor with a high forehead teaching things nobody can understand, or nobody wants to understand. That's not the logic I'm talking about. Let me introduce you to logic in terms of how you might find it useful.

Logic is the study of how to take statements you know are true and put them together to come up with a conclusion you also know is true. Logic is also used to prove or disprove arguments.

Because many people have wanted to prove things, men have tried to develop our understanding of how to reason logically. Logicians have studied how to prove things and in the process discovered fundamental laws for reasoning which we call the laws of logic. From the three most fundamental laws of logic, logicians have expanded to other laws of logic. This is much the same way mathematicians have expanded our understanding of mathematics. As Mathematics is to numbers, so logic is to words and language.

Learning how to reason well is something the Bible speaks about. I have found seven reasons in the Bible to learn logic.

1. To logically defend your faith – Apologetics

Now sanctify the Lord God in your hearts (minds); and always be prepared for (presenting) a logical defense to everyone who requests a reason from you concerning the hope which is among you, (doing so) with meekness and fear . . . –1 Peter 3:15. (Very Literal Translation)

Always be ready to give a logical defense for your faith in Christ. Why does Peter say this? If we defend our faith, as taught in the Bible, with clear logical reasoning, showing how every man is accountable to the Bible, then we will be witnesses against the world. The world will have no logical excuse for its rebellion against God and for its hatred of us.

Walk in wisdom toward them that are without, redeeming the time. Let your speech be always with grace, seasoned with salt, that ye may know how ye ought to answer every man. –Colossians 4:5-6. (KJV)

Know how to respond with a wise answer to non-Christians. God knows that if we prepare ourselves to answer those who accost us about our faith, then our faith and our hope in Christ will be strengthened.

. . . holding fast the faithful word as he has been taught, that he may be able, by sound doctrine, both to exhort and convict those who contradict. –Titus 1: 9 (NKJV)

Hold tight to God's truth in order to be able to refute your opposition with sound biblical reasoning. The Lord makes every man pass this test before he can become an elder in His church. Shouldn't we all aspire to meet this challenge? If we stand firm in the truth, then we will be able to refute those who attack what we know is true.

Then Paul stood in the midst of Mars' hill, and said, Ye men of Athens, I perceive that in all things ye are too superstitious . . . –Acts 17:22-31 (KJV)

Paul stood before the pagan Greeks in Athens and showed them how the true God whom they did not know required them to repent. Have we trained ourselves to be able to do as Paul did? To give logical arguments when the opportunity presents itself? This is what first century Christians had to do, and quickly before the lions had the time to spring!

Defending our faith is our duty, and good reasoning is a means God has given us to do it.

2. To defeat the world's philosophies by advancing Biblical reasoning.

We are at War

For the weapons of our warfare (are) not fleshly, rather (they are) powerful in God for the demolishing of fortresses; demolishing reasonings and every thing lifting itself up against the knowledge of God, and taking captive every thought into the obedience of Christ. –2 Corinthians 10:3-6 (Very Literal Translation)

God gave us weapons in order to pull down the reasoning and philosophies of the world, and to subjugate all thoughts to the teaching of the Bible. The Bible lays down a plan for victory, not for defeat. This is a war we are fighting. It is not a war of swords and shields, but of thoughts and ideas, a war of minds, a war between God's truth and the world's rebellious reasoning.

. . .[I] exhort you that ye should earnestly contend for the faith which was once delivered unto the saints. –Jude 3 (KJV)

Contend earnestly for the religion which the Bible teaches. The world's opinion is that we all should contend earnestly for nothing. They want everyone to learn to accept all beliefs and diverse religions in the name of tolerance and progress. But Jude says something quite different. There is only one Book of Truth, and its doctrines deserve to be argued uncompromisingly everywhere.

The Enemy is strong. Be prepared.

That we henceforth be no more children, tossed to and fro, and carried about with every wind of doctrine, by the sleight of men, and cunning craftiness, whereby they lie in wait to deceive; –Ephesians 4: 14. (KJV)

Do not be like children, believing everything which comes your way, and falling for the cunning lies of the world. The world is not without designs on you.

For they that are such serve not our Lord Jesus Christ, but their own belly; and by good words and fair speeches deceive the hearts of the simple. –Romans 16:18. (KJV)

Beware of those who try to deceive the unlearned. Have your mind well grounded in Biblical reasoning. This is your best lie detector.

. . . Beware lest any man spoil you through philosophy and vain deceit, after the tradition of men, after the rudiments of the world, and not after Christ. –Colossians 2:6-8

Be well established in the teaching of the Bible, and be on your guard for those who would hoodwink you with the traditions and philosophies of the world.

The Weapon of Logic

God gave us a weapon with a winning edge: sound reasoning from the Bible. Though we may seem to lose battles as our enemies try to silence the truth we proclaim, nevertheless this is a war we know we cannot lose in the end – if we are on God's side.

3. To prove your doctrines from the Bible.

When it comes to the doctrines we believe, what is one of the most worthy examples in the Bible?

These [of Berea] were more noble than those in Thessalonica, in that they received the word with all readiness of mind, and searched the scriptures daily, whether those things were so. –Acts 17:10-11 (KJV)

Paul and Silas, coming to Berea, found the people there more noble than at previous cities, for these people were eager to listen, and carefully studied the Bible to see if what Paul and Silas taught was true. What was so important to these Bereans? Why didn't they immediately accept what Paul and Silas were saying? Because the Bible says we should prove a doctrine before we let ourselves be convinced by it.

Prove all things; hold fast that which is good. –1 Thessalonians 5:21. (KJV)

The simple believeth every word: but the prudent man looketh well to his going. –Proverbs 14:15. (KJV)

Beloved, believe not every spirit, but try the spirits whether they are of God. . . –1 John 4:1. (KJV)

For ye were sometimes darkness, but now are ye light in the Lord: walk as children of light. . . Proving what is acceptable unto the Lord. –Ephesians 5:8-11. (KJV)

. . .abound yet more and more in knowledge and in all judgment; That ye may approve things that are excellent. . . –Philippians 1:9-10. (KJV)

Whom shall [God] teach knowledge? and whom shall He make to understand doctrine? Them that are weaned from the milk, and drawn from the breasts. For precept must be upon precept, precept upon precept; line upon line, line upon line; here a little, and there a little. . . –Isaiah 28:9-10. (KJV)

Paul's methods

If the Bereans needed things proven to them, what were Paul's methods for accomplishing this? The following passages from Acts illustrate how Paul tried to convince his audience:

9:22 [Paul] confounded the Jews which dwelt at Damascus, proving that this is very Christ.

17:2. And Paul, as his manner was, went in unto them, and three sabbath days reasoned with them out of the scriptures, Opening and alleging, that Christ

must needs have suffered, and risen again from the dead; and that this Jesus, whom I preach unto you, is Christ.

18:4. And he reasoned in the synagogue every sabbath, and persuaded the Jews and the Greeks.

18:19 . . .he. . . entered into the synagogue, and reasoned with the Jews.

18:28. For he mightily convinced the Jews, and that publickly, shewing by the scriptures that Jesus was Christ. (KJV)

Paul knew he needed to prove that Jesus was the Messiah. If he couldn't prove what he said, he could not rightly expect them to believe it.

Augustine on Logic

A Christian in the fourth century, St. Augustine of Hippo, had much to say about logic. He believed it was important to teach logic, which was the common practice in the classical schools of his day.

"The science of reasoning is of very great service in searching into and unraveling all sorts of questions that come up in Scripture, only in the use of it we must guard against the love of wrangling and the childish vanity of entrapping an adversary." (On Christian Doctrine II,48)

Augustine used Paul's argument against those who deny the resurrection of the dead (I Corinthians 15:12-20) as an example of how logic is necessary for proving our Christian doctrines.

". . .if there is no resurrection of the dead, then Christ is not risen,

then our preaching is in vain,
then we are false witnesses
then your faith is in vain,
then you are yet in your sins,
then those who have fallen asleep in Christ have perished.

"But all these false inferences followed legitimately from the opinion of those who said that there is no resurrection of the dead. These inferences, then, being repudiated as false, it follows that since they would be true if the dead rise not, there will be a resurrection of the dead. As then valid conclusions may be drawn not only from true but from false propositions, the laws of valid reasoning may easily be learnt in the schools . . . .But the truth of propositions must be inquired into in the sacred books. . ." (II,49)

Augustine also explained how logic is not an invention of the pagan philosophers, as some men objected, but a science which man has learned from God.

". . . [T]he validity of logical sequences is not a thing devised by men, but is observed and noted by them. . . . [I]t exists eternally in the reason of things, and has its origin with God. For as the man who narrates the order of events does not himself create that order; . . . and as he who points out the stars and their movements does not point out anything that he himself or any other man has ordained; in the same way, he who says, "When the consequent is false, the antecedent must also be false," says what is most true; but he does not himself make it so, he only points out that it is so. And it is upon this rule that the reasoning . . . from the Apostle Paul proceeds. For the antecedent is, "There is no resurrection of the dead. . . ." . . . the necessary consequence is "Then Christ is not risen." But this consequence is false, for Christ has risen; therefore the antecedent is also false. . . . We conclude therefore that there is a resurrection of the dead. . . . This rule, then, that when the consequent is removed, the antecedent must also be removed, is not made by man, but only pointed out by him. And this rule has reference to the validity of the reasoning, not to the truth of the statement." (II,50)

A Cloud of Witnesses

The Bereans were commended for carefully studying the Bible before believing; Paul used proof and clear reasoning to convince men of the truth of the gospel; and Augustine, though not an inspired writer, showed how the Bible uses logic to demonstrate our most basic doctrines.

4. To apply the logical implications of God's commands in your life.

As Christians, God has put in us the desire to obey His commands. But we cannot obey them if we do not know and understand them. Therefore, God has written His commands in the Bible and given us a mind to understand His commands. Now what is our duty?

Wherefore be ye not unwise, but understanding what the will of the Lord is. *–Ephesians 5:17. (KJV)*

And be not conformed to this world: but be ye transformed by the renewing of your mind, that ye may prove what is *that good, and acceptable, and perfect, will of God. –Romans 12:2. (KJV)*

For this cause we also, since the day we heard it, *do not cease to pray for you, and to desire that ye might be filled with the knowledge of his will in all wisdom and spiritual understanding; –Colossians 1:9. (KJV)*

God commands us, not only to know His commands, but also to understand them – to understand their logical implications and to apply them to our life.

Abortion

An example of how we recognize the need to obey the logical implications of God's commands is in the issue of abortion. Nowhere does the Bible explicitly say killing unborn children is sin, but we can deduce this command by comparing scripture with scripture.

- Murdering living persons is sin. Exodus 20:13. Matthew 19:18.
- To unlawfully kill a person with premeditation is murder. Deuteronomy 19:4, 11.
- Pre-born children are living persons. Jeremiah 1:5; Luke 1:41.
- Abortion is killing a living pre-born child
- Therefore, abortion is murder and a sin.

The logic is clear, no one can deny it. The conclusion is true, if you believe the Bible.

5. To be a good steward of your mind.

Some men think that all we need to get by in life is big muscles and wilderness survival skills. I would challenge these men to prove this idea from the Bible. God gave us a mind in order to make us more than just another kind of animal.

Some men assert that the mind is evil. It is only our feelings which we should trust. Though our mind is fallen like the rest of us, it is still an essential part of who we are as sons of God, created in His likeness. God tells us to renew our mind, and learning to reason logically instead of emotionally is part of that.

Brethren, be not children in understanding. . . in understanding be men. –1 Corinthians 14:20.

Be a man. Use your mind.

In Matthew, Jesus tells us the parable of the talents in order to teach us to be good stewards with what God has given us.

. . . And unto one he gave five talents, to another two, and to another one. . . . he that had received five talents came and brought other five talents. . . . His lord said unto him, Well done, thou *good and faithful servant . . . –Matthew 25:14 (KJV)*

Like the many other things God has given us, our mind is also a stewardship we need to be faithful in.

Wherefore gird up the loins of your mind . . –1 Peter 1:13. (KJV)

Jesus said unto him, Thou shalt love the Lord thy God with all thy heart, and with all thy soul, and with all thy mind. –Matthew 22:37. (KJV)

. . . strong meat belongeth to them that are of full age, even *those who by reason of use have their senses [mind] exercised to discern both good and evil. –Hebrews 5:14. (KJV)*

As newborn babes, crave ye after the genuine mental [/logical] milk, in order that ye may grow by

it. –I Peter 2:2. (Very Literal Translation)

For God hath not given us the spirit of fear; but of power, and of love, and of a sound mind. –II Timothy 1:7. (KJV)

Some liken our mind to a muscle – the more we exercise it the stronger it grows. I know this to be true in my own experience. If I don't stimulate my mind, then it becomes like jelly and it won't work when I need it.

6. To seek wisdom in living your life.

So far we have been talking about one branch of logic, called deductive reasoning. This is the logic of proving things. I described it at the beginning of this article. Other areas of logic are also useful. It is handy to learn to recognize common errors in reasoning. This protects us from slick propaganda techniques and sales pitches. These common errors – such as circular reasoning, straw man, red herring – have, for our benefit, been cataloged by men.

Another branch of logic is inductive or scientific reasoning. The world is run by rational rules. God set it up this way so we could understand it. Good inductive reasoning helps us to make wise and practical choices in our everyday life. The study of scientific reasoning, and how to evaluate evidence to make wise choices, has a wide range of useful applications. (However, inductive reasoning is disastrous when used in theology.)

Many characters in the Bible are commended for their wisdom in their every day life. Joseph, Solomon, the wise woman of Proverbs 31, and Daniel are warmly commended for their wisdom. Proverbs often holds up the wise man who seeks to understand discretion, gathers knowledge to increase learning, and listens to the counsel of other wise men.

. . . To know wisdom and instruction; to perceive the words of understanding; To receive the instruction of wisdom, justice, and judgment, and equity; To give subtlety to the simple, to the young man knowledge and discretion. A wise man *will hear, and will increase learning; and a man of understanding shall attain unto wise counsels: –Proverbs 1:1-5.*

Wisdom crieth without; she uttereth her voice in the streets . . . How long, ye simple ones, will ye love simplicity? and the scorners delight in their scorning, and fools hate knowledge? Turn you at my reproof. . . . whoso hearkeneth unto me shall dwell safely, and shall be quiet from fear of evil. –Proverbs 1:20-33.

The heart of him that hath understanding seeketh knowledge: but the mouth of fools feedeth on foolishness. –Proverbs 15:14.

Without counsel purposes are disappointed: but in the multitude of counsellors they are established. –Proverbs 15:22.

Every *purpose is established by counsel: and with good advice make war. –Proverbs 20:18.*

7. Jesus was a logical man.

This last reason is the heart of the whole matter. A few examples will show you what use Jesus made of logic.

At the very beginning of the New Testament, our Lord displayed His mental acumen and thorough knowledge of His Father's Word. In Matthew 4, the devil tempted Jesus. Each time Jesus withstood Satan by deducing that if He complied with the devil's request, then He would disobey the logical implications of Scripture.

Throughout the Gospels, Jesus used logic to deduce His theology from the Bible. In Matthew 12:1-8, Jesus deduced from the exceptions to a command of Moses' that the law of mercy superseded Moses' law. (See my father's pamphlet *Sabbath Syllogism*)

Battle on the Temple Steps

But the greatest example is in Matthew 21:23-22:46, where Jesus stood out as the world's foremost logician. There were six battles of the mind that day at the temple, and Jesus stood unvanquished. (For a

better treatment of this topic see my father's article *Jesus' Use of the Logical Dilemma*.)

First, the Jewish leaders asked Jesus where he received the authority to do what He did. In response, Jesus gave them a logical dilemma which answered their question and yet left them with nothing they could use against Him.

Second, Jesus told three parables with which the Jewish leaders must agree, but in doing so they condemned themselves.

Third, the Pharisees asked Jesus if Roman taxes were lawful, trying to trap Him into angering either the Romans or the common people. But Jesus threw the question back at them in another dilemma exposing their false *either or* dilemma

Fourth, the liberal, skeptical Sadducees tried to show how absurd the idea of life after death was by presenting the dilemma of a woman who had seven husbands, one after another, and then died herself. Their question: whose wife would she be in the resurrection? Jesus destroyed their faulty reasoning by citing the Old Testament, how marriage plainly did not exist after death. Then came the most masterful move of the millennia. Jesus showed from the passage of the burning bush in Exodus that the logical implication of the tense of the verb *is* proved that God *still was* the God of Abraham, Isaac and Jacob. Therefore there is indeed life after death.

Fifth, the Pharisees came again and tried to stump Jesus with a question Jewish theologians had been debating for a long time: "Which is the greatest commandment of the law?" But again, Jesus showed that upon the first command, and the second after it, all the other commands hung. No Jew could disagree.

Sixth, and last of all, Jesus Himself put forth a dilemma – a dilemma which, if the Jewish leaders answered, they would have to acknowledge who Jesus was. Jesus asked how it could be that David spoke of his son, the Messiah, as his Lord. The only way this could be true was if Christ was both born a son of David but also existed before David – as God the Son.

What a mind our Lord had! What a logician He was! By God's grace, I want to be like Him. There is no greater reason to study Logic.

The Subject of Logic

The branches of logic

What do you study when you study "logic?" Logic is a subject much like math. In math you have simple arithmetic, algebra, geometry, trigonometry, etc. In logic you also have many sub-subjects, all under the big heading of "logic." The branches on the tree of logic cast a broad shadow. Some are easy to understand and apply – like addition or multiplication. Others have difficult concepts and theory to understand, similar to calculus or quantum mechanics. Don't expect to understand all of the branches to which I will introduce you in this section. Consider this introduction as a high altitude aerial photograph of the subject of logic which gives you the overall picture.

From the start, logic can be divided into *formal logic* and *informal logic*. This is similar to the difference between standard math and "consumer" math. Formal logic is the abstract rules and theory of logical reasoning which logicians have developed over the years. Informal logic is much more of the practical side of the coin, where you learn how to analyze arguments in order to see if they really prove their point. You learn decision making skills and quick methods for detecting bad reasoning. Learning formal logic is needful since without it you would not understand the foundational principles which you use in the more practical informal logic.

Some of the branches on this tree overlap. For instance, *Recognizing Arguments* is something you do in both types of deductive reasoning, but I would classify it under informal logic.

The Three Fundamental Laws of Logic

1. Law of Identity: *if any statement is true, then it is true.*
2. Law of Non-Contradiction: *no statement can be both true and false.*
3. Law of Excluded Middle: *any statement is either true or false.*

Formal Logic

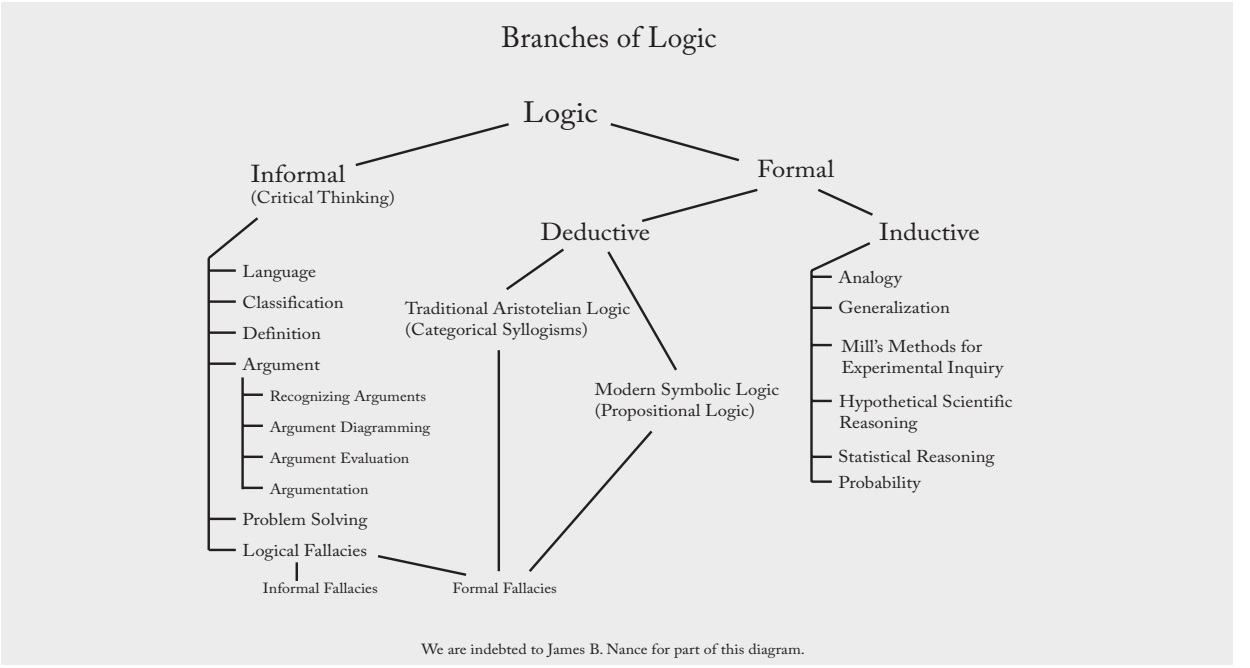
Formal logic splits into two fundamentally different types of reasoning: *deductive* and *inductive*.

Deductive Reasoning is the logic of proving things for certain. With deductive reasoning, you can start with a few true statements, then deduce more statements which you know are also true. You can also analyze arguments to see if they are valid.

Traditional Aristotelian Logic, Classical Deductive Logic or *Categorical Syllogisms* (three confusing names for about the same thing) is the classical method of deductive reasoning. History records that Aristotle of ancient Greece was the first man to develop this method of reasoning, though even the Bible contains many elementary syllogisms. At debates in classical times, men presented their arguments first in traditional Aristotelian syllogisms, and then they gave their arguments in a rhetorical form. Men were then held to a higher standard. This branch of logic gave us such famous lines of reasoning as:

All men are mortal.
Socrates is a man.
Therefore, Socrates is mortal.

Modern Symbolic Logic is a more sophisticated method of deductive reasoning. This logic was developed after the 17th Century. Gottfried Leibniz and other logicians had a vision for a more simple and useful method for translating ordinary reasoning into a universal language of symbols. Among other things, this method can quickly analyze longer arguments to see if they are valid. This method of deductive reasoning made logic even more "math-



We are indebted to James B. Nance for part of this diagram.

ematical." It also made it more ugly:

$p \supset q$
p
$\therefore \quad q$

translated into

If p is true, then q is true.
p is true.
Therefore, q is true.

This branch of deductive reasoning has many subbranches. Computer programming is one branch of modern symbolic logic.

Inductive Reasoning is an entirely different form of reasoning than deductive reasoning. While deductive reasoning proves things for certain, inductive reasoning evaluates the evidence in a scientific way to demonstrate that an argument is *probably* true or false. Since it is not always possible to prove something for certain, logicians developed principles to reason from the evidence to the most useful conclusion. We see the benefits of this scientific reasoning all around us in our modern technological world. Sir Frances Bacon was a leading developer of this form of reasoning.

I will touch on six prominent forms of inductive reasoning: • *Analogy* builds arguments based on similarities between two things. • *Mill's Methods for Experimental Inquiry* were developed by John Stuart Mill to investigate the causes of scientific phenomena. • *Hypothetical Scientific Reasoning* is where scientists create theories about things and test their theories by experimentation. • *Generalization* reasons from one thing to all things. This is the basis of all scientific reasoning and is technically a logical fallacy, but a useful one. • *Statistical Reasoning* is creating and interpreting statistics about things and drawing conclusions from those statistics. • *Probability* is a science closely related to statistical reasoning which tries to predict the future based on our knowledge of past experiences. None of these six methods of inductive reasoning can ever prove anything, but they sure come in handy sometimes.

Informal Logic

Informal logic is the technical name for what is called *Critical Thinking* in modern high schools and colleges. This modern branch of logic tries to take formal logic and, by intermingling it with Rhetoric, make it into something more palatable and useful.

Language plays a fundamental role in reasoning. Understanding how language influences our reasoning is foundational to understanding reasoning itself. Logic deals with a part of language called *statements*.

Classification is the organizing of different things into separate classes according to similarities and differences. This helps us to understand the relationship between things. *Definition* describes what a word means by *genus, species,* and *differentia.* Noah Webster used this reasoning in his dictionary.

Argument can be divided into: *Recognizing Arguments* – which is what you need to do before you can evaluate them critically; *Argument Diagraming* – which is a neat method for laying out reasoning in a visual way; *Argument Evaluation* – which includes general methods for analyzing what other people say; and *Argumentation* – which includes methods for creating your own logical arguments.

Problem Solving is the method for solving complex puzzles.

Logical Fallacies are common errors which we make in reasoning. Practical logicians have tried for millennia to teach ordinary people how to recognize these logical fallacies, but apparently to little avail. There are two types of logical fallacies: *formal fallacies,* which are violations of the rules of Syllogisms, and *informal fallacies,* which are bad forms of reasoning, but which are nonetheless persuasive. On an everyday basis, logical fallacies are the most useful part of logic. *Propaganda Techniques* such as, "Elizabeth Taylor likes this perfume, so you should, too," and *Methods of Manipulation,* such as *dialectic praxis,* are what you see on TV and hear from politicians every day.

As I mentioned, some of these branches of informal logic overlap into Rhetoric, but for practical teaching purposes they can be included under Logic.

Overall suggestions

The subject of logic is surprisingly like the subject of mathematics. There are many branches, some more useful to ordinary people, and some not. Some branches are easy to grasp, and other branches only the dusty headed professors who inhabit obscure halls of learning can really comprehend. Some parts are fun, such as logical fallacies, while others, such as the higher reaches of modern symbolic logic, were invented for geeks to enjoy in blissful solitude.

Which of these branches of logic should you study? Having studied parts of all of them, it is hard for me to recommend one over another. There is useful knowledge in all of them. But as my mother says, there is only so much time in the day. With that in mind, I would recommend the same strategy for everyone – a progressive strategy. Start with the basics of informal logic. Then, as you have time and inclination, continue on into formal logic. In the next sections, I have outlined a suggested course of study for students of all ages to begin their study of logic. If you use this outline, then you will have a good introduction to all the branches of logic, and you will have some uniquely useful tools-of-the-mind under your belt.

Logic Materials

There are hundreds of logic books available. My job has been to find the ones which will help ordinary people learn logic at home.

I have met many homeschoolers who want to learn logic, or to teach it to their children, but they do not know how to get there from here. My parents were in this dilemma when I was about 13 years old. Over the years, my parents did find logic materials. Some were good, but most were very hard to use.

There are three important criteria for good logic materials: (1) self-teaching, (2) Christian worldview, and (3) practical.

Why self-teaching?

If you want to teach yourself logic, then you will need a unique type of book – one which liberates you from the need of a classroom with a teacher. What is self-teaching? To be self-teaching a book should:

- Explain concepts in both abstract and real-life terms.
- Explain concepts at the comprehension level of the audience towards which the book is directed. If it is for adults, then ordinary adults should be able to understand it. If it is for children, then I should be able to hand it to a child and he can get through it, with a minimal amount of help from his parents.
- Explain all technical language it uses.
- Have both easy and difficult exercises for every aspect of every concept. I need practice doing something before I really understand it. The author also needs to provide answers for all of the exercises.
- Progress from one concept to the next without leaving gaps. How many times have I read a book which goes from one idea to the next and leaves me behind, wondering where I got lost.
- Not need a teacher who already knows the subject to direct students and answer difficulties. This is basically what "self-teaching" means.

Why distinctly Christian?

I wouldn't refuse to learn auto mechanics if I could not learn distinctly Christian auto mechanics. So, why do I want a logic book to be distinctly Christian? Because logic and worldviews are closely linked. Logic is like math or auto mechanics in that the rules of logic aren't Christian or non-Christian. But the way the rules and techniques are taught influence the philosophy of how logic is applied and how it is understood in relationship to other things. I would prefer that a book teach logic with a distinctly Christian worldview. However, many Christian texts are not usable for homeschoolers. Christian materials are often not self-teaching and are often hard to understand.

A word on secular texts

The new subject of "critical thinking" is gaining more and more prominence in the high school and college scene. It is sometimes a required course for college freshmen. Grade school and high school "Talented and Gifted" programs teach it. In response to the obvious need among college students for some mental training in the most basic areas of reasoning, colleges parade students through critical thinking courses in order to give emergency boot-ups to their brains. Critical thinking might be called "practical logic" or "good reasoning skills." The books used in these courses can be useful for homeschoolers.

There is a problem with many of these critical thinking texts. Many of them are spattered with values clarification, political correctness and humanistic philosophy. The problems I've found most often in critical thinking texts are:

- Uni-sex and multi-cultural language (chairperson, he/she, etc.)
- Excessive emphasis on "open-mindedness" to the extent that they almost want us to let our brains fall out.
- Unquestioned trust in expert scientific author-

ity.

• Empirical epistemology (reliance on experience as the final proof for arguments).

• Examples and exercises which leave you *not* wondering which side the author takes.

• Examples which unnecessarily discuss inappropriate topics in order to keep a secular student's attention.

Some texts use a minimum of this P.C., and the little there is can be filtered out by a parent. But many texts teach it so explicitly that they may be dangerous for undiscerning children. I do not want homeschool parents to overreact to what I am warning against, though. Discernment is needed when reading any book, and these books are no exception. Some critical thinking texts are useful and should not be censured by Christians just because they are secular. All the books I review should be acceptable to Christian homeschoolers. I have weeded out a lot of books.

Why be practical?

I want to do real things. I don't want to try to understand a subject, yet not use it. I have work to do, and I think logic will help me do it better – that is why I started learning it. I don't study logic because I just like doing it for its own sake – as some dusty old professor might do. I want a logic book which focuses on using logic in the real world, not one which only teaches abstract concepts.

Book Reviews

Comments

The following are my general comments concerning logic materials. Following my comments you will find extensive charts comparing the materials.

1. The Fallacy Detective: Thirty-Six Lessons on How to Recognize Bad Reasoning, *by Nathaniel Bluedorn & Hans Bluedorn*

First of all, I wrote half of this book, so I can't help but be a little biased.

We have found that the average homeschooling parent, after trying their first logic textbook, can become intimidated and discouraged. They see a lot of theory and not very much of what they need – real world, on-the-street application of logic. My brother Hans and I wrote this for beginning logicians who want to start learning logic with something practical – logical fallacies. This book is intended for beginning logicians, as well as seasoned logicians. It is an elementary book which uses 36 lessons to teach 17 common logical fallacies and 9 propaganda techniques. It introduces the Christian idea of developing an inquiring mind. Each lesson ends with a set of exercises. Answers to all exercises are in the back of the book. This book also includes *The Fallacy Detective Game* where you are encouraged to make up your own examples of logical fallacies. This game is whopping fun to play. I would recommend this book for anyone age 13 and up.

2. The LogicWorks, *by Brady*

I found this software program on the Internet, and I was immediately excited about it. It is essentially a program of logic exercises which are arranged at different levels of difficulty. The author intended it to be used in conjunction with some standard logic text, such as Copi's *Introduction to Logic*. This program seemed to have bugs in it, though this may only be my inexperience with computers. I would not recommend using *The LogicWorks* without prior knowledge of most areas of logic.

3. Logic, *by Clark*

I wish Clark had written a more useful logic text. With his excellent perspective and dry wit he could have done better than he did. Clark fails to write for a practical audience. Though he teaches a good Christian philosophy of logic, he does not do a good job of presenting the methods and rules of formal logic. Robbins' audio series does help make Clark a little more digestible, but I would not recommend Clark unless you already had some experience in logic.

4. Introduction to Logic, *by Copi & Cohan*

I decided to read Copi's text because I had for many years heard that Copi was a standard logic text in college. I figured that I needed to understand logic as modern logicians had so far developed it. This would give me a better perspective on the subject. I was not disappointed. Copi helped me understand the length and breadth of the subject of logic. I would compare *Introduction to Logic* to an advanced math or calculus text. Though I learned more from this text than from any other, I did not learn many practical skills. I did, however, obtain the perspective which I wanted. I would recommend Copi's text for those who feel confident in tackling difficult and abstract concepts and who would like to have a standard perspective on the subject of logic.

5. Traditional Logic, *by Cothran*

In this text, Mr. Cothran teaches traditional Aristotelian logic as that subject was taught prior to any developments in the past few centuries. In this sense I believe he has done an excellent job. Many logicians would contend, however, that modern practical innovations – such as Venn diagrams for testing syllogisms – are very useful. Mr. Cothran does not teach these. Also, he omits teaching logical fallacies, which, in my mind are important.

Mr. Cothran does an excellent job dividing his text into daily lessons with good exercises. This is something I wish other writers would do. On the other hand, my father, my brother and I had difficulty grasping Mr. Cothran's explanations of concepts.

Mr. Cothran has recently published a second volume to *Traditional Logic.*

6. With Good Reason, *by Engel*

Professor Engel tries to make informal fallacies and basic logic concepts available to the ordinary person. At this he is superbly successful, and entertaining, too – Engel includes a lot of comics along the way to illustrate what he teaches. The informal logical fallacies are the focus of *With Good Reason*, but before teaching them, the basic concepts of logical reasoning are touched on. Engel shows a special interest in how language influences the way we think. He believes informal fallacies are basically errors in language which confuse our thinking.

The problem with this book is its political correctness and humanistic viewpoint. I wouldn't have any reservations about *With Good Reason* if it were not for these drawbacks.

7. Come, Let Us Reason, *by Geisler & Brooks*

The authors present a clear Christian view of logic and use examples in the text which are distinctly Christian or directly from the Bible. This text is hard to use as a self-teaching tool because the explanations are short and difficult to understand. *Come, Let Us Reason* might do well in a classroom situation with a teacher.

8. Critical Thinking, *by Harnadek*

Critical Thinking Books 1 & 2 were what my mother first used to teach us logic. Fun to do, these books are a practical and usable starting place for learning informal logic. Each concept is broken down into

lessons with a wealth of exercises which focus on real-life experience. If for no other reason, the sections on logical fallacies and propaganda techniques make these books worth studying.

However, these books do teach from a secular worldview and do include some politically correct examples. Mrs. Harnadek never lapses into inappropriate language or examples. Otherwise, *Critical Thinking* teaches the same logic a Christian logic text would teach.

9. The Art of Reasoning, *by Kelley*

The *art* of logic is different from the *science* of logic. The *art* consists of the practical skills embodied in the more abstract *science* of logic. I read Kelley's *The Art of Reasoning* after reading *Introduction to Logic* by Copi. I found that Kelley directs his text more towards ordinary people, while Copi's goal is to be a standard textbook for college logic classrooms. This is why Kelley's explanations are easier to understand, and why his examples and exercises try to build practical skills, rather than only an abstract understanding of the subject of logic.

10. Introduction to Logic, *by Robbins*

Though Mr. Robbins is often dry, his distinctly Christian approach to logic and science gives us a good perspective on those subjects. Robbins uses Clark's *Logic* text as a groundwork and Carranza's *Logic Workbook* for exercises. The exercises in logic are often hard to follow. Interspersed among the logic lectures are excellent lectures on the philosophy of logic and science. If for no other reason, I would recommend this series for the Christian philosophy of logic and science.

11. Introductory Logic, *by Sproul*

I enjoyed Mr. Sproul's lectures immensely. He has a way of bringing the logical fallacies down to earth and of showing them to be what they really are. His presentation of the Christian philosophy of logic and the foundational role logic plays in Bible interpretation was excellent. He taught that the law of Non-Contradiction is inseparably intertwined with true Biblical Christianity. (This is a favorite doctrine of my father's.) Unless you have studied syllogisms, Sproul's exercises in testing syllogisms by Venn diagrams are hard to follow. I would recommend this series of tapes for an introduction to Christian philosophy of logic and for an entertaining intermission between other studies in logic.

12. Better Thinking & Reasoning, *by Tagliapietra*

When my family used this book, we had difficulty understanding some of Tagliapietra's explanations. Because the book lacks a clear system, it is sometimes hard to follow. This book intermingles modern symbolic logic with informal logic. It does not cover categorical syllogisms. The practical and Biblical applications of logic were helpful, as were the exercises. I do believe other books do a better job teaching logic, though they are not as distinctly Christian as Tagliapietra.

13. Logic, *by Watts*

I have mixed feelings about Issac Watts' logic book. While, on the one hand, he writes in a fine 18th Century English style, on the other hand, the content of his book is often more philosophy than logic. In the first half of his book, Watts teaches his methods for organizing perceptions, ideas, words and thoughts into hierarchies. This would seem to my mind to be more of an introduction to 18th Century empirical philosophy and psychology of thought than a study of logic. Next, Watts turns his attention to rules for making judgements, which includes a small part on syllogisms. Watts' book gave me some idea of the development of logic and how logic in his day was mixed with extraneous subjects. Unfortunately, this severely dates Watts' book. It would not be considered a modern treatment of the

subject. For instance, syllogisms can be tested today with ease by the use of Venn diagrams, but that method wasn't developed until a hundred years after Watts' time. Watts also failed to clearly distinguish between inductive and deductive reasoning. The practical aspects of logic, such as logical fallacies, were not taught by Watts. I would only recommend Watts' *Logic* for adults who wanted to understand the history of logic.

14. A Rulebook for Arguments, *by Weston*

In creating a concise rulebook for writing arguments, Mr. Weston clearly follows Strunk & White's classic creative writing text, *Elements of Style*. Rules are given for creating arguments from examples, analogy, authority, cause, and deductive reasoning, along with general rules for any sort of argument. You are taught a three step process when writing an argument. Fallacies and definition are touched on at the close of the book. I would recommend this *Rulebook* for a practical introduction to writing research papers and argumentative essays.

15. Introductory Logic, *by Wilson & Nance*

This is the first course in traditional categorical syllogisms I have seen which is truly usable for homeschoolers. My family tried to use the first edition of the *Introductory Logic* text when it was authored by only Mr. Wilson and had no videos. We found it didn't work for us. Among other things, we couldn't grasp his explanation of concepts. This revision (the third edition) is significantly improved, and by adding the video lectures, Nance has raised the course to the top of its class.

The text is directed almost solely to teaching categorical syllogisms. Traditionally, the study of syllogisms comprised the largest portion of the study of logic. It is an important part of logic and needs to be grasped well. Wilson and Nance also cover informal fallacies, but they do not do as good a job as they do with syllogisms.

I would not begin your studies in logic with this course. Students need an introduction which is less abstract and more fun and practical. I would compare the difficulty of this course with an Algebra II text.

Introductory Logic by Wilson & Nance is often sold separately from the video course. I do not recommend *Introductory Logic* without the videos. The explanations in the text are inadequate without Mr. Nance's video lectures.

How to read my reviews

This is the key to understanding my reviews on the following pages. In the left hand column of the charts are listed (after the title, author and copyright/publisher) ten categories for evaluation.

Course Includes describes the materials which come with the course, whether books, software, audio tapes or videos.

Cost & Availability is self-explanatory.

Subjects Covered describes which topics in logic this book covers. The terminology I use comes from the topics described in *The Subject of Logic*.

Teaching Method indicates how the author presents his material. A *deductive* text explains the concepts in a descriptive way. An *inductive* text takes a different route and helps you to discover the concepts for yourself. A text using a lesson format with exercises would be similar to how many math books are formatted.

Self-teaching indicates, by one to five "*" stars, which materials are self-teaching and which are better used in a homeschool environment. Less stars indicates that either some prior knowledge of the subject is needed, that a teacher who knows the subject is needed, or that the student must be bright and self-disciplined in order to master the material himself.

. . . *continued on page 23*

Logic Books

Title	*The Fallacy Detective*	*The LogicWorks*	*Logic*	*Introduction to Logic*	*Traditional Logic*
Author	Nathaniel Bluedorn & Hans Bluedorn	Rob R. Brady	Gordon H. Clark	Irving M. Copi & Cohen	Martin Cothran
Edition, Copyright & Publisher	2002, Trivium Pursuit	Version 7.39 1998, Philosophy Documentation Center	1998, 1985, The Trinity Foundation	10th Ed. 1998, 1994, Prentice Hall	1998, Memoria Press
Course Includes	219 pg text with Answer Key in back	1 booklet, one 3.5 diskette	140 pg text, see workbook under Robbins' tapes	714 pg text; CD of exercises	143 pg text, Answer Key
Cost & Availability	$22, publisher, homeschool suppliers	$26, publisher	$11, publisher	$65, book store	$25, homeschool suppliers
Subjects Covered	Logical fallacies, propaganda, Christian inquiring mind	Exercises in all areas of logic	Definition, categorical syllogisms, some symbolic logic, Christian philosophy of logic	Diagramming arguments, language, definition, logical fallacies, deductive logic (categorical syllogisms & symbolic logic), inductive logic (analogy, experimental & scientific)	Psychology of thought, categorical syllogisms
Teaching Method	Lessons with exercises	Computer exercise program	Deductive text	Deductive text with exercises	Deductive text with daily exercises
Self-teaching	*****	*** Difficult & easy exercises, no explanations	* Difficult language, advanced explanations & theory	** College level text, few answers to exercises	*** Difficult explanations with gaps, daily lessons
Suggested Ages & Time to Complete	13-adult, 2-3 months	17-adult, 3 weeks	18-adult, 2 months	18-adult, 1 year	17-adult, 6 months
Worldview	Distinctly Christian	Secular	Distinctly Christian	Secular	Christian
Thoroughness	Good foundation in logical fallacies and Christian reasoning	?	Short intro. to logic	Standard college text	Teaches pre-1800s categorical syllogisms
Best Features	Totally self-teaching, gives a practical entrance into logic, cute dog on cover	Interactive exercises	Distinctly Christian philosophy	Thorough, widely used in college classes	Well arranged daily lessons & exercises
Worst Features	Only 36 lessons	Program bugs, assumes full understanding of logic	Abstract explanations & advanced topics, no exercises	Few answers to exercises, doesn't emphasize practical skills	Difficult abstract explanations of concepts, incomplete treatment

Logic Books

Title	***With Good Reason***	***Come, Let Us Reason***	***Critical Thinking***	***Art of Reasoning***	***Introduction to Logic***
Author	S. Morris Engel, Rudolf Steiner	Norman L. Geisler & Ronald M. Brooks	Anita Harnadek	David Kelley	John Robbins
Edition, Copyright & Publisher	5th Ed 1994, St. Martins Press	1990, Baker Book House	1981, Critical Thinking Books & Software	3rd Ed 1998, 1988, W. W. Norton	1995, The Trinity Foundation
Course Includes	276 pg text	232 pg text	Book 1, 178 pg text; Book 2, 247 pg text; 2 Teacher's Manuals	582 pg text; LogicTutor web site; Instructor's Manual w/ answers	12 audio tapes; Logic Workbook by Elihu Carranza; Answer key (uses Logic by Clark)
Cost & Availability	$27, book store	$13, book store	$52 for all 4 books, homeschool suppliers	$50, book store	$45+12, publisher
Subjects Covered	Argument evaluation, basic logic concepts, language, logical fallacies, essay writing	Christian philosophy of logic, categorical syllogisms, elementary symbolic logic, logical fallacies, inductive scientific reasoning	Critical thinking (informal logic), elementary symbolic logic, logical fallacies	Classification, definition, language, argument (recognizing, etc.), logical fallacies, deductive logic (classical & modern), inductive logic (generalization, etc.)	Definition of logic terms, logical fallacies, intro. to syllogisms, Christian philosophy of logic & science
Teaching Method	Deductive text with exercises	Deductive text with exercises	Lessons with exercises	Deductive text with exercises, interactive tutor	Audio tape lectures with exercises
Self-teaching	***** Easy to understand explanations, many exercises	*** Short difficult explanations, too few exercises	***** Easy to understand explanations, examples & exercises	**** Quizzes with answers, adequate explanations	*** Exercises hard to follow
Suggested Ages & Time to Complete	15-adult, 2 months	18-adult, 6 months	13-adult, 6 months Book 1, 1 year Book 2, less for adult	17-adult, 1 year	17-adult, 6 weeks
Worldview	Secular	Distinctly Christian	Secular	Conservative, secular	Distinctly Christian
Thoroughness	Thorough treatment of informal fallacies	Basic intro. to logic	Teaches practical aspects of logic	Thorough on all topics	Intro. to logic, doesn't cover all of Clark's Logic
Best Features	Practical & easy explanations & exercises	Christian philosophy of logic	Totally self-teaching, many comprehensive exercises	More practical than Copi, thorough	Excellent Christian philosophy
Worst Features	Some PC illustrations, answers to 1/3 of exercises	Difficult explanations, written for classroom use	Secular examples, some PC	Conservative but secular worldview, Instructor's Manual hard to obtain	Hard to follow exercise reviews, answer key out of print

Logic Books

Title	***Introductory Logic Audio Series***	***Better Thinking & Reasoning***	***Logic***	***A Rulebook for Arguments***	***Introductory Logic***
Author	R.C. Sproul	Ron Tagliapietra	Isaac Watts	Anthony Weston	Douglas J. Wilson & James B. Nance
Edition, Copyright & Publisher	Legonier Ministries	1995, Bob Jones University Press	1724, 1996, Soli Deo Gloria	2nd Ed. 1992, Hackett Publishing Co.	3rd Ed. 1997, Canon Press
Course Includes	Six 60 minute audio tapes with outline	233 pg text	352 pg text, (guide available from Berean Bookshelf)	98 pg text	118 pg text; 3 video tapes; test book; answer key
Cost & Availability	$20, publisher	$12, publisher	$30, homeschool suppliers	$5, book store	$75, publisher, homeschool suppliers
Subjects Covered	Christian philosophy of logic, logical fallacies, basic logic terms, intro to syllogisms	Definitions, elementary symbolic logic, logical fallacies, applications for logic	Psychology of thought, classification, definition, categorical syllogisms	Argument evaluation, argumentation, some logical fallacies, definition	Basic logic terminology, categorical syllogisms, logical fallacies, Christian philosophy of logic
Teaching Method	Audio lectures with notes	Deductive text with exercises	Deductive text	Deductive text	Deductive text with exercises and video lectures
Self-teaching	**** Understandable explanations	*** Inadequate explanations with gaps, good practical exercises	* Difficult language, abstract explanations with gaps, no exercises	**** Easy to understand explanations	**** Explains concepts adequately well, without gaps, visual presentation, comprehensive exercises
Suggested Ages & Time to Complete	16-adult, 2 weeks	17-adult, 6 months	18-adult, 6 months	15-adult, 1 month	16-adult, 6 months
Worldview	Distinctly Christian	Distinctly Christian	Christian	Secular	Distinctly Christian
Thoroughness	Fallacies & philosophy covered well, syllogisms incomplete	Misses many topics in logic	Not thorough	Covers argumentation	Covers foundational & traditional logic well
Best Features	Entertaining lessons in Christian philosophy and logical fallacies	Practical applications and exercises	Watts' fine 1700's literary style	Clear explanations and concise format	Visual presentation, systematic structure, comprehensive exercises
Worst Features	Treatment of syllogisms hard to follow & incomplete	A broad selection of topics taught somewhat unsystematically	Not a modern treatment of logic	Some PC examples	Lectures are somewhat dry, logical fallacies are not well covered, lack of practical applications

Suggested Ages are the minimum age a text is appropriate for. *This may not be the author's suggested ages*. This category may be used as an index of how difficult the materials are.

Time to Complete is my approximation of how long an ordinary person of the suggested age would take if he spent about 30 minutes a day, 5 days a week, using the materials.

Worldview is the religious outlook of the book.

Thoroughness is how well the author covered his topics.

Best Feature and *Worst Features* are the features which stood out most distinctly to my mind.

Publishers

Baker Book House, Box 6287, Grand Rapids, Michigan, 49516

Berean Bookshelf, Box 649, Edwardsburg, Michigan, 49112

Bob Jones University, Greenville, South Carolina, 29614

Canon Press, Box 8741, Moscow, Idaho, 83843

Critical Thinking Books and Software, Box 448, Pacific Grove, California, 93950

Greenhaven Press, Box 289009, San Diego, California, 92198

Hacket Publishing, Box 44937, Indianapolis, Indiana, 46244

Ligonier Ministries, Box 547500, Orlando, Florida, 32854

Memoria Press, Box 820, Danville, Kentucky, 40422

Philosophy Documentation Center, Bowling Green State University, Bowling Green, Ohio, 43403

Prentice Hall, Upper Saddle River, New Jersey, 07458

Soli Deo Gloria Publishers, Box 451, Morgan, Pennsylvania, 15064

St. Martins Press, 345 Park Avenue South, New York, New York, 10010

The Trinity Foundation, Box 68, Unicoi, Tennessee, 37692

Trivium Pursuit, PMB 168, 139 Colorado Street, Muscatine, Iowa 52761, www.triviumpursuit.com

W. W. Norton & Co. 500 Fifth Avenue, New York, New York, 10110

Internet Resources

You can learn much about logic right off the Internet. The World Wide Web has several excellent sites which teach logic, especially logical fallacies. There is even a news group dedicated to answering people's questions on logic, along with an email loop for the same purpose.

General Logic

Mission: Critical is an award winning introduction to Critical Thinking. This site lays down some basics in recognizing arguments, analyzing arguments, common logical fallacies and non-rational persuasion, Venn diagrams and logic games. http://www.sjsu.edu/depts/itl/graphics/main.html

Summit Ministries page on Critical Thinking introduces the subject from the point-of-view of a Christian world-view. It teaches some major concepts and the most important logical fallacies. http://www.summit.org/resources.htm

The Logic Classroom – "The Logic Classroom offers you the opportunity to learn logic on your own or to improve your logic skills." Elihu Carranza has designed an excellent web site which introduces categorical syllogisms at a beginner level, and from a Christian perspective. http://www.sjsu.edu/faculty/carranza

Logic – "In this review of elementary logic, we'll undertake a broad survey of the major varieties of reasoning that have been examined by logicians of the Western philosophical tradition." http://www.philosophypages.com/lg/

Introduction to Logic: a complete text resource on the World Wide Web by Wanent and Costenoble teaches some basic concepts in logic and provides exercises for practice. http://www.hofstra.edu/~matscw/RealWorld/logic/logicintro.html

The Power of Logic is an excellent site developed in conjunction with a logic text by the same name.

Power of Logic lets you choose problems in different areas of logic for you to solve. When you complete a page it checks your answers and explains the ones you missed. http://www.poweroflogic.com

Deductive & Inductive Arguments has a simple description of deductive and inductive reasoning with common errors in each. http://webpages.shepherd.edu/maustin/rhetoric/deductiv.htm http://webpages.shepherd.edu/maustin/rhetoric/inductiv.htm

Elementary Logic teaches many of the major topics covered in Copi and Cohen's Introduction to Logic. Covers: language, some logical fallacies, categorical logic, symbolic logic, inductive and scientific reasoning. This web site also includes an extensive treatment of the history of philosophy and a dictionary of philosophical terms and names. http://www.philosophypages.com/lg

The news group sci.logic is an active place for logicians amateur, professional and expert. I have had several of my questions answered here.

The email loop Logic-L (logic-l@bucknell.edu to subscribe) is a less active group but one with more expert interaction.

Logical fallacies

SoYouWana.com has a fun web page on several of the most common logical errors. http://www.soyouwanna.com/site/syws/logic/logic.html

Logical Fallacies in Scientific Writing compiles many common errs in reasoning you will find in scientific publications and gives a good explanation for each. http://mason.gmu.edu/~arichar6/logic.htm

Stephen's Guide to the Logical Fallacies gives a very good explanation of all logical fallacies. This site may be the best on the Web. http://www.intrepidsoftware.com/fallacy/welcome.htm

The Fallacy Zoo is a site on all the traditional fallacies. A man who wants to increase general understanding of fallacies set up this site. He was tired of explaining the fallacies to people over the email. http://www.primenet.com/~byoder/fallazoo.htm

The Logical Fallacies at dissension.com is one of the most thorough sites there are. Each fallacy is clearly laid out with the origin of the name, how the fallacy is not logical and examples. http://www.dissension.com/logic/logic.html

Christian Logic

ChristianLogic.com is the web site my brother Hans and I have created to promote the vision of Christian logic. http://www.christianlogic.com

Christian Logic Loop is an email loop maintained by my brother Hans. Its starring feature is "What is the latest Fallacy in the News?" This email loop is devoted to explaining logical fallacies found in the news and everyday life – loop@christianlogic.com to subscribe.

Logic in Apologetics – Unbelievers use logic, and we can turn discussions with them around by showing how their logic is inconsistent, or that it begins with the wrong premises. http://www.carm.org/apologetics/logic.htm

Apologetics Information Ministry by Craig S. Hawkins http://apologeticsinfo.org/papers/logiccoherence.html http://apologeticsinfo.org/papers/logicpostmodern.html

Critical Thinking and Logic is an article by Doug Wilson on the difference between humanistic critical thinking skills and Christian logic. http://www.home-school.com/Articles/ThinkingAndLogic.html

Your suggestions

I know there must be many more materials out there which I have not yet seen. If you know of any books, audio tapes, videos, software, etc. which I may be interested in reviewing, please contact me. I would be glad to hear from you.

Suggested Course of Study

Children under 13

Why Pre-Logic is important

My parents' application of the trivium model of child development places the beginning of the logic stage at about age thirteen. (Read more about this in *Teaching the Trivium: Christian homeschooling in a Classical Style*) Before that age, children can benefit from pre-logic mind exercises. Pre-logic is not strictly logic. Rather, pre-logic is the fundamental mental tool used in thinking. Before age thirteen, connections are made between different parts of the brain. If parents help these connections to form, children can more easily study formal logic in later years. Children enjoy sorting shapes into classes, connecting words with a similar meaning, and knowing what follows in a series of things. Studies have shown that this sort of activity develops the cognitive domain in a child's mind. Just as a child practices handwriting skills to improve small motor control in his hands, and a little league baseball player practices hitting a ball from a tee in order to develop better hand-eye co-ordination, so also the brain is like a muscle which becomes stronger and more focused as it is exercised.

These pre-logic activities are optional. There is only so much time in the day, and some things take precedence over others. Do not worry that your child will be irretrievably damaged because you never sat down with him and sorted shapes into boxes. Many children obviously have done fine without special activities, though these activities do help. Children love doing activities which encourage them to think, and they will often find such activities naturally on their own.

Logic activities

Common games and everyday activities may develop your child's powers for thinking. For hundreds of years, old-fashioned games, such as checkers, chess, dominoes, and card games, such as rummy and bridge, have stretched people's minds. Modern games such as Uno, Rummikub, Scrabble and strategy games like Risk are enjoyable ways to pass an evening strengthening your mind.

A more natural way to stimulate a child's mind would be simply to converse with him. Long ago, families sat around the dinner table talking about thought-provoking topics. From the time your child is young, focus your heart on developing a relationship with your child which keeps the door open to deep conversations. Children who hate to talk to their parents, or who shy away from listening to adult conversations have not been properly brought up. Their mental maturity will be delayed. From the time I was little, I enjoyed listening to the grown-ups talk – even to the point that I sometimes forgot to go outside and play. My parents encouraged this listening.

Reading good classic books aloud to children is also good for their minds. I don't mean reading fast-food fiction like Jeanette Oake, Nancy Drew, and the Boxcar Children. The older authors, such as Stevenson, Scott, Dickens, and Hawthorne wrote stories which gave children a bigger picture of the world, and which left them with thoughts which go below the surface.

Memorization and narration also tie together the neuron-synapse routes between those little gray cells which populate the heads of children. Memorizing passages from the Bible and from poetry will do wonders for mental recall. To build connections between words and thoughts, have your child tell

back to you what is happening in the story. (See my mother's article *Ten Things to Do Before Age Ten*.)

What not to do

When I was little, I did not have many opportunities to play video games. The few times I did, I could sense a deadness in my mind when I left off playing. But I was too immature to resist the perverse desire to manipulate a little guy on a screen. I am glad my parents didn't allow those video or computer games in our house. Instead of writing this, I might be flipping hamburgers instead, my mind having been pulverized by all that unnatural visual bombardment.

Do you want to save your child a lot of regrets later in life? Begin the withdrawal process before it is too late. If your kids aren't already addicted, then resolve to keep them clean.

Learning logic is more than just using a logic curriculum. It encompasses all of life. When I talk about learning logic, I am speaking about a life-style of becoming good thinkers.

Building Thinking Skills

Building Thinking Skills is a set of workbooks published by Critical Thinking Books and Software. This series is the only pre-logic curriculum of which I know. It was designed to be used in classroom schools, but it can be easily adapted for homeschool use.

These books are well designed. They provide a fun and stimulating sequence of activities which children enjoy. Each page is self-explanatory.

Building Thinking Skills is not sequential. You don't have to start with Book 1, but you can jump in at any time. The Teacher's Manuals include the answers to the exercises. My mother let us do as many pages as we wanted, skipping parts when they were too easy, and slowing down when we came to more challenging material.

If you want to use the books with more than one child, then you may consider this strategy. Let your child mark his answers with dry erase markers on clear plastic sheets placed over each page. Then you can wipe off the sheet and reuse it for the next page. This leaves the book unmarked for the next child to use. Critical Thinking Books and Software also gives homeschoolers the right to make photocopies from their books. This may be a more convenient option for you.

My mother also saved time by allowing us to check our own answers.

Suggested Course of Study for Students below Age Thirteen

Age	*Books to Use*	*Comments*
Before 10	We do not recommend doing workbooks with children before age 10. Therefore we do not use either the Primary book or Book 1 of Building Thinking Skills.	
10	*Building Thinking Skills Book 2*	Teacher's Manual not needed. Problems are easy for a parent to solve. Covers: Describing shapes, and words; Following directions; Antonyms and Synonyms; Analogy; Parts of a whole; Mapping and directionality; Logical connectives; Pattern folding; Tracking, rotation, and Reflection; Mental manipulation of two-dimensional objects; etc.
11	*Building Thinking Skills Book 3 Figural*	Teacher's Manual recommended. Problems can be challenging even for parent. Covers: Deductive reasoning; Denotation/ Connotation; Following directions; Map skills; Time ranking; Degree of meaning; Logical connectives; Flowcharts; Parts of a whole; Branching diagrams; Analogy; Congruence; etc.
12	*Building Thinking Skills Book 3 Verbal*	

Students 13 & Up

At age thirteen, something happens in the brains of children – they begin to ask questions. "Why do I have to go to bed at 8:00 PM? Why do words have meaning? Did God create Satan?" At this time, a child's brain develops connections and begins to put ideas together which before were just a jumble of information. His head is converting from a disorganized storage shed into a highly organized information warehouse. Children begin to come up with logical conclusions which can startle the adults. In the trivium model of child development, this is called the logic stage. This is when a child's formal training in logic should begin.

The key to teaching logic to young students is the materials which you use. In professional academia, logic is normally considered a college subject. Children are considered too young to learn logic. If they did, they wouldn't use it. I disagree. First, children most definitely can use logical thinking skills, and the sooner their mind is trained to reason, the better they will be equipped to study other subjects and be prepared to lead a thoughtful life. Secondly, logic textbooks are written for college students, not children. You wouldn't expect children to learn math from a college math text book, would you? I believe children are perfectly capable of learning logic if they have materials which present the subject at their level. Such materials do exist.

> "Logic!" said the professor half to himself. "Why don't they teach logic at these schools?"
>
> *–C. S. Lewis, The Lion, the Witch, and the Wardrobe*

Perspective: logic is like math

I have said before that logic is like math. When you think about it, the similarities are obvious:

- Logic has a broad range of topics which logicians have developed over time, the same way mathematicians have developed mathematics.
- Logic has many abstract concepts and rules which use unfamiliar technical terms.
- The laws of logic flow one from another. The first laws can be developed into further laws which are in turn developed into more laws. Logic and Geometry are very much this way – they are both logical sciences.
- Logic has a wide range of practical uses and applications.
- Logic is just as useful as math in our everyday life.
- Logic can also be taught in the same manner as math. It can be spread out over ages 13-18. Each year more complex ideas can be built into the student's mind. Logic has a range of concepts similar to math, so why not spread them out over the whole period, so that a more thorough job can be done?

How is logic different from math? Though logic was traditionally taught to younger students in earlier centuries, it has not been taught in the twentieth century. Logic does not have a plethora of easy-to-use textbooks and teaching methods as have been developed for math. In my opinion, logic is much more useful for ordinary people on a practical day-to-day level than algebra or trigonometry.

Why are the similarities between logic and math important? I want to give you a confident perspective from which to view logic. If math was easy or difficult for you, logic will probably be the same. Math was easy for me, so when I saw logic this way for the first time, I had more energy to tackle the work.

Course of study

1) It isn't necessary, but we think it may be a useful idea for students to start a *Logic Notebook*. The things students can put into this notebook are: (a) rules and formulas which they learn in logic, (b) technical terms with their definitions, (c) answers to quizzes, problems, exercises and tests. This notebook can help students through the learning process by organizing the information as they learn it. Also, the notebook can serve them later in life as a handy reference tool.

2) If possible, parents should work through the materials together with their children. Children may become discouraged when they encounter problems which they cannot solve on their own. Besides, parents often need to learn the logic as much as their children. Individual students can study the materials by themselves, but I believe there is a need for class discussion time. This is the way my mother and father arranged our logic studies. We did the lesson individually, then we met to answer the quiz questions and to dialogue over what we had just learned including the problems we had. Video and audio lessons were done together.

3) The chart below gives my recommendations for specific materials for ages thirteen and up. This course of study is only my suggestion – you may modify it to fit your schedule, priorities and individual needs.

My brother and I wrote *The Fallacy Detective* to be an easy start to logic. We teach logical fallacies, and introduce the Christian idea of the inquiring mind. Going through *The Fallacy Detective* will give you a better idea of what logic is. It will transition you into the world of logic – or help you decide that you don't want to study any more logic.

Critical Thinking Book 1 also teaches logical fallacies and introduces if-then reasoning and symbolic logic. *Critical Thinking Book 2* continues in the same direction, taking the simple concepts taught in Book 1 and developing them further.

If you want to get a basic grounding in logic but don't want to study this complete logic course, then I suggest you at least use these three books (*The Fallacy Detective*, *Critical Thinking Books 1* and *2*). This will give you the essentials of practical logic.

The *Introductory Logic* video series will change gears and dive you head-first into traditional Aristotelian logic. The last lap of this course is *The Art of Reasoning*, which is a standard college-level textbook covering all of logic, including inductive reasoning. This book will prove to be the most challenging, but also very rewarding.

4) To give variety and flavor, incidental materials (such as web pages, booklets and audio tapes) can be mingled in with the regular course. When you get bored with what you are doing, change pace and read a web page or listen to a tape series. When you have the time, read my father's article on *The Sabbath Syllogism*, which will give you an introduction to how a Christian should apply logic to studying

Suggested Course of Study for Students Age Thirteen and Up

Years or Steps	*Books*	*Comments*
1	*The Fallacy Detective* and *Critical Thinking Book 1*	Both these books teach logical fallacies, and *The Fallacy Detective* also introduces the biblical idea of the inquiring mind.
2	*Critical Thinking Book 2*	This second book further develops some of the material in *Critical Thinking Book 1.*
3	*Introductory Logic* video series by Wilson & Nance	This series covers traditional categorical syllogisms from a Christian perspective.
4	*The Art of Reasoning* by David Kelley	Traditional logic text with a practical focus

the Bible.

5) Don't rush through this course, but don't dawdle either. The goal isn't to get done with it as soon as possible. The goal is to learn logic.

6) An older student, or an adult, who has never studied any logic, but who wants to begin, may wish to cut out the *Critical Thinking* series. This is especially true if the student has done well in Algebra or Geometry. But if a student were to dive into *Introductory Logic* by Wilson & Nance without any previous acquaintance with logic, he may have trouble adjusting to the higher temperature. My course of study is progressive: each step builds upon the one before. A new student needs to be acclimated to logic before jumping into the hot water (sort of like boiling a frog one degree at a time).

How to use *The Fallacy Detective* by Nathaniel and Hans Bluedorn

The introduction to *The Fallacy Detective* explains how students should use the book. We wrote this book for children and parents to use together. The picture we had in our mind was of a parent – father or mother – sitting beside his or her children and working through this book together. Each lesson begins with a section for you to read, and ends with exercises for you to answer. You may wish to have each person read each lesson independently, then have everyone read the lesson through again together. As you read each exercise and give your answer, you can check each answer with the answer key provided at the back of the book. As you follow this three step sequence (first read the exercise, then give your answer, then check your answer), you will have your answers immediately corrected if you happen to miss the point. We designed the exercises to be a teaching tool, so you may catch in the exercises what you did not understand in the lesson itself. If you miss many of the exercises, and you do not know why, then you may need to repeat a lesson until you understand it.

You can play *The Fallacy Detective Game* at the end of the book as a final way of testing how well you understand the fallacies and propaganda techniques taught in the book.

This book is very easy to use. If you are not able to get through *The Fallacy Detective*, then you will probably have difficulty using any other logic book.

How to use *Critical Thinking*, by Harnadek

Critical Thinking Book 1 introduces many of the most basic concepts in informal logic: evaluating evidence, logical fallacies and propaganda techniques, evaluating arguments, etc.; some topics in formal logic: deductive reasoning and elementary symbolic logic. *Book 2* develops the concepts of *Book 1* and adds more: language, more symbolic logic, inductive reasoning, Euler circles, and more logical fallacies.

We found the hardest part of *Book 1* to be lessons 2.5-2.12. When you do come to a difficult lesson which you don't understand, then try the following:

- Review that lesson, and possibly the one before.
- Go over and over that lesson several times.
- Go on to the next few lessons; they may explain it further.
- Explain to someone else in your own words what it is which you don't understand.
- Find help.

We did one lesson per day on most days, but some lessons took longer – especially the reviews. Every chapter in *Critical Thinking* ends with a review lesson. My mother used these review lessons to test us to see whether we had mastered the material well enough to go on in the book.

Critical Thinking needs to be done in a discussion environment, where you have the opportunity to question what the book says and to ask help from one another. We individually read each lesson, then

we sat down together with Mom and discussed the lesson and did the problems together.

How to use *Introductory Logic*, by Wilson & Nance

The *Introductory Logic* video course by Wilson and Nance is made up of: 1) a textbook with exercises, 2) an answer key booklet for the exercises, 3) a test booklet with answers in the back, 4) three video cassettes. The material in the text is divided into 30 sections, with exercises for each section. There are 6 tests which are to be used periodically throughout the text, and there is a comprehensive final test. The videos are divided into 20 lessons: each lesson covers one or more sections of the text.

Mr. Nance suggests that homeschool students proceed through his course in this way. (I've added some suggestions of my own.):

1. Read the sections in the text which correspond with that day's video lesson, then peruse the exercises without doing them as yet.
2. Watch the video lesson and take notes. If you have trouble understanding what Mr. Nance teaches, then you may want to watch the video lessons more than once.
3. Do the exercises in the text, correct them, then review any parts which you missed. If you have the opportunity to do this course with others, then perform the exercises and tests orally as a group. By doing this, you will help each other understand the problems which you encounter. I have found this is essential to conquering the most difficult concepts.
4. Do the tests as they come due. Review any problems which you miss on the test until you understand why you missed them. Don't proceed to the next video lesson until you get at least 90% correct on the test.
5. Take the final test.

Mr. Nance's logic class in Logos school, Idaho, takes three months of one hour classes, five days a week, to finish this course. I would expect that homeschoolers will take a somewhat longer time to finish the same course. More time may be required if each video lesson and exercises are stretched out over more than an average of four days. Tests should be done on individual days. Thirty minutes is a good round time to spend each day.

Every lesson in this course is difficult – there is no way to help that. But because you already have some experience in logic, I am confident that you will be able to use Introductory Logic.

Introductory Logic is a more complex system of materials. Because there is no teacher's guide to instruct you on how to use the materials together, I have briefly outlined the course for you. Each video lesson should be done as follows:

- Lesson 1: Introduction – text pages 1-2 (no exercises). Lesson 1 of the video is one of the hardest lessons to understand, and it may discourage you at first. Mr. Nance gives a good introduction to the Christian philosophy of logic in this first lesson. When you are done with the last video lesson in this course, then go back and watch the first lesson again. You will then understand better some of the fundamental ideas which Mr. Nance teaches better.
- Lesson 2: Statements & the Laws of Thought – text pages 3-7.
- Lesson 3: Types of Statements – text pages 8-12.
- Lesson 4: Relationships Between Statements – text pages 13-20. Test 1.
- Lesson 5: Statements in Categorical Form – text pages 21-26.
- Lesson 6: The Square of Opposition – text pages 27-44. Test 2.
- Lesson 7: Arguments – text pages 45-52. The definitions of validity and truth often give students difficulty when they first encounter

them.

- Lesson 8: The Syllogism – text pages 53-56. Students often resist accepting the rules for syllogisms as true.
- Lesson 9: Mood & Figure of Syllogisms – text pages 57-60. Test 3.
- Lesson 10: Testing Syllogisms by Counterexample – text pages 61-64.
- Lesson 11: Distributed Terms & Testing Syllogisms by Rules – text pages 65-72. Mr. Nance is often too abstract in explaining these concepts. He needs to come down to earth and give us some real-life examples.
- Lesson 12: Immediate Inferences – text pages 73-79. I found Lesson 12 on immediate inferences to be the most difficult of all the lessons. It took my father, my brother and I a week to do.
- Lesson 13: Extra Lesson: Venn Diagrams & The Existential Presupposition – This lesson is not in the text. Test 4.
- Lesson 14: Translating Ordinary Statements – text pages 80-82. Mr. Nance told me that Lessons 14 through 18 are the most difficult for his students to understand. But they were the easiest for me.
- Lesson 15: Parameters & Exclusives – text pages 83-87.
- Lesson 16: Enthymemes – text pages 88-92. Test 5.
- Lesson 17: Hypothetical Syllogisms – text pages 93-100.
- Lesson 18: Extra Lesson: Hypotheticals to Syllogisms – This lesson is not in the text.
- Lesson 19: Informal Fallacies – text pages 101-118. Test 6.
- Lesson 20: Extra Lesson: Overview & Further Study – This lesson is not in the text. Final Comprehensive Test

Introductory Logic by Wilson & Nance is often sold separately from the video course. I do not recommend *Introductory Logic* without the videos. The explanations in the text are inadequate without Mr. Nance's video lectures.

How to use *The Art of Reasoning*, by Kelley

Now we get serious. If you have come this far with your studies in logic, then I think you will make it to the end. *The Art of Reasoning* is intended to be a college text on logic, but, because Mr. Kelley writes at a high school level, I recommend using it. I would compare the difficulty of this text with an Algebra II or Trigonometry text.

The format for using this text is the same as any deductive text with exercises. Read the chapter, do the exercises. My suggestions for using previous books apply to this text also. Take notes from what you read and summarize each chapter in your notebook. Try to do this text with someone else. By interacting over what you are learning, you can help each other when you are having trouble. Do all the quizzes and exercises. There are no answers to the exercises unless you obtain the Teacher's Manual, which is available from the publisher. This Manual may be hard to obtain. Besides the quizzes and exercises in the text, the publisher, W. W. Norton, provides an interactive web site with exercises (www.wwnorton.com/logictutor). This web site, named the LogicTutor, is free for those who have the password printed in the back of the textbook.

The most difficult parts of this book are the sections on Classical Deductive Logic and on Modern Deductive Logic. If you can get through these two long sections, then you can finish the book. After these sections comes Inductive Logic, which is immensely useful for everyday life. It is also very interesting to study. I am sure you will enjoy it.

I will not be surprised if some students have trouble finishing *The Art of Reasoning* in one year. If you have trouble, don't get discouraged. Take as

much time as you need. Remember, most people don't ever learn any logic at all. You are at least trying.

Further Improvements

I hope to improve this suggested course of study as I discover better materials. I already know of some which I may wish to recommend, but I have not had the opportunity to use them myself. The materials here are the best I can recommend at present. If you try some of my recommendations and find they are too hard for you to use, or are questionable in some way, please contact me. This booklet is a work in progress – I need your input.

Conclusion

Some people learn logic, and then do not use it. Don't set your logic accomplishments on a shelf so that your friends can admire them. We will eventually discover that logic is as useful as knowing how to read. Logic has taught us how to think, which can be a tremendous advantage when everyone else does not! Now we want to begin something new. Logic is not for elite intellectuals. It is for ordinary Christians like you and me.

Applied Logic

Using Logic

Once you have learned logic, what next? Why did you try to learn it in the first place? I did not learn logic in order to have an intellectual ornament to set on my shelf and show off to my friends. I learned logic so that I could use it. How can we start using logic on an everyday basis?

Recognizing bad reasoning in other people's arguments will be the first real application you will see in your life. This will come without much effort simply by learning the most common logical fallacies. You will have a more critical outlook on what other people try to pass off as good arguments. You will no longer be satisfied by the same shallow reasoning. Arguments which once convinced you – especially political debates and theological arguments – will suddenly strike you as downright dumb. The deeper you study in logic, the more subtle the illogical reasoning you will be able to discern. If you have studied formal logic, then you will notice when a speaker commits the formal fallacy of "denying the antecedent," or "affirming the consequent" when using a hypothetical syllogism. If a salesman tries to convince you of the value of his product by means of an inductive generalization, you will be able to recognize if he is using a representative sample for his generalization, or if he is just trying to pull some wool over your eyes. You will know what constitutes true scientific evidence.

These are some of the critical uses for logic. But what are the constructive applications of logic? The study of logic proves its value when it comes time to build your own arguments. This is also where logical reasoning becomes the most difficult! Discipline in logical thinking is not a piece of cake – no wonder few people try it! Practice makes perfect, and exercise of those little gray cells can leave your head hurting

just as much as stacking a cord of firewood will make those muscles ache next morning!

Specific applications for logic

I must apologize at this point for having few resources to point you to. I have found few books which explicitly apply logic to their subject.

History – Critical Thinking in U. S. History is a set of four workbooks which my mother used with us when I was younger. These teach how to question historical interpretations and sources. They are written for students ages 13 and up. (Critical Thinking Books & Software.)

Historical Fallacies, by David Hackett Fischer, is a book which shows how common the logical fallacies are in historical writing and how to detect and avoid them. (Published by Harper & Row.)

Opposing Viewpoints – This series of texts, published by Greenhaven Press, presents original historical sources and articles on opposite sides of many issues.

Debate – Debate is a way to learn to think logically in a fast paced environment. This is a classical outlet for training in logic.

Science – There are many texts that teach scientific reasoning at different grade levels.

Theology – my father wrote a pamphlet, *The Sabbath Syllogism*, in which he lays a basic foundation for the logical interpretation of Scripture and for deducing doctrine. He uses the example of the doctrine of the weekly Sabbath to show how Jesus reasoned syllogistically. (Published by Trivium Pursuit.)

Philosophy – Gordon Clark was a Christian philosopher who applied logic to every area of thought. He wrote many books on different philosophical subjects. The Trinity Foundation has several lectures on philosophical topics which I would recommend.

Do you know of other materials which apply logic? I would appreciate your suggestions for later editions of this booklet.

Learning logic is just the first step. Learning to consistently apply what you have learned is the next step, which you will have to take on your own.

Logic Quotes

"It's not enough to have a good mind, the main thing is to use it." –Descartes

"I do not feel obliged to believe that the same God who has endowed us with sense, reason, and intellect has intended us to forgo their use." –Galileo Galilei

"There is no expedient to which a man will not go to avoid the labor of thinking." –Thomas Edison

"The only reason some people get lost in thought is because it's unfamiliar territory." –Paul Fix

"Why is this thus? What is the reason for this thusness?" –Artemus Ward

"Logic is like the sword–those who appeal to it shall perish by it." –Samuel Butler

Frequently Asked Questions

Isn't logic too hard for ordinary people?

Ordinary people, I will freely admit, do not ordinarily study logic. This can be seen by how the public in general is so easily manipulated. We all tend to run away when someone demands that we use our mind. The average Joe is not very concerned with developing his mind and thought life. In his experience, he is much happier when left undisturbed. May I suggest that God has a much different vision for His people?

I believe logic is within the reach of ordinary people: Dads and Moms, and their children too. homeschooling parents are teaching logic to their children right now. I know them, and though they are finding it is a challenge, I know they are doing a good job.

Don't we naturally learn to think logically?

If men did not need any improvement on their reasoning powers beyond what nature provides them, then you would not need to ask that question because you would already know the answer. Nature and nature's God may have seen fit to endow us with certain inalienable rights, but not among these is the right to think, except by the sweat of our brow. Thinking is work and work is more profitable after some training.

But can't we learn to reason well by reading books written by great men? Great men may have great minds and reading their works may strengthen our own mind, but many of those great men advise us to study logic! Also, even great men make mistakes, and we need to be able to recognize their mistakes.

Wasn't logic invented by an ancient pagan philosopher named Aristotle?

If you will remember, Augustine answered this question in a quote which I took from him earlier (page 5). He said in summary that: Logic is not an invention of the pagan philosophers, but a science which man has learned from God.

How will learning logic help in other subjects?

Logic is foundational to the study of every other subject. Learning to read is a pretty basic skill without which students are crippled. Learning to think well is just as basic. When I write an essay, I use logic to find what conclusion follows from what I've already written. When I study to give a report on Napoleon, I use logic to decide which historian has interpreted the evidence about Napoleon's life the most accurately. When I am studying the Bible, I use logic to pull together different statements in the Bible to prove that God is sovereign over every area of my life. I use logic in every subject.

Who should study logic with the kids? Dad or Mom?

I am going to make a controversial statement, but one which I believe my experience warrants. Men generally do a better job teaching logic than women. Also, fathers need to learn logic themselves. Mothers have been carrying enough burdens teaching their children, and it is high time fathers became more than the principal of their homeschool.

As a father takes the time to sit down beside his son and teach him how to use his mind, he gives part of himself to his son. He gives more than just the answers to his son's questions. He can impart a love for learning which can only happen at home.

Can kids do it on their own?

No, Newton may have been able to learn logic on his own, but, short of a genius, most children need help from Dad.

Do we need the answer key?

Try doing without it and you'll soon discover why authors write answer keys to go along with their books. They don't do it just to make more money (though, that may be some of the motivation).

Any more questions?

I would love to answer them. Just write me, Nathaniel Bluedorn, at the address on the inside cover, and I will answer you.

Conclusion

Have I accomplished my three objectives? 1) Are you convinced that logic is something you should learn? 2) Do you have a picture in your mind of what logic is and do you see that you can learn it at home? 3) Do you know where to start? I am not satisfied with my work unless I have given you all of these things.

Some parting observations

Actually use the logic you study. In the Bible, God teaches that we are to prove our doctrines, and Jesus was the great example of a man who did just that. In classical ages, the world valued logical reasoning. Make logical reasoning part of your life-style.

Don't get discouraged when your head hurts. Don't feel overwhelmed when you aren't understanding a concept. The most valuable diamonds are the hardest to mine. Persevere and have patience. The reward is worth it.

For many years, logic has been viewed as a subject for philosophers, geeks and computer programers. Let's start something different. Logic is not only for elite intellectuals. It is for ordinary people. It is for you and me.