VideoText*Interactive*

New Customer Orientation Packet for Geometry

INTRODUCTION

I would first like to thank you for your interest in the VideoText Interactive (VTI) Geometry program materials. I don't know what circumstances caused you to be drawn to give my program a try, but I trust your instructional experience will be a positive one, with noticeable student achievement.

I would also like to apologize, in advance, for the quantity of material in this orientation packet. However, because of the unique nature of the VTI program approach to concept development, and content coverage, it is simply necessary to examine, in detail, the various characteristics of the VTI philosophy. This will ensure that you begin your evaluation, and the instruction of your students, in the most efficient way possible, minimizing questions. In addition, I'm sure you will quickly notice that this approach to teaching and learning does not reflect the way most of us were taught. So, please know that you can contact me at any time, should you encounter something that just doesn't seem quite right, or something you or your student is having trouble with.

Just remember, I am known, all over the country, as the "why" guy, because I don't teach tricks, shortcuts, rules, or formulas. In fact I don't even encourage memorizing, at this level of Mathematics instruction. I am entirely focused on the development of concepts, and a student's demonstration of concept mastery. I want the student to "internalize" the concept, understanding where it comes from, why it works, and why it makes sense to do it. As a result, memorization will be almost automatic.

With that introduction, let me briefly explain the purpose of the rest of the orientation materials in this packet.

PROGRAM OVERVIEW

The first document you will see, is titled, "Program Overview". This is a very important piece, because it explains the dynamic of concept development, and why it is so necessary for true mastery. As such, it explains the nature of the Geometry course, and the instructional strategies that are used to make sure students truly understand where the concepts come from.

SCOPE AND SEQUENCE RATIONALE

Related to that, the next piece is titled, "Scope and Sequence Rationale. This document explains, in detail, the organization of the Geometry course, and why the concepts are arranged in a particular order. This explanation is again extremely important, because it lays out the pure mathematical logic of the sequence of the topics in the course. You need to understand that there is no other commercial text which is organized in this way. I hope you will see, however, that following this very logical sequence, will be extremely efficient and productive, resulting in a high level of mastery.

PACING OPTIONS

Continuing, as you consider the Scope and Sequence Rationale, it will be natural to ask questions such as, "How fast should I go?", or, "How much should I cover in a school year?" The next document, titled, "Pacing Options", gives you several alternatives which you may follow, based on your particular situation. For example, considering that the Geometry program includes the essential elements of what is traditionally called Geometry Readiness, Plane Geometry, and Trigonometry, it would seem appropriate to finish the program in two to three years. However, since traditional programs largely teach only the mechanics of "how", with little regard for the "why", Plane Geometry usually must contain a review of Geometry Readiness. Further, Trigonometry must contain some review of Plane Geometry. I firmly believe that, when students are taught conceptually, with a focus on mastery and internalization, the necessity of a major review is minimized. When you couple that with a scope and sequence which requires students to regularly "use" learned concepts, in the development of new concepts, the review is, of necessity, embedded in the new material. Again, if you have questions in this area, do not hesitate to contact me.

QUICK REFERENCE GUIDE

The fifth document, titled, "Quick Reference Guide", is fairly self-explanatory, laying out a reasonably detailed, daily plan for teaching and reinforcing the concept in each lesson, as well as assessing student mastery. You will notice that it specifically address the use of the online format. If you are examining the classic print program, you will have a Quick Reference Guide included in your shipped materials. In either case, it will probably be helpful to keep this document handy, until you and your student become familiar, and comfortable, with the daily instructional procedure.

VIDEOTEXT PROGRESS CHECKLIST

Finally, you will see a document titled, "VideoText Progress Checklist". This tool is designed to help you track student progress, and provide documentation, as your student moves through the program. This is, of course, an Algebra sample, but it illustrates several approaches to record keeping which are just as applicable to the Geometry course. You will notice that several strategies are suggested, and examples are given, relative to entering student information. However, you are encouraged to develop your own strategies, and keep records based on your personal philosophy of grading.

CONCLUSION

To summarize the VideoText Interactive philosophy, our goal is to make sure students:

a) experience and own the concept (by participating in its development through the Video Lesson)
b) verbalize the concept (by using the Course Notes to teach the lesson back, developing articulation skills and logical thinking skills)
c) demonstrate understanding of the concept (by working through Exercises and applications in the WorkText and Solutions Manual)
d) assess mastery of the concept (by using the Quizzes and Tests to exercise the ability to apply the concept, including the ability to analyze their own errors)

I know this seems like a lot to digest right now, but we must not forget our ultimate goal in teaching our students. Everything we do should be contributing to our students becoming independent, life-long learners, being personally responsible for their work, and developing their analytical and critical thinking ability to a high level. Keeping that in mind, I urge you to contact me if there are issues or concerns, or if anything in this packet seems unclear.

Thank you again for your willingness to evaluate my programs. I wish you the best.

Cordially,

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PROGRAM OVERVIEWS

VTI Geometry
Program Overview

The VideoTextInteractive Geometry program addresses two of the most important aspects of mathematics instruction. **First, the inquiry-based video format contributes to the engaging of students more personally in the concept development process.** Through the frequent use of the pause button, you, as the instructor, can virtually require interaction and dialogue on the part of your student. As well, students who work on their own, can "simulate" having an instructor present by pausing the lesson every time a question is asked, and trying to answer it correctly before continuing. Of course, the student may answer incorrectly, but the narrator will be sure to give the right answer when the play button is pressed to resume the lesson. Right or wrong, however, the student is regularly engaging in analytical and critical thinking, and that is a healthy exercise, in and of itself. **Second, each incremental concept is explored in detail, using no shortcuts, tricks, rules, or formulas, and no step in the process is ignored.** As such, the logic and the continuity of the development assure students that they understand completely. Subsequently, learning is more efficient, and all of the required concepts (topics) of the subject can be covered with mastery. Of course, the benefits of these efforts can be seen even more clearly in a description of a typical session, as follows:

After a brief 2 or 3 sentence introduction of the concept to be considered, usually by examining the description, and the objective given at the beginning of the video lesson, you and your student can begin. **You should pause the lesson frequently,** usually every 15-20 seconds (or more often if appropriate), to engage your student in discussion. This means that, for a 5-10 minute VideoText lesson, it may take 10-15 minutes to finish developing the concept. Dialogue is a cornerstone. In addition, during this time, **your student should probably not be allowed to take notes.** Students should not have their attention divided, or they risk missing important links. Neither should you be dividing your attention, by looking at notes, or writing on a pad, or an overhead projector. **Everyone should be concentrating on concept development and understanding.** Please understand that a student who is accustomed to working alone, or can be motivated to study independently, has, with the VideoText, a powerful resource to explore and master mathematical concepts by simulating the dialogue normally encountered with a "live" instructor. And, because of the extensive detail of the explanations, along with the computer generated graphics, and animation, students are never shortchanged when it comes to the insight necessary to fully comprehend.

Once the concept is developed, and the VideoText lesson is completed, you can then **employ the Course Notes to review, reinforce, or to check on your student's comprehension.** These Course Notes are replications of the essential content that was viewed in the VideoText lesson, illustrating the same terms, diagrams, problems, numbers, and logical sequences. In fact, at this time, if your student needs a little more help, he or she can use the Course Notes while viewing the lesson again, using them as a guide, to re-examine the concept. **The key here is that students concentrate on understanding first, and take care of documentation later.**

Please understand that it is not the intent of the program to let the VideoText lesson completely take the place of personal instruction or interaction. Actually, **the video should never tell your**

students anything that hasn't been considered or discussed (while the lesson is paused), and it should never answer questions that have not already been considered and resolved. As such, it becomes a “new breed” of chalkboard or overhead projector, whereby you, as the teacher, or your student working alone, can “write”, simply by pressing the “play” button. This is a critical point to be understood, and should serve to help you examine all of the materials and strategies from the proper perspective.

Next, your student can begin to do some work independently, either by your personal introduction of additional examples from the WorkText, or by the student immediately going to the WorkText on his or her own. **The primary feature of the WorkText,** beside providing problem banks with which students can work on mastery, is that **objectives are restated, important terms are reviewed, and additional examples are considered,** in noticeable detail, **taking students, once again, through the logic of the concept development process.** The premise here is simple. When students work with an instructor, whether doing exercises on their own, or working through them with other students, they are usually concentrating more on “how to do” the problems. Then, when they leave the instructor, they simply don't take the discussion of the concept with them. The goal of this program is to provide a resource which will help students “re-live” the concept development on their own, whether for review, or for additional help. That is the focus of the Student WorkText.

Having completed the exercises for the lesson being considered, your **student is now ready to use the detail in the Solutions Manual to check work and engage in error analysis.** Again, it is essential to a student's understanding that he or she find mistakes, correct them, and be required to give some explanation, either verbal or in writing, to you as the instructor. In fact, at this stage, you might even **consider grading your student only on the completion of the work,** not on its accuracy. Remember, this is the first time the student has tried to demonstrate understanding of a concept, and he or she may still need some fine-tuning. So, because this is part of the initial learning process, **the focus should be on a careful analysis of the logic behind the work, not just the answers.** Finally, **it is time to assess your student's mastery** of the concept behind the work. Just **be sure you are not testing on the same day the exercises were completed.** Short-term memory can trick you into thinking that you “have it”, when, in fact, you are just remembering what you did moments before. A more accurate evaluation can be made on the next day, before moving on to the next lesson. Further, the quizzes and tests in the program often utilize **open-response questions which will require your student to state, in writing, his or her understanding of the concept.** This often reveals much more about a student's understanding than just checking to see if an answer on a test is correct. Remember too, that there are **two versions of every quiz and test**, allowing you to retest, if necessary, in order to make sure that your student has mastered the concept.

Of course, just as with the WorkText, there are detailed **solutions for all of the quiz and test problems, in the Instructor's Guide.** Again, your student should be required to analyze problems that were missed, and explain why the problem should have been done differently. It is simply a fact that one of the most powerful and effective teaching tools you can employ, is to **ask your students to “articulate” to you what their thinking was,** as they worked toward a given answer.

As you can see, the highly interactive quality of this program, affords students a much greater opportunity than usual to grow mathematically, at a personal level, and develop confidence in their ability. That can have a tremendous impact on a student's future pursuits, especially in an age where applications of mathematics are so important.

SCOPE AND SEQUENCE RATIONALE

VTI Geometry
Scope & Sequence Rationale

There are two basic premises which drive concept development in Geometry, and these two essentials shape the logical scope and sequence of geometric content.

First, it is generally understood that **Geometry is the study of spatial relations.** In the same way that Algebra is the study of numerical relations (equations and inequalities), and Calculus is concerned primarily with rates of change, Geometry is a comprehensive exploration of "shapes" (as sets of points), the measurements associated with those shapes, and the relationships that can be established between those shapes. As such, no treatment of Geometry should ever investigate those relationships only individually, or in isolation. This is especially noticeable with traditional textbooks, which generally use a format which addresses them in different "chapters". In the VideoText Interactive Geometry course, **concepts are discussed from a "Unit" perspective, pursuing and connecting, in an exhaustive way, all of the outcomes associated with various possibilities for a specific relationship.** Of course, as much as is possible, students need to "see" those relationships, and experience the "motion", or "transformation", necessary to clearly illustrate the concept. It really is impossible to put a value on the benefits of visualization, in life in general, and in Geometry in particular. So, in the VideoText Interactive Geometry program, **computer-generated graphics are used extensively, along with animation and color-sequencing,** in order that students can actually see the relationships develop.

The second premise is that geometric concepts should be studied **utilizing all of the power and conviction that both inductive and deductive reasoning can bring to the table.** In other words, it is always desirable, and helpful, for students to "experiment", inductively, with a geometric relationship, in an effort to come to some general conclusion. Once that general conclusion has been arrived at, however, it is even more convincing if the student is able to "prove", deductively, that the conclusion absolutely must follow, logically, from the given information. No, formal proof is not often asked for in everyday life. On the other hand, the exercise of developing that kind of thinking is invaluable, not only in some specific job-related activities, but, more generally, in the daily problem-solving situations that confront us. The VideoText Interactive Geometry program is formatted in such a way that formal proof is a cornerstone.

Unit I, then, focuses on a complete preparation for students to begin a formal study of Geometry by "re-teaching" of all of the basic geometric concepts for which students have simply memorized the appropriate term, definition, or formula. That means we must re-establish that **Mathematics in general, and Geometry in particular, is a language,** with parts of speech and sentence structure. We must develop, in detail, the concepts associated with **building geometric shapes.** We must investigate, again in detail, the concepts dealing with the **measurement of those shapes.** Finally, we must thoroughly develop the principles of inductive and deductive reasoning, giving significant attention to the dynamics of mathematical deductive logic, which are the building blocks that students will use to **construct formal proofs.**

In Unit II, we begin the actual study of "Plane Geometry" by developing all of the necessary terms, definitions, and assumptions we will be using as a basis for studying geometric relationships. In other words, we draw on the analogy that studying any area of Mathematics is like "playing a game". We must first determine **which basic elements will be "undefined"** in our Geometry, or accepted without definition. We must then determine which basic elements can be formally defined, using those undefined terms. Finally, we must **build a list of "postulates", or conditional assumptions** which will serve as the "rules of the game", guiding us through the investigation of relationships, in our Geometry. It is important to note, at this point, that every Plane Geometry study will, in certain ways, be unique to the philosophy of the instructor, depending on the acceptance of these fundamental terms. In other words, while the prevailing context will always be that of classical Euclidean Geometry, the lists of definitions and postulates may differ from person to person. The key, however, is that each study will rely on its own particular list of Essential Elements to prove the rest of the relationships to be investigated.

So, in Unit III, we use the Fundamental Terms developed in Unit II, to prove Fundamental Theorems related to points, lines, rays, segments, and angles. These theorems will be foundational to the study of Simple Closed Plane Curves, which are the primary backdrop of all studies of Plane Geometry.

At this point, since we have put in place the "rules of the game", we can begin, and, for all practical purposes, complete, a methodic investigation of the **geometric relationships associated with Triangles (Unit IV), Other Polygons (Unit V), and Circles (Unit VI).** That then allows us to conclude our study by the investigation of several applications, internal to the study of Geometry.

First, in Unit VII, we will engage in the classic geometric exploration of "Construction". This means that, with the use of only a **straight edge** (to construct lines, rays, and segments), and a **compass** (to construct circles, and arcs of circles), we will attempt to use our knowledge of geometric relationships to "build", and "operate on", various geometric shapes. Included will be the replication and division of line segments and angles, the building of polygons to desired specifications, and the generation of circles to desired specifications.

Second, in Unit VIII, we will examine, in significant detail, the relationships between the various components of triangles. This is, of course, the study of **Trigonometry,** from the Greek, meaning "tri-angle-measure". Included are the basic relationships of **sine, cosine, and tangent,** as well as applications involving the Pythagorean Theorem, the Laws of Sines and Cosines, and several other ambiguous cases.

Please understand that the organizational argument presented here is not meant to stifle the creativity of the instructor. Neither should it prohibit the instructor from utilizing a modular approach to concept development. It does, however, serve to remedy the fragmented, isolated topic, "chapter" approach to a subject which has been traditionally presented to us in "textbooks", without that element of developmental continuity. To that end, it speaks loudly to the curricular issues which all instructors face, and the attitudinal issues students deal with when they are presented with a new and different Mathematics course.

PACING OPTIONS

PACING OPTIONS

The VideoText Interactive Mathematics programs can be paced in several ways, according to the age and/or need of your student.

VideoText*Interactive*

ONE-YEAR PLAN

The One-Year Plan for completing the entire Geometry program is designed primarily for the high school student that is in need of acquiring credits as soon as possible.

In this plan, the student is, **each day**, watching one video lesson, working with the exercises, and testing on the previous day's lesson, as follows:

Step 1) The day starts with a Quiz over the previous lesson, if one is prescribed, with the instructor grading only the answers, and letting the student analyze the errors, in order to verify mastery, and receive partial credit.

Step 2) The student then watches the new lesson, followed by the student “re-teaching” the lesson to the instructor, using the Course Notes.

Step 3) The student demonstrates understanding, by working 5-10 Exercises in the WorkText.

Step 4) The instructor checks only the answers, and requires the student to do error analysis, using the Solutions Manual.

This procedure is repeated each day, allowing the student to cover the entire Geometry program, including Trigonometry in one year. The student receives full credit for Geometry and Trigonometry (now included in Pre-Calculus) for this work.

However, from a transcript perspective, you need to be aware that there is no formal Trigonometry course any more, as a separate entity. You now receive Pre-Calculus credit when you cover Coordinate Geometry, (Units III, IV, and IX in the VideoText Algebra course) Exponential Logarithmic Functions (Unit X in the VideoText Algebra course) and Trigonometry.

Keeping that in mind, I urge you to contact me if there are issues or concerns, or if any of this seems unclear.

TWO-YEAR PLAN

The Two-Year Plan for completing the entire Geometry program is designed primarily for the younger high school student, who has finished the entire Algebra program, and now has time to go more slowly, and achieve a noticeably higher level of mastery.

In this plan, the student is watching and working with a new lesson every other day, with the quizzes being given on the off-days, as follows:

Day One:

Step 1) The student watches a new lesson, followed by the student re-teaching the lesson to the instructor, using the Course Notes.

Step 2) The student demonstrates understanding by working with 5-10 Exercises in the WorkText.

Step 3) The instructor checks only the answers, and requires the student to do error analysis, using the Solutions Manual.

Day Two:

Step 1) The day starts with a quiz over the previous lesson, if one is prescribed.

Step 2) The instructor grades only the answers, and requires the student analyze the errors, in order to receive partial credit.

This two-day cycle is repeated, allowing the student to complete the entire Geometry program in two years. Again, the student receives full credit for Geometry and Pre-Calculus (as explained previously) for this work.

QUICK REFERENCE GUIDES

QUICK REFERENCE GUIDE
for using the
VIDEOTEXT INTERACTIVE ONLINE GEOMETRY PROGRAM

I. PREPARE FOR THE DAY'S LESSON !

Step 1 – Have the student log in to the site, and navigate to the lesson for the day. Be sure to notice if there is a quiz that should be taken first, or if the Video Lesson can be started immediately.

If there is a quiz, the student should log out, and have the instructor log in to access the appropriate quiz. Print out the quiz for the student and, upon completion, access the solutions pages in the Instructor's Guide to grade the quiz. (Note: In the interest of efficiency, convenience, and saving time, the instructor can print complete sets of quizzes and tests, by clicking on the appropriate link at the top of the Unit outline page.)

If there is no quiz, the student should begin the Video Lesson for the day. Be sure to note the description of the lesson, given to the right of the video screen, and the objective which is to be addressed.

II. TEACH THE LESSON ! Two basic steps each day

Step 1 – Watch the video lesson with your student (at least for the first several lessons), pausing from time to time to answer the questions posed on the video or to make sure the concept is understood.

Suggestion: To help your student focus on the concept development on the video, note-taking is not recommended. Just remember that the Course Notes are next on the lesson agenda, and contain all of the essential information from the lesson. To ensure that your student really understands the concept before working the daily exercises, the student should be required to briefly re-teach the lesson to you, after the fact, using the Course Notes as a guide.

Suggestion: Because the student is engaged in a technical explanation of a mathematical concept, we have now closed-captioned every Video Lesson. Reading along, as the concept is developed, helps greatly with understanding. This option can be accessed by clicking on the CC at the bottom of the video screen, and selecting English. The lesson will then show, in print, what is being said in the lesson.

Step 2 – Assign exercises from the Student WorkText to reinforce the concept.

Suggestion: You might want to take it very slowly, assigning only the odd problems (or even problems) as your student's initial assignment, and begin checking with the Solutions Manual after the first 2 or 3 exercises. As well, the student should have to regularly explain what he or she did in solving a problem.

Suggestion: Assign only the odd problems (or even problems) as your student's initial assignment, and begin checking answers with the yellow Solutions Manual after the first 2 or 3 exercises. We also suggest that you give your student a daily grade of 100% for completing the assigned exercises, regardless of whether they are correct. This is their first time with a new concept. It is a learning experience, and the analysis that the student does is really in preparation for the next quiz, to determine that the concept has been mastered.

III. EVALUATE PROGRESS ! A mastery approach

Use the appropriate Quiz, when called for, to determine the proficiency of your student and check the answers with the Instructor's Guide, using the same technique for error analysis explained above. We suggest letting each problem be worth 10 points, to allow for ample room for giving points back, for understanding. See the suggestion below.

Suggestion: It is best to wait at least one day to give a quiz after a lesson is covered. In that way, students are not simply using short-term memory to repeat what they have just learned. The program will address this each day, at the beginning of the lesson, so you will be aware of the procedure.

Suggestion: You have two versions of each quiz and you can use them in several ways. Form A might be an actual graded quiz and Form B would then be a retest if the first quiz score was not satisfactory. Or form A might be used as an ungraded review with Form B being the graded quiz. Use them to suit your needs.

Suggestion: You also have two versions of each Unit Test, and you can use them in several ways, as described above. In fact, for the longer units, you probably should use form A as a comprehensive review, and then use form B as the actual test. Notice that Unit Tests are comprehensive and often lengthy, so you might even take 2 days to administer them. Just check each part separately and combine the scores. Again, give points back to students for doing acceptable error-analysis. Remember, too, that the detailed solutions for the Unit Tests also indicate, for each problem, which lesson that problem came from. This will help a lot with review.

REMEMBER ! We are working toward **mastery**, so, as much as is possible, students should **demonstrate a thorough understanding** of a concept before moving on. However, you must understand that missing 2 or 3 problems in an exercise set does not generally indicate lack of mastery. You can usually go on to the next lesson, without any trouble. Just be sure to take advantage of our **toll-free help-line**, **(800-254-3272)** when you have difficulty. You will find the number at the top of every page in the program. **Don't wait until you and your student are frustrated.** The trouble is usually due to some minor mistake. **We want to help.**

NOTE : More detailed information can be found in several resources in **"Unit 0 – Resources for Instructors"**. These would include the **"Letters from the Author"** for each unit, the **"Program Overview"**, and others.

FEEL FREE TO PRINT AND POST THIS GUIDE FOR FUTURE REFERENCE!

PROGRESS CHECKLIST

VideoText Progress Checklist –Unit I (sample)

STUDENT NAME _____ **SCHOOL YEAR** _____

	PART A			PART B							
	1	2	3	1	2	3	4	5	6	7	8
View	X	2X	4/16								
Odd	X	9/10	75%								
Quiz A	X	80%	90%								
Even	----	8/10	----								
Quiz B	----	90%	----								

	DATE	SCORE
UNIT I TEST FORM A	May 13, 2005	46/51 Pretest Only
UNIT I TEST FORM B	May 15, 2005	92%

This is just part of the Progress Checklist for Unit I of the VideoText Interactive Algebra Program, but it will give you a general idea of the helpfulness of the checklist as you keep a record of your student's progress. Please read the following explanation for three suggestions for using this tool. The complete package of Progress Checklists is available to download at the website below.

You will notice that, for Lesson 1, a simple notation (X) has been used to indicate that the lesson was viewed, the odd problems in the exercise set were completed, and the form A quiz for that lesson was successfully finished. This may be your approach if you are not so concerned with numerical grades.

Another approach is illustrated in the lesson 2 record. Here, we have shown that the lesson was viewed twice, 9 out of 10 exercises were completed successfully, and analyzed for errors. Then, taking the Form A quiz resulted in a score of 80%, and it was decided that more practice was needed, so, the even problems were assigned. The student got 8 out of 10 right, those problems were analyzed and the Form B quiz was taken. The student scored 90%.

A third approach is shown in the record for Lesson 3. You will notice that the student viewed the video lesson on April 16th, got 75% of the odd exercises correct, and took the Form A quiz, getting a 90% score. That was considered sufficient.

Notice too, that the record for the Unit Test is shown, including options for documenting the scoring and results for Forms A and B.

Visit our website at www.videotext.com, and click on "Parent Resources" for downloadable pdf versions of the checklist for all ten units.