RCHS FOCUS SKILLS FOR MATH

PRACTICE	GRADE 9	GRADE 10	GRADE 11	GRADE 12
MAKE SENSE OF PROBLEMS AND PERSEVERE IN SOLVING THEM	WORD PROBLEMS THAT CONNECT EITHER SYSTEMS OF EQUATIONS OR SYSTEM OF INEQUALITIES. STUDENTS SHOULD BE ABLE TO ANNOTATE AND BREAKDOWN A WORD PROBLEM INTO SMALL PORTIONS FOCUSING ON WHAT THEY NEED.	WORD PROBLEMS THAT CONNECT TO EXPONENTIAL GROWTH OR DECAY. SPECIFICALLY THE FORMULA P=ERT. STUDENTS SHOULD BE ABLE TO PERSEVERE THROUGH THESE COMPLEX PROBLEMS TO DEFINE WHAT THE RATE IS AND HOW OFTEN THE RATE IS BEING COMPOUNDED.	THIS SCREAMS PROOFS. STUDENTS NEED TO BE ABLE TO MAKE SENSE OF GIVEN INFORMATION AND THEN RELATE THIS BACK TO WHAT THEY NEED TO PROVE. STUDENTS OFTEN STRUGGLE PERSEVERING THROUGH MORE COMPLEX PROOFS	USING THE SKILLS OF PERSEVERANCE, WITH A FOCUS ON MULTIPLE EQUATIONS (SYSTEMS). STUDENTS WILL NEED TO SOLVE PART III AND PART IV QUESTIONS ON THE AP EXAM. THIS WILL REQUIRE STUDENTS TO ANNOTATE IMPORTANT INFORMATION AND UNDERSTAND HOW THE TWO EQUATIONS RELATE TO ONE ANOTHER.
REASON ABSTRACTLY AND QUANTITATIVELY	WHEN IDENTIFYING A QUADRATIC FUNCTIONS. STUDENTS MUST BE ABLE TO PERSEVERE THROUGH THE MULTIPLE ENTRY POINTS IN SOLVING FOR THE ROOTS. THIS INCLUDES WHETHER OR NOT TO COMPLETE THE SQUARE, USE THE QUADRATIC FORMULA, OR SIMPLY FIND THE APPROPRIATE FACTORS. IF STUDENTS ARE ABLE TO MAKE SENSE OF THESE PROBLEMS THAN ALGEBRA II BECOMES FAR LESS COMPLEX.	CONTINUING ON THE WORK DONE FRESHMEN YEAR, STUDENTS SHOULD BE ABLE TO IDENTIFY A QUADRATIC AND UNDERSTAND THE MULTIPLE WAYS IN WHICH TO FIND THE SOLUTION. IN ALGEBRA II THE FOCUS IS MORE ON WHAT TYPE OF ROOTS. STUDENTS SHOULD STILL BE ABLE TO IDENTIFY AND QUANTITATIVELY REASON WHAT THE ROOTS ARE.	CONTINUING WORK DONE IN ALGEBRA & ALGEBRA II. STUDENTS SHOULD BE ABLE TO REASON ABSTRACTLY THE RELATIONSHIP BETWEEN THE QUADRATIC FUNCTION AND CIRCLE EQUATION (SQUARE FUNCTION). STUDENTS SHOULD BE ABLE TO CONNECT TO PREVIOUS YEARS WORK TO REASON THEY NEED TO COMPLETE THE SQUARE TO RE-WRITE / FIND EQUATION OF CIRCLE.	USING THE PRACTICE OF REASONING ABSTRACTLY, STUDENTS WILL NEED TO FIND THE DERIVATIVE OF A QUADRATIC FUNCTION USING A COMBINATION OF PRODUCT RULE AND THE CHAIN RULE. STUDENTS WILL NEED TO UNDERSTAND THE MULTIPLE WAYS IN WHICH STUDENTS CAN APPROACH ALL DERIVATIVE PROBLEMS.
CONSTRUCT VIABLE ARGUMENTS AND CRITIQUE THE REASONING OF OTHERS	WITH A FOCUS ON STATISTICS & PROBABILITY STUDENTS SHOULD BE ABLE TO PERFORM FISH BOWLS TO DISCUSS THE IMPORTANCE OF DATA: HOW IT IS COLLECTED, AND HOW IT IS FAIRLY CALCULATED.SKILLS SHOULD INCLUDE STANDARD DEVIATION, LINEAR REGRESSION, AND CENTRAL TENDENCY.	CONTINUING TO FOCUS ON STATISTICS & PROBABILITY, STUDENTS SHOULD BE ABLE TO PERFORM FISH BOWLS TO DISCUSS THE IMPORTANCE OF NORMAL DISTRIBUTION, MARGIN OF ERROR AND SURVEYING AS IT RELATES TO THE REAL WORLD (INCLUDING ELECTIONS AND SCIENTIFIC RESEARCH).	TRANSFORMATIONS ALLOW GEOMETRY STUDENTS TO CREATE WORKS OF ART STARTING WITH JUST A FEW POINTS. STUDENTS SHOULD BE ABLE TO CRITIQUE THEIR PEERS WORK USING THE FOUR MAJOR TRANSFORMATIONS: DILATION, ROTATION, REFLECTION AND TRANSLATION.	USE PROJECT BASED LEARNING TO DISCUSS THE IMPORTANCE OF SPEED LIMITS AND INSTANTANEOUS VELOCITY
MODEL WITH MATHEMATICS	STUDENTS SHOULD BE ABLE TO MODEL THE REAL LIFE DIFFERENCES BETWEEN A LINEAR FUNCTION AND AN EXPONENTIAL FUNCTION. STUDENTS SHOULD BE ABLE TO UNDERSTAND AND COMMUNICATE TO TEACHER AND FELLOW STUDENTS THE IMPORTANCE OF THAT DIFFERENCE.	CONTINUING WITH A FOCUS ON EXPONENTIAL FUNCTIONS, STUDENTS SHOULD BE ABLE TO RELATE EXPONENTIAL FUNCTION PROBLEMS TO REAL WORLD ISSUES LIKE BANK ACCOUNTS, MORTGAGES, DEPRECIATION OF ITEMS, AND HALF-LIVES.	ROTATIONS OF 2D OBJECTS AND CROSS-SECTIONS OF 3D OBJECTS LEAD DIRECTLY TO THE CREATION OF SHAPES AND IS IMPORTANT IN BOTH CALCULUS AND OUR 3D PRINTING CLASS. STUDENTS SHOULD BE ABLE TO SEE HOW ROTATIONS AND CROSS-SECTIONS ARE IMPORTANT TO ENGINEERING AND CALCULUS.	USING THE INFORMATION FROM GEOMETRY STUDENTS NEED TO CREATE THREE DIMENSIONAL SHAPES USING A CROSS-SECTION AND A ROTATION. THIS WILL HELP CREATE "DISKS" AND "DONUTS" THAT ARE USED IN ENGINEERING AND 3-D PRINTING.