Mathematics Department
at Harrisburg Area Community College

The most dangerous phrase in the language is 'we've always done it this way.'

— Grace Hopper
The Charge Made by the HACC Administration - May 2019

1. Multiple Measures for Placement
2. Create Pathways for Developmental Math

To be completed in 15 months – August 2020
1. Multiple Measures for Placement

Incorporate one of the following:

- Math SAT 530 or higher
- Math ACT 21 or higher
- Math GED 175 or higher
- High School GPA 3.0 or higher (HGPA = 3.0 or above)
- High School Algebra II grade of A or B (HSMA = 3 or 4)
- Placement Testing scores

This will allow a student to go to College Level Mathematics courses that have a developmental pre-requisite.
2. Create Pathways for Developmental Mathematics (+1)

1. Where we were way back!!
2. Where we just were!
3. Where we are now!!!
Where we were way back!! – just like everyone else!

- FS 107 – Foundational Studies – lots of student study skills, very little math.
- Math 010 – Prealgebra (4 credits)
- Math 020 – Beginning Algebra (3 credits)
- Math 051 – Intermediate Algebra (3 credits)

Placement by Accuplacer only

**Charged by Administration to figure a way to get students through developmental faster**
Where we just were!

- Math 006 – Developing Confidence and skills in Math
- Math 008 – 2 credit – Pre-College Math I
- Math 022 – 2 credit – Pre-College Math II
- Math 033 – 2 credit – Pre-College Math III
- Math 044 – 2 credit – Pre-College Math IV (prerequisite Math 033)
- Math 055 – 2 credit – Pre-College Math V (prerequisite Math 033)

- Seven-week courses
- Exit Exams – yes, no, maybe
- Accuplacer for placement, not so good!
- Attempt at self placement, not so good!
- Transition from previous classes to new classes.
Where we are now!!

How did we get from May 2019 to August 2020 to now?

1. Needed to get the right people in the right positions.
2. Funding.
4. Who to always keep in the loop!!
   a. Administration
   b. Faculty – Math Dept meeting, Department Chairs meetings
   c. Counselors
   d. Developmental Coordinator
5. Training for all faculty – Summer 2020.
Multiple Measures and Math Pathways Committee - Summer 2019

Getting organized – getting the right people in the right positions

Leadership:
• Dan Fahringer – Math Pathways
• Jason Rosenberry – Multiple Measures

Group Leads:
• Math Literacy – Todd Stine
• Statistics – Brian DeSantis
• STEM – Joseph Miller
• ALEKS – Mallary DeSantis

Support: all parties kept in the loop
• Administration
• Faculty
• Staff

• Microsoft Teams – Jason Rosenberry
Funding & Administrative Support

1. Met frequently with Provost and Developmental Coordinator.
3. Provost invited to attend faculty planning meetings.
4. Keep Dean and Associate Dean on most email lists.
5. Laid out PPA plans for each semester for support for Group Leaders, ALEKS specialist and me.
1. Math department faculty buy-in, secret meeting 😳
2. Creation of new courses / what pathways did we want?
3. Evaluate competencies
4. Coordination of Pathway Groups
5. Notifying all appropriate parties potentially affected
6. Creation of flow chart of Pathways – see Pathways Guide
7. Placement scores??? LOL
8. Creation of Pathways Guide – evolves continually
9. Working with Banner
10. ALEKS Level interpretation – STEM Pathway
Mathematic Pathways 1.02

Developmental Math Pathway Courses:

- **Math 006** = Developing Confidence & Skills in Math: Preliminary course for all Pathways; 3 credits; Self-paced with computer

- **Math 070** = Fundamentals of Quantitative Literacy: *Quantitative Literacy Pathway*; 3 credits; Instructor-driven pace

- **Math 080** = Fundamentals of Statistics: *Statistics Pathway*; 3 credits; Instructor-driven pace

- **Math 090** = Fundamentals of Algebra – Part 1: *STEM Pathway*; 3 credits; Self-paced with computer

- **Math 091** = Fundamentals of Algebra – Part 2: *STEM Pathway*; 3 credits with 1 hour required lab; Instructor-driven pace
1. Department met Week #0 to discuss content for each of the courses.
2. Created courses, including testing.
3. Went to NYC to visit McGraw Hill
4. Discussed what courses should be classroom, online or remote.
5. Created lab to go with Math 091
6. Populated Teams. (go to Teams)
7. Created training modules for all courses and Teams. (go to D2L)
8. Updating of Advising Guide.
Beginning Summer/Fall 2020, the Math Department will be using Microsoft Teams for all file storage and committee work for each course. Items that will be available on Teams include:

- Discussion Posts
- Class Activities
- Course Assessments
- Course Competencies
- Syllabi
- Daily Outlines
- Form 335
- Projects
- Textbook and Instructor Recourses
- Chat, calls, video conferencing, etc, are also available for use.

Please contact the course coordinator to be added to the Team of the course you are/will be teaching. A big thank you to Jason Rosenberry for setting this up.
Placement Testing

**Accuplacer** couldn’t be used with campuses shut down.

**ALEKS PPL** is a web-based program that uses artificial intelligence to map a student's strengths and weaknesses. (Assessment and LEarning in Knowledge Spaces - Placement, Preparation and Learning)

**Pros**
- we could get it up and running quickly.
- Lockdown Browser available.
- liked the ALEKS calculator.
- we could set the number of attempts (min 2) and incorporate a cool off period hoping they will take advantage of the Preparation and Learning Module.
- same price as Accuplacer

**Cons**
- we had to run it un-proctored.
MM/MP Committee
Summer 2020

1. Completion of new courses
2. Re-evaluate competencies
3. Coordination of Pathway Groups
4. Notifying all appropriate parties potentially affected
5. Placement scores for PPL set
6. Completion of Pathways Guide
7. Working with Banner
8. ALEKS Level interpretation – STEM Pathway
9. Math department faculty buy-in
10. Training website on D2L
MM/MMP Committee
Fall 2020

1. Began teaching new courses. Transition was almost seamless.
3. Start to discuss when we can do Assessments!!

THE TIME HAS COME...
Active Learning!!

Active learning is generally defined as any instructional method that engages students in the learning process. In short, active learning requires students to do meaningful learning activities and think about what they are doing. While this definition could include traditional activities such as homework, in practice active learning refers to activities that are introduced into the classroom. The core elements of active learning are student activity and engagement in the learning process. Active learning is often contrasted to the traditional lecture where students passively receive information from the instructor.

HACC – Mathematics and Computer Science Department

Starting the Fall semester of 2020, the Mathematics Department will begin teaching *Math Pathway* courses at the developmental level. These courses will allow students to enroll in and complete developmental courses by providing options that are relevant to a student's program of study.

**Topic:** Math Pathway courses flowchart

**Page:** 2

**Topic:** New Developmental Math Course Descriptions

**Page:** 3-4

**Topic:** Suggested Transitions into Developmental Math Pathways from current developmental courses for:

- Fall 2020

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**Topic:** Pre-requisites for courses beginning Fall 2020

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**Topic:** ALEKS PPL scores for Placement

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**Topic:** Multiple Measures Placement

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**Topic:** Analysis of Accuplacer scores if needed:

- Quant Lit Pathway
- Statistics Pathway
- STEM Pathway
- College-Level Courses
- Condensed Flow Chart

**Page:** 9, 10, 11, 12, 13

**Topic:** ALEKS Level Interpretation for Math 090 course starting Fall 2020

**Page:** 14-15

**Topic:** Course Equivalencies for GPA Recalculation

**Page:** 16-17
1. **Math 006: Developing Confidence and Skills in Math: 14 weeks, 3 credits**
   a. During this course, students will utilize an online math program (ALEKS) to review and learn arithmetic and pre-algebra topics. With support from their classroom instructor, students will work through the Math 006 course module at their own pace to identify, then learn, the missing skills in their arithmetic and algebraic knowledge.

   b. Besides improving math proficiency using ALEKS, effective study habits, self-management techniques, and anxiety reduction strategies will be developed through guided readings and classroom activities.

   c. Students who successfully complete the Math 006 course module early will have the opportunity to move forward into the Math 090 (Fundamentals of Algebra – Part I) ALEKS course module. Those who successfully complete the Math 090 course module will have the opportunity to move forward into the Math 091 (Fundamentals of Algebra – Part II) ALEKS course module. Thus, Math 006 provides students with the opportunity to complete up to three developmental math courses in one semester.

   d. Math 006 is the preliminary course for all of the Mathematics Pathways.

2. **Math 070: Fundamentals of Quantitative Literacy: 14 weeks, 3 credits**
   a. During this course, students will build the mathematics foundation necessary to be successful in Math 100 (College Mathematics for Business) and Math 111 (Principles of Mathematics).

   b. The Math 070 instructor will set the pace students will follow to guarantee the completion of all course content during the semester.

   c. Students in Math 070 will utilize an online math program (ALEKS) to aid in developing skills proficiency.

   d. Math 090 may be used as a substitute for Math 070.

3. **Math 080: Fundamentals of Statistics: 14 weeks, 3 credits**
   a. During this course, students will build the mathematics foundation necessary to be successful in Math 202 (Statistics).

   b. The Math 080 instructor will set the pace students will follow to guarantee the completion of all course content during the semester.

   c. Students in Math 080 will utilize multiple platforms (ALEKS, Excel, etc.) to aid in developing skills proficiency.

   d. Math 090 may be used as a substitute for Math 080.
   a. Math 090 is the first of two developmental math courses in the STEM Pathway. Upon completion of both Math 090 and Math 091, students will have built the algebraic foundation necessary to be successful in Math 103 (College Algebra), Math 104 (Trigonometry), Math 116 (College Algebra for Calculus), and Math 113/114 (Math for Elementary Teachers).
   
   b. During this course, students will utilize an online math program (ALEKS) to review and learn foundational algebra topics. With support from their classroom instructor, students will work through the Math 090 course module at their own pace to identify, then learn, the missing skills in their algebraic knowledge.
   
   c. Besides improving math proficiency using ALEKS, problem-solving strategies will be developed through group activities.
   
   d. Students who successfully complete the Math 090 course module early will have the opportunity to move forward into the Math 091 (Fundamentals of Algebra – Part II) ALEKS course module. Thus, Math 090 provides students with the opportunity to complete two developmental math courses in one semester.
   
   e. Math 090 may be used as a substitute for Math 070 and Math 080.

5. Math 091: Fundamentals of Algebra – Part II: 14 weeks, 3 credits
   a. Math 091 is the second of two developmental math courses in the STEM Pathway. Upon completion of both Math 090 and Math 091, students will have built the algebraic foundation necessary to be successful in Math 103 (College Algebra), Math 104 (Trigonometry), Math 116 (College Algebra for Calculus), and Math 113/114 (Math for Elementary Teachers).
   
   b. The Math 091 instructor will set the pace students will follow to guarantee the completion of all course content during the semester.
   
   c. Students in Math 091 will utilize an online math program (ALEKS) to aid in developing skills proficiency.
   
   d. Students taking Math 091 in a face-to-face or blended format will be required to spend at least 50 minutes per week in a computer lab, during which they’ll practice algebraic skills with the support of a classroom tutor. Students may attend this lab when it is convenient to their personal schedules; they need not schedule an appointment.
   
   e. Students taking Math 091 in a virtual/online format will be required to fulfill their “lab” requirement using an alternative setting.
Transition into Developmental Math Pathways
Beginning Fall 2020

NOTE: Beginning in the Fall of 2020, the grading policies and ALEKS modules in Math 006 and Math 090 will be different than those used in the previous semesters.

I. Quantitative Literacy Pathway – Math 100 or Math 111
   • Students who planned to enroll in Math 008 should enroll in Math 006.
   • Students who planned to enroll in Math 022 should enroll in Math 070*.

II. Statistics Pathway – Math 202
   • Students who planned to enroll in Math 008 should enroll in Math 006.
   • Students who planned to enroll in Math 022 or 033 should enroll in Math 080*.
   • Students who planned to enroll in Math 044 or 055 should enroll in Math 202.

III. STEM Pathway – Math 103 or Math 104 or Math 113 or Math 114 or Math 116
   • Students who planned to enroll in Math 008 should enroll in Math 006.
   • Students who planned to enroll in Math 022 or 033 should enroll in Math 090.
   • Students who planned to enroll in Math 044 or 055 should enroll in Math 091.

*If Math 070 or Math 080 are not available, students should enroll in Math 090.
## Prerequisite List for Courses Beginning Fall 2020

<table>
<thead>
<tr>
<th>Courses Eligible to Take Beginning Fall 2020</th>
<th>Prerequisites – must meet one of the following All classes must be passed with a “C” or better.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Starting Fall 2020</td>
</tr>
<tr>
<td>MATH 006 Developing Confidence and Skills in Math</td>
<td>None</td>
</tr>
<tr>
<td>MATH 070 Fundamentals of Quantitative Literacy</td>
<td>Passed MATH 006</td>
</tr>
<tr>
<td>MATH 080 Fundamentals of Statistics</td>
<td>Passed MATH 006</td>
</tr>
<tr>
<td>MATH 090 Fundamentals of College Algebra: Part I</td>
<td>Passed MATH 006</td>
</tr>
<tr>
<td>MATH 091 Fundamentals of College Algebra Part II</td>
<td>Passed MATH 006 and required ALEKs for MATH 090 or Passed MATH 090</td>
</tr>
<tr>
<td>MATH 100 College Math Business</td>
<td>Passed MATH 006 and required ALEKs for MATH 090 or Passed MATH 070 or Passed MATH 090</td>
</tr>
<tr>
<td>MATH 111 Principles of Math</td>
<td>Passed MATH 006 and required ALEKs for MATH 090 or Passed MATH 070 or Passed MATH 090</td>
</tr>
<tr>
<td>MATH 202 Introduction to Statistics</td>
<td>Passed MATH 006 and required ALEKs for MATH 090 or Passed MATH 080 or Passed MATH 090</td>
</tr>
<tr>
<td>MATH 103 College Algebra or MATH 104 Trigonometry or MATH 113 Principles of Math for Elementary Teachers I or MATH 114 Principles of Math for Elementary Teachers II or MATH 116 College Algebra for Calculus</td>
<td>Passed MATH 006 or MATH 090 and required ALEKs for MATH 091 or Passed MATH 091</td>
</tr>
</tbody>
</table>
**ALEKS PPL score interpretation beginning Summer/Fall 2020**

Effective immediately, ALEKS Placement, Preparation and Learning (PPL) will be replacing Accuplacer for Placement Assessment. For the Summer and Fall semester, HACC will be using this placement assessment in a non-proctored environment due to the result of the Covid-19 virus. Assessment scores for placement are listed below:

<table>
<thead>
<tr>
<th>Pathway</th>
<th>PPL Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>STEM</td>
<td></td>
</tr>
<tr>
<td>Math 006</td>
<td>0-13</td>
</tr>
<tr>
<td>Math 090</td>
<td>14-29</td>
</tr>
<tr>
<td>Math 091</td>
<td>30-45</td>
</tr>
<tr>
<td>MATH 103</td>
<td>46-60</td>
</tr>
<tr>
<td>Math 119</td>
<td>61-75</td>
</tr>
<tr>
<td>Math 121</td>
<td>76-100</td>
</tr>
<tr>
<td>Statistics</td>
<td></td>
</tr>
<tr>
<td>Math 006</td>
<td>0-13</td>
</tr>
<tr>
<td>Math 080</td>
<td>14-29</td>
</tr>
<tr>
<td>Math 202</td>
<td>30-100</td>
</tr>
<tr>
<td>Quotative Literacy</td>
<td></td>
</tr>
<tr>
<td>Math 006</td>
<td>0-13</td>
</tr>
<tr>
<td>Math 070</td>
<td>14-20</td>
</tr>
<tr>
<td>Math 100</td>
<td>21-100</td>
</tr>
<tr>
<td>Math 111</td>
<td>21-100</td>
</tr>
</tbody>
</table>
Utilizing Multiple Measures for placement in 100 level courses that require a developmental pre-requisite.

Does the student meet any of the following criteria?

- Math SAT 530 or higher
- Math ACT 21 or higher
- Math GED 175 or higher
- Accuplacer NGAA score 250 or higher
- Accuplacer NGQS score 270 or higher
- High School GPA 3.0 or higher (HGPA = 3.0 or above)
- High School Algebra II grade of A or B (HSMA = 3 or 4)

If so, students are eligible to register for Math 100, 103, 104, 111, 113, 114, 116 or 202.
Quantitative Literacy Pathway: Leads to Math 100 and Math 111

Look at Quantitative Reasoning & Statistics (NGQS) Score

If NGQS score is less than 240:

- Look at Arithmetic (NGAR) Score
  - If NGAR score is less than 249, Enroll in Math 006
  - If NGAR score is 250 or more, Enroll in Math 070

If NGQS score is 240 or higher:

- Enroll in Math 100 or Math 111

Students should enroll in Math 070 if Math 070 is unavailable.
Statistics Pathway: Leads to Math 202

Look at Quantitative Reasoning & Statistics (NGQS) Score

NGQS score is less than 240
- Look at Arithmetic (NGAR) Score
  - NGAR score is less than 249
    - Enroll in Math 006
  - NGAR score is 250 or more
    - Enroll in Math 080
      Students should enroll in Math 090 if Math 080 is unavailable.

NGQS score is 240-269
- Enroll in Math 080
  Students should enroll in Math 090 if Math 080 is unavailable.

NGQS score is 270 or higher
- Enroll in Math 202
STEM Pathway: Leads to Math 103, 104, 110, 113, 114, 116, 119, 121, etc.

Look at Quantitative Reasoning & Statistics (NGQS) Score

- NGQS score is less than 240
  - Look at Arithmetic (NGAR) Score
    - NGAR score is less than 249
      - Enroll in Math 006
    - NGAR score is 250 or more
      - Enroll in Math 090

- NGQS score is 240-255
  - Enroll in Math 090

- NGQS score is 256-269
  - Enroll in Math 091*

- NGQS score is 270 or higher
  - Enroll in Math 103 or Math 116**
    Also Eligible for Math 104, 113, 114

*Students who prefer a self-paced, computer-driven learning environment may enroll in Math 090.

**Math 116 offers an accelerated pathway to calculus.
College Level Mathematics

Student is eligible for Math 100, 103, 104, 111, 113, 114, 116, or 202

Does the student’s program require Math 110, 119, 121, or 125?

NO
Enroll in Math 100, 103, 111, 113, 114, 116, or 202
Also eligible for Math 104

YES
Student should take the Accuplacer Math Placement Test

Check NGAA Score

No NGAA Score Or NGAA less than 270
Enroll in Math 103 or 116**
Also eligible for Math 104

NGAA 270-289
Enroll in Math 110 or 119

NGAA 290 or higher
Enroll in Math 121 or 125

**Math 116 offers an accelerated pathway to calculus.
Start

Are ANY of the math multiple-measures criterion met?

No

Student Takes Accuplacer Placement Test

Quantitative Literacy

Is NGQS ≥ 240?

Yes

Take Math 100, 111

Take Math 100, 111

Math 103 → Math 104 → Math 119 → Math 121

Math 116 → Math 104 → Math 121

Math 113 ↔ Math 114

Math 103 → Math 110

Statistics

Math 202

Quantitative Literacy

Is NGQS ≥ 270?

No

Is NGR ≥ 250?

Yes

Take Math 070

No

Take Math 006

STEM

Math 103

Math 110

Math 116

Math 121

Math 113

Math 114

Math 103

Statistics

Is NGQS ≥ 270?

Yes

Take Math 080

No

Is NGQS ≥ 270?

Yes

Take Math 080

No

Take Math 006

STEM

Is NGQS ≥ 270?

Yes

Take Math 091

No

Is NGQS ≥ 270?

Yes

Take Math 090

No

Is NGQS ≥ 270?

Yes

Take Math 090

No

Is NGQS ≥ 270?

Yes

Take Math 090

No

Is NGQS ≥ 270?

Yes

Take Math 090

No

Is NGQS ≥ 270?

Yes

Take Math 090

No

Is NGQS ≥ 270?

Yes

Take Math 090

No

Is NGQS ≥ 270?

Yes

Take Math 090

No

Is NGQS ≥ 270?

Yes

Take Math 090

No

Is NGQS ≥ 270?
Use this chart for placement after the completion of Math 006*

*Math 006 was completed during or after the Fall of 2020.

Look at Math 006* Course Grade

- Math 006* course grade is a D, F, W, or Y
  - Enroll in Math 006

- Math 006* course grade is an A, B, or C
  - Look at AL91 Score
    - There is no AL91 score or AL91 score is less than 80
      - Look at AL90 Score
        - There is no AL90 score or AL90 score is less than 80
          - Enroll in Math 070 or Math 080 or Math 090
        - AL90 score is 80 or more
          - Enroll in Math 091 or Math 100 or Math 111 or Math 202
    - AL91 score is 80 or more
      - Enroll in Math 100 or Math 103 or Math 104 or Math 111 or Math 113 or Math 114 or Math 116 or Math 202
Use this chart for placement after the completion of Math 090*

*Math 090 was completed during or after the Fall of 2020.

Look at Math 090 Course Grade

Math 090* course grade is a D, F, W, or Y

Enroll in Math 090

Math 090* course grade is an A, B, or C

Look at AL91 Score

There is no AL91 score or AL91 score is less than 80

Enroll in Math 091 or Math 100 or Math 111 or Math 202

AL91 score is 80 or more

Enroll in Math 100 or Math 103 or Math 104 or Math 111 or Math 113 or Math 114 or Math 116 or Math 202
GPA Developmental Math Grade Removal & Course Equivalencies
Beginning Fall 2020

NOTE: Math 006 and/or Math 090 must be completed in the Fall semester of 2020 or later.

1) **Math 008** = Successful completion of Math 006

2) **Math 010** = Successful completion of Math 006 with AL90 score 80 or more
   OR
   = Successful completion of Math 070
   OR
   = Successful completion of Math 080
   OR
   = Successful completion of Math 090

3) **Math 020** = Successful completion of Math 006 with AL90 AND AL91 scores 80 or more
   OR
   = Successful completion of Math 090 with AL91 score 80 or more
   OR
   = Successful completion of Math 090 AND Math 091

4) **Math 022** = Successful completion of Math 006 with AL90 score 80 or more
   OR
   = Successful completion of Math 070
   OR
   = Successful completion of Math 080
   OR
   = Successful completion of Math 090

5) **Math 033** = Successful completion of Math 006 with AL90 score 80 or more
   OR
   = Successful completion of Math 090
6) **Math 044** = Successful completion of Math 006 with AL90 AND AL91 scores 80 or more
   OR
   = Successful completion of Math 090 with AL91 score 80 or more
   OR
   = Successful completion of Math 091

7) **Math 045** = Successful completion of Math 006 with AL90 AND AL91 scores 80 or more
   OR
   = Successful completion of Math 090 with AL91 score 80 or more
   OR
   = Successful completion of Math 090 AND Math 091

8) **Math 051** = Successful completion of Math 006 with AL90 AND AL91 scores 80 or more
   OR
   = Successful completion of Math 090 with AL91 score 80 or more
   OR
   = Successful completion of Math 090 AND Math 091

9) **Math 055** = Successful completion of Math 006 with AL90 AND AL91 scores 80 or more
   OR
   = Successful completion of Math 090 with AL91 score 80 or more
   OR
   = Successful completion of Math 091