Integrated Mathematics 3 Syllabus 2015-2016

ESK 1: Quadratic Functions and Transformations AUGUST/SEPTEMBER	**ESK 2: Polynomial Functions** SEPTEMBER/OCTOBER	**ESK 3: Operations on Polynomials** OCTOBER/NOVEMBER	**ESK 4: Rational Functions** NOVEMBER/DECEMBER
-LT 1A: Concept of a Function -LT 1B: Composite Functions -LT 1C: Solving and Graphing Quadratics QC A* (ESK1 cumulative assessment) → Quality scores inputted to PowerSchool -LT 1D: Converting into Vertex Form QC B* (ESK1 cumulative assessment) → Mastery and accountability scores inputted to PowerSchool	-LT 2A: Fundamental Theorem of Algebra and Complex Numbers -LT 2B: Key Features (End Behavior, intercepts, increasing/decreasing, min/max, symmetry, Domain/Range) QC A* (Assesses 2 most recent concepts & replaced if improved) -LT 2C: Translations **MOCK FINAL EXAM: October 8-9 (Semester 1, ESK1-4): First Opportunity; Assesses all ESKs for the semester, only replaces improvement**	-LT 3A: Arithmetic Operations on Polynomials -LT 3B: Zeroes and Factors -LT 3C: Remainder Theorem QC A* (Assesses 2 most recent concepts & replaced if improved) -LT 3D: Polynomial Identities and Binomial Theorem **FINAL EXAM November 5-6 (Semester 1, ESK1-4): Second Opportunity; Assesses all ESKs for the semester, replaces ALL ESKs**	-LT 4A: Graphing: Key Features (Asymptotes, End Behavior, intercepts, increasing/decreasing, min/max, symmetry [even/odd], Domain) -LT 4B: Rewriting Rational Expressions with Long Division and Inspection QC A* (ESK 4 cumulative & 1? from ESKs 1-3) -LT 4C: Rewriting Rational Expressions with addition, subtraction, multiplication, and division -LT 4D: Applications: Modeling **CHOICE FINAL EXAM December 10-11 (Semester 1, ESK1-4): Grade: Final Opportunity; Assesses all ESKs for the semester, teacher replaces 2 ESKs, student chooses others (if he/she wants)**

ESK 5: Interpret Functions JANUARY	**ESK 6: Exponential/Logarithmic Functions** FEBRUARY	**ESK 7: Applied Trigonometry** MARCH	**ESK 8: Trigonometric Functions** APRIL	**ESK 9: Statistical Modeling** MAY
-LT 5A: Square Root Functions, Cube Root Functions -LT 5B: Properties of Radicals -LT 5C: Absolute Value Function -LT 5D: Piece-wise Functions QC A* (ESK5 cumulative assessment) -LT 5E: Systems (applied) -LT 5F: Inequalities QC B* (ESK5 cumulative assessment & 1-2 ?s from ESK 1-4)	-LT 6A: Definitions of Logarithms with Exponentials -LT 6B: Key Features (End Behavior, intercepts, increasing/decreasing, min/max, symmetry [even/odd]) QC A* (ESK6 cumulative assessment & 3 ?s from ESK 1-5) -LT 6C: Applying Properties of Logarithms -LT 6D: Inverse Functions **MOCK FINAL EXAM February 22-23 (Semester Exam: ESK1-9): First Opportunity**	-LT 7A: Right Angle Trigonometry QC A (ESK 7 cumulative & 3 ?s selected from ESK1-6) -LT 7B: Law of Sin/Cos -LT 7C: Unit Circle **FINAL EXAM March 2-4 (Semester Exam: ESK1-10): First Opportunity** **Boot camp**	-LT 8A: Key Features (End Behavior, intercepts, increasing/decreasing, min/max, symmetry [even/odd]) QC A (ESK 8 cumulative) -LT 8B: Graphing/Translations -LT 8C: Modeling QC B* (ESK8 cumulative assessment & 1-2 ?s from ESK 1-7)	-LT 9A: Sample Surveys -LT 9B: Univariate Data -LT 9C: Inferences -LT 9D: Probability to evaluate outcomes **CHOICE FINAL EXAM: May 27-29 (Semester Exam: ESK1-9): Grade: Final Opportunity**

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Integrated Mathematics 3 Syllabus
2015-2016

Course Description:
It is in Integrated Mathematics 3 that students pull together and apply the accumulation of learning that they have from their previous courses, with content grouped into four critical areas, organized into units. They apply methods from probability and statistics to draw inferences and conclusions from data. Students expand their repertoire of functions to include polynomial, rational, and radical functions. They expand their study of right triangle trigonometry to include general triangles. And, finally, students bring together all of their experience with functions and geometry to create models and solve contextual problems.

Required Materials:
- **College-Ruled Spiral Notebook** for structured notes
- **Second College Ruled Spiral Notebook** for targeted practice connected to action plan
- **Red pen and Purple pen** for error analysis and annotating notes
- **Highlighters** for error analysis and annotating notes
- **Post-Its** for error analysis and annotating notes
- **Scientific Calculator (Texas Instruments TI-30X IIS)**

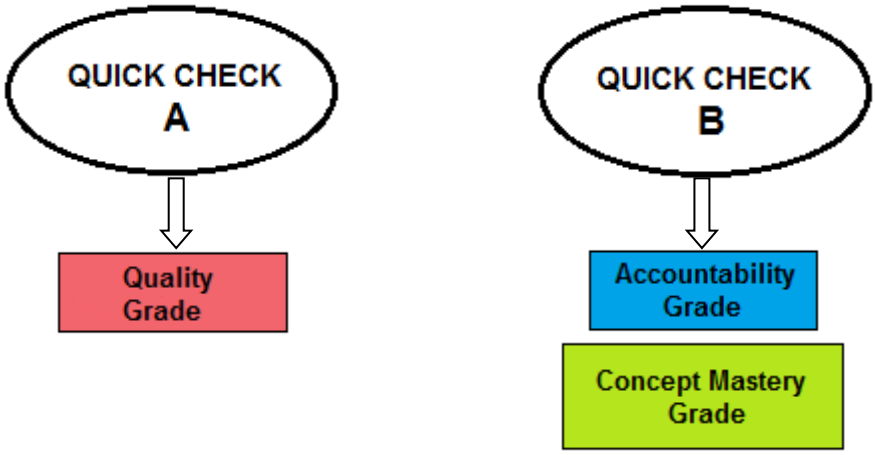
Assessment AS Learning System:
Definition of Mastery in Integrated Mathematics 3:
- Competence: The ability to perform a requisite range of skills
- Contextualization: Knowing when to do what
- Contingency: The flexibility to cope, adapt, and respond when things go wrong
- Creativity: The capacity to solve novel problems by applying ACE-M strategy

First Semester: Essential Skills (ESK) 1-4 assessed for mastery
Second Semester: Essential Skills (ESK) 1-9 assessed for mastery
Student/Teacher Collaboration to Develop Growth Mindset for Integrated Mathematics 3:
Grading
- 80% of your grade is determined by the **most recent demonstrations of mastery** in each Essential Skill concept category
    - Mastery is demonstrated by performance on the following types of assessments:
        - (1) Recall & Reproduction, Routine, and Non-Routine problems on Quick Checks and Cumulative Exams
        - (2) Projects/Written Defenses to support performance on routine problems
        - (3) Presentation of Learning (POL) on Routine an Non-Routine problems/Mastery Portfolio
- 20% of your grade is determined by your Habits of Mind
    - 10% of your grade is determined by the **current quality score**, calculated following each Quick Check A and the Mock Final Exam
    - 10% of your grade is determined by the **current accountability score**, calculated following each Quick Check B, the Final Exam, and the Choice Final Exam
- Replacement Opportunities: Mastery scores, quality scores, and accountability scores are replaced by the most recent assessment evidence from QC B, the Final Exam, and parts of the Choice Final Exam

Classroom Rules

- No Food and Drink (except water) in Class (Grade-Wide Policy)
- No Cellphone Usage, if *seen* by instructor it will be taken until a parent picks it up (Grade-Wide Policy)
- Listening to Music in Class is Prohibited (earphones cannot be visible)
- Students CANNOT use restrooms during class (40-50 minutes classes) and must wait for passing periods or other classes.
- Students must not talk over whoever is speaking at the time

Types of Assessment



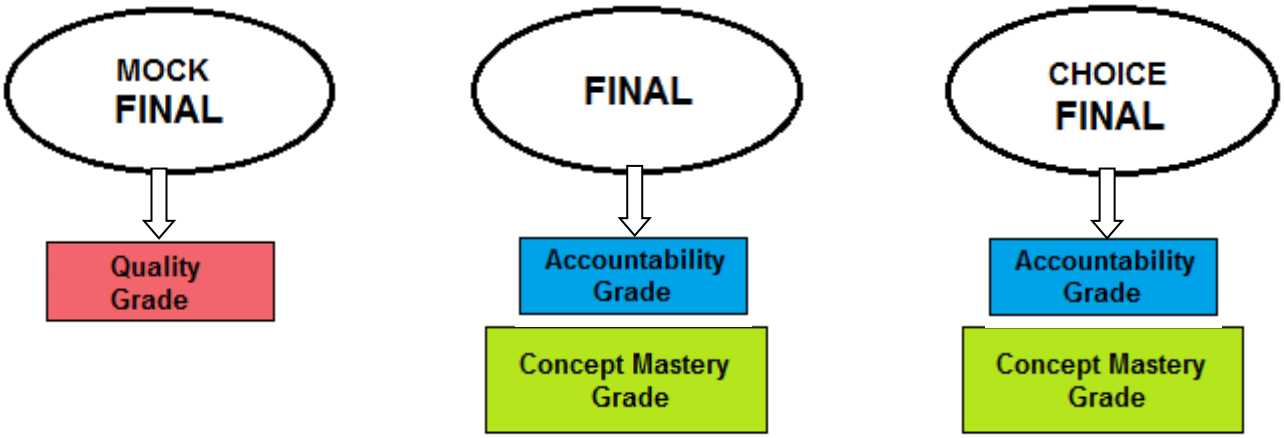
QUICK CHECK A (scored, not entered into PowerSchool): Cumulative and assesses entire Essential Skill concept category. Same concepts as Quick Check B, but different problems.

- Following QC A:
  - → Student completes error analysis (see *Error Analysis Checklist*)
  - → Student creates action plan (see *Action Plan Checklist)*
  - → Student scores mastery & quality (see *Integrated Mathematics Mastery & Quality Rubrics*)
  - → Teacher provides quality feedback (see *Quality Rubric*) of error analysis
    - Expectation is for students to answer questions to strengthen learning and to write questions about any problem that is not yet familiar during the test. During error analysis, expectation is for students to write a reasoning question about what they're curious about learning related to the question on a topic yet to be learned
    - After students complete error analysis, students design action plans (see *Action Plan Checklist*). Students calendar their action plans.
  - → Teacher collects, validates, and enters quality scores

QUICK CHECK B (scored, entered into PowerSchool): Cumulative and assesses entire Essential Skill concept category. Same concepts as Quick Check A, but different problems.

- On the day of QC B:
  - → Student turns in organized action plan evidence in binder or folder
  - → Teacher collects and provides accountability feedback (see *Accountability Rubric*) while students work on QC B
- Following QC B:
  - → Student completes error analysis (see *Error Analysis Checklist*)
  - → Student scores mastery (see *Integrated Mathematics Mastery Rubric*)
  - → Student analyzes growth, reflects on efficacy of action plan, scores accountability
  - → Teacher collects, validates, and enters mastery and accountability scores

FINAL EXAMS: There are 3 opportunities (MOCK FINAL EXAM, FINAL EXAM, and CHOICE FINAL EXAM) to demonstrate cumulative mastery of content, quality, and accountability in each semester.



MOCK FINAL EXAM (scored, not entered into PowerSchool unless scores are higher): Cumulative and assesses all concepts from the semester. Exam covers Essential Skill concept categories from ENTIRE respective semester. Student completes error analysis; teacher provides quality feedback and any concept categories that improve are updated in PowerSchool.

- Following Mock Final Exam:
  - → Teacher collects and provides feedback on quality (see *Quality Rubric*) of error analysis
    - Expectation is for students to answer questions to strengthen learning and to write questions about any problem that is not yet familiar during the test. During error analysis, expectation is for students to write a reasoning question about what they're curious about learning related to the question on a topic yet to be learned
    - After students complete error analysis, students design action plans (see *Action Plan Checklist*). Students calendar their action plans.
  - → Teacher collects, validates, and enters quality score

FINAL EXAM (scored, all concepts entered into PowerSchool): Cumulative and assesses all concepts from the semester. Exam covers Essential Skill concept categories from ENTIRE respective semester. Student completes error analysis; teacher provides accountability feedback and all concept categories are updated in PowerSchool.

- On the day of Final Exam:
  - → Student turns in organized action plan evidence
  - → Teacher collects and provides accountability feedback (see *Accountability Rubric*) while students work on Final Exam
- Following Final Exam:
  - → Student completes error analysis
  - → Student scores mastery
  - → Student analyzes growth, reflects on efficacy of action plan, and scores accountability
  - → Teacher collects, validates, and enters mastery and accountability scores

CHOICE FINAL EXAM (scored, choice Essential Skill concept categories are entered into PowerSchool): Cumulative and assesses all concepts from the respective semester. Student completes error analysis; teacher provides accountability feedback and **all choice Essential Skill concept categories** are updated in PowerSchool.

Choice Final Exam = 1 or 2 teacher choice categories replaced and 1 or more student choice categories replaced

- On the day of Choice Final Exam:
  - → Student turns in organized action plan evidence
  - → Teacher collects and provides accountability feedback (see *Accountability Rubric*) while students work on Choice Final Exam
- Following Choice Final Exam:
  - → Student completes error analysis
  - → Student scores mastery
  - → Student analyzes growth, reflects on efficacy of action plan, and scores accountability
  - → Teacher collects, validates, and enters mastery and accountability scores

Tasks: Non-Routine Problems/Scenarios that apply concepts learned and require connections between learning targets and Essential Skill concept categories

- Feedback using **ACE-M check-list**
- Purpose:
  - Support students in making connections between concepts and strengthen problem solving
  - Provide opportunities to flexibly apply skills (fluency)
  - Provide opportunities for "*Brilliant Failure*"
  - Provide opportunity for students to engage with the rigor expected on QC/Cumulative Exams for non-routine problems/scenarios

Parent/Guardian Collaboration to support student learning:

- ❑ Ask questions about follow through and efficacy of action plan for learning Integrated Math 1 content
- ❑ Ask what procedural/reasoning questions student posed to a peer/teacher during class

Integrated Mathematics Mastery Rubric

Mastery:

- *Competence*: The ability to perform a requisite range of skills
- *Contextualization*: Knowing when to do what
- *Contingency*: The flexibility to cope, adapt, and respond when things go wrong
- *Creativity*: The capacity to solve novel problems.

Atherton J S (2013) *Doceo; Competence, Proficiency and beyond* [On-line: UK] retrieved 17 July 2015 from http://www.doceo.co.uk/background/expertise.htm#DREYFUS

Points	Meaning	Letter Grade Equivalent
4.0	❑ I can demonstrate recall & reproduction problems. ❑ Routine & Non-Routine: I can write solutions for routine and non-routine problems that present a logical chain of reasoning that leads to a viable/accurate solution.	A
3.0	❑ I can demonstrate recall & reproduction problems. ❑ Routine: I can write solutions for routine problems that present a logical chain of reasoning that leads to a viable/accurate solution. ❑ Non-Routine: I can accurately approach, start a plan, and write one "brilliant failure" question from my failed execution that moves me back to my approach/plan.	B
2.0	❑ I can demonstrate recall & reproduction problems. ❑ Routine: My approach is accurate and execution presents unclear logical chain of reasoning. ❑ Non-Routine Problems: I can write accurate procedural/reasoning questions & annotations in my approach.	C
1.0	❑ I can demonstrate recall & reproduction problems. ❑ Routine: I have accurate procedure and reasoning questions. ❑ Non-Routine: I have an inaccurate approach/plan/execution.	I
Not Yet NY	❑ I have difficulty getting started in all problems. ❑ I have difficulty thinking about questions to ask.	I

Da Vinci Design Mastery Rubric

Points	Meaning	Letter Grade Equivalent
5.0	Evidence demonstrates detailed understanding and connections that go beyond the scope of teacher instruction.	A+ (or Honors Designation)
4.0	Evidence demonstrates detailed understanding.	A
3.0	Evidence demonstrates understanding.	B
2.0	Evidence demonstrates basic understanding.	C
1.0	Evidence demonstrates partial understanding.	I
0.0	No evidence. Mark as **Missing** in the grade book.	I

****Note: Any grade lower than a "2" or C- is considered not passing (incomplete) at Da Vinci Design. If you receive a grade lower than a "2" or C-, you will be responsible for completing summer school, additional classes, special assignments, and/or office hours to complete the class for credit.*

****Note: **Disregard percentages shown in PowerSchool**. They are not reflective of your true grade value.*

Quality Rubric – Error Analysis

Quality: I learn from my mistakes by critically analyzing and critiquing my work to develop a better product.

SCORE & LEVEL (Independently in purple)	❑ Tally correct (+1) and/or incorrect (+0) problems ❑ Give yourself an accurate level based on your evidence
SOLUTION & QUESTION KEY (Independently in purple)	❑ Answer both procedure/reasoning questions from the Solution & Question Key (highlights or **purple** pen markings, reference Error Analysis Checklist) using your notes **OR** write **2** questions you need answered to move forward in **purple**
REASONING KEY (Collaboratively in red)	❑ Use Reasoning Key to answer all of your "**purple**" questions **OR** complete the non-routine problem in a different way
EXPLANATION (Collaboratively in red)	❑ Summarize what you *learned* from the peer on a post-it, place on your evidence **OR** summarize what you *explained* to a peer on a post-it, then place post-it on your evidence

Quality Scoring:

4	Student has completed **all** 5 checks
3	Student has completed 4 checks
2	Students has completed 3 checks
1	Student has completed 2 checks

Accountability Rubric – Action Plan Implementation

Accountability: I consistently take ownership of my learning by making data-informed decisions and following through on my action plan to develop a better product.

CALENDAR	❑ Annotated calendar of plan
ACTION PLAN	❑ Action plan and evidence consistently demonstrates growth in my learning
EVIDENCE	❑ Different/unique pieces of practice and assessments that prove follow through to attain my mastery goal
CLAIM	❑ Convincing written argument of my plan's efficacy (see Action Plan Checklist)

Accountability Scoring:

4	Student has completed calendar with action plan & **4** pieces of evidence & persuasive claim
3	Student has completed calendar with action plan & **3** pieces of evidence & plausible claim
2	Student has completed calendar with action plan & **2** pieces of evidence
1	Student has completed calendar with action plan

Integrated Math 3
Student and Parent/Guardian Information Agreement
2015-2016 School Year

I look forward to having a wonderful year with you, and I encourage you to ask questions, to seek my coaching the moment you begin to feel lost, and to *NEVER* doubt your ability to succeed. *HARD WORK* and a willingness to seek and embrace brilliant failure will lead to success.

We are in this together and together we will succeed.

You can reach me by email (preferred communication).

- Email: jhwang@davincischools.org

Please provide the following information so that we can work together this year:

Student Name (Print): _____

I have read and agree to all Integrated Math 3 policies & procedures as well as all Da Vinci Schools policies and procedures.

Student Signature: _____ Date: _____

Student Email: _____

Student Phone: _____

Share one example of how you used failure to learn:

_____

_____

_____

_____

_____

Parent/Guardian Name (Print): _____

I have read and agree to all Integrated Math 3 policies & procedures as well as all Da Vinci Schools policies and procedures.

Parent/Guardian Signature: _____ Date: _____

Parent/Guardian Email: _____

Parent/Guardian Phone: _____