Orange Township Public Schools

The Office of Mathematics and Science

Dr. Tina Powell, Director

Gerald Fitzhugh, II, Ed.D
Superintendent of Schools

One Year Plan for Mathematics
2019-2020

ONE YEAR MATHEMATICS PLAN

Program Year:

July 1, 2019 – June 30, 2020

DEPARTMENT OF CURRICULUM & INSTRUCTION

What any person in the world can learn, almost all persons can learn, if provided with the appropriate prior and current conditions of learning. Remember, test scores and measures of achievement tell you where a student is, but they don't tell you where a student could end up.

Dr. Carol Dweck, Mindset: The New Psychology of Success

Mission Statement

The Office of Mathematics exists to provide the students it serves with a mathematical 'lens'-- allowing them to better access the world with improved decisiveness, precision, and dexterity; facilities attained as students develop a broad and deep understanding of mathematical content. Achieving this goal defines our work - ensuring that students are exposed to excellence via a rigorous, standards-driven mathematics curriculum, knowledgeable and effective teachers, and policies that enhance and support learning.

Executive Summary

The One Year Mathematics Plan outlines the activities which will be undertaken during the program year beginning July 1, 2019 and ending June 30, 2020 using district resources and funds granted for use during the 2019-2020 school year. Programs and activities in this plan are intended to provide support and direction to schools in alignment to the Orange Public School district's vision, the Office of Mathematics and Science philosophy for Mathematics, and the district-wide school mathematics goals for SY2019-20. Given the number of challenges facing a district having only 27% of its students in grades 3-12 meeting expectations on the statewide mathematics assessment (a growth of +6% points over last year and +10% points in over the last two years), it is imperative to focus interventions on content and performance standards, human capital strategies, and assessment and data analysis systems. **While the district will employ five broad goals for improving student performance in the area of Mathematics, these goals will be distilled into 3 concentrated areas: FOCUS, COHERENCE, & RIGOR.** To support this overall plan, it is imperative that district leadership align organizational structures and resources to make sure teachers have what they need to be effective, including access to high-quality curricula, ongoing professional development, and allocated time to learn, work, and plan with other educators.

STATUS UPDATE: Districtwide Student Achievement and Growth Goals (2018-2019)

a. By June 2019, for all 3-11 grades, the Orange Board of Education will enhance and improve student achievement for all students, as measured by a minimum increase of 10 percentage points, either by grade band or cohort, on the PARCC assessments in mathematics and English Language Arts over the 2018 baseline scores.

Status: While we did not meet our goal of 10% growth across all grade levels, we increased, by 6%, the number of students either meeting or exceeding expectations as compared to the prior year of PARCC assessment.

Test Code	**2018 % Meeting/Exceeding**	**2019 % Meeting/Exceeding**	**Difference**
MAT03	30%	33%	**+3%**
MAT04	27%	36%	**+8%**
MAT05	22%	26%	**+4%**
MAT06	22%	25%	**+3%**
MAT07	27%	28%	**+1%**
MAT08	11%	24%	**+13%**
ALG01	26%	27%	**+1%**
ALG02	4%	14%	**+10%**
GEO01	21%	22%	**+1%**
	21%	**27%**	**+6%**

b. By June 2019, **80%** of all **K-2** students will demonstrate improved academic achievement as measured by scoring at or above end of year growth norms/expectations as measured by performance on content-related assessments in ELA and Mathematics (e.g. iRead, Reading Inventory, iReady).

Status: While we did not meet our goal of 80% of all K-2 students scoring at or above end of year growth norms/expectations, we increased, the % of students meeting and exceeding growth targets in grades K – 2 all exceeded 55% with over 60% of our students showing improvement over their initial placement status (Emerging, Approaching, Meeting).

Grade	% on/above grade level	% w/improved placement	% meeting growth target	80% Goal Met?
K	74.57	72.86	72.86	No
1	46.43	62.57	60.00	No
2	44.00	61.71	55.14	No

Our 2018 – 2019 Districtwide Performance Targets

PERFORMANCE GOALS

Performance Goal 1: Reasoning Abstractly and Quantitatively
Based on the Spring 2018 PARCC data in grades 3- 11, it is noted that there is an average of a 16 percentage point difference between students meeting or exceeding expectations in reasoning between the state and district performance. Therefore, ***Goal 1*** is….

To decrease the average difference between the state and district performance in Reasoning by 4% this year by strengthening mathematical reasoning districtwide. Strategies include engaging students in learning experiences that allow the judging of reasonableness of numerical results, developing number sense and an understanding or numerical operations, communicating mathematical ideas and procedures, exploring the meaning and role of mathematical concepts, and applying mathematics in contexts outside of mathematics. The 5 Practices for Orchestrating Productive Mathematics Discussion, TQE, and/or the implementation of daily use of Mathematics Content Routines will be a focus of the 2018-2019 school year.
GOAL 1 STATUS:

Performance Goal 2: Geometry, Measurement, and Data
Based on the Spring 2018 PARCC data, it is noted that the district fell below state performance within the Geometry and/or Measurement & Data Domains for grades 4 and 5. Therefore ***Goal 2*** is…

To increase proficiency within the Geometry and Measurement & Data Domains in Grades 3-5 as measured by an average score increase of 20% on iReady Standards Mastery Assessments (Fall to Spring). These domains will be reinforced through center instruction, after school programming and the overall reinforcement of procedural fluency, conceptual understanding, and problem solving.
GOAL 2 STATUS:

Performance Goal 3: Grade 8
Grade 8 math has been identified as a struggling area for two consecutive years. Although progress was made from 2017 to 2018, when compared to the state, the achievement gains are subpar. In effort to close the achievement gap over a 4-5 year period, we will aim at closing the achievement gap one year at a time using small group intervention strategies to target the individual student deficiencies. The

department will support teachers and administration in analyzing data quarterly to chunk/sequence content materials specific to student needs to promote student learning. Therefore ***Goal 3*** is:

Goal: By June 2018, the district-state achievement gap in PARCC mathematic proficiency results for Grade 8 will decrease by at least 3%.
GOAL 3 STATUS:

Performance Goal 4: Algebra I
Algebra I is a foundation course of all high school math courses. Improving Algebra I proficient rate will help students to success in the future math courses and increase student college readiness. In addition, passing Algebra I PARCC is one of NJ state high school graduation requirements. Based on 2018 Spring PARCC assessment, there is a 20% proficient rate difference between state and district. A 4% points higher than state Algebra I student growth on PARCC per year will lead district to close Algebra I student achievement gap in 5 years. Therefore ***Goal 4*** is…

To increase the % of 9th grade students meeting expectations on the 209 PARCC assessment in Algebra I by 4 percentage points
GOAL 4 STATUS:

Performance Goal 5: Students with Disabilities
Results show that while the difference in 2017 and 2018 average scale score of non-students with disabilities showed a statistically significant increase, there was no significant change in performance from 2017 – 2018 of students with disabilities. The 2017mean scale score of students with disabilities is 699.39 and the mean scale score in 2018 is 699.39. Therefore ***Goal 5*** is…

By June 2019, the district will increase the mean scale score for special needs students taking the 2019 PARCC Assessments in Mathematics by .5 standard deviation, which equated to a mean scale score 710.
GOAL 5 STATUS:

Our 2019-2020 Districtwide Performance Targets

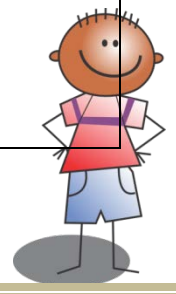
PERFORMANCE GOALS

Our Departmental Priorities for the 2019 – 2020 School Year include:

- **PRIORITY 1: Developing Conceptual Understanding**
- **PRIORITY 2: Incorporating Rich Tasks**
- **PRIORITY 3: Encouraging Student Discourse**
- **PRIORITY 4: Providing Differentiated & Personalized/Targeted Supports for Teaching & Learning (Tailored Curriculum/Tailored PD/Tailored Student Supports)**
- **PRIORITY 5: Incorporating Formative Assessment**

Departmental Initiatives and Related Goals

Priority	Description	One Year Plan Reference
Priority 1	Developing Conceptual Understanding	2.1D – Daily Routines & 5 Practices 4.1F – After School PD
Priority 2	Incorporating Rich Tasks	2.1E - 24/7 Access 3.1C - ECRs
Priority 3	Encouraging Student Discourse	2.1D – Daily Routines & 5 Practices
Priority 4	Providing Differentiated & Personalized Supports for Teaching & Learning **2019-2020 Schools of Focus** **Based upon 2018 NJDOE reports:** Mathematics met all proficiency targets in all schools with exception of OHS, OPA, and Oakwood. • OPA & OHS: Have not met the state's proficiency targets in math for 2 consecutive years • Oakwood: Summative Rating Low (8 pts); fell 13 pts; Consistently Lowest School in District • Park Avenue School is a districtwide focus as well* **2019-2020 Teachers of Focus:** • New Teachers	**Students** 1.1D – Self-contained classrooms 1.1E – Tiered Intervention in Algebra 2.3F – Tiered Intervention in Algebra 2.3H – Tiered Intervention in Algebra 2.2A – Higher Performing Students 2.1F – Range of Course Offerings 2.1G – Rigorous Sequencing (8-12) 2.3A – Tailored Intervention (during school) 2.3E– Tailored Intervention (after school) **Curriculum Supports** 3.2C – K-2 EOC Results 3.2H – Correlation Data **Professional Development** 4.1B – Teacher Leaders 4.1C – Teacher Leaders 4.1F – Differentiating Support 4.1I – Lesson Planning Teams



Priority 5	Incorporating Formative Assessment	3.1B – Formative Assessment
Our Personal Goals	Going Above and Beyond	4.2G - Partnerships 4.2H – Expanding our Knowledge (grants/research/collaboration)

CALENDARS

Important Dates

Reporting Period	Marking Period End Date	Posting Window Opened	Posting Window Closed	Distribution
Interim Report Card 1	*Wednesday 10/9/19*	*Wednesday 10/2/19*	*Wednesday 10/16/19 4:00pm*	*Thursday 10/17/19 End of Day*
MP1 Report Card	**Wednesday 11/13/19**	**Wednesday 11/6/19**	**Monday 11/18/19 4:00pm**	***Conferences (PreK-7) 11/19/19* 5:30-7:30 *(8-12)* 11/21/19 5:30-7:30**
Interim Report Card 2	*Wednesday 12/18/19*	*Wednesday 12/11/19*	*Thursday 12/19/19 4:00pm*	*Friday 12/20/19 End of Day*
MP2 Report Card	**Thursday 1/30/20**	**Thursday 1/23/20**	**Friday 1/31/20 4:00pm**	***Conferences (PreK-7) 2/3/20* 5:30-7:30 *(8-12)* 2/5/20 12:30-4:00**
Interim Report Card 3	*Monday 3/9/20*	*Monday 3/2/20*	Monday *3/16/20 4:00pm*	*Tuesday 3/17/20 End of Day*
MP3 Report Card	**Thursday 4/9/20**	**Thursday 4/2/20**	**Monday 4/20/20 4:00pm**	**Wednesday 4/22/20** *End of Day*
Interim Report Card 4	*Wednesday 5/20/20*	*Wednesday 5/13/20*	*Wednesday 5/27/20* 4:00pm	*Thursday 5/28/20 End of Day*
MP4 Report Card	**Monday 6/22/20**	**Monday 6/15/20**	**Wednesday 6/24/20 3:00pm**	**Thursday 6/25/20 12:30 PM**

IMPORTANT TESTING WINDOWS

Diagnostic Assessments

- 1st Assessment: Sept 9- Sept 20, 2019
- 2nd Assessment: Jan 6- Jan 17, 2020
- 3rd Assessment: (TBD – mid April)

Interim Assessment Testing Windows

- Interim 1: October 28 – November 12, 2019
- Interim 2: January 13 – January 24 2020
- Interim 3: March 23- April 3, 2020
- Interim 4: June 1- Jun12, 2020

October 31 Completed SGO's due	**February 5** Due date for adjusted SGOs	**April 17** Final SGOs due for non-ten'd	**May 24** Final SGOs due for ten'd

CLE

Test Code	2017	2018	2019	Gain
MAT03	27%	39%	50%	11.10%
MAT04	31%	25%	30%	4.50%
MAT05	16%	24%	20%	-4.00%
MAT06	21%	39%	14%	-24.70%
MAT07	17%	25%	24%	-0.90%

FOR

Test Code	2017	2018	2019	Gain
MAT03	25%	29.60%	44.40%	14.80%
MAT04	24%	26.20%	39.20%	13.00%
MAT05	20%	33.30%	43.10%	9.80%
MAT06	17%	18.40%	35.90%	17.50%
MAT07	27%	18.40%	34.60%	16.20%

HEY

Test Code	2017	2018	2019	Gain
MAT03	29%	31%	62%	31%
MAT04	36%	46.50%	33.30%	-13%
MAT05	29%	20.90%	28.20%	7%
MAT06	21%	23.40%	17.40%	-6%
MAT07	13%	16.70%	34.70%	18%

LAS

Test Code	2017	2018	2019	Gain
MAT03	11%	24.80%	25.00%	0.20%
MAT04	10%	12.90%	33.70%	20.80%
MAT05	16%	15.70%	18.10%	2.40%
MAT06	15%	18.60%	20.50%	1.90%
MAT07	14%	28.40%	25.00%	-3.40%

ROSA

Test Code	2017	2018	2019	Gain
MAT03	32%	25.80%	27.80%	2.00%
MAT04	28%	32.60%	34.50%	1.90%
MAT05	16%	25.50%	34.00%	8.50%
MAT06	21%	25.70%	38.30%	12.60%
MAT07	19%	39.30%	33.30%	-6.00%

OAK

Test Code	2017	2018	2019	Gain
MAT03	35%	37.50%	21.00%	-16.50%
MAT04	12%	20.00%	20.00%	0.00%
MAT05	11%	9.10%	16.60%	7.50%
MAT06	0%	16.70%	7.60%	-9.10%
MAT07	7%	6.30%	8.30%	2.00%

PAS

Test Code	2017	2018	2019	Gain
MAT03	27%	37.70%	11.60%	-26.10%
MAT04	24%	29.80%	39.10%	9.30%
MAT05	19%	21.10%	13.40%	-7.70%
MAT06	20%	17.90%	16.90%	-1.00%
MAT07	21%	24.40%	20.00%	-4.40%

OPA/OHS/STEM
OPA/OHS/STEM
OHS/STEM

Test Code	2017	2018	2019	Gain
ALG01	16%	25.80%	25%	-0.6%
ALG02	12%	4.00%	14%	9.7%
GEO01	10%	20.80%	22%	0.8%

DISTRICT

Test Code	2017	2018	2019	Gain
MAT03	26%	29.50%	33%	3.3%
MAT04	24%	27.30%	36%	8.3%
MAT05	17%	21.70%	26%	4.1%
MAT06	18%	22.10%	25%	2.8%
MAT07	17%	26.70%	28%	0.8%
MAT08	9%	11.00%	24%	**13.4%**
ALG01	16%	25.80%	27%	1.2%
ALG02	12%	4.00%	14%	**9.7%**
GEO01	10%	20.80%	22%	0.8%

Algebra I	N	PLD 1	PLD 2	PLD 3	PLD 4	PLD 5		% Passing
OPA-8	44	0	1	1	36	6		95.45%
OPA-9	195	35	95	46	19	0		9.74%
STEM-9	24	0	0	1	22	1		95.83%
OHS	74	30	40	3	1	0		1.35%
District	337	65	136	51	78	7		**25.22%**

OPA: 25.5% Overall

Algebra II								
OPA-9	9	1	0	3	5	0		55.56%
OHS-9	2	1	0	0	1	0		50.00%
OHS-10	180	109	48	15	8	0		4.44%
OHS-11?	48	33	10	4	0	0		0.00%
STEM-10	23	0	0	1	21	1		95.65%
District	**262**	**144**	**58**	**23**	**35**	**1**		**13.74%**

OHS: 3.91% Overall

2018-2019 DEPARTMENT GOALS

GOAL I
Strengthen and align curriculum to the Common Core State Standards for Mathematics, ensuring that it is engaging, challenging, and consistently implemented.

GOAL 2
Improve the quality of mathematics instructional programs in grades K-12; thereby maintaining the mutually reinforcing balance between procedural skill and fluency, conceptual understanding, and problem solving.

GOAL 3
Advance the use, and management of assessment; understanding assessment (e.g. diagnostic, formative, summative, authentic) as a continuous thread of instructional practice, rather than a series of isolated events.

GOAL 4
Create a highly effective professional development system for teachers and administrators that is more focused on delivering quality instruction and aligned to the learning needs of teachers and students.

GOAL 5
Empower parents to be more effectively engaged in their child's instruction through the creation of a highly-accessible, web-based system for parents and students that increases exposure to and the availability of the districts' instructional resources.

To effectively teach math, all teachers must develop and maintain skills that enable them to help students understand the complex concepts that underpin mathematical formulas and computation.

OBJECTIVE 1.1: CREATE PACING CALENDARS FOR ALL DISTRICT CURRICULUM (K-12)

1.1a Refocus district curriculum in MIF sites to address curricular gaps and/or misalignments (K-3)
1.1b Develop pacing calendars to accommodate the needs of subgroups such as SPED, ELL and 4th year math course (9-12)
1.1c Align 4th year math course with state mandated Portfolio Appeals criteria (HS)
1.1d Adjust the Standards Continuum in the Self-Contained classrooms to focus on Rational Number concepts and operations
1.1e Establish curricular access for all tiered courses Grade 9 -12 (ex: Advanced Topics in Algebraic Thinking; Functions & Modeling; etc.)

2018-2019 Status Update
• K-4: Curriculum was updated and posted on the Mathematics K-4 webpage for both the Eureka and Math in Focus curriculums being used. There was also a "Year at a Glance" posted to show teachers the mapping of standards and pacing recommendations. Curriculums were supplemented when needed to assure all standards per grade level were adequately addressed. • 5-8: New pacing calendars have been developed for new curricular programs (Eureka and Illustrative Mathematics) for grades 5-8. Pacing calendars include "Yearlong Pacing Guides" to show when the grade level standards should be addressed throughout the year. Later units have been distributed in DRAFT form and require minor final edits before posting to district website. • 9-12: Pacing calendars were developed and implemented to accommodate the needs of ELL & SPED subgroups. The curriculum of the 4th year math course, Functions & Modeling, was revised to support the state mandated Senior Portfolio to help students to meet graduation requirement. ALEKS program has been used in OPA Algebra I Tier 3, OHS/CIAO Algebra II, and all STEM math courses in class practice, and Power-20 remediation/enrichment practice.

Objective 2.1: Align instructional materials, programs, and expectations for practice to support the shared belief that all students can learn and succeed.

2.1a Continue to articulate the Ideal Math Block to dedicate 60 minutes to core instruction and 30 minutes to the specific needs of students based upon data (5 days per week). Everything is organized to evoke and support this effort, to send the message that effort is expected and that tough problems yield to sustained work. High minimum standards are set and assessments are geared to the standards. All students are taught a rigorous curriculum, matched to the standards. They receive as much time and expert instruction as they need to meet or exceed expectations.

2.1b Continue to institute the daily use of Mathematics Content Routines (ex: Number Talks, Noticing & Wonderings, Which One Doesn't Belong) and Mathematics Language Routines (ex: Info Gaps, Think Alouds, etc.) in place of Do Nows and across all Mathematics classrooms to make mathematical thinking VISIBLE, EXPECTED, & VALUED.

2.1c Focus the year on daily use of the 5 Practices for Orchestrating Productive Mathematics Discussions (Anticipating, Monitoring, Selecting, Sequencing, Connecting) as the approach to Anchor Tasks and across all Mathematics classrooms to make mathematical thinking VISIBLE, EXPECTED, & VALUED.

2.1d Continue to focus teaching around the Big "C" – Reasoning which highlights MPs 1, 2, 3, and 6 and
Additional areas of focus include:

- Content and Language Routines
- The 5 Practices for Orchestrating Productive Mathematics Discussions
- Task Analysis and Rubric Norming via the Mathematics Problem Solving Guide
- TQE Model (High School)

2.1e **Institute Strategic 24/7 Access to Mathematics via through IXL and/or iReady (Practice at Home)**
Assign Lessons quarterly based upon Core Concepts and given a window of time to successfully complete the lessons. We can assign in advance for the upcoming units.

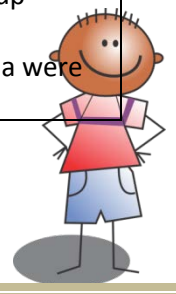
Learning Games
Assigning the Games nightly for fluency in Grades K – 5 (anticipate Grade 6 later)

Summer and Break Assignments
Using IXL based upon Grade Level for students entering honors settings

2.1f Offer a wider range of high-level course options to increase students' chances for math success; expanding the number, levels, and variety of math courses available to students while eliminating the most basic courses.

2.1g Audit all existing courses (grades 8 – Pre Calculus) to ensure alignment and that all students are prepared for rigorous math courses that will bring them at least to the pre-Calculus level.

2018-2019 Status Update
• K-4: The ideal math block was shared with teachers during CPT/PD sessions at the beginning of the school year. Teachers were given the math block recommendation based on the program utilized in their schools. The focus of this year was on core instruction, and additional support is needed on small group instruction and data analysis. "Daily Math Fluency" was introduced to schools utilizing Math in Focus and allowed teachers to engage in number talks and number strings as part of their daily lessons. The Eureka program has fluency activities at the start of each lesson already embedded, but we are recommending the incorporation of number talks and number strings in order to assist in fostering mathematical discourse and strategy understanding during the 2019-2020 school year. Schools utilizing the Math in Focus curriculum embed a daily anchor task. In Eureka, it is known as the application problem. Further development of teacher capacity is needed in developing understanding and implementation of the 5 Practices for Orchestrating Productive Mathematics Discussion to effectively use the tasks during instruction. Teacher content knowledge varies by school and grade, and overall support is needed in understanding grade level "concepts" that are referred to by standards. • 5-8: Implementation of the Ideal Math Block has improved across grades 5-8 in regards to the structure. Teachers are limiting whole group instruction to 50-70 minutes, depending on the instructor's level of comfort, and allotting the remainder of time to small group instruction. Additional support is needed in planning intentionally and purposefully to address the needs of students during small group instruction. Further development is also needed in ensuring digital content is utilized specifically to address student deficiencies and to support the learning. In regards to productive math discourse, the practice is trending positively. More and more classroom observations toward the end of the school year revealed students engaged in productive math discourse. Teachers seemed more comfortable and capable of releasing and facilitating higher levels of math discourse with the students as well. Lastly, math content routines and anchor tasks are imbedded directly into our curricular materials and used consistently. • 9-12: The ideal math block was redesigned and introduced to all 9-12 math teachers. Digital software, ALEKS, Khan, and Mathia were provided to support the redesigned ideal math block setting. Additional supports are still needed for most teachers in small group instruction. High minimum standards/Big Rocks were identified and embedded into curriculum unit plans. Rigorous standard-driven curricula were unpacked and communicated with all math teachers during CPTs, and implemented in each math course.



Standard-based benchmark common assessments have been administered for all math courses. Data analysis approached/protocol and methods have been introduced in September and January PD sessions. The support of implementation in data analysis and data driven instruction were provided during CPTs and coaching periods. Three high school core curricula (Algebra I, Algebra II, and Geometry) and learning materials were designed based on TQE model. Additional supports and practice in using questioning technique for developing math conceptual understanding are still needed to maximum the effectiveness of TQE model.

OBJECTIVE 2.2: ESTABLISH OPPORTUNITIES TO ADVANCE HIGH ACHIEVING STUDENTS (3-8)

2.2a **Identify potential high performing math students in grades 3-8 such to provide enrichment opportunities (focus on grades 5 and 6)**

2.2b Institute extracurricular opportunities for students to showcase their math talents in grades 3-10 (i.e. competitions, inside and outside of school math events)

2.2c Expand Accelerated 7th grade course opportunity to all schools (i.e. zero period or after school)

2.2d Enroll and participate in Essex County Consortium

2018-2019 Status Update
• K-4: Schools have identified and recommended students for the Scholars Program. Grade 4 students have also participated in the Game 24 district competition. • 5-8: Our students showcased their math talents in a districtwide Game 24 competition. Additionally, our district enrolled in the Essex County Consortium and performed well in the county/regional Challenge 24 Tournament. Lastly, as a district we held an iReady competition to promote, highlight and celebrate classrooms at each school with the most usage and best performance. While the accelerated 7th grade course expanded to Forest, it was removed at Park Avenue. As a result, the same number of schools offered the course this year as last year.

OBJECTIVE 2.3: SUPPORT THE STRATEGIC INTERVENTION FOR TARGETED GROUPS OF STUDENTS

2.3a Incorporate & Monitor Intervention Periods into the school day

2.3b Provide support to teachers and administration on intervention strategies and data analysis to chunk/sequence content materials

2.3c Monitor implementation of student progress in the intervention plan

2.3d Use Math180 as a 'separate' intervention (either during a separately allotted time during the school day or in an after school or zero period setting) The target populations should be students performing at PLDs of 1 or 2

2.3e Via the Mathematics coaches, provide intervention support to targeted schools.

2.3f Begin identifying an intermediary course occurring prior to students' taking Algebra II for all students not successful on the Algebra I PARCC exam (Advanced Topic in Algebra I)…See Pathways below

2.3g AFTER SCHOOL PROGRAMMING:

- In grades K – 5, introduce a supplemental mini course designed to address applications of geometric concepts.
- In grades 6 – 8, introduce a supplemental mini course designed to address algebraic thinking and applied geometry topics.

2.3h Develop a summer refresher/retake strategy for students not successfully passing PARCC Algebra I AND Algebra II

- Additional Summer Intensives & Bridges
- PreCalculus
- Algebra 1.5
- Grade 8 Algebra Bridge
- STEM Grade 9 Bridge

2.3i Incorporate a 'formal' strategy for addressing our pathways towards Honors and AP offerings (starting as early as grade 7).

2.3 SPECIAL EDUCATION

J-m

HLP 11, Identify and prioritize lone- and short-term learning goals.

- Teachers must prioritize what is most important for students to learn by providing meaningful access to and success in the general education and other contextually relevant curricula.
- Teachers must use grade-level standards, assessment data and learning progressions, students' prior knowledge, and IEP goals and benchmarks to make decisions about what is most crucial to emphasize, and develop long- and short-term goals accordingly.
- Teachers must, understand essential curriculum components (arrow doc), identify essential prerequisites (progressions) and foundations, and assess students' performance in relation to these components.

- Alignment to IEP goals in a span of 3 to 4 grade levels up to current grade based on the NWEA and iReady Performance.

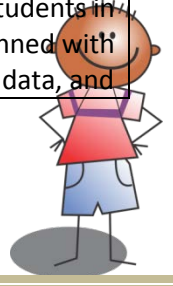
HLP 12, Systematically design instruction toward a specific learning goal.

- Teachers must, help students to develop important concepts and skills that provide the foundation for more complex learning.
- Teachers must, sequence lessons that build on each other and make connections explicit, in both planning and delivery.
- Teachers must, activate students' prior knowledge and show how each lesson "fits" with previous ones.
- Teachers planning must, involve careful consideration of learning goals, what is involved in reaching the goals, and allocation time accordingly.
- Teachers must, allow for ongoing changes (e.g., pacing) that occur throughout the sequence based on student performance.
- District: Will target select DOMAINS for Algebra Readiness (Major Work standards); …Connecting to Chapters and Lessons

HLP 13, Adapt curriculum task and materials for specific learning goals.

- Teachers must, assess individual students needs and adapt curriculum materials and tasks so that students can meet instructional goals.
- Teachers must, select materials and tasks based on student needs; use relevant technology; and make modifications by highlighting relevant information, changing task directions, and decreasing amounts of materials.
- Teachers must, make strategic decisions on content coverage (i.e. essential curriculum elements), meaningfulness of tasks to meet stated goals, and criteria for student success.
    - *Planning Lessons with Go Math*
    - *Determining Instructional Groups based on NWEA data*
    - *Utilization of digital components through My Personal Math component supporting relations/alignment through the iReady program.*

Status Update
• K-4: Intervention periods are not being conducted in all schools. Schools that do have intervention periods scheduled it themselves. The use of centers has been encouraged as a form of intervention as well. PARCC and Interim Assessment data have been analyzed, and schools have been provided with target students, standards, and strategies that can be used to target the needs of identified students in each grade level. The mathematics coach has provided in class support to many classrooms and has led small groups when planned with the classroom teacher. After school programming was decided upon based on data, including i-Ready and Interim Assessment data, and



overall performance needs. Geometric concepts were recommended during small group instruction during the second semester of the school year.

- 5-8: Intervention periods are not in place at the middle school grades at any of the sites. Schools were encouraged to utilize stations rotations during the math block as a form of intervention. PARCC, Interim Assessment, and additional student data were compiled, distributed and analyzed to identify target students and standards. Additionally, materials were sought out and distributed to supplement the curriculum specifically to address the targeted needs of the students during small group instruction. In some cases, building administration utilized the data and resources to design and implement afterschool programming.
- 9-12: Teachers have been given supports on data analysis and how to chunk/sequence content materials via CPTs and coaching periods. Common assessment data (benchmark assessments and NWEA assessments) were provided to school administration. A 4-week Algebra I focused Power-20 intervention was implemented at OPA before NJSLA. Targeted students list and evidence-based learning material were provided to teachers for the intervention.

  The intermediary course for students who are not successful on the Algebra I PARCC exam has been planning and collaborative designing with school administration. The identified students will take the intermediary course prior to take Algebra II; the new pathway will be implemented starting from the school year of 2019-20

2019-2020 Course Pathways

Pathway 1:

Course	Algebra II	Geometry	Pre-Calculus	AP-Calculus (AB)	AP-Calculus (BC)/Statistics
Grade	9th	10th	Summer	11th	12th
Criteria: Pass 8th grade year (or summer) Algebra I NJSLA					

Pathway 2:

Course	Algebra I	Algebra II	Geometry	Pre-Calculus	AP-Calculus
Grade	9th	10th	11th	Summer	12th
Criteria: Pass 9th grade (or summer) Algebra I NJSLA Recommended by teachers					

Pathway 3:

Course	Algebra I	Algebra II	Geometry	Pre-Calculus/Introduction of Statistics
Grade	9th	10th	11th	12th
Criteria: Pass 9th grade (or summer) Algebra I NJSLA Pre-calc: gained "B" or higher in previous year mathematics course				

Pathway 4:

Course	Algebra I	Advance Alg (Alg. 1.5)	Algebra II	Geometry (Fall) Pre-Cal/Statistics (Spring)
Grade	9th	10th	11th	12th
Criteria: 9th grade Algebra I NJSLA 735-749 attend summer program but did not pass Or 9th grade Algebra NJSLA 730-749 **Note: This pathway students need to retake Algebra I NJSLA in 10th grade**				

Pathway 5:

Course	Algebra I /Intensified Agile Mind	Applying Function & Modeling	Algebra II	Geometry (Fall) Pre-cal/Statistics (Spring)
Grade	9th	10th	11th	12th
Criteria: 9th grade Algebra I NJSLA below 715				

OBJECTIVE 3.1: ESTABLISH YEARLONG DISTRICT MATH ASSESSMENT CALENDARS (K-12)

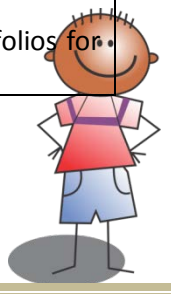
3.1a	Create grade level specific yea long district math assessment calendars including but not limited to iReady, NWEA. Unit Assessment, End of Course, Midterm/Final testing windows
3.1b	Identify/Develop Common Formative Assessments & Progress Monitoring Systems • Same questions same standards • Multidimensional • Multiple opportunities • Same grade level • Same curriculum; same content (different aspects of the content) • Takes into consideration the same curriculum
3.1c	Identify/Develop Common Performance Tasks that allow students to judge the reasonableness of numerical results, develop number sense and an understanding of numerical and algebraic operations, communicate mathematical ideas and procedures, explore the meaning and role of mathematical concepts, and apply mathematics in contexts outside of mathematics; instituting formal protocols for scoring, feedback, and reporting. Strategies include engaging students in learning experiences .

Status Update
• K-12: Teachers were provided with dates of testing windows and standards to be assessed during Interim Assessments and a few weeks prior to each Interim Assessment.

OBJECTIVE 3.2: REDESIGN DISTRICT BENCHMARKS (K-12)

- **3.2a** Revise current assessments to reflect curriculum adjustments/curriculum adoptions (K-12)
- **3.2b** Develop midterm and/or final assessments for identified courses (6-12)
- **3.2c** Implement performance based assessments by developing student portfolios (K-2); Review EOC for K – 2 to assess "readiness" for next grade.
- **3.2d** Develop and institute a formal testing protocol to standardize testing conditions during the administration of all districtwide assessments.
- **3.2e** Implement the usage of iReady diagnostic assessment across the district (K-8)
- **3.2f** Redesign SGOs to reflect changes in the districtwide areas of focus and improve the use of standards-based measures that are rigorous and comparable across classrooms of similar content areas and levels.
- **3.2g** Redesign SGOs to reflect progress toward academic and functional goals included in an individualized education program and/or progress made towards student academic growth objectives.
- **3.2h** Determine R; the correlation between the Standards Mastery results and NJSLA performance.

Status Update
• K-4: Grades K-1 had performance based assessments for Interims 1-4. The last interim assessment was an overall year assessment to indicate student readiness in core skills for the next grade level. Teachers reported data using trackers, and these items were part of student portfolios. Grade 2 was intended to be a transitional year in which Interims 1-2 were solely paper and pencil assessments, Interim 3 was partially on i-Ready and partially paper and pencil, and Interim 4 was completely on i-Ready. Grades 3-4 utilized i-Ready standards mastery for all Interim Assessments. All K-4 Gen Ed. classrooms utilized the i-Ready diagnostic as the SGO assessment. i-Ready typical growth was used to create SGO target growth for groups of students. Performance tasks with appropriate scoring rubrics were included in the curriculum and should be included in student portfolios for Grades K-4.
• 5-8: Grades 5-8 utilized i-Ready standards mastery for all Interim Assessments. Interim Assessments were designed to reflect the learning that occurred during the given marking period window based on the yearlong pacing guide. Assessments were adjusted mid-year to address pacing concerns. All 5-8 Gen Ed. classrooms utilized the i-Ready diagnostic as the SGO assessment. i-Ready typical growth was used to create SGO target growth for groups of students. Performance tasks with appropriate scoring rubrics were included in the curriculum and should be included in student portfolios for Grades 5-8.



- 9-12: Curriculum assessments have been revised based on the pacing calendars for each subgroup. Four common benchmark assessments for each math course have been created and administered for all 9-12 math courses.
  Math department test protocol has been introduced to all teachers during September PD and implemented in all common assessments.

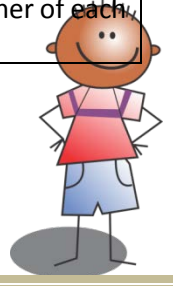
OBJECTIVE 4.1: DISTRIBUTE LEADERSHIP AMONG SELECT TEACHERS TO PROMOTE AND SUPPORT A SHARED VISION FOR INSTRUCTION AND PERFORMANCE. (K-12)

4.1a Identify and develop teacher facilitators to provide support to peers. (i.e. sharing instructional strategies and peer observations)
4.1b Utilize teacher leaders to facilitate or conduct CPT and professional development sessions. (i.e. data analysis, unpacking content, instructional materials, and common anchor tasks)
4.1c Identify teacher leaders to participate in out of district professional development opportunities.
4.1d Provide content based professional development after school.
4.1e Identify teachers to participate in SIOP training.
4.1f Institute Plan for Differentiated Yearlong Professional Development for teachers
4.1g Reinstituting Partnerships: PRISM, WOODROW WILSON, MSU, KEAN, NJCU, NJIT, RUTGERS, William Paterson, RIDER, NJCTL, TCNJ, RELAY
4.1h Growing the expertise of the department via

- New Partnerships (e.g. MSU, Exeter Academy)
- Grants
- Roundtables
- Conferences
- Research: Reintroducing the Data Action Model, other
- NJDOE Broadcasts

4.1i Cultivate mathematics support teams. In addition to meeting as a department, teachers meet in subject-specific teams that work together to plan units, develop lesson plans, and evaluate student data. Teams discuss student needs and develop extra academic supports as needed. Teachers each other's work intimately and are therefore able to hold each other accountable for teaching all of their students to a higher standard.

Status Update
• K-4: Teachers were utilized to conduct District Professional Development sessions, peer observations, and CPT meetings in various schools. Additional teacher participation will be encouraged for next year. Additionally, the development of teacher ability in content and data analysis will be highlighted through department support and out of district PD when appropriate. • 5-8: Teachers conducted portions of district wide professional development sessions as well as led peer observation cycles at various schools. For the upcoming school year, teacher leadership opportunities and collaboration will be promoted more deliberately. The development of teacher ability in content and data analysis will be highlighted through department support and out of district professional development where appropriate. • 9-12: January PD session were facilitated by 3 lead teachers for 9-12 math teachers. Most CPTs were facilitated by the lead teacher of each course (Algebra I, Algebra II, and Geometry) to analyze data, discuss curriculum material, and teaching strategies.



APPENDIX

BIG ROCKS

Focus is critical to ensure that students learn the most important content completely, rather than succumb to an overly broad survey of content. The idea is that when students are taught with understanding, there will be less need to reteach concepts from year to year. Instead, content is revisited as connections are made to new content-- first with concepts and then with procedures. This is accomplished through a focused curriculum. When fewer topics are addressed in a given grade or course, those topics can be taught coherently and with rigor.

In grades K–5, the focus is on the addition, subtraction, multiplication and division of whole numbers, fractions and decimals, with a balance of concepts, skills and problem solving. Arithmetic is viewed as an important set of skills and also as a thinking subject that, done thoughtfully, prepares students for algebra. Measurement and geometry develop alongside number and operations and are tied specifically to arithmetic along the way.

In middle school, multiplication and division develop into powerful forms of ratio and proportional reasoning. The properties of operations take on prominence as arithmetic matures into algebra. The theme of quantitative relationships also becomes explicit in grades 6–8, developing into the formal notion of a function by grade 8. Meanwhile, the foundations of high school deductive geometry are laid in the middle grades. Finally, the gradual development of data representations in grades K–5 leads to statistics in middle school: the study of shape, center and spread of data distributions; possible associations between two variables; and the use of sampling in making statistical decisions.

In high school, algebra, functions, geometry and statistics develop with an emphasis on modeling. Students continue to take a thinking approach to algebra, learning to see and make use of structure in algebraic expressions of growing complexity. As this description suggests, mathematical content in all grades is best approached in the ways envisioned by the Standards for Mathematical Practice.

K	1	2	3	4
REQUIRED FLUENCIES FOR GRADES K THROUGH 4				
K.OA.A.5 Add/Subtract within 5	**1.OA.C.6** Add/Subtract within 10	**2.OA.B.2** Single digit sums and differences (sums from memory) **2.NBT.B.5** Add/Subtract within 100	**3.OA.C.7** Single-digit products and quotients (Products from memory by end of Grade 3) **3.NBT.A.2** Add/Subtract within 1000	**4.NBT.B.4** Add/Subtract with 1,000,000
AREAS OF FOCUS				
K.CC.A Know number names and the count sequence (3)	**1.OA.A** Represent and solve problems involving addition and subtraction (2)	**2.OA.A** Represent and solve problems involving addition and subtraction*	**3.OA.A** Represent & solve problems involving multiplication and division	**4.OA.A** Use the four operations with whole numbers to solve problems
K.CC.B Count to tell the number of objects (2)	**1.OA.B** Understand and apply properties of operations and the relationship between addition and subtraction	**2.OA.B** Add and subtract within 20*	**3.OA.B** Understand properties of multiplication and the relationship between multiplication and division*	**4.NBT.A** Generalize place value understanding for multi-digit whole numbers
K.CC.C Compare numbers* (2)	**1.OA.C** Add and subtraction within 20 *	**2.NBT.A** Understand place value*	**3.OA.C** Multiply & divide within 100*	**4.NBT.B** Use place value understanding and properties of operations to perform multi-digit arithmetic*
K.OA.A Understand addition as putting together and adding to, and understand subtraction as taking apart and taking from (5)	**1.OA.D** Work with addition and subtraction equations	**2.NBT.B** Use place value understanding and properties of operations to add and subtract*	**3.OA.D** Solve problems involving the four operations, and identify & explain patterns in arithmetic	**4.NF.A** Extend understanding of fraction equivalence and ordering*
K.NBT.A Work with numbers 11-19 to gain foundations for place value (1)	**1.NBT.A** Extend the counting sequence	**2.MD.A** Measure and estimate lengths in standard units*	**3.NF.A** Develop understanding of fractions as numbers*	**4.NF.B** Build fractions from unit fraction by applying and extending previous understanding of operations*

K.G.A Identify and describe shapes (squares, circles, triangles, rectangles, hexagons, cubes, cones, cylinders, and spheres)*	**1.NBT.B** Understand Place Value*	**2.MD.B** Relate addition and subtract to length	**3.MD.A** Solve problems involving measurement and estimation of intervals of time, liquid, volumes, & masses of objects.	**4.NF.C** Understand decimal notation for fractions and compare decimal fractions
	1.NBT.C Use place value understanding and properties of operations to add and subtract.	2.G.A Reason with shapes and their attributes*	**3.MD.C** Geometric measurement: understand concepts of area and relate area to multiplication and addition.*	4.G.A Draw and identify lines and angles, and classify shapes by properties of their lines and angles.*
	1.MD.A Measure lengths indirectly and by iterating length units*		3.G.A Reason with shapes and their attributes	
	1.G.A Reason with shapes and their attributes*			
68%**	86%**	73%**	68%**	73%**

*Critical areas of the grade

**Percent of represented CCSS for given grade level

OPPORTUNITIES FOR IN-DEPTH FOCUS				
Kindergarten	**1st Grade**	**2nd Grade**	**3rd Grade**	**4th Grade**
K.CC.B.5	1.NBT.B.2	2.OA.A.1	3.OA.A.3	4.NBT.B.5
K.OA.A.2	1.NBT.C.4	2.NBT.B.7	3.OA.C.7	4.NBT.B.6
K.OA.A.3	1.OA.A.1		3.NF.A.2	4.NF.A.1
K.OA.A.4			3.MD.A.2	4.NF.B.3
K.NBT.A.1			3.MD.C.7	4.NF.B.4
FLUENCY or CULMINATING STANDARDS				
K.CC.A.1	1.OA.C.6	2.OA.B.2	3.OA.C7	4.NBT.4
K.CC.A.3	1.OA.D.7	2.NBT.B.5	3.NBT.A.2	
K.CC.B.5	1.OA.D.8	2.NBT.A.2		
K.CC.C.7	1.NBT.C.5	2.NBT.A.3		

K.OA.A.5		2.NBT.B.8		
		2.MD.A.4		

Grade 5	Grade 6	Grade 7	Grade 8
REQUIRED FLUENCIES FOR GRADES 5 THROUGH 8			
5.NBT.B.5 Multi-digit multiplication	6.NS.B.2 Multi-digit division 6.NS.B.3 Add, subtract, multiply and divide multi-digit decimals		
5.NBT.A Understand the place value system	6.NS.A Apply and extend previous understandings of multiplication and division to divide fractions by fractions*	**7.NS.A** Apply and extend previous understandings of operations with fractions	**8.EE.A** Work with radicals and integer exponents
5.NBT.B Perform operations with multi-digit whole numbers and decimals to hundredths	6.NS.C Apply and extend previous understandings of numbers to the system of rational numbers*	**7.RP.A** Analyze proportional relationships and use them to solve real-world and mathematical problems*	**8.EE.B** Understand the connections between proportional relationships, lines, and linear equations
5.NF.A Use equivalent fractions as a strategy to add and subtract fractions	6.RP.A Understand ratio concepts and use ratio reasoning to solve problems*	**7.EE.A** Use properties of operations to generate equivalent expressions*	**8.EE.C** Analyze and solve linear equations and pairs of simultaneous linear equations*
5.NF.B Apply and extend previous understandings of multiplication and division to multiply and divide fractions	6.EE.A Apply and extend previous understandings of arithmetic to algebraic expressions*	**7.EE.B** Solve real-life and mathematical problems using numerical and algebraic expressions and equations*	**8.F.A** Define, evaluate, and compare functions*
5.MD.C Geometric measurement: understand concepts of volume and relate volume to multiplication and to addition	6.EE.B Reason about and solve one-variable equations and inequalities	**7.G.B** Solve real-life and mathematical problems involving angle measure, area, surface area, and volume*	**8.F.B** Use functions to model relationships between quantities*
5.G.A Graph points in the coordinate plane to solve real-world and mathematical problems	6.EE.C Represent and analyze quantitative relationships between dependent and independent variables		**8.G.A** Understand congruence and similarity using physical models, transparencies, or geometry software*
			8.G.B Understand and apply the Pythagorean Theorem*

			8.G.C Solve real-world and mathematical problems involving volume of cylinders, cones, and spheres
73%**	65%**	**62%****	**83%****

*Critical areas of the grade
**Percent of represented CCSS for given grade level

Grade 5	Grade 6	Grade 7	Grade 8
Opportunities for In-Depth Focus			
5.NBT.A.1	6.RP.A.3	7.RP.A.2	8.EE.B.5
5.NBT.B.6	6.NS.A.1	7.NS.A.3	8.EE.C.7
5.NF.A.2	6.NS.C.8	7.EE.B.3	8.EE.C.8
5.NF.B.4	6.EE.A.3	7.EE.B.4	8.F.A.2
5.MD.C.5	6.EE.B.7	7.G.B.6	8.G.B.7
Fluency or Culminating Standards			
5.NBT.B.5	6.NS.B.2	7.EE.B.3	8.EE.C.7
	6.NS.B.3	7.EE.B.4	8.G.C.9
	6.NS.A.1	7.NS.A.1	
		7.NS.A.2	

High School focused Big Rocks Standards

	Algebra I	Algebra II	Geometry
Major	**Create Equation (L, Q, E)** A.CED.1, A.CED.2, ACED.3, A.CED.4 **Reasoning with equation and Inequality (L,Q,E)** A.REI.1, A.REI.3, A.REI.4, A.REI.10, A.REI.11, A.REI.12 **Seeing structure in expression(I, Q, and E)** A.SSE.1, A.SSE.2 **Interpreting Functions(L, Q, E)** F.IF.1, F.IF.2, F.IF.4, F.IF.5, F.IF.6 **Polynomial Operation (L, Q)** A.APR.1 **Interpreting categorical and Quantative Data:** S.ID.7, SID.8	**Real Number System (E)** N.RN.B.1 N.RN.B.2 **Reasoning with equation and Inequality (L,Q,E)** A.REI.1, A.REI.2, A.REI.4, A.RE.I.11 **Seeing Structure in Expression (Q, and E)** A.SSE.2, A.SSE.3c, A.SSE.4 **Interpreting Functions(L, Q, E)** F.IF.4, F.IF.6 **Polynomial Operation (L, Q)** A.APR.2, A.APR.3, A.APR.6. **Making Inferences and Justifying Conclusion** S.IC.3, S.IC.4, S.IC.5, S.IC.6	**Congruence** G.CO.6, G.CO.7, G.CO.8, G.CO.9, G.CO.10, G.CO.11 **Similarity, Right Triangle, and Geometry** G.SRT.1, G.SRT.2, , G.SRT.3, G.SRT.4, G.SRT.5, G.SRT.6, G.SRT.7, G.SRT.8 **Expressing Geometric Properties with Equation** G.GPE.4, G.GPE.5, G.GPE.6, G.GPE.7 **Modeling with Geometry** G.MG.1, G.MG.2, G.MG3
Additional	**Reasoning with equation and Inequality** A.REI.5, A.REI.6 **Seeing structure in expression(Q: Completing Square)** A.SSE.3b **Building Function(L, Q and E)** F.BF.3	**Reasoning with equation and Inequality (L)** A.REI.6, A.RE.7 **Polynomial Operation (L, Q)** A.APR.4 **Complex Number System** N.CN.1, N.CN.2, N.CN.7 **Trigonometric Function** F.TF.1, F.TF.2, F.TF.5, F.TF.8	**Expressing Geometric properties with Equation** G.GPE.1 **Circles** G.C.1, G.C.2, G.C.3, G.C.5 **Geometric Measurement and Dimension** G.GMD.1, G.GMD.3, G.GMD4

	Real Number System N.RN.B.3 **Interpreting categorical and Quantative Data:** S.ID.1, S.ID.2, S.ID.3	**Linear, Quadratic, Exponential** F.LE.5, **Expressing Geometric properties with Equation** G.GPE.2 **Interpreting categorical and Quantative Data:** S.SID.4	

L = LINEAR EQUATION

Q = QUADRATICS EQUATION

E = EXPONENTIAL EQUATION

EFFECTIVE TEACHERS

- act on the belief that all students can learn and succeed.
- have deep content knowledge and knowledge of best practices in their content area.
- apprentice students to read, write, think, talk, inquire, and
- reason like experts in each content area—like scientists, mathematicians, historians, readers, and writers.
- consistently provide all students with opportunities to gain knowledge and develop conceptual understanding of core, content-specific concepts.
- consistently provide all students with opportunities to engage with cognitively demanding texts, tasks, problems, and projects. They scaffold students' learning without doing the cognitive heavy lifting for them.
- encourage students to take risks, seek and offer help, ask questions, reflect on their learning, and learn from one another.
- understand that talking through problems is a core act of learning. They make student talk and collaboration key learning routines.
- make assessment part of teaching. They consistently check for student understanding and use data to guide instruction.
- value the diversity of their students and work hard to make their classrooms safe and inclusive spaces where all students can learn and succeed.
- work hard and consistently to improve their own teaching.
- learn, work, and plan with other educators in professional learning communities.

Whole Group Instruction	55min	INSTRUCTION (Grades 3 – 8) Daily Routine: Mathematical Content or Language Routine Anchor/Instructional Task: Anticipate, Monitor, Select, Sequence, Connect And Collaborative Work Practice Collaborative Independent Work (Demonstration of Student Thinking)		
Rotation Stations (Student Notebooks & Chromebooks Needed)	1-2X 30 min	STATION 1: Focus on current Grade Level Content STUDENT EXPLORATION* Independent or groups of 2-3 Emphasis on MP's 3, 6 (Reasoning and Precision) And MP's 1 & 4 (Problem Solving and Application) TOOLS/RESOURCES Extra Practice/Enrichment Math Journal Let's Explore Put Your Thinking Cap On	STATION 2: Focus on Student Needs TECH STATION Independent TOOLS/ RESOURCES iReady TenMarks Khan Academy Dreambox Moby Max Approved Digital Provider Fluency Practice	TEACHER STATION: Focus on Grade Level Content; heavily scaffolded to connect deficiencies TARGETED INSTRUCTION 4 – 5 Students TOOLS/ RESOURCES Homework Manipulatives Reteach Workbook Transition Guide
Closure	5 min	INSTRUCTION Exit Ticket (Demonstration of Student Thinking) TOOLS/RESOURCES Notebooks or Exit Ticket Slips		

* Promotes discourse and collaboration

Whole Group Instruction	50 min	INSTRUCTION (Grades 9 – 12) Daily Routine: Mathematical Content or Language Routine Anchor Task: Anticipate, Monitor, Select, Sequence, Connect Collaborative Work* Guided Practice Independent Work (Demonstration of Student Thinking)		TOOLS Manipulatives RESOURCES Agile Mind
Rotation Stations (Student Notebooks & Chromebooks Needed)	1-2X 25 min	STATION 1: Focus on current Grade Level Content STUDENT EXPLORATION* Independent or groups of 2-3 Emphasis on MP's 3, 6 (Reasoning and Precision) And MP's 1 & 4 (Problem Solving and Application) TOOLS/RESOURCES Agile Mind Math Journals	STATION 2: Focus on Student Needs TECH STATION Independent TOOLS/ RESOURCES Khan Academy Dreambox Approved Digital Provider Fluency Practice	TEACHER STATION: Focus on Grade Level Content; heavily scaffolded to connect deficiencies TARGETED INSTRUCTION 4 – 5 Students TOOLS/ RESOURCES Agile Homework Manipulatives
Closure	5 min	INSTRUCTION Exit Ticket (Demonstration of Student Thinking) TOOLS/RESOURCES Notebooks or Exit Ticket Slips		

* Promotes discourse and collaboration

STRUGGLING LEARNERS

Many of our struggling learners will never be able to be proficient in mathematics unless we address their skill deficits. For example, a student who struggles with beginning multiplication will not be able to use that skill to multiply fractions or solve algebraic equations in later grades. Focusing all our energy on the grade level curriculum is a losing proposition, because study after study has shown that students who fail to master foundational skills will have severe difficulty when they encounter the secondary curriculum. In other words, not only do we need to help students master their current grade level content, but we also need to remediate specific skill deficits. Central to an effective RtI program is the idea that struggling students need a powerful combination of additional time, a challenging curriculum, cohesive, targeted supports and interventions, and teachers who are well equipped for helping them make up for lost learning. With these tools and teaching supports in place, students can stay on track, graduate on time, and gain passage to advanced learning.

In the Response to Intervention (RtI) framework, students who fall below the proficient level also receive Tier 2 support in addition to the core instruction provided in the general classroom. The content of this supplemental instruction is targeted to address gaps in the students' knowledge, which means it is often focused on content that students should have mastered several years earlier. Seldom will all students who experience difficulty at a given grade level have identical skill deficits, so Tier 2 instruction is given in small homogenous groups of two to five students who typically meet for approximately thirty minutes per day to receive instruction targeted to address their particular skill deficits.

Tier 2 instruction is designed to be provided by trained personnel, such as a mathematics coach, general education teacher, or another professional who has received special training. While computer programs can be used to provide supplemental practice, these students first need direct teacher instruction targeted on foundational content they missed in previous years.

GOAL SETTING

SGO Framework

K-2 STUDENT GROWTH OBJECTIVES		FOCUS	PROGRESS MONITORING	FINAL ASSESSMENT
GRADE K	SGO1	Major Work	iReady Fall, Winter Diagnostic	iReady Spring Diagnostic
GRADE 1	SGO1	Major Work	iReady Fall, Winter Diagnostic	iReady Spring Diagnostic
GRADE 2	SGO1	Major Work	iReady Fall, Winter Diagnostic	iReady Spring Diagnostic
3-5 STUDENT GROWTH OBJECTIVES				
GRADE 3	SGO1*	Major Work	iReady Fall, Winter Diagnostic	iReady Spring Diagnostic
GRADE 3	SGO2*	Reasoning & Modeling	Task Analysis	Assessment Portfolio
GRADE 4, 5	SGO1	Major Work	iReady Fall, Winter Diagnostic	iReady Spring Diagnostic
6-8 STUDENT GROWTH OBJECTIVES				
GRADE 6, 7	SGO1	Major Work	iReady Fall, Winter Diagnostic	iReady Spring Diagnostic
GRADE 8	SGO1	Major Work	iReady Fall, Winter Diagnostic	iReady Spring Diagnostic
GRADE 8	SGO2*	Reasoning & Modeling	Task Analysis	Assessment Portfolio
9 – 12 STUDENT GROWTH OBJECTIVES				
Algebra I, Intensive	SGO1	Major Work	Fall, Winter NWEA	Spring NWEA
Algebra I, Intensive	SGO2*	Reasoning & Modeling	Task Analysis	Portfolio Assessment
Algebra I	SGO1	Major Work	Fall, Winter NWEA	Spring NWEA
Algebra I	SGO2*	Reasoning & Modeling	Task Analysis	Portfolio Assessment
Algebra II	SGO1	Major Work	Fall, Winter NWEA	Spring NWEA
Algebra II	SGO2*	Reasoning & Modeling	Task Analysis	Portfolio Assessment
Geometry	SGO1	Major Work	Fall, Winter NWEA	Spring NWEA
Geometry	SGO2*	Reasoning & Modeling	Task Analysis	Portfolio Assessment
Pre-Calculus	SGO1	Content	Pre Test	Post Assessment
Functions & Modeling	SGO2	Reasoning & Modeling/	Task Analysis	Post Assessment
AP Calculus		Content	Pre Test	Pre-AP Assessment Results

Growth Goal 1 : By June 2019, **70 – 75%%** of all **K - 12** students will demonstrate improved academic achievement as measured by scoring at or above end of year growth norms/expectations as measured by performance on either the Spring iReady Assessment or the Spring NWEA MAP Assessment.

Growth Goal 2: Will be related to a performance based assessments.

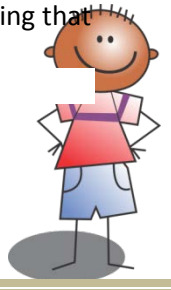
Growth Goal 1													
Tiers	**Percentiles**	**Gr. K**	**Gr. 1**	**Gr. 2**	**Gr. 3**	**Gr. 4**	**Gr. 5**	**Gr. 6**	**Gr. 7**	**Gr. 8**	**Alg I**	**Alg II**	**Geo**
3+ Levels Below	< 21	---	---	---	55	47	51	35	33	31	4+	3+	2+
2 Levels Below	21 – 40	---	57	48	43	41	35	30	25	23	3+	2+	2+
1 Level Below	41 - 60	39	37	36	35	34	31	26	23	22	3+	2+	2+
On Levels, Early	61 - 80	38	36	35	34	33	29	25	22	21	3+	2+	2+
On Level, Mid. Late, Above	>80	35	32	31	30	24	20	20	20	19	3+	2+	2+

Growth Goal 2		
Tiers	**Percentiles**	**Expected Growth**
LEVEL 1	< 21	PLD 2
LEVEL 2	21 – 40	PLD 3
LEVEL 3	41 - 60	PLD 4
LEVEL 4	61 - 80	PLD 4 or PLD 5
LEVEL 5	>80	PLD 5

CONCORDANCE OF PERFORMANCE LEVELS BETWEEN THE PARCC MATH AND SPRING NWEA MAP *(R=71% - 77%)*

ALGEBRA I		**ALGEBRA II**	
PARCC	**NWEA**	**PARCC**	**NWEA**
PLD 1	207	PLD 1	231
PLD 2	224	PLD 2	238
PLD 3	232	PLD 3	243
PLD 4	240	PLD 4	247
PLD 5	257	PLD 5	260

The consistency rate provided in this report can be calculated as, for the "proficient" performance category concordant scores, the percentage of examinees who score at or above both concordant scores plus the percentage of examinees who score below both concordant scores on each test. Higher consistency rate indicates stronger congruence between PARCC and MAP scores. The results in Table 9 demonstrate that on average, MAP reading scores can consistently classify students' proficiency (Level 4 or higher) status on PARCC ELA test approximately 83% of the time and MAP math scores can consistently classify students on PARCC math test approximately 88% of the time. Those numbers are high suggesting that both MAP reading and math tests are great predictors of the students' proficiency status on the PARCC tests.



Mathematics Problem Solving Scoring Guide

Apply mathematics in a variety of settings. Build new mathematical knowledge through problem solving. Solve problems that arise in mathematics and in other contexts. Apply and adapt a variety of appropriate strategies to solve problems. Monitor and reflect on the process of mathematical problem solving.

Process Dimensions	5	4	3	*2 / 1
CCSS.MATH.PRACTICE.MP1: Making Sense of the Task *Interpret the concepts of the task and translate them into mathematics.*	The interpretation and/or translation of the task are ☐thoroughly developed and/or ☐enhanced through connections and/or extensions to other mathematical ideas or other contexts.	The interpretation and translation of the task are ☐adequately developed and ☐adequately displayed.	The interpretation and/or translation of the task are ☐partially developed, and/or ☐partially displayed.	The interpretation and/or translation of the task are ☐underdeveloped, ☐sketchy, ☐using inappropriate concepts, ☐minimal, and/or ☐not evident.
CCSS.MATH.PRACTICE.MP4: Representing and Solving the Task *Use models, pictures, diagrams, and/or symbols to represent and solve the task situation and select an effective strategy to solve the task.*	The strategy and representations used are ☐elegant (insightful), ☐complex, ☐enhanced through comparisons to other representations and/or generalizations.	The strategy that has been selected and applied and the representations used are • effective and • complete.	The strategy that has been selected and applied and the representations used are ☐partially effective and/or ☐partially complete.	The strategy selected and representations used are • underdeveloped, ☐sketchy, ☐not useful, ☐minimal, ☐not evident, and/or ☐in conflict w/ the Solution/outcome.
CCSS.MATH.PRACTICE.MP2: Communicating Reasoning *Coherently communicate mathematical reasoning and clearly use mathematical language.*	The use of mathematical language and communication of the reasoning are ☐elegant (insightful) and/or ☐enhanced with graphics or examples to allow the reader to move easily from one thought to another.	The use of mathematical language and communication of the reasoning ☐follow a clear and coherent path throughout the entire work sample and ☐lead to a clearly identified solution/outcome.	The use of mathematical language and communication of the reasoning ☐are partially displayed with significant gaps and/or ☐do not clearly lead to a solution/outcome.	The use of mathematical language and communication of the reasoning are • underdeveloped, • sketchy, • inappropriate, • minimal, and/or • not evident.
CCSS.MATH.PRACTICE.MP6: Accuracy *Support the solution/outcome.*	The solution/outcome is correct and enhanced by ☐extensions, ☐connections, ☐generalizations, and/or ☐asking new questions leading to new problems.	The solution/outcome given is ☐correct, ☐mathematically justified, and ☐supported by the work.	The solution/outcome given is ☐incorrect due to minor error(s), or ☐a correct answer but work contains minor error(s) ☐partially complete, and/or ☐partially correct	The solution/outcome given is ☐incorrect and/or ☐incomplete, or ☐correct, but o conflicts with the work, or o not supported by the work.
CCSS.MATH.PRACTICE.MP3: Reflecting and Evaluating *State the solution/outcome in the context of the task.* *Defend the process, evaluate and interpret the reasonableness of the solution/outcome.*	Justifying the solution/outcome completely, the student reflection also includes ☐reworking the task using a different method, ☐evaluating the relative effectiveness and/or efficiency of different approaches taken, and/or ☐providing evidence of considering [illegible] and/or interpretations.	The solution/outcome is stated within the context of the task, and the reflection justifies the solution/outcome completely by reviewing • the interpretation of the task • concepts, • strategies, • calculations, and • reasonableness.	The solution/outcome is not stated clearly within the context of the task, and/or the reflection only partially justifies the solution/outcome by reviewing ☐the task situation, ☐concepts, ☐strategies, ☐calculations, and/or [illegible]	The solution/outcome is not clearly identified and/or the justification is • underdeveloped, • sketchy, • ineffective, • minimal, • not evident, and/or • inappropriate

*2 for a given dimension would be underdeve[illegible]

Rubric will be used in conjunction with PARCC Released Student Response Samples

[illegible]regon Department of Education

PROFESSIONAL DEVELOPMENT

Our intention with professional development is to create a highly effective professional development system for teachers and administrators that is more focused on delivering quality instruction and aligned to the learning needs of teachers and students.

A particular target for criticism is the prevalence of single-shot, one-day workshops that often make teacher professional development "intellectually superficial, disconnected from deep issues of curriculum and learning, fragmented, and noncumulative" (Ball & Cohen, 1999, pp. 3–4). And because often there is no coherent infrastructure for professional development, professional development represents a "patchwork of opportunities—formal and informal, mandatory and voluntary, serendipitous and planned" (Wilson & Berne, 1999, p.174).

Recognizing the short supply of high quality professional development for teachers, the No Child Left Behind Act of 2001 mandated that teachers receive such learning opportunities. No Child Left Behind sets five criteria for professional development to be considered high quality:

- It is sustained, intensive, and content-focused—to have a positive and lasting impact on classroom instruction and teacher performance
- It is aligned with and directly related to state academic content standards, student achievement standards, and assessments
- It improves and increases teachers' knowledge of the subjects they teach
- It advances teachers' understanding of effective instructional strategies founded on scientifically based research
- It is regularly evaluated for effects on teacher effectiveness and student achievement

Studies that had more than 14 hours of professional development showed a positive and significant effect on student achievement from professional development.

This goal will only occur if teachers have sufficient content knowledge for teaching so that they are able to select appropriate tasks to address the standards, support those tasks with productive and effective questioning, and collect meaningful evidence of students' conceptual understandings and misunderstandings to guide their instruction. This focus on tasks, questions, and evidence the TQE Process (Nolan, et al, 2016).

Effective Teachers…

- Teach a curriculum aligned to standards
- Set goals for students
- Determine the needs of students using several methods including a variety of assessments

- Differentiate instruction based on the needs of students
- Use high quality assessments to measure student performance
- Work in collaborative groups to improve student achievement

PLC Expectations …

All members

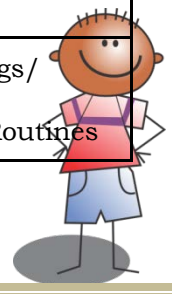
- engage as learners
- work on substantive issues that will impact teaching and learning; studying how students learn particular content and concepts, analyze evidence of student learning, plan and revise lessons based on student work, and discuss best teaching practices in particular content areas
- seek opportunities to extend their content knowledge and knowledge of best teaching practices in their content areas
- work from curriculum, standards, data, and best practices in the content areas
- promote inquiry, collaboration, and collegiality
- meet regularly and have short and long term goals

PD Plan (K – 4)

The focus of the K-4 Professional Development for the 2019-2020 school year will be on developing teacher conceptual understanding through K-2 and 2-4 grade spans. It will entail content understanding, student work analysis, teacher created assessments, data analysis, and the importance of open ended questions and anchor task usage in daily lessons. The overarching topic in Grades K-2 will be "Developing Teacher and Student Number Sense with Whole Numbers," and in grades 3-4 it will be "Connecting with K-2 Content."

Professional Development Focus

Grade Span	Overarching Goal	Topics	PD Format	Instructional Frameworks
K-2	**Increase Student and Teacher Number Sense (Whole Numbers)** The focus on number sense is being chosen to increase fluidity and flexibility of whole number understanding and application. Through data analysis, a noticed continuum of struggle is seen in grades 2-4 in many topics, such as rounding, due to the lack of number sense and overall place value understanding that is developed in Grades K-2. Emphasize trajectories of math skills to meet students are their level of understanding/ zone of proximal development.	• Counting • Subitizing • Place Value • Adding/ Subtracting • Measuring Length • Shapes	Coaching (Reflection tool/ Coaching Debrief on Google Forms) https://forms.gle/KAF7fuPbxH6LnB2CA https://forms.gle/EhyPi1bbEqDK9uRo8 • Teacher time out • Model lessons • In class support • Lesson Study District PD Days After School PLCs CPT	• Number strings/ number talks • Energizers/ Routines • Daily Problem Solving • 5 practices • Journals- Accountability in centers/ rotations • Guided Math Planning- Unit Plans for Small group • Vocabulary- concept walls • Anchor charts • *Running Records
3-4	**Connecting with K-2 Content:** Develop content/ conceptual understanding based on previous	• Adding/ Subtracting • Multiplying/	Coaching (Reflection tool/ Coaching Debrief on Google Forms)	• Number strings/ number talks • Energizers/ Routines



	structures, concepts, models, and strategies used in K-2. Emphasize connections to whole number understanding when introducing fractions/ decimals as numbers.	Dividing • Fractions as numbers/ Decimals • Area/ Perimeter • Measurement/ Estimation • Place Value • Subitizing	https://forms.gle/KAF7fuPbxH6LnB2CA https://forms.gle/EhyPi1bbEqDK9uRo8 • Teacher time out • Model lessons • In class support • Lesson Study District PD Days After School PLCs CPT	• Daily Problem Solving • 5 practices • Journals- Accountability in centers/ rotations • Guided Math Planning-Unit plans for small group • Vocabulary- concept walls • Anchor charts • *Running Records

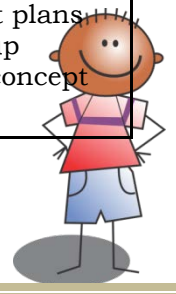
PD Plan (5 – 8)

Teachers are continually supported in their efforts through a rich Professional Development Program that provides opportunities for collaboration and growth in content and pedagogy. This office oversees a wide variety of in-district and out-of-district opportunities for all staff with the primary focus on improving instruction and creating new pathways for students to achieve.

Professional Development Focus
5-8

Grade	Overarching Goal	Topics	PD Format	Instructional Frameworks
5	**Increase Student and Teacher Number and Operations (Fractions)** In fifth grade, students achieve fluency with multi-digit addition, subtraction, multiplication, and division of positive whole numbers. Students find whole-number quotients of whole numbers with up to four-digit dividends and two-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Students develop an understanding of operations with decimals as they add, subtract, multiply, and divide decimals to hundredths. In both the 1997 California mathematics standards and the CCSS, students use their understanding of place value to read, write, and compare decimals to thousandths and round decimals to any place. Fifth-grade students expand their understanding of place value as they explain the	<u>Whole Numbers</u> • Division <u>Decimals</u> • Multiplication <u>Fractions</u> • Addition/ Subtraction in word problems using models • Multiplication • Interpreting fractions as division	<u>Coaching Cycles</u> • Reflection tool • Coaching Debrief • Model lessons • Co-Teaching • In class support • Lesson Study • Collegial Observations <u>After School PLCs</u> <u>CPTs</u> • Unit Overviews • Collaborative lesson planning • Content Development • Planning with the 5 practices • Benchmark data will be analyzed at the school and classroom level to modify instruction in a timely manner • Developing short	• Number strings/ number talks • Anchor Tasks • Daily Problem Solving • 5 practices • Journals- Accountability in centers/ rotations • Guided Math Planning- Unit Plans for Small group • Anchor charts • Providing opportunities for students to share their thinking • Fostering meaningful student discourse that promotes reasoning • Promoting the use of manipulatives and other tools in concept development • Posing challenging and interesting

	effect of multiplying or dividing by powers of 10 on decimal position and the number of zeros in a product. They also use whole-number exponents to denote powers of 10. The focus on number sense is being chosen to increase fluidity and flexibility of whole number understanding and application. Through data analysis, a noticed continuum of struggle is seen in grades 2-4 in many topics, such as rounding, due to the lack of number sense and overall place value understanding that is developed in Grades K-2. Emphasize trajectories of math skills to meet students are their level of understanding/ zone of proximal development.		and long term goals for small group • Data analysis <u>District PD Days</u> • Surveying teachers to assess needs and growth focus • Provide differentiated PD • Promote teacher leaders • Establish a new teacher's academy for support • Observations	questions • Promoting divergent strategies • Making connections between different strategies
Grade 5	**Connecting with Content:** Develop content/ conceptual understanding based on previous structures, concepts, models, and strategies used in middle school. Emphasize connections to whole number understanding when introducing fractions/ decimals as numbers.	• Division of	Coaching (Reflection tool/ Coaching Debrief on Google Forms) https://forms.gle/KAF7fuPbxH6LnB2CA https://forms.gle/EhyPi1bbEqDK9uRo8 • Teacher time out • In class support • Lesson Study	• Number strings/ number talks • Energizers/ Routines • Daily Problem Solving • 5 practices • Journals- Accountability in centers/ rotations • Guided Math Planning-Unit plans for small group • Vocabulary- concept walls



			District PD Days After School PLCs CPT	• Anchor charts • *Running Records
Grade 6	**Connecting with Content:** Develop content/ conceptual understanding based on previous structures, concepts, models, and strategies used in middle school. Emphasize connections to whole number understanding when introducing fractions/ decimals as numbers.	• Ratios • Unit Rates • Percentages • Area/ Perimeter • Measurement/Estimation • Place Value	Coaching (Reflection tool/ Coaching Debrief on Google Forms) https://forms.gle/KAF7fuPbxH6LnB2CA https://forms.gle/EhyPi1bbEqDK9uRo8 • Teacher time out • In class support • Lesson Study District PD Days After School PLCs CPT	• Number strings/ number talks • Energizers/ Routines • Daily Problem Solving • 5 practices • Journals- Accountability in centers/ rotations • Guided Math Planning-Unit plans for small group • Vocabulary- concept walls • Anchor charts • *Running Records

https://www.state.nj.us/cgi-bin/education/grants/grants_active2.pl?string=recnum=00935&maxhits=500&fed=2

2019-2020 PD Focused Concepts (9-12th Grade)

PD Plan:
One of 2019-20 District PDs for 9-12th grade will focus on "Conceptual Understanding ". It will include exploring important content/topics in 9-12th grade level, teaching skills for helping student developing specific math concepts, and creating/choosing appropriate teaching material/resource to help students build their math concepts.

The other focus in the PD will be "Common Assessment". During the PDs, teachers will understand the purpose of common assessment, and how to create test items which will assess conceptual understanding, procedure fluency, application, reasoning, and modeling ability.

Weekly CPT:
Align to district PDS, teachers will use the weekly CPTs to collaboratively work with their colleagues to select resource/material to help students develop specific concepts; additionally, they will also work as a team (by course) to develop common assessment test items based on CCSS unit by unit.

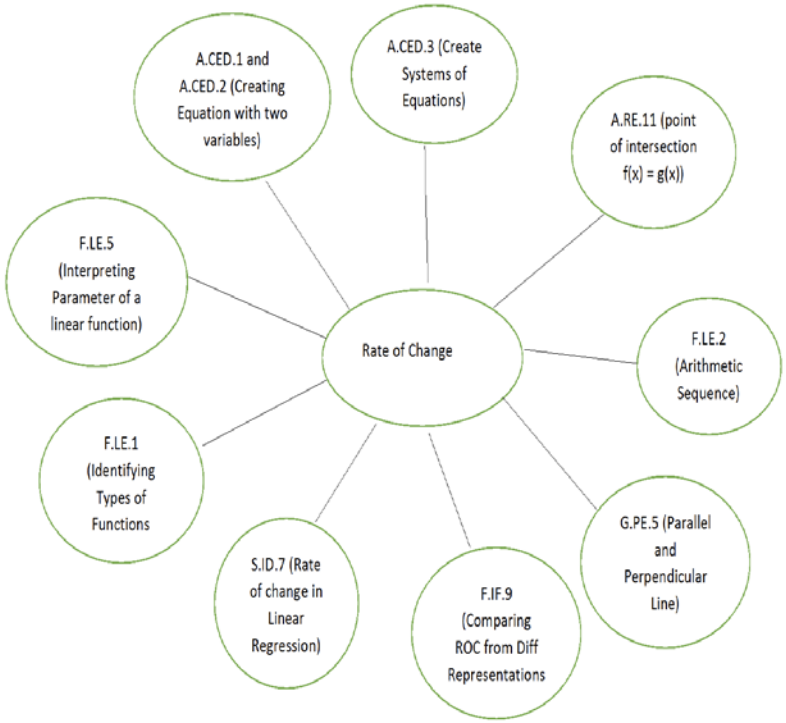
After school PD for target new teachers: (Possible focused topics)—5-day workshop

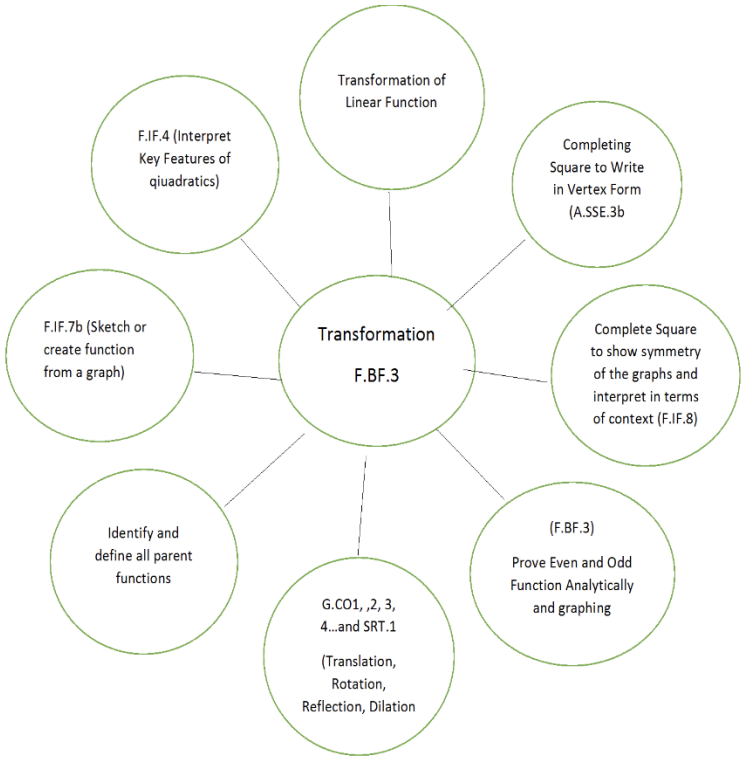
- TQE
- 5 Practice
- Ideal math block with MTSS
- Modeling & Reasoning with grading rubric
- Technology (Graphing calculator, Euplastic, NWEA…)
- Common core standards & 8 mathematical practices
- Data Analysis (item/error/standards analysis)

Instructional Expectation (PD follow up focused Look Fors):

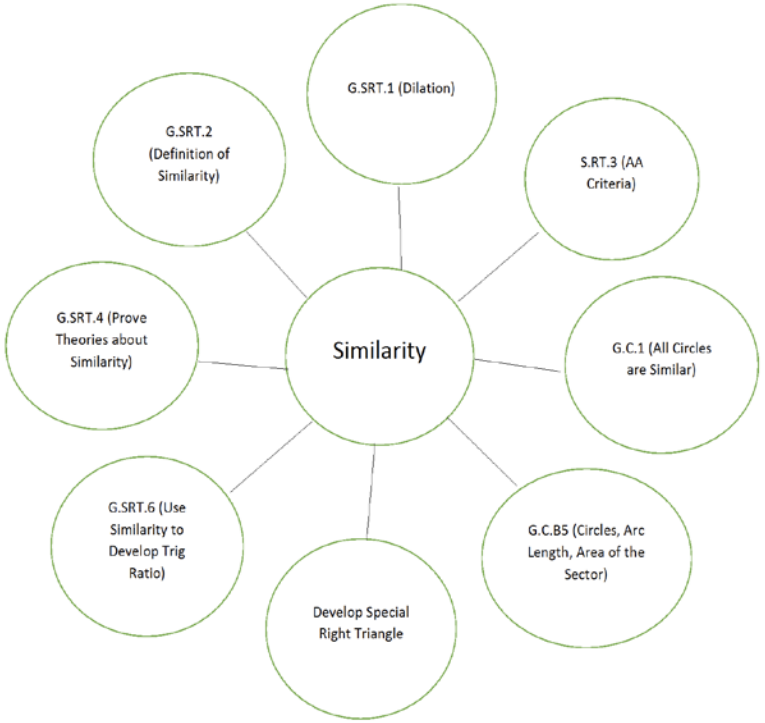
- Conceptual understanding comes before the procedure fluency
- Connect multiple representations to form solid math concepts
- Small group instruction (teacher center small group)
- Technology tools using for developing math concepts
- Using common assessment to self-reflect on own teaching

Conceptual Understanding focused content:
Algebra:





Geometry


G.SRT.1 (Dilation)
G.SRT.2 (Definition of Similarity)
S.RT.3 (AA Criteria)
G.SRT.4 (Prove Theories about Similarity)
Similarity
G.C.1 (All Circles are Similar)
G.SRT.6 (Use Similarity to Develop Trig Ratio)
Develop Special Right Triangle
G.C.B5 (Circles, Arc Length, Area of the Sector)

KEEP THE DATA

SIMPLE

&

THE ANALYSIS COMPLEX…

TASK AND ASSESSMENT RESOURCES

Illustrative Math
http://illustrativemathematics.org/

PARCC Released Items
https://prc.parcconline.org/assessments/parcc-released-items (Log in required)

Coherence Map
http://achievethecore.org/coherence-map/ (See tasks sections)

NJDOE
http://www.state.nj.us/education/modelcurriculum/math/ (username: model; password: curriculum)

DANA Center
http://www.ccsstoolbox.com/parcc/PARCCPrototype_main.html

New York
https://www.engageny.org/resource/released-2015-3-8-ela-and-mathematics-state-test-questions

Delaware
http://www.doe.k12.de.us/Page/512

TIMSS Released Assessment Items for Grades 4 & 8
https://nces.ed.gov/timss/educators.asp

Department Walk though protocol: Thinking is visible, expected, and valued.

Teacher encourages all students to learn and succeed.

1	2	3	4	5

Teacher consistently provides all students with opportunities to engage with cognitively demanding tasks, problems, and projects. They scaffold students' learning without doing the cognitive heavy lifting for them.

1	2	3	4	5

Teacher consistently provides all students with opportunities to gain knowledge and develop conceptual understanding of core, content-specific concepts.

1	2	3	4	5

Teacher encourages students to take risks, seek and offer help, ask questions, reflect on their learning, and learn from one another.

1	2	3	4	5

Teacher understands that talking through problems is a core act of learning. They make student talk and collaboration key learning routines.

1	2	3	4	5

Teacher makes assessment part of teaching. They consistently check for student understanding and use data to guide instruction.

1	2	3	4	5

Teacher apprentices students to read, write, think, talk, inquire, and reason like mathematicians.

1	2	3	4	5

Evidence Statements:

- □ Routines
- □ Anchor Task done via the 5 practices
- □ Small Group Instruction (Teacher Led)
- □ Checks for Understanding
- □ Use of Digital Content
- □ Independent Practice

Artifacts:

- □ Notebooks and Journals
- □ Lesson Plans
- □ Portfolios
- □ Student Work/Student Work Folders

PARCC POINTS TABLE

	Possible Points	Points Needed to Score a 750	Major Work	Reasoning	Modeling
Grade 3	66	33	30	14	12
Grade 4	66	37	31	14	12
Grade 5	66	34	30	14	12
Grade 6	66	37	26	14	12
Grade 7	66	26	29	14	12
Grade 8	66	26	27	14	12
Algebra I	81	22	28	14	18
Algebra II	81	28	30	14	18
Geometry	81	27	29	14	18
Integrated Math I	81	28	31	14	18
Integrated Math II	81	26	32	14	18
Integrated Math III	81	28	26	14	18

Long Term Planning

Offer a wider range of high-level course options to increase students' chances for math success; expanding the number, levels, and variety of math courses available to students while eliminating the most basic courses.

Audit all existing courses (grades 8 – Pre Calculus) to ensure alignment and that all students are prepared for rigorous math courses that will bring them at least to the pre-Calculus level.

Introduce additional options for extra-curricular support

- Algebra I Bridge for Grade 8 students
- Office Hours (Daily and Open Tutoring from 3pm – 4pm daily)
- Advisory (40 min additional time for academic support)

Cultivate mathematics support teams. In addition to meeting as a department, teachers meet in subject-specific teams that work together to plan units, develop lesson plans, and evaluate student data. Teams discuss student needs and develop extra academic supports as needed. Teachers each other's work intimately and are therefore able to hold each other accountable for teaching all of their students to a higher standard.

Establish partnerships with colleges/universities whereby students can take college-level math courses and earn college credit.

Eureka Look Fors

Fluency:

- Sprints
- Grade level appropriate Counting: Can start at numbers other than 0 or 1 and might include supportive concrete materials or visual models (Ex: Happy Counting, Red Light/Green Light. Beep Counting, Ten and Tuck, etc.)
- Whiteboard Exchange

Application Problem:

- Engage students in using the RDW Process (Read, Draw, Write a Sentence)
- Sequence problems from simple to complex and adjust based on students' responses
- Facilitate share and critique of various explanations, representations, and/or examples.

Concept Development: (largest chunk of time)

Instruction:

- Maintain overall alignment with the objectives and suggested pacing and structure.
- Use of tools, chromebooks, precise mathematical language (vocab and units), and/or models
- Balance teacher talk with opportunities for peer share and/or collaboration

Problem Set: (Individual, partner, or group)

- Allow for independent practice and productive struggle
- Assign problems strategically to differentiate practice as needed
- Create and assign remedial sequences as needed

Student Debrief:

- Elicit students' thinking, prompt reflection, and promote metacognition through student centered discussion
- Culminate with students' verbal articulation of their learning for the day
- Close with completion of the daily Exit Ticket (opportunity for informal assessment that guides effective preparation of subsequent lessons) as needed.

i-Ready:

- Monitor student progress and alerts to adjust schedules and instruction.
- Review and analyze data from assessments to prioritize and adjust instruction.

Workstations: (Pairs/Small Group/Individual)

- Differentiated activities designed to reteach, remediate, and enrich student's understanding of concepts
- Small Group Instruction: Technology (Chromebooks), Problem Solving, Fluency, Math Journal

Illustrative Mathematics Look Fors
Routines: • Implementation of daily routines   o Routines may include Number Talks, Notice & Wonder, Pole the Class, True or False, Which One Does Not Belong?, Gallery Walk, Matching/Sorting, Stronger & Clearer, Collect & Display, Collect, Critique, & Clarify, Info Gap, CoCraft Questions & Problems, Three Reads, Compare & Connect, Discussion Supports • Ensure discourse and instruction align to the focus of the routine
Activity: Planning: • Plan with the 5 Practices for Orchestrating Productive Math Discourse in mind (Anticipating, Monitoring, Selecting, Sequencing, Connecting) • Make deliberate instructional decisions based on students' needs and major work standards • Review imbedded resources and strategies designed to support the needs of the students Instruction: • Promote effective mathematical discourse through the utilization of the 5 practices • Ensure discourse and instruction align to the learning goals of the lesson • Incorporate use of chromebooks
Stations: (Small group activities such as technology, teacher targeted group, hands on, and application) Planning: • Analyze student data to identify the individual needs of the students • Group students based on data analysis and student need • Use district approved resources to prepare targeted instruction that meet the individual needs of students Instruction: • Lead small group instruction • Monitor student progress on i-Ready and intervene when necessary • Provide appropriate interventions for struggling learners and enrichment materials for high performing students
Closure: • Elicit student thinking, prompt reflection, and promote metacognition through student centered discussion • Close with completion of the Cool Downs where students are able to demonstrate their thinking (additional opportunity for informal assessment that may guide the preparation of subsequent lessons)

Math in Focus Looks Fors:

Fluency- Daily Math Fluency :

- Number Strings: A set of related math problems designed to teach strategies based on number relationships
- Math Talk: An activity designed to elicit multiple strategies and provide opportunities for students to reason about the relationships in numbers and make connections in mathematics.

Application Problem- Anchor Tasks:

- Task that allows students to engage in an inquiry based learning experience that will be taught in the upcoming lesson(s)
- Students making connections with prior knowledge, reasoning and thinking logically to apply what they know to solve a problem with a partner or small group.
- All students will be given time to work in the concrete phase to develop and hone their conceptual understanding.
- As students are ready, they will naturally explore the representational or abstract phases of learning and discover strategies, or methods, for solving the given problem. (gallery walks, anchor chart creation)
- Sharing methods that allow students to communicate mathematically to explain and defend their thinking and consolidate their learning.
- 5 Practices for Orchestrating Productive Mathematics Discussion

Practice:

- Maintain overall alignment with the objectives and suggested pacing and structure.
- Use of tools, manipulatives, chromebooks, precise mathematical language, and/or models
- Balance teacher talk with opportunities for peer share and/or collaboration
- Generate next steps by watching and listening for understanding
- Allow for independent and/ or small group practice and productive struggle
- Create and assign remedial sequences as needed (Reteach/ Remediate/ Enrich)

Workstations:

- Small group activities such as technology, teacher targeted group, hands on, and application)
- Use of chromebooks

Closure:

- Exit Tickets that are brief and intentional to assess student performance for the day

i-Ready

- Analysis of diagnostic assessment data
- Monitoring student performance
- Monitoring student alerts to intervene as necessary

9-12th Grade Math Class Look Fors:

Lesson Planning

- Lesson design is based on district approved curriculum and Big Rock initiative
- Lesson activities focused on specific concepts and skills which is aligned to course level NJSLS
- The sequence of lesson activities is coherent and aligned to lesson objectives
- High level rich tasks are selected to build on student prior knowledge and deepen learning
- District approved programs (Agile Mind, Carnegie, CPM) are used as primary teaching resource
- Intervention and Enrichment activities are planned to meet individual student needs

Instruction

Ideal Math Block:

Core Curriculum Learning:

- Implement TQE process to build student conceptual understanding and develop problem solving skills
  - Use carefully selected rich tasks (**T**)
  - Use productive questions (**Q**) to promote student thinking
  - Seek evidence (**E**) of student learning through the formative assessment
- Conceptual development should occur before the procedural skill is addressed
- Develop mathematical understanding through multiple representations
- Mathematical discourse occurs during whole group or small group activities

Intervention/Enrichment Station (MTSS)

- Small group instruction (Teacher station) must be provided for targeted group students while other students are in their personal learning path (Tech station) such as ALEKS, Khan Academy, and Carnegie Mathia
- Meaningful grouping is based on the data analysis results

Closure/Exit Ticket:

- DOL is aligned to lesson goals
- Exit ticket should be an independent work to get individual valid data used to modify next day lesson

Overall:

- Effectively using technology (smartboard, document camera, chromebooks, graphing calculus..etc) to support student learning activities.
- Lesson activities should be aligned to daily lesson plan
- Math department assessment protocol should be implemented during any test period

Digital Learning:

- ALEKS:
  - Administer pre-assessment
  - Create student personal learning pat
  - Monitor student's progress
- Carnegie Mathia:
  - Use curriculum plan to assign student assignment accordingly
  - Monitor student's progress

Student Learning Environment

- Appropriate student seating is arranged to maximum student learning achievement
- Relevant anchor charts are displayed in the classroom to enhance student learning
- An ongoing and meaningful Word Wall is displayed to maintain student mathematic vocabulary knowledge and retention
- An updated Data Wall is designed to help students to track their learning progress

Go Math Look Fors:

Lesson Planning

Lessons must prioritize long- and short-term learning goals:

- Lessons must prioritize what is most important for students to learn by providing meaningful access to relevant curricula.
- Lessons must reflect grade-level standards, assessment data and learning progressions, students' prior knowledge, and IEP goals and benchmarks to develop long- and short-term goals.
- Lessons must reflect essential curriculum components (arrow doc) and identified essential prerequisites (progressions).
- Plans should reflect district approved programs (Go Math) as the primary teaching resource
- Intervention and Enrichment activities should be planned such to meet individual student needs

Note: Lessons may reflect alignment to IEP goals in a span of 3 to 4 grade levels up to current grade based on the NWEA and iReady Performance

Instruction

Introduction/Warm Up : To focus students and engage them in learning
Purpose: To Recall pre-requisite skills

Resources:
Problem of the Day (used as the Anchor Task)
Vocabulary Builder
Fluency Builder

Small Group Instruction/Rotations: On level instruction using 5E lesson plan/Promotes discussion
Purpose: To provide direct instructional support
and intervention where needed (Engage, Explore, Explain and Elaborate of the 5E's)

Resources: Manipulatives
Online Student Edition (e-book)
iTools (digital manipulatives)
Manipulatives
5E lesson

Note: Assign the students **Quick Check** problems within the student TEXTBOOK for the EXPLAIN portion of the lesson to ensure understanding (see below). Use **Math on the Spot** to ELABORATE (w/in PMT). Finally, make an instructional determination for Intervention

RTI activities
Reteach pdf
Strategic Intervention resources
Intensive Intervention resources

Independent/ Collaborative Stations: Lesson Reinforcement
Purpose: Practice and reinforcement of new and pre-requisite skills; Independent reteach (Evaluate of the 5E's)

Resources: Personal Math Trainer (evaluate) or

Textbook

Resources to Promote Collaboration:
Grab and Go Kit (games & activities)

Resources to Promote Independent Thinking:
Animated Math Models
Mega Math
Concept Readers
Homework

- and **iReady**

Closure : To summarize and solidify learning (Exit Ticket, Essential Question Check-in)

Resources: Math Journal (teacher's edition)
Essential Question check in
Lesson Summary

Classroom Environment

- Students are modeling, drawing, listening in groups and on their own
- Students articulate their understandings through Math Talk
- Participation strategies are used: Turn and talk; pair share, wait time, guided practice
- Relevant anchor charts are displayed in the classroom to enhance student learning
- An ongoing and meaningful Word Wall is displayed to maintain student mathematic vocabulary knowledge and retention
- Student learning goals are posted
- Charts are posted that dynamically display daily student grouping and rotations
- All students have access to Chromebooks to engage in lessons
- Teacher uses the Document Camera to share student approaches to problem solving

Calendar

SGO Sample

Lesson Plan Sample 1

Mathematics
Grade 7
September 9, 2019

Unit Plan 5, Lesson 7, Adding and Subtracting to Solve Problems

Standards:

7.NS.A.1.c-Understand subtraction of rational numbers as adding the additive inverse, . Show that the distance between two rational numbers on the number line is the absolute value of their difference, and apply this principle in real-world contexts.

7.NS.A.3-Solve real-world and mathematical problems involving the four operations with rational numbers. Computations with rational numbers extend the rules for manipulating fractions to complex fractions.

Essential Questions: A **question** that lies at the heart of a subject or a curriculum and one that promotes inquiry and the discovery of a subject. **Essential Questions** are critical drivers for teaching and learning… They can help students discover patterns in knowledge and solve problems.

Essential Question Sample:

How can we apply properties associated with addition/subtraction and multiplication/division to manipulate algebraic expressions to find (equivalent values or expressions) when solving problems?

Lesson Objective(s): Sets the goals for the lesson. Anchors the thinking. What are the students responsible for learning?

Objective Sample:

I can solve problems involving the addition and subtraction of integers; correctly answering 4 out of 5 practice problems.

Prerequisite Questions: Identification of questions that will be asked in advance of delivering the lesson. Utilize Bloom's Taxonomy Questioning Cues to ignite the questions in the lesson. As students are learning, more questions will be delineated however these pre-requisite questions will assist with the creation of the lesson accordingly.

Lower-Order Thinking Questions:
Medium-Order Thinking Questions: (at the end of Bloom's in the lower tier section and analyzing at the top of the higher order tier section)
Higher-Order Thinking Questions:

Pre-Requisite Questions Sample:

Lower Tier Question: How would you use integers in the real world?

Medium Tier Question: How can a vertical or horizontal number-line be used to explore the addition and subtraction of integers? How would you explain the difference between the addition of integers and the subtraction of integers? How is the addition and subtraction of

integers related? How do you rewrite subtraction expression as an equivalent addition expression?

Higher Tier Question: Generate your own rules for adding two or more positive integers; subtracting two or more positive integers; for adding a positive and a negative integer; for obtaining a sum or zero when adding two integers.

Technology Integration: How will the technology enhance the lesson. What will be used?

Technology Integration Sample:

Teacher will explore online applets such to provide visual representations for adding and subtracting positive and negative numbers (e.g. number-line, two-color counters; and algebra tiles).

Teacher will use Chromebooks in the effort of students answering extended constructed response (ECR) question accordingly. Students will then upload their completed ECR into the Math ECR Google Drive Period One Class Folder September 9, 2019.

Instructional Do-Now: How are we launching the lesson?

Instructional Do-Now Sample:

Without computing:
Is the solution to -2.7 + x = 3.5 positive or negative?

Arrange students in groups of 2. Give students 30 seconds of quiet think time and ask them to give a signal when they have an answer and a strategy for the first question. Then have them discuss their reasoning with a partner. Ask for an explanation, and then ask if everyone agrees with that reasoning.

The I Do: The modeling of the practice

I Do Sample:

Exploration of the 5 Practices using the Anchor Task #1 [Activity 7.3]: Han's family got a solar panel. Each month they get a credit to their account for the electricity that is generated by the solar panel. The credit they receive varies based on how sunny it is. What is the difference between the value of the electricity generated in week 1 and week 2? Between week 2 and week 3?

5 Practices:

- Anticipating
- Monitoring
- Selecting

- Sequencing
- Connecting

Activity Synthesis: Ask selected students to share their reasoning for the second questions. Discuss the relative merits of different approaches to solving the problem.

The **We Do** (Collective Student and Teacher). Here students and teachers are engaging in the instructional practice.

We Do Sample:

Have students continue with Activities 7.2, and 7.4; employing the instructional routines where needed
(e.g. Think Pair Share, 5 Practices, Lesson Synthesis, etc.)

The **You Do:** (Students on their own; Teacher facilitating the learning.) Students here may be asking one another questions or teacher may ask a few questions based on what is observed.

You Do Sample:

Lesson 7 Practice Problems 1 – 2; Students in pairs are completing several questions as it relates to adding and subtracting integers. Teacher is walking around in order to see which students understand the topic and provides additional support to those that do not; extends learning to those that can.

Differentiation of Instruction: How is the lesson tiered for the following subsets of students?

Higher Tiered Students (How are we stretching them to think more critically? Not having them simply assist a struggling student. We want their learning to be outside of the box.)

Medium/Benchmark Tiered Students: Think of this as the lesson is constructed for the benchmark learner.

Lower Tiered Students: Questions will be modified

Differentiation of Instruction Sample:

Higher Tiered Students: Have students complete the "Are You Ready for More" sections.

Medium/Benchmark Tiered Students: Students complete select questions from the "Are You Ready for More" sections.

Lower Tiered Students:

ELL: Employ the Support for English Language Learners e.g. *Language Routine 6 & 8: Discussion Supports using sentence frames or Three Reads to support reading comprehension.*

Struggling Learners/SNs: Employ supports for Conceptual Processing: Processing Time: e.g. *Review an image, video, or lead a discussion about store inventory in order to activate prior knowledge of the context of the problem.*

Small Group Instruction: What is the expectation of learning here? What are the small groups doing as it relates to the accomplishment of the objective? How are ancillary skills being developed in the small group setting?

Small Group Instruction Sample:

Students will be grouped based on results from the previous two quizzes and today's lesson. Groups will move in 15-minute intervals.
Groups:

- Exploration Station: Completion of Practice and Extension Problems
- Digital Content: iReady Practice
- Teacher-Led Small Group Instruction: The teacher will work with the students struggling with integers in a small group of 3 to 4.

Assessments: How are you ensuring that students understood the lesson's goals i.e. some type of project, discussion with a scripted takeaway, quiz, think, pair, and share activities, as well as extended constructed response question(s).

Assessments Sample:

1) Extended Constructed Response Question (See attached)
2) Questioning led by teacher and ultimately the students
3) Exit Ticket: 4 Questions to answer on the topic

21st Century Alignment:
Learning Skills
Critical Thinking
Creative Thinking
Collaborating
Communicating

Literacy Skills
Information Literacy
Media Literacy
Technology Literacy

Life Skills
Flexibility
Initiative
Social Skills
Productivity
Leadership

21st Century Alignment can be identified (so identify which 21st Century alignment skill or skills you are using and how via a short response.)

21st Century Sample:

Critical Thinking will be used -- Implement problem-solving strategies to solve a problem in school or the community. The teacher will provide an extended constructed response question in order to gauge student extended learning. Students will have to also think critically to answer varying questions on integers.

Homework: Homework MUST be an extension of the lesson's goals. How are you ensuring that the learning is extending beyond what was taught as it related to the lesson?

Homework Sample:

4 problem solving questions based on +/- of integers

Lesson Closure/Exit Ticket: Be specific how you are closing the lesson and what the measurable exit ticket will be.

Lesson Closure/Exit Ticket Sample:

Lesson Synthesis -What are some situations where adding and subtracting rational numbers can help us solve problems?
Cool Down – Activity 7.5 Coffee Shop Cups (Expectation is 4 out of 5 (80%) are answered correctly.)

Lesson Plan Sample 2

Mathematics
Grade 2
September 9, 2019
Unit Plan 1, Lesson 3, Adding to Make Ten

Standards:

2.OA.1- Use addition and subtraction within 100 to solve one- and two-step word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions

2.OA.2- Fluently add and subtract within 20 using mental strategies.2 By end of Grade 2, know from memory all sums of two one-digit numbers.

2.NBT.5-Fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.

Essential Questions: A **question** that lies at the heart of a subject or a curriculum and one that promotes inquiry and the discovery of a subject. **Essential Questions** are critical drivers for teaching and learning… They can help students discover patterns in knowledge and solve problems.

Essential Questions Sample:

What strategy do you use to determine the choice of adding methods?
How can you use models and mental math to add numbers?
How can you show the number 10 as two parts?
How can you use a known part of 10 to find a missing part?

Lesson Objective(s): Sets the goals for the lesson. Anchors the thinking. What are the students responsible for learning?

Objective Sample:

I can make a ten when one addend is 9, 8, or 7.

Prerequisite Questions: Identification of questions that will be asked in advance of delivering the lesson. Utilize Bloom's Taxonomy Questioning Cues to ignite the questions in the lesson. As students are learning, more questions will be delineated however these pre-requisite questions will assist with the creation of the lesson accordingly.

Lower-Order Thinking Questions:
Medium-Order Thinking Questions: (at the end of Bloom's in the lower tier section and analyzing at the top of the higher order tier section)
Higher-Order Thinking Questions:

Pre-Requisite Questions Sample:

Lower Tier: Can you orally count to 10? Can you show me 10 items?

Medium Tier: Can you show me how to decompose numbers into 2 parts? What is the relationship between an addend and the sum in an addition equation?

Higher Tier: How can you use the strategy learned with other addition problems? Can you create an example? What patterns did you notice?

Technology Integration: How will the technology enhance the lesson. What will be used?

Technology Integration Sample:

I-Ready
Class Dojo
ST Math

Instructional Do-Now: How are we launching the lesson?

Instructional Do-Now Sample:

Number Routines/ Fluency

Number Strings Activity: Go to Ten
6+4
6+3
3+7
3+8
5+4

The I Do: The modeling of the practice

I Do Sample:

Anchor Task: Mark had a stick of 9 green linking cubes. His friend gave him 4 yellow linking cubes. How many linking cubes does Mark have now?

Emphasizing the various models and strategies used to solve.

The **We Do** (Collective Student and Teacher). Here students and teachers are engaging in the instructional practice.

We Do Sample:

Part 1 & Part 2 of concept development in Module 1 Lesson 4 in which students use circles and x's to show the combinations to make 10 that can be created when 9, 8, or 7 are an addend. Students discuss their noticings with their peers throughout the experience.

The **You Do:** (Students on their own; Teacher facilitating the learning.) Students here may be asking one another questions or teacher may ask a few questions based on what is observed.

You Do Sample:

10 minutes of Independent Practice from Problem Set of Module Lesson 4
Discuss responses with a peer when complete.

Differentiation of Instruction: How is the lesson tiered for the following subsets of students?

Higher Tiered Students (How are we stretching them to think more critically? Not having them simply assist a struggling student. We want their learning to be outside of the box.)

Medium/Benchmark Tiered Students: Think of this as the lesson is constructed for the benchmark learner.

Lower Tiered Students: Questions will be modified

Differentiation of Instruction Sample:

Provide templates of pre-drawn circles to model addends of 9,8, and 7.
Incorporate 2 colors of linking cubes
Provide a ten frame

Problem Set Differentiation:
Low- # 1-6
Medium- # 1-2, 8-12
High- # 9-14 (Create a rule when one addend is 7,8, or 9)

Small Group Instruction: What is the expectation of learning here? What are the small groups doing as it relates to the accomplishment of the objective? How are ancillary skills being developed in the small group setting?

Small Group Instruction Sample:

M (Meet with me) Practice finding partners of 10 with ten frames and linking cubes.
A (Application) Provide students with Add to Result Unknown Word Problems to complete with a partner within 20
T (Technology) iReady Station/ST Math Station

H (Hands on) Make a ten game: Roll dice for the first addend and provide second addend needed to make a 10.

Students will participate in 2 centers daily.

Assessments: How are you ensuring that students understood the lesson's goals i.e. some type of project, discussion with a scripted takeaway, quiz, think, pair, and share activities, as well as extended constructed response question(s).

Assessments Sample:

1) Lesson Exit Ticket
2) ECR (I have 6 dragonflies, but I want 10 dragonflies. How many more do I need to catch? Draw a model to explain your response)

21st Century Alignment:

Learning Skills
Critical Thinking
Creative Thinking
Collaborating
Communicating

Literacy Skills
Information Literacy
Media Literacy
Technology Literacy

Life Skills
Flexibility
Initiative
Social Skills
Productivity
Leadership

21st Century Alignment can be identified (so identify which 21st Century alignment skill or skills you are using and how via a short response.)

21st Century Sample:

Critical Thinking:
Use various types of reasoning as appropriate to the situation.
Solve different Kinds of non-familiar problems in both conventional and innovative ways.

Social Skills:

Articulate thoughts and ideas effectively using oral, written, and non-verbal communications skills in a variety of forms and contexts**.**

Homework: Homework MUST be an extension of the lesson's goals. How are you ensuring that the learning is extending beyond what was taught as it related to the lesson?

Homework Sample:

Module 1 Lesson 4 Homework:
Low- # 1,3,5,7
Medium- # 9 (5 Parts)
High- # 9-10

Lesson Closure/Exit Ticket: Be specific how you are closing the lesson and what the measurable exit ticket will be.

Lesson Closure/Exit Ticket Sample:

Student Debrief as whole class:
Do you notice a pattern that will help you memorize your 9-plus facts? What other patterns do you notice?
Explain the strategy that we reviewed today. Can you think of another problem that the make 10 strategies will help us solve?

Completion of lesson exit ticket