

## Program Elements

## MATHEMATICS

## Proficiency for All

Throughout the years Arithmetic Solutions has specialized in helping students reach the level of Proficiency in the area of Mathematics. Working in the capacity of an SES Provider as well as providing numerous tutoring sessions to private clients we have developed an extensive and detailed program that helps students grow their mathematical understanding and increase their letter grades in the subject.

## I.) Pre-Assessment or Student Performance Data

Our first phase of tutoring begins with Grade Level Pre-Assessment that takes place online through the Arithmetic Solutions' (AS) website. This process is designed to accurately evaluate each students' math knowledge in order to properly group them in a virtual classroom with others of similar mathematical understanding. Pre-Assessment results will be shared with school faculty and staff to establish a starting point so that academic growth can be tracked throughout the tutoring process. Should any school site decide against Pre-Assessment Testing in order to reduce cost, school officials can share accurate Student Performance Data so that virtual classroom grouping can take place at no extra cost.

## II.) Virtual Classroom Grouping

Students will be entered into virtual classrooms in a manner that is totally dependent upon which evaluation school sites select. Should the PreAssessment Testing be selected, students will be entered into virtual classrooms according two criteria: 1.) Grade Level - each virtual classroom will be populated with students who are in the same grade. There will be acceptions for students who "over-perform" or "under-perform" on specific grade levels; adjustments for said students will be made on a case-by-case basis. 2.) Assessment Scoring Range - once assessments results have been reviewed and evaluated, students on the same grade level scoring within 10 percentage points of one another will be grouped together. If the school site decides to supply Arithmetic Solutions administrators with Student Performance Information in lieu of PreAssessment Testing costs, we'd evaluate the students' last two qui es and most recent test and group participants accordingly. Virtual classrooms will be created for students consistent with the following performance levels: A 100 - 91 , B 1 - 90 , C 71 - 0 , D 1 - 70 , F 0 - Below (Far Below Basic). Groupings will be comprised of A, B, C, D & Far Below Basic clusters in associated virtual classrooms.

## III.) Online Tutoring

We administer tutoring services in a one-on-one and or small group format to our students online ONL because we find that the capacity to replay previous sessions is invaluable. It saves money for school sites because the costly process of reviewing past concepts at the beginning of each tutoring session is eliminated and the assigned tutor can proceed to new material. Our common practice is to structure each tutoring session to meet a 1:4 tutor to student ratio with the participants having similar mathematical understanding. Our ONLINE tutoring platform has the capacity to accommodate 5 students in a single session, but we will never exceed a 1 to 4 ratio. A live tutor conducts all of our online tutoring sessions using "REAL-TIME" AUDIO & VIDEO! All tutoring sessions are recorded for quality control purposes and made available to our assigned students through June 30th of each calendar year. A structured "checks-and-balances" system is created when we share login credentials with school site administrators that allow them to access any LI E session in real-time as well as all

previously recorded sessions. In an effort to facilitate immediate growth in the classroom, clients, students, and school officials are encouraged to e-mail homework assignments to their assigned tutors in a PDF, JPeg, or Word format a minimum of 2-hours prior to the scheduled session and the tutor will integrate specific problems into the LI E session. It is this aspect of our process that elicits the most immediate improvement in academic growth and standardized testing; of course this in-class growth is directly related to effective communication between the school's teachers staff and Arithmetic Solutions' administrators.

Our Mathematics Enrichment program has been highly successful in serving "in-need" students mainly due to the pliable nature of the math support services. One of the most valuable aspects of Arithmetic Solutions' enrichment program is how easily our administrators can conform session content to fit the specific academic needs of student populations at each school site.

#### IV.) Post Assessment

Upon completion of the tutoring process, regardless of term length, students will log back onto the Arithmetic Solutions website and complete the Post Assessment. Our administrators will compare each student's Pre and Post test scores in order to compile a report that will analyze changes in mathematical understanding. Electronic copies of the report will be submitted to the faculty and staff at the school site and another will be maintained in Arithmetic Solutions' administrative offices. If administrators at the school site elected to submit Student Performance Data in lieu of Pre-testing and post-testing costs, our office staff will request updated Student Performance Data so that a report can be prepared in an effort to give school site administrators a detailed analysis of academic outcomes.

### ENGINEERING S.T.E.M.

#### I.) Introduction

When the S.T.E.M. program begins we inform the students of the engineering project they will complete and the various aspects and elements of engineering that will be addressed through the navigation of the process on to the completion of the project. Normally our S.T.E.M. Staff will describe a real life scenario in which a problem has to be solved or an obstacle must be overcome by engineering an object over time. Of course the scenario is different with each Project-based Learning project.

#### II.) Team Building

Our staff explains that should any of the students decide to become an Engineer in the future, they will work with a team 90 to 95% of the time. We then initiate the process of creating 4 to 5 person teams depending upon the number of students enrolled. It is stressed that each team member should possess a unique skill that will contribute to the overall success of the group. Since each project must be designed, one of the members should possess above average art skills, another should be good with mathematics in order to make the necessary calculations & measurements that may be required and another member should be adept in the area of construction in order to assemble the project properly. Although some skills may overlap, this process is still extremely successful.

#### III.) Materials Determination & Construction

Once S.T.E.M. instructors have grouped the students, we then introduce the specific materials that will be used to construct the engineering project and explain how important it is to understand the task at hand when making their Materials Determination. We discuss how many outside factors will organically guide the direction and thought processes behind planning, development and construction. Outside factors that are commonly taken into consideration are environment & weather conditions,

usage, anticipated loads the structure may be required to support, etc... It is at this stage we guide the students into the thinking about the Engineering Process.

#### IV.) Project Completion & Evaluation

Lastly, after all teams have completed construction, S.T.E.M. instructors will inspect each project for completeness and the efficient use of materials; considerable waste is discouraged. Depending upon the assignment, there may be a competition (in the case of the catapult) and then projects will be evaluated for operational efficiency.

## PRICE SCHEDULE

<b>PRICE PROPOSAL (Per Week)</b>			
Expenditure per Student for 1 Session each week			
NUMBER OF STUDENTS	NUMBER OF CLASSES	COST PER STUDENT / SESSION	TOTAL COST PER WEEK
1 - 20 Students	1 Online Class per Week	\$55.00	\$55.00 - \$1,100.00
21 - 40 Students	1 Online Class per Week	\$50.00	\$1,050.00 - \$2,000.00
41 - 60 Students	1 Online Class per Week	\$45.00	\$1,845.00 - \$2,700.00
61 - 80 Students	1 Online Class per Week	\$40.00	\$2,440.00 - \$3,200.00
81 - 100 Students	1 Online Class per Week	\$35.00	\$2,835.00 - \$3,500.00
<i>*Note: Services for MORE than 100 students can be negotiated for a lesser rate than those listed above.</i>			

<b>PRICE PROPOSAL (Per Term)</b>				
(Numbers reflect cost per student)				
Payment Schedule for Sessions Occurring ONCE weekly for each Student				
NUMBER OF STUDENTS	4 WEEKS	8 WEEKS	12 WEEKS	16 WEEKS
1 - 20 Students	\$220.00 – \$4,400.00	\$440.00 – \$8,800.00	\$660.00 – \$13,200.00	\$880.00 – \$17,600.00
21 - 40 Students	\$4,200.00 – \$8,000.00	\$8,400.00 – \$16,000.00	\$12,600.00 – \$24,000.00	\$16,800.00 – \$32,000.00
41 - 60 Students	\$7,380.00 – \$10,800.00	\$14,760.00 – \$21,600.00	\$22,140.00 – \$32,400.00	\$29,520.00 – \$43,200.00
61 - 80 Students	\$9,760.00 – \$12,800.00	\$19,520.00 – \$25,600.00	\$29,280.00 – \$38,400.00	\$39,040.00 – \$51,200.00
81 - 100 Students	\$11,340.00 – \$14,000.00	\$22,680.00 – \$28,000.00	\$34,020.00 – \$42,000.00	\$45,360.00 – \$56,000.00
<i>*Note: Services exceeding 16 weeks can be negotiated for a lesser rate than those listed above.</i>				

Please note that all prices above include access to session recordings through June 30 of each year regardless of Term.

## VEERING S.T.E.M. PROGRAM

<b>PRICE PROPOSAL</b>				
The figures below apply to 25 to 40 participants attending 90 minute sessions				
NO. OF DAYS PER WEEK	3 MONTHS	6 MONTHS	9 MONTHS	12 MONTHS
1	\$3,000.00	\$5,000.00	\$7,500.00	\$9,000.00
2	\$6,000.00	\$10,000.00	\$13,500.00	\$17,000.00
3	\$9,000.00	\$15,000.00	\$21,000.00	\$27,000.00
4	\$12,000.00	\$20,000.00	\$27,000.00	\$35,000.00
5	\$15,000.00	\$25,000.00	\$35,000.00	\$45,000.00
<i>* Note: Since all schools, student populations and budgets are different the fees listed above are fully negotiable depending upon overall program structure. Our S.T.E.M. Programs may be implemented differently from school-to-school and as a result costs may vary.</i>				

The Price Proposal above is merely a baseline for services. Our goal is to create a custom & integrated program that specifically suits the needs of each individual school site and its budget. Our administrators will work closely with school officials to create the best structure to deliver the our Engineering S.T.E.M. Program most effectively.

## Vendor Virtual Services Plan

Due to school closures, approved vendors on the Partners for Student Success bench that have a signed contract will need to submit their *Vendor Virtual Services Plan* to the Office of Partnerships and Grants. The plans will be vetted and shared with eligible schools to select the services they are interested in and follow up with vendors. Any new approved vendors that are in the process of signing their contract will also need to fill out the below form.

### Things to Consider:

- Currently, certificated staff are required to supervise any services rendered to students by a third party.
- Recording and pictures of students is prohibited.
- District’s [Code of Conduct](#) is expected when interacting with students

Vendor’s Name: <b>Arithmetic Solutions</b>	Submittal Date: <b>September 30, 2020</b>
Schools Planning to Serve: <b>Baldwin Elementary School Gifted and High Ability Magnet</b>	
List the services in your agreement that can be provided virtually:	Comprehensive S.T.E.M. Program and related Project construction. Mathematics Tutoring for all Grade Levels K thru 12.
List the services in your agreement that cannot be provided virtually:	All services in Arithmetic Solutions’ agreement <i>can</i> be provided virtually.
List the platforms you plan to use for delivery of virtual services:	Arithmetic Solutions will use the Zoom platform to administer our Online S.T.E.M. Program.
Provide a brief description of how you plan to deliver each of your services virtually (i.e. coordinate with school to schedule 30 minute session once a week, etc.):	<b>S.T.E.M.</b> – Our Online S.T.E.M. Program is an extension of the S.T.E.M. services we provide at school sites. Our management personnel will coordinate with School Administrators in an effort to indentify the students, per grade level, who will participate in the program. Once we have specific numbers, we will deliver to the school one S.T.E.M. Kit per student. We will then share one <b>Zoom</b> link per Grade Level with the school site coordinator so that each group can log into the Virtual Meeting Room on the same day each week. Arithmetic Solutions Staff Instructors will log on with their designated Grade Level each week and teach Physics Fundamentals, Basic Engineering concepts and guide the students through the entire Engineering Process; construction will be the final Phase of the process. At the end of the program, each student will have an engineered and constructed project of their own. <u>Current projects</u> : The Trebuchet, Balloon Powered Car, Hovercraft, Roller Coaster, Windmill and Parachute.