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Saxon Math in the Middle Grades: A Content Analysis

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Abstract. This paper discusses a content analysis of the Saxon Math curriculum in the middle school grades of 6th to 8th grades. Researchers reviewed the Saxon math program's philosophical and pedagogical intent in light of common curriculum ideologies and the adoption of the Common Core State Standards across the United States. Data were gathered and analyzed in the areas of clarity, comprehensiveness, accuracy, depth of mathematical inquiry and mathematical reasoning, organization, and balance. Strengths of the program include comprehensiveness, accuracy, and organization.

Keywords: mathematics education; curriculum; content analysis; Saxon Math; middle grades.

Introduction

Public education is a complex struggle between competing cultural interests, hard practical and bureaucratic realities, and the needs of various stakeholders. The political and social conditions of any given time and geographical region, greatly influence what society deems important, and thus, what should be passed along to the rising generation. In nothing are political, economic, religious, social, and educational interests more controversial than what should or should not be included in the public school curriculum. With the Russian launch of Sputnik in 1957 and the ensuing passage of the National Defense Education Act of 1958, the specific development of more rigorous mathematics curriculum took on a greater urgency in the United States of America. However, what defines "rigorous" continues to be, and has only become, more controversial over time.

In 1989, the National Council of Teachers of Mathematics (NCTM) published its pioneering *Curriculum and Evaluation Standards for School Mathematics*. A subsequent revision of this landmark publication under the new title, *Principles* *and Standard for School Mathematics,* followed in 2000. These, along with the passage of the No Child Left Behind (NCLB) Act of 2001 and the adoption of the Common Core State Standards in Mathematics (CCSSM) (Common Core State Standards Initiative, 2010) by the majority of the states, contributed to an even higher level of accountability in mathematics, with its accompanying emphasis on high-stakes testing for all groups of students. As such, it became of great importance to many interest groups from parents, to legislators, to textbook companies at federal, state, and local levels to determine what constitutes a "rigorous" and "effective" mathematics curriculum.

It is beyond the scope of this project to consider all the mathematics curriculum available in today's vast offerings. However, it may be of help to various stakeholders, decision makers, and researchers for systematic content analyses of particular mathematics programs. Therefore, the purpose of this project is to provide a thorough content analysis of one specific mathematics program in the middle grades: the Saxon math middle school sequence consisting of the curricular resources associated with Course 1, Course 2, and Course 3.

Review of Relevant Literature

Three areas influenced the design and implementation of this content analysis: current common curriculum ideologies, the Saxon math program philosophical and pedagogical intent, and previous research on the effectiveness of the Saxon math program.

1. Curriculum Ideologies

While many curriculum researchers have given labels to past and current interest groups (Apple, 2004; Kliebard, 2004; Noddings, 2013), Eisner (2003) identified six current overarching curriculum ideologies that will be referenced in this paper as a way to describe the complexities found in the current political and economic climate in the United States: religious orthodoxy, rational humanism, progressivism, critical theory, reconceptualism, and cognitive pluralism. Kliebard (2004) also introduced the concept of social efficiency as an ideology that will be added to Eisner's list. A brief definition of each ideology follows.

Religious orthodoxy refers to the ideological stance associated with a belief in the importance of God's word in defining the content, aims, and conditions of education practice (Eisner, 2003). Thus, the objective of an orthodoxy is to mold others' perspectives so they are consistent with the views contained in the orthodoxy. However, dogmatism can also be thought of as an orthodoxy. This can include both liberal and conservative dogmatism. Any curriculum ideology that attempts to develop unquestioning "true believers" could fall under this category. It is an interesting side note that many private schools, including both secular and non-secular, choose Saxon math as their math program. In addition, Saxon math started out as a home school curriculum that expanded first to private and then to public school (especially public charter schools).

The rational humanism ideological perspective advocates for all children to receive equally superior content; or, the very best the culture has to offer, as determined by societal norms. As such, electives are undesirable and vocational studies should only be attempted after the general education of a child (Eisner, 2003). Progressivism as an ideology advocates for the emotional and social life of the child with an emphasis on improving the social order. Many of John Dewey's ideas are associated with progressivism even though he often advocated for a blending of ideological perspectives (Dewey, 2003). Critical theory as an ideology advocates for the acknowledgement of the implicit values that fundamentally control the educational enterprise. Thus, the revealing of the hidden curriculum along with whose interests are being served is essential (Eisner, 2003). Reconceptualism as an ideology promotes a deep appreciation for personal meaning, lived experience, creative expression, and for qualitative ways of describing and measuring phenomenon (Eisner, 2003). Cognitive pluralism focuses on the plurality of meaning and intelligence (Gardner, 1993) and the need to expand the idea of literacy to be all ways in which human being communicate.

The final ideology considered for this analysis is that of social efficiency. Kliebard (2004), which emphasizes the creation of a coolly efficient, smoothly running society. While this ideology had its beginning at the turn of the 20th century, aspects of this ideology are so embedded in American culture as to be almost unconscious. While it is not one of Eisner's six current ideologies, and is unpopular with current researchers, it nonetheless permeates the bureaucratic and organizational structure of schools to such a degree, there really is no other ideology that encompasses the current state of accountability.

In the current political climate with the implementation of CCSSM and the high-stakes testing environment, the rational humanism and social efficiency ideologies seem to dominate the landscape of mathematics curriculum in the United States; although aspects of reconceptualism and cognitive pluralism can be found in the CCSSM as part of the mathematical practices (NCTM, 2000, 2014). Saxon math programs seem to resonate with those interest groups that have religious orthodoxy, rational humanism, and social efficiency ideological tendencies. From this researchers' experience those with progressive, critical theory, reconceptualistic, and cognitive pluralistic leanings tend to criticize the Saxon math program.

2. Program Philosophy and Pedagogical Intent

The Saxon mathematics educational philosophy is very different from most traditional and reform mathematics programs. This difference is most felt in the organizational structure of the program. Instead of units grouped around specific big ideas, Saxon math breaks apart these units and distributes and integrates the concepts across the year. The philosophical foundation behind this is the belief that the mastery of standards happens at different rates for different students, a reconceptualist idea. However, the philosophy proposes students need time to interact with mathematical ideas and to process these ideas to achieve long lasting mastery, or automaticity, of each part of every standard, more of a rational humanist idea. Within this distributed and integrated structure, content is supposed to be mastered through small increments, called lessons, followed by daily, cumulative and integrated practice, and strategically-placed assessments every five lessons ("Saxon math," 2013); a socially efficient idea. Because of this organizational structure, the intent for the teacher is to teach every lesson, without skipping lessons (rational humanism and socially efficient). While lessons can be combined to quicken the pace or enriched with various internal or external materials, the developers do not intend for teachers to skip lessons or alter the order of the lessons.

In 2007, Saxon math, as a subsidiary of Harcourt publishers, underwent major revisions to their standard middle grade texts. Previously known as Math 76, Math 87, and Algebra ½, these texts were redesigned to give more emphasis to problem solving, inquiry, technology, manipulative use, and to enhance teacher resources. These revised texts were renamed Course 1, Course 2, and Course 3 and are intended for grades six through eight. In 2010 and 2012, Harcourt added "Standards Success Books" with additional materials and topics to help align the texts to the new Common Core State Standards in Mathematics (CCSSM). These additional materials included extra topics with instructions for when to teach them in the organizational structure along with additional student and teacher resources.

3. Discussion of Previous Research

As a result of these new revisions, there are no research studies using the new Course 1, 2, and 3 texts. However, there are many studies which looked at the older Saxon math sequence. These research studies show mixed results in effectiveness. For example, in an experimental study comparing students using Saxon math 87 to a group using the KeyMath Teach and Practice program, students using Saxon performed better on math computations (Greathouse, 1997). In analyzing the effects of Saxon math on middle school students in Texas, California, and North Carolina, using their respective standardized tests, researchers found small to large positive effect sizes for all students, regardless of demographics, although not significantly different from other math programs (Resendez & Azin, 2007; Resendez, Fahmy, & Azin, 2005; Resendez, 2008; What Works Clearinghouse (ED), 2010). Since these predate the implementation of the CCSSM, research on the effectiveness of these new revisions will need to be done as assessments aligned with the CCSSM become available. However, to begin this process, the purpose of this paper is to provide a thorough content analysis of the Saxon math middle school curriculum comprising Course 1, Course 2, and Course 3 in light of the CCSSM. It is hoped this content analysis will help inform future researchers interested in the effectiveness of the revised Saxon curriculum.

Methodology

In conducting this content analysis, the criteria are taken from the recommendations outlined in *On Evaluating Curricular Effectiveness: Judging the Quality of K-12 Mathematics Evaluations* (2004). First, from the disciplinary perspective, this analysis will look at Saxon math's clarity, comprehensiveness, accuracy, depth of mathematical inquiry and mathematical reasoning, organization, and balance. These are defined as follows:

1. Clarity of mathematics content: Are there too many disjointed and overlapping mathematics topics? Are there objectives or an identification of the major conceptual ideas?
2. Comprehensiveness: Are the CCSSM completely covered? Do they prepare students for the next level?
3. Accuracy: Are there errors?
4. Mathematical inquiry: What are the elements of intuition necessary to create insight into the genesis and evolution of mathematical ideas, to make conjectures, to identify and develop mathematical patterns, and to conduct and study simulations?
5. Mathematical reasoning: Formalizations, definition, and proof, often based on deductive reasoning, formal use of induction, and other methods of establishing the correctness, rigor, and precise meaning of ideas and patterns found through mathematical inquiry.
6. Organization: Is there a logical progression of concept development?
7. Balance: What is the relative emphasis among the choices of approaches used to attain comprehensiveness, accuracy, depth of mathematical inquiry and reasoning, and organization? What curricular choices were made to enact the curriculum in real time?

Second, from the learner perspective, this analysis will look at the program's engagement, timeliness and support for diversity, and assessment, defined as follows:

1. Engagement: How do the materials capture a variety of aspects of attention to students' participation in the learning process that may vary because of considerations of prior knowledge, interests, curiosity, compelling misconceptions, alternative perspectives, or motivation?
2. Timeliness and support for diversity: How does this meet the needs of all students, in terms of the level of preparation (high, medium, low), the diverse perspectives, the cultural resources and backgrounds of students, and the timeliness of the pace of instruction?
3. Assessment: How do these materials determine what students know?

Finally, from the teacher perspective, this analysis will look at the program's intended pedagogy, resources, and professional development (National Research Council, 2004), again, defined as follows:

1. Pedagogy and resources: How do the materials pay attention to the abilities and needs of teachers? Do the materials help strengthen teachers' content knowledge? How are children expected to be filtered (grouped)? What resources do teachers have to deal with various situations?
2. Professional development: What are the expectations of the designers for professional development? How are teachers expected to develop deeper understandings?

Participants

While considering these questions, the researcher met with a group of 4 middle grades mathematics teachers at a suburban, public charter school to systematically review every lesson to identify which CCSSM standard(s) were covered (see Appendices A, B and C for coverage tables). The researcher discussed the best placement with the teachers and came to consensus before moving to the next lesson. However, sometimes the group decided to go back and reassess their decisions as future lessons were considered. In all about 50 hours were spent in this analysis.

Results

1. Disciplinary Perspective

Clarity of mathematics content. The philosophy behind the Saxon math organizational structure does not allow for the identification of major conceptual ideas in the traditional sense of a unit. While objectives are listed for every individual lesson, teachers would need to create an awareness of the big ideas of the CCSSM for their students. There is only minimal help for this in the teacher materials. Also, because of the distributed and integrated approach, various standards from third through high school are covered in Course 1 and Course 2. In Course 3, various standards from 4th through high school are covered. In addition, topics are arranged in a distributed way. For example, in lessons 66-70 of Course 2, the standard 7th grade text, the following topics are covered with the corresponding CCSSM standard in parentheses: Ratio Problems Involving Totals (6.RP.3), Geometric Solids (7.G.3), Algebraic Addition (7.NS.1a, 7.NS.1b, 7.NS.1c, 7.NS.1b), Proper Form of Scientific Notation (8.EE.3), and Volume (6.G.2). While all of the standards from the 6th, 7th, and 8th grade core are covered in each respective course if all the lessons are taught with the additional topics from the Standards Success Books, the depth required by the core would need to be consciously developed by the teacher. While resources exist to do this, it is not necessarily laid out for the teacher.

As further examples, in Course 2, only 62 out of the 132 lessons specifically cover 7th grade CCSSM standards. The other 70 lessons include content from 6th grade (35 lessons), 8th grade (17 lessons), 5th grade (15 lessons), 4th grade (9 lessons), high school (5 lessons), 3rd grade (3 lessons), and not in the CCSSM (3 lessons). In Course 3, only 57 out of the 160 lessons include content specifically from the 8th grade CCSSM standards, the other 103 lessons include content from high school (45 lessons), 7th grade (33 lessons), 6th grade (32 lessons), not in the CCSSM (7 lessons), 5th grade (2 lessons), and 4th grade (3 lessons). It should be noted that lessons sometimes cover content from multiple grade standards. It would be easy for an inexperienced teacher to skip the level of preparation needed to highlight the big ideas expected by the CCSSM and have students experience a disjointed collection of various topics. Thus the clarity, expected by the CCSSM, is the major weakness in the Saxon math middle school offerings.

Comprehensiveness. The CCSSM standards are completely covered in each of the Courses (see Appendices A, B and C for coverage tables) if used in conjunction with the Standards Success Books. If all the lessons are taught, each course builds on the next so students are prepared for the next level. A comprehensive review of previous levels is part of the first 20-30 lessons to ensure all students are prepared before moving into more complex topics. Thus, comprehensiveness is a strength in the Saxon math middle school curriculum.

Accuracy. With the new revisions there are some errors in the solutions manuals. In some instances, entire blocks of questions are different from the problems in the student textbooks, especially in Course 2. The problems are less in the solutions manuals of Course 1 and Course 3. The errors are mainly in the solutions to the problem sets (homework). There are rare errors in the test solutions. However, the problems and answers are always correct in the teacher's manual highlighted in red. The examples in the teacher and student texts and resources are also always mathematically correct. Thus, accuracy for these materials is a strength if the solutions manuals are disregarded and other resources are used to grade assignments.

Mathematical inquiry. The new revisions included a much heavier emphasis on inquiry, technology use, and problem solving. Every lesson includes problem solving activities and exercises. In addition, every 10 lessons there is an investigation encouraging mathematical inquiry and depth. Performance tasks and activities are available every five lessons to allow students to explore topics in the real world and to explain their thinking with open ended questions. However, the performance tasks are additional resources and could be skipped easily if a teacher were not aware. Thus mathematical inquiry is a slight weakness for this program.

Mathematical reasoning. The elements of formalizations, definition, and proof are found scattered throughout the lessons and especially in the investigations. As the courses progress, there is more of an emphasis on this in Course 2 than in Course 1 and even more in Course 3 than in Course 2. Mathematical reasoning is a slight weakness for this program.

Organization. There is a logical progression of concept development. Concepts are carefully developed, integrated, and practiced to create a foundation for more complex topics. Especially taken across the full three years, students are very well prepared by the organization to be successful in high school courses. This is a strength for the Saxon math program.

Balance. The Saxon math philosophy is centered on the concept of automaticity, or that students can look at a problem and know how to approach it with rapid ease. The program does not expect mastery when a topic is first introduced. The program carefully spirals to allow students time to process concepts and practice them to promote long-term retention. As such, clarity and depth of mathematical inquiry and reasoning are partially sacrificed for comprehensiveness, accuracy, and organization. The Saxon math program does what it says it does. It promotes long-term retention through distributed practice and integrated topics.

2. Learner Perspective

Engagement. The program has a built in review period at the beginning of each level. The first 20-30 lessons allow for a review of previous concepts that could be used to help students that may lack prior knowledge, or these lessons could be rapidly covered for those who do not. In addition, early finishers in the written practice offer the opportunity to deepen mathematical learning with problem solving, cross-curricular, and enrichment activities. Extensions in the investigations allow students to expand their knowledge of the investigation concepts, work on their higher-order thinking skills, and explore more connections. The teacher also has access to "Extend the Problem" suggestions for more ways to engage the advanced learner. Performance Tasks and activities also allow for real-world connections. Graphing calculator activities, online activities, and manipulative kits are available for greater depth of understanding. If teachers choose to use these materials, there are multiple ways to appeal to students with various differentiated needs. However, the materials are not designed to explore issues of power or social justice. Teachers would need to supplement such materials if this were a goal of their school or district.

Timeliness and support for diversity. While the developers generally expect teachers to cover one lesson a day, adaptations are available for faster and slower paces as needed. Adaptations are available for special education or self-contained resource classrooms, Title I resources exist for pullout programs, and a test and practice generator is provided to create individualized worksheets. In addition, throughout the student text, ESL/ELL students have structures to help them acquire mathematical understanding through visual models, hands-on activities, and mathematical conversations and language prompts. Teacher notes in this area focus on language acquisition, not on re-teaching or simplifying the mathematics. If social justice issues are not a primary, or even secondary goal, this is a strength of the Saxon math curriculum.

Assessment. During instruction, opportunities for assessment include practice sets and the daily written practice. Re-teaching masters are also available for every lesson. Every five lessons there is a Power-Up test to assess basic facts and skills, as well as problem solving strategies, and a Cumulative Test to check mastery of concepts from previous lessons. Two test versions are provided for retake opportunities. Again, teachers can make individualized assessments, as needed. Every quarter, there is a multiple choice benchmark test. A final multiple choice exam is also available. Performance tasks with accompanying rubrics are available every five lessons for alternative ways to assess mastery. A deficiency is assessment in the use of technology. The assessments are all paper and pencil tests.

3. Teacher Perspective

Pedagogy and resources. Teacher materials list the objectives of each lesson, the materials needed, the math language introduced or needed (including ESL specific vocabulary), and the technology resources and adaptations available. In addition, teacher tips referring to ways to use manipulatives, think about concepts, and anticipate student errors are embedded in the teacher text. Specific prompts are given to encourage mathematical discourse, develop problem solving strategies and tie in to past and future concepts. There are many resources to help teachers with limited abilities including partial scripts, if desired. Specific sections in the teacher materials help teachers to make connection to other subjects such as geography, history, science, and sports. Every ten lessons, possible big ideas are listed such as algebraic thinking, probability and fractions, equivalence, measurement and geometry, and spatial thinking. However, teacher learning through inquiry is not explored explicitly.

Professional development. Professional development is available through Harcourt Publishers however it is sparse and not required. "Advanced Implementation Workshops" and webinars such as "Response to Intervention: Supporting All 3 Tiers", "Getting to Know the Common Core", and "Classroom Observation Best Practices for Administrators" are available although somewhat generic. These offer some instruction to teachers; however, the program was designed to be implemented with minimal professional development. The developers do not push for schools to purchase professional development packages as part of implementation. This is a weakness of the program.

Discussion

As a comprehensive K-12 program, Saxon math provides a unique choice in today's curricular offerings. Due to its unusual organizational structure constructed of distributed units of instruction, integrated strands, and incremental learning, no other program looks or feels like Saxon math. In keeping with the developers' philosophical and pedagogical intent, the program has strengths and weaknesses that need to be considered before adoption, as well as features that may appeal to certain ideological leanings.

The strengths of the program include comprehensiveness, accuracy, and organization. This is consistent with the developers' intent to foster long-term mastery and automaticity. While mathematical inquiry and reasoning have been greatly enhanced from previous editions, it is still not a central goal in the middle school courses. Teachers would need to consciously and purposely integrate this aspect of the program. While resources exist, they are not as easily integrated into the teacher materials and could be overlooked by less experienced teachers.

Student engagement, resources for diverse needs, and assessment are also strengths of this program rational humanism and socially efficient perspectives. Teachers have access to a wide variety of formative and summative paper and pencil assessments. Many ways to track student progress are embedded in the program. Teachers also have access to many different ways to engage students, enrich and enhance learning, and reteach as necessary.

The greatest weakness of the program is clarity of mathematical content due to its lack of organization around big ideas. Other weaknesses include integration of technology and professional development. While technology use has been added to the new revisions (previously technology was completely absent), there is still a general lack of technology use to explore and expand on concepts.

Teacher professional development is also generally lacking. It appears the developers feel a teacher should be able to read the materials and know how to teach the program. While professional development is available, it is only vaguely program specific and generally comes across as an afterthought.

Recommendations for Improvement

In future revisions, the developers could keep true to their philosophical and pedagogical intent and still integrate technology and socially justice focused activities or investigations more pervasively throughout the lessons. This could also be a way to organize the content around big ideas and thus address the clarity of mathematics content weakness. In addition, professional development needs to be developed specifically for Saxon math. As a program so unique, it would increase the validity of the program to ensure implementation is happening across classrooms in line with the programs foundational principles. This program could easily devolve into a less rigorous, rote learning environment without adequate, continuous professional development.

Conclusion

The Saxon math middle school curricular offerings consisting of Course 1, Course 2, and Course 3, offer a comprehensive, organizationally strong choice to schools across America. With recent revisions and additional resources ensuring a complete coverage of the CCSSM, schools can feel comfortable that all relevant mathematical topics with be introduced. However, schools may hesitate to adopt the program because the clarity of the mathematics content of the program is a major weakness due to its lack of organization around big mathematical ideas. In addition, unless teachers receive specific professional development, it is possible the program can become more about breadth than depth as intended by the CCSSM.

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Appendix A
Table 1: Course 3

Lesson #	Content	Standard
1	Number Line: Comparing and Ordering Integers	6.NS.6c; 6.NS.7a, 6.NS.7c
2	Operations of Arithmetic	6.EE.3
3	Addition and Subtraction Word Problems	6.EE.6; 6.EE.7
4	Multiplication and Division Word Problems	6.EE.6; 6.EE.7
5	Fractional Parts	4.NF.2
6	Converting Measures	6.RP.3d
7	Rates and Average; Measures of Central Tendency	6.RP.2, 3b; 6.SP.5c
8	Perimeter and Area	6.G.1
9	Prime Numbers	
10	Rational Numbers; Equivalent Fractions	6.NS.6c; 6.NS.4
Test 1		
Inv. 1	The Coordinate Plane	6.NS.6b
11	Percents	6.RP.3c
12	Decimal Numbers	8.NS.1
13	Adding and Subtracting Fractions and Mixed Numbers	5.NF.1
14	Evaluation; Solving Equations by Inspection	8.EE.7
15	Powers and Roots	8.EE.2
Test 2		
16	Irrational Numbers	8.NS.1, 8.NS.2
17	Rounding and Estimating	4.OA.3
18	Lines and Angles	7.G.2, 8.G.5
19	Polygons	8.G.2
20	Triangles	6.G.1, 8.G.5
Test 3		
Inv. 2	Pythagorean Theorem	8.G.6, 8.G.7
21	Distributive Property; Order of Operations	6.EE.3

22	Multiplying and Dividing Fractions	6.NS.1
23	Multiplying and Dividing Mixed Numbers	6.NS.1
24	Adding and Subtracting Decimal Numbers	6.NS.3
25	Multiplying and Dividing Decimal Numbers	6.NS.3
Test 4		
26	Transformations	8.G.1a, 8.G.1b, 8.G.1c, 8.G.3, 8.G.4
27	Laws of Exponents	8.EE.1
28	Scientific Notation for Large Numbers	8.EE.3, 8.EE.4
29	Ratio	6.RP.1, 6.RP.2, 6.RP.3
30	Repeating Decimals	8.NS.1
Test 5		
Inv. 3	Classifying Quadrilaterals	7.G.2
31	Adding Integers; Collecting Like Terms	7.EE.1
32	Probability	7.SP.5
33	Subtracting Integers	7.NS.1c
34	Proportions; Ratio Word Problems	6.RP.3a
35	Similar and Congruent Polygons	8.G.2, 8.G.5
Test 6		
36	Multiplying and Dividing Integers; Multiplying and Dividing Terms	7.NS.2a; 7.EE.1, 8.EE.2
37	Areas of Combined Polygons	6.G.1, 8.G.7
38	Using Properties of Equality to Solve Equations	8.EE.7b
39	Circumference of a Circle	7.G.4
40	Area of a Circle	7.G.4
Test 7		
Inv. 4	Drawing Geometric Solids	7.G.2
41	Functions	8.F.1, 8.F.2, 8.F.4, 8.F.5
42	Volume	6.G.2
43	Surface Area	6.G.4

44	Solving Proportions Using Cross-Products; Slope of a Line	6.RP.3; 8.EE.5
45	Ratio Problems Involving Totals	6.RP.3
Test 8		
46	Solving Problems Using Scientific Notation	8.EE.4
47	Graphing Functions	8.F.1, 8.F.2
48	Percent of Whole	6.RP.3c
49	Solving Rate Problems with Proportions and Equations	6.RP.3b; 7.RP.2
50	Solving Multi-Step Equations	8.EE.7b
Test 9		
Inv. 5	Graphing Transformations	8.G.1a, 8.G.1b, 8.G.1c, 8.G.3
51	Negative Exponents; Scientific Notation for Small Numbers	8.EE.1,8.EE.3
52	Using Unit Measures to Measures to Convert Measures; Converting Mixed-Unit to Single-Unit Measures	6.RP.3d
53	Solving Problems Using Measures of Central Tendency	6.SP.3, 6.SP.4, 6.SP.5d, 7.SP.4
54	Angle Relationships	7.G.5, 8.G.5
55	Nets of Prisms, Cylinders, Pyramids, and Cones	6.G.4
Test 10		
56	The Slope-Intercept Equation of a Line	8.F.3
57	Operations with Small Numbers in Scientific Notation	8.EE.1, 8.EE.3, 8.EE.4
58	Solving Percent Problems with Equations	7.RP.3
59	Experimental Probability	7.SP.6
60	Area of a Parallelogram	8.G.3
Test 11		
Inv. 6	Collect, Display, and Interpret Data	8.SP.4
61	Sequences	F.BF.2

A61	Simplifying Equations with Decimals	7.EE.1
62	Graphing Solutions to Inequalities on a Number Line	7.EE.4b
63	Rational Numbers, Non-Terminating Decimals and Percents; Fractions with Negative Exponents	8.NS.1; 8.EE.1
A63	Simplifying Equations with Fractions	7.EE.1
64	Using a Unit Multiplier to Convert a Rate	N.Q1
65	Applications Using Similar Triangles	8.G.5, G.SRT.1b
Test 12		
66	Special Right Triangles	8.G.7, G.SRT.6
A66	Writing the Equation of a Line Given the Slope and a Point on the Line	8.EE.6
67	Percent of Change	6.RP.3a
68	Probability Multiplication Rule	7.SP.8a
A68	Finding a Slope from Two Given Points	8.F.4
69	Direct Variation	7.RP.2b, 8.EE.5
70	Solving Direct Variation Problems	7.RP.3
Test 13		
Inv. 7	Probability Simulation	7.SP.8c
71	Percent Change of Dimensions	8.G.3, 8.G.4 this is even more complex
A71	Finding the Equation of a Line Given Two Points	8.F.4
72	Multiple Unit Mulipliers	N.Q1
73	Formulas for Sequences	F.IF.3
A73	Graphing Sequences	F.IF.7
74	Simplifying Square Roots	8.EE.2, 8.G.7, N.RN.2; Honors topic in Sec. 2
75	Area of a Trapezoid	
Test 14		
76	Volumes of Prisms and Cylinders	6.G.2
77	Inequalities with Negative Coefficients	7.EE.4b

78	Products of Square Roots	N.RN.2
79	Transforming Formulas	A.CED.4
80	Adding and Subtracting Mixed Measures; Polynomials	5.MD.1; A.APR.1
A80	Adding and Subtracting Polynomials	A.APR.1
Test 15		
Inv. 8	Scatterplots	8.SP.1, 8.SP.2, 8.SP.3, 8.SP.4, S.ID.6a
81	Central Angles	G.C.5
82	Graphing Equations Using Intercepts	F.IF.7a
83	Probability of Dependent Events	7.SP.8a
A83	Proportions with Unknown in Two Terms	7.RP.3
84	Selecting an Appropriate Rational Number	6.RP.3c
A84	Adding Radical Expressions	N.RN.2
85	Surface Area of Cylinders and Prisms	7.G.6
Test 16		
86	Volume of Pyramids and Cones	8.G.9
87	Scale Drawing Word Problems	7.G.1
A87	Solving Equations with Two Variables Using Substitution	8.EE.8b
88	Review of Proportional and Non-Proportional Relationships	7.RP.2a, 7.RP.2b,7.RP.2c, 8.EE.5
89	Solving Equations with Two Unknowns by Graphing	8.EE. 8a, A.REI.11
90	Sets	
Test 17		
Inv. 9	Sampling Methods	7.SP.8c
91	Effect of Scaling on Perimeter, Area, and Volume	8.G.4 is more complex
92	Areas of Rectangles with Variable Dimensions; Products of Binomials	A.APR.1
A92	Solving Systems of equations by Substitution, Part 1	8.EE.8b

93	Equations with Exponents	8.EE.2, A.REI.4
94	Graphing Pairs on Inequalities on a Number Line	7.EE.4b
95	Slant Heights of Pyramids and Cones	8.G.7
A95	Products Equal to Zero	A.REI.4
Test 18		
96	Geometric Measures with Radicals	8.G.7
97	Recursive Rules for Sequences	F.BF.2
A97	Writing Equations with Two Variables	8.EE.8c
98	Relations and Functions	8.EE.1, 8.EE.2, 8.EE.3, 8.EE.4, F.IF.1
A98	Function Notation	F.IF.2
99	Inverse Variation	GPE.3
A99	Solving Systems of Equations by Elimination, Part 1	8.EE.8b
100	Surface Area of Right Pyramids and Cones	6.G.4
Test 19		
Inv. 10	Compound Interest	7.RP.3
101	Geometric Probability	7.SP.6
A101	Factoring Quadratics	A.SSE.3a
102	Growth and Decay	F.BF.2
A102	Solving Systems of Equations by Substitution, Part 2	8.EE.8b
103	Line Plots; Box and Whisker Plots	S.ID.1
104	Volume, Capacity, and Mass in the Metric System	N.Q1
A104	Solving Systems of Equations by Elimination, Part 2	8.EE.8b
105	Compound Average and Rate Problems	F.IF.6
A105	Solving Quadratic Equations by Factoring, Part 1	A.SSE.3a
Test 20		
106	Reviewing the Effects of Scaling on Volume	8.G.4 more complex

A106	Graphing Linear Inequalities on the Coordinate Plane, Part 1	A.REI.12
107	Volume and Surface Area of Compound Solids	G.GMD.3
108	Similar Solids	8.G.4 more complex
A108	Graphing Linear Inequalities on the Coordinate Plane, Part 2	A.REI.12
109	Consumer Interest	7.RP.3
110	Converting Repeating Decimals to Fractions	8.EE.7b
A110	Solving Quadratic Equations by Factoring, Part 2	A.SSE.3a
Test 21		
Inv. 11	Non-Linear Functions	8.F.5
111	Volume and Surface Area of a Sphere	8.G.9
112	Ratios of Side Lengths of Right Triangles	G.RST.6
A112	Graphing Systems of Inequalities	A.REI.12
113	Using Scatterplots to Make Predictions	8.EE.1, 8.EE.2, 8.EE.3, 8.EE.4, S.ID.6a
114	Calculating Area as a Sweep	
A114	Solving Systems of Inequalities from Word Problems	A.REI.12
115	Relative Sizes of Sides and Angles of a Triangle	
Test 22		
116	Division by Zero	PreCalc, Obj.3c
A116	The Quadratic Formula, Part 1	A.REI.4b
117	Significant Digits	
118	Sine, Cosine, Tangent	G.RST.6
A118	The Quadratic Formula, Part 2	A.REI.4b
119	Complex Fractions	7.NS.3
A119	Finding the Equation of a Line Parallel to a Given Line through a Given Point	G.GPE.5
120	Rationalizing a Denominator	N.RN.2
A120	Finding the Equation of a Line Perpendicular to a	G.GPE.5

	Given Line through a Given Point	
Inv. 12	Proof of the Pythagorean Theorem	8.G.6

Appendix B
Table 2: Course 2

Lesson #	Content	Standard
1	Arithmetic with whole numbers and Money Variables and Money	7.NS.2b
2	Properties of operation	6.EE.3
3	Unknown numbers in Addition, Subtraction, Multiplication, and Division	7.EE.4a
4	Number Line Sequences	6. NS.6c
5	Place Value through Hundred Trillions Reading and writing whole numbers	5.NBT.1, 5.NBT.4
6	Factors Divisibility	4.OA.4, 4.NBT.6
7	Lines, Angles, and Planes	4.G.1
8	Fractions and Percents Inch Ruler	6.RP.3c
9	Adding, Subtracting, and Multiplying Fractions Reciprocals	7.NS.2c
10	Writing Division Answers as Mixed Numbers Improper Fractions	5.NF.1, 5.NF.3
Test 1		
Inv 1	Investigating Fractions and Percents with Manipulatives	6.RP.3c
11	Problems about Comparing Problems about Seperating	7.EE.3, 7.EE.4a
12	Problems about Comparing Elapsed Time Problems	7.EE.4a
13	Problems about equal groups	7.NS.3, 7.EE.4a
14	Problems about parts of a whole Simple Probability	7.EE.4a, 7.SP.5, 7.SP.6
15	Equivalent Fractions Reducing Fractions, Part 1	4.NF.1; 5.NF.1
Test 2		
16	U.S. Customary System Function Tables	5.MD.1; 6.RP.3a

17	Measuring angles with Protractors	4.MD.6
18	Polygons Similar and Congruent	5.G.2; 8.G.2
19	Perimeter / Creating Formulas for Perimeters of Polygons	3.MD.8; 4.MD.3
20	Exponents Rectangular Area, Part 1 Square Root	6.EE.1; 7.G.6; 8.EE.2
Test 3		
Inv 2	Using a compass and Straightedge, Part 1	SM1.G.CO.12
21	Prime and Composite numbers Prime Factorization	4.OA.4; 6.NS.4
22	Problems about a Fraction of a group	7.NS.2c, 7.NS.3
23	Subtracting Mixed Numbers with regrouping	5.NF.1
24	Reducing Fractions, Part 2	7.NS.2c
25	Dividing Fractions	7.NS.2c
Test 4		
26	Multiplying and Dividing Mixed Numbers	7.NS.2c, 7.NS.3
27	Multiples Least Comon Multiple Equivalent Division Problems	6.NS.4; 6.RP.3a
28	Two-Step Word Problems Average, Part 1	7.RP.2c, 7.NS.3
29	Rounding Whole Numbers Rounding Mixed Numbers Estimating Answers	4.OA.3
30	Common Denominators Adding and Subtracting Fractions with different Denominators	4.NF.2
Test 5		
Inv 3	Coordinate Plane	6.NS.6b; 6.G.3
31	Reading and Writing Decimal Numbers	5.NBT.3a
32	Metric System	5.MD.1,
33	Comparing Decimals	5.NBT.3b, 5.NBT.4, 6.NS. 3

	Rounding Decimals	
34	Decimal Numbers on a number line	5.MD.1, 6.NS.6
35	Adding, Subtracting, multiplying and dividing decimal numbers	7.NS.2c
Test 6		
36	Ratio Sample Space	7.SP.5, 7.SP.6, 7.SP.7a
37	Area of a triangle Rectangulat Area, Part 2	7.G.2, 7.G.6
38	Interpreting Graphs	6.SP.5a, 3.MD.3
39	Proportions	6.RP.3
40	Sum of the angle measures of a triangle Angle Pairs	7.G.5
Test 7		
Inv 4	Stem-and-leaf Plots Box-and-whisker plots	7.SP.5, 7.SP.6, 7.SP.7a
41	Using Formulas Distributive Property	7.G.2, 7.G.6
42	Repeating Decimals	6.SP.5a, 3.MD.3
43	Converting Decimals to Fractions Converting Fractions to Decimals Converting Percents to Decimals	6.RP.3
44	Division Answers	7.G.5
45	Dividing by a decimal number	7.NS.2c, 7.NS.3
Test 8		
46	Rates	7.RP.1, 7.RP.2b
47	Powers of 10	5.NBT.2, 6.EE.1
48	Fraction-Decimal-Percent Equivalents	7.NS.2d, 6.RP.3c,
49	Adding and Subtracting Mixed Numbers	5.MD.1, 4.MD.2
50	Unit Multipliers and Unit Conversions	6.RP.3b, 6.RP.3d
Test 9		
Inv 5	Creating Graphs	7.SP.1, 7.SP.2, 7.SP.3

51	Scientific Notation for large numbers	8.EE.3
52	Order of Operations	6.EE.2c
53	Ratio Word Problems	7.RP.1
54	Rate Word Problems	6.RP.3b, 6.RP.2
55	Average and Rate Problems with Multiple Steps	7.RP.2c
Tets 10		
56	Plotting Functions	6.EE.9
57	Negative Exponents Scientific Notation for Small Numbers	7.RP.2c
58	Symmetry	8.G.3
59	Adding Integers on the number line	7.NS.1a, 7.NS.1b, 7.NS.1c, 7.NS.1d
60	Fractional Part of a number	7.RP.3
Test 11		
Inv 6	Classifying Quadrilaterals	7.G.2
61	Area of a Parallelogram Angles of a parallelogram	7.G.6
62	Classifying triangles	7.G.2
63	Symbols of Inclusion	5.OA.1
64	Adding positive and negative numbers	7.NS.1a, 7.NS.1b, 1.NS.1d
65	Circumference and Pi	7.G.4
Test 12		
66	Ratio Problems Involving Totals	6.RP.3
67	Geometric Solids	7.G.3
68	Algebraic Addition	7.NS.1a, 7.NS.1b, 7.NS.1c, 7.NS.1d
69	Proper Form of Scientific Notation	8.EE.3
70	Volume	6.G.2
Test 13		
Inv 7	Balanced Equations	6.EE.5

71	Finding the Whole Group When a Fraction is Known	
72	Implied Ratios	6.RP.3
73	Multiplying and Dividing Positive and Negative Numbers	7.NS.2a, 7.NS.2b, 7.NS.2c
74	Fractional Part of a number, Part 2	5.NF.4
75	Area of a Complex Figure Area of a trapezoid	7.G.6
Test 14		
76	Complex Fractions	7.NS.3
77	Percent of a number, Part 2	6.RP.3c
78	Graphing Inequalities	7.EE.4b
79	Estimating Areas	5.NF.4b
80	Transformations	8.G.1, 8.G.2, 8.G.3
Test 15		
Inv 8	Probability and Odds Compound Events Experimental Probability	7.SP.5, 7.SP.6, 7.SP.7a, 7.SP.7b, 7.SP.8a, 7.SP.8b, 7.SP.8c
81	Using Proportions to Solve Percent Problems	6.RP.3
82	Area of a Circle	7.G.4
83	Multiplying numbers in Scientific Notation	8.EE.4
84	Algebraic Terms	7.EE.1
85	Order of operations with positive and negative numbers	6.EE.2c, 7.NS.2a, 7.NS.2b, 7.NS.2c
Test 16		
86	Number families	6.NS.6
87	Multiplying Algebraic Terms	6.EE.1, 3
88	Multiple Unit Multipliers	6.RP.3d
89	Diagonals Interior Angles Exterior Angles	8.G.5
90	Mixed-Number Coefficients	7.EE.1, 7.EE.4a

	Negative Coefficients	
Test 17		
Inv 9	Graphing Functions	7.RP.2a
91	Evaluations with positive and negative numbers	6.EE.2c
92	Percent of Change	7.RP.3, 7.EE.4a
93	Two-Step Equations and inequalities	7.EE.4b
94	Probability of dependent events	7.SP.8a
95	Volume of a right Solid	7.G.6
Test 18		
96	Estimating Angle Measures Distributive Property with Algebraic Terms	7.EE.1
97	Similar Triangles Indirect Measure	7.G.1
98	Scale Scale Factor	7.RP.2d
99	Pythagorean Theorem	8.G.7
100	Estimating Square Roots Irrational Numbers	8.NS.2
Test 19		
Inv 10	Using a compass and Straightedge, Part 2	G.CO.12
101	Translating Expressions into Equations	7.EE.2, 7.EE.4a
102	Transversals Simplifying Equations	8.G.5; 8.EE.7b
103	Powers of Negative Numbers Dividing Terms Square Roots of Monomials	8.EE.1
104	Semicircles, Arcs, and Sectors	G.C.5
105	Surface Area of a right solid Surface area of a sphere	7.G.6
Test 20		
106	Solving Literal Equations Transforming Formulas More on Roots	A.REI.3; A.EE.2

107	Slope	8.EE.5
108	Formulas and Substitution	6.EE.5
109	Equations with Exponents	8.EE.2
110	Simple Interest and Compound Interest Successive Discounts	7.RP.3; A.SSE.3c
Test 21		
Inv 11	Scale Factor in Surface Area and Volume	7.RP.1, 7.G.6
111	Dividing in Scientific Notation	8.EE.4
112	Applications of the Pythagorean Theorem	8.G.7
113	Volume of Pyramids, Cones, and Spheres	7.G.6
114	Volume, Capacity, and Mass in Metric System	7.G.6
115	Factoring Algebraic Expressions	7.EE.1
Test 22		
116	Slope-Intercept Form of Linear Equations	8.F.3
117	Copying Geometric Figures	7.G.2
118	Division by zero	7.NS.2b
119	Graphing area and volume formulas	6.EE.9
120	Graphing Nonlinear Equations	6.EE.9
Inv 12	Platonic Solids	6.G.4

Appendix C
Table 3: Course 1

Lesson #	Content	Standard
1	Adding Whole Numbers and Money, Subtracting Whole Numbers and Money, Fact Families, Part 1	2.MD.8, 3.MBT.2
2	Multiplying Whole Numbers and Money, Dividing Whole Numbers and Money, Fact Families, Part 2	6.NS.2
3	Unknown Numbers in Addition, Unknown Numbers in Subtraction	6.EE.2a, 6.EE.2b, 6.EE.5, 6.EE.6, 6.EE.7
4	Unknown Numbers in Multiplication, Unknown Numbers in Division	6.EE.2a, 6.EE.2b, 6.EE.5, 6.EE.6, 6.EE.7
5	Order of Operations, Part 1	5.OA.1
6	Fractional Parts	4.NF.1, 4.NF.4a
7	Lines, Segments, and Rays, Linear Measure	4.MD.1, 4.MD.5a, 4.G.1
8	Perimeter	3.MD.8
9	The Number Line: Ordering and Comparing; Ext. Writing, Solving, and Graphing Inequalities	6.NS.7a, 6.NS.7b; 6.EE.8
10	Sequences, Scales	3.OA.9, 2.MD.6
Test 1		
Inv. 1	Fequency Tables, Histograms, Surveys	6.SP.2, 6.SP.4, 6.SP.5a, 6.SP.5b
11	Problems About Comparing; Problems About Separating	6.EE.2a, 6.EE.6
12	Place Value Through Trillions; Mulistep Problems (Ex. 5)	4.MBT.3, 5.OA.1
13	Problems About Comparing; Elapsed-Time Problems	6.EE.2c, 4.OA.3
14	The Number Line: Negative Numbers; Ext. Understanding and Comparing Absolute Values	6.NS.5, 6.NS.6a, 6.NS.6c,6.NS.7a, 6.NS.7b, 6.NS.7c, 6.NS.7d

15	Problems about Equal Groups	6.EE.2a, 6.EE.6, 6.EE.7
Test 2		
16	Rounding Whole Numbers; Estimating	4.MBT.3
17	The Number Line: Fractions and Mixed Numbers	3.NF.2a, 3.NF.2b, 2.MD.1
18	Average; Line Graphs	6.SP.5c, 6.EE.9
19	Factors, Prime Numbers	4.OA.4
20	Greates Common Factor (GCF); Ext. Using the GCF and the Distributive Property	6.NS.4
Test 3		
Inv. 2	Investigating Fractions with Manipulatives	4.MF.1
21	Divisibility	4.OA.1
22	"Equal Groups" Problems with Fractions	4.NF.4c
23	Ratio, Rate	6.RP.1, 6.RP.2, 6.RP.3b
24	Adding and Subtracting Fractions that Have Common Denominators	4.NF.3a
25	Writing Division Answers a Mixed Numbers; Multiples	5.NF.3, 4.OA.4
Test 4		
26	Using Manipulatives to Reduce Fractions, Adding and Subtracting Mixed Numbers	4.NF.3c
27	Measures of Circles	7.G.2
28	Angles	4.G.1
29	Multiplying Fractions, Reducing Fractions by Dividing Common Factors	5.NF.4
30	Least Common Multiple (LCM); Reciprocals	6.NS.1, 6.NS.4
Test 5		
Inv. 3	Measuring and Drawing Angles with a Protractor	4.MD.6
31	Areas of Rectangles	4.MD.3

32	Expanded Notation, More on Elapsed Time	4.MBT.2, 5.MD.1
33	Writing Percents of Frations, Part 1	6.RP.3c
34	Decimal Place Value	5.MBT.4
35	Writing Decimal Numbers as Fraction, Part 1; Reading and Writing Decimal Numbers	5.MBT.3a
Test 6		
36	Subtracting Fractions and Mixed Numbers from Whole Numbers	5.NF.1
37	Adding and Subtracting Decimal Numbers	6.NS.3
38	Adding and Subtracting Decimal Numbers and Whole Numbers, Squares and Square Roots	6.NS.3; 6.EE.1, 8.EE.2
39	Multiplying Decimal Numbers	6.NS.3
40	Using Zero as Placeholder; Circle Graphs	6.NS.3; 6.EE.9
Test 7		
Inv. 4	Collecting, Organizing, Displaying, and Interperting Data; Ext. Recognizing a Statistical Question, Describing Patterns in Statistical Data; Displaying Data in Box Plots	6.SP.1, 6.SP.2, 6.SP.4, 6.SP.5a, 6.SP.5b
41	Finding a Percent of a Number	6.RP.3c
42	Renaming Fractions by Multiplying by 1	4.NF.1
43	Equivalent Division Problems; Finding Unknowns in Fraction and Decimal Problems	6.EE.5
44	Simplifying Decimal Numbers; Comparing Decimal Numbers	5.MBT.3b
45	Dividing a Decimal Number by a Whole Number	6.NS.3
Test 8		
46	Writing Decimal Numbers in Expanded Notation; Mentally Multiplying Decimal Numbers by 10 and 100	5.MBT.3a, 6.NS.3
47	Circumference; Pi	6.RP.1
48	Subtracting Mixed Numbers with Regrouping, Part 1	5.NF.1

49	Dividing by a Decimal Number	6.NS.3
50	Decimal Number Line (Tenths); Dividing by a Fraction	6.NS.1, 6.NS.6c
Test 9		
Inv. 5	Displaying Data; Ext. Using Measuring of Variability; Describing the Distribution in a Set of Data	6.SP.1, 6.SP.2, 6.SP.3, 6.SP.5, 6.SP.5
51	Rounding Decimal Numbers	5.MBT.4
52	Mentally Dividing Decimal Numbers by 10 and by 100	6.NS.3
53	Decimals Chart; Simplifying Fractions	6.NS.1, 6.NS.2, 6.NS.3
54	Reducing by Grouping Factors Equal to 1; Dividing Fractions	6.NS.1
55	Common Denominators, Part 1	6.NS.4
Test 10		
56	Common Denominators, Part 2	6.NS.4
57	Adding and Subtracting Fractions: Three Steps	5.NF.1
58	Probability and Chance	7.SP.5
59	Adding Mixed Numbers	5.NF.1
60	Polygons	4.MD.3, 5.G.1
Test 11		
Inv. 6	Attibutes of Geometric Solids	6.G.4
61	Adding Three of More Fractions	6.NS.1
62	Writing Mixed Numbers as Improper Fractions	4.NF.3c
63	Subtracting Mixed Numbers with Regrouping, Part 2	5.NF.1
64	Classifying Quadrilaterals	5.G.2
65	Prime Factorization, Division of Primes, Factor Trees	4.OA.4 more complex
Test 12		

66	Multiplying Mixed Numbers	5.NF.3
67	Using Prime Factorization to Reduce Fractions	
68	Dividing Mixed Numbers	6.NS.1
69	Lengths of Segments; Complementary and Supplementary Angles	7.G.5
70	Reducing Fractions Before Multiplying	6.NS.1
Test 13		
Inv. 7	The Coordinate Plane; Ext. Finding Distances on the Coordinate Plane	6.G.3, 6.NS.8
71	Parallelograms	6.G.1
72	Fraction Chart; Multiplying Three Fractions	6.NS.1
73	Exponents; Writing Decimal Numbers as Fractions, Part 2	6.EE.1; 6.RP.1
74	Writing Fractions as Decimal Numbers; Writing Ratios as Decimal Numbers	6.RP.1
75	Writing Fractions and Decimals as Percents, Part 1	6.RP.1
Test 14		
76	Comparing Fractions to Decimal Form	6.RP.1
77	Finding Unstated Information in Fraction Problems	6.RP.1
78	Capacity	5.ND.1
79	Area of a Triangle	6.G.1
80	Using a Constant Factor to Ratio Problems	6.RP.3a
Test 15		
Inv. 8	Geometric Construction of Bisectors	G.CO.12
81	Arithmetic Units of Measure	5.MD.1
82	Volume of Rectangle Prism; Ext. Finding Volume of a Prism with Fractional Edge Lengths	6.G.2
83	Proportions	6.RP.2

84	Order of Operations, Part 2	5.OA.2
85	Using Cross Products to Solve Proportions	
Test 16		
86	Areas of Circle	6.EE.1
87	Finding Unknown Factors	6.EE.2b, 6.EE.7
88	Using Proportions to Solve Ratio Word Problems; Ext. Using Tables to Compare Ratios	6.RP.3a
89	Estimating Square Roots	8.EE.2
90	Measuring Turns	8.G.1
Test 17		
Inv. 9	Experimental Probability	7.SP.6
91	Geometric Formulas	6.EE.1. 6.EE.2c
92	Expanded Notation with Exponents; Order of Operations with Exponents, Powers of Fractions	6.EE.1
93	Classifying Triangles	5.G.2
94	Wrting Fractions and Decimals as Percents, Part 2	6.RP.1
95	Reducing Rates Before Multiplying	6.RP.2
Test 18		
96	Functions, Graphing Functions; Ext. Analyzing the Relationship Between Dependent and Independent Variables	6.EE.2c, 6.EE.9
97	Transversals	8.G.5
98	Sum of the Angle Measures of Triangles and Quadrilaterals	7.G.5
99	Fraction-Decimal-Percent Equivalents	6.RP.3
100	Algebraic Addition of Integers	6.NS.5, 6.NS.6a, 6.NS.6c
Test 19		
Inv. 10	Compound Experiments	7.SP.8b

101	Ratio Problems Involving Totals	6.RP.3a
102	Mass and Weight	5.MD.1
103	Perimeter of Complex Shapes	6.G.1
104	Algebraic Addition Activity	6.NS.5, 6.NS.6a
105	Using Proportions to Solve Percent Problems	6.Rp.3a
Test 20		
106	Two-Step Equations; Ext. Indentifying Parts of Expressions and Generating Equivalent Expressions; Identifying Equivalent Expressions	6.EE.4, 6.EE.5, 6.EE.7
107	Area of Complex Shapes; Ext. Finding the Area of Trapezoids and Regular Polygons	6.G.1
108	Transformations; Ext. Analyzing the Relationship of Points on a Coordinate Plane	8.G.3, 8.G.4, 6.NS.6b
109	Corresponding Parts; Similar Figures	6.RP.1
110	Symmetry	4.G.3, 8.G.1
Test 21		
Inv. 11	Scale Factor: Scale Drawings and Models	6.RP.1; 6.NS.8
111	Applications Using Division	6.NS.1
112	Multiplying and Dividing Integers	5.MBT.5
113	Adding and Subtracting Mixed Measures; Multiplying by Powers of Ten	5.MD.1, 5.MBT.2, 4.MBT.4
114	Unit Multipliers	6.RP.3d
115	Writing Percents as Fractions, Part 2	6.RP.3c
Test 12		
116	Compound Interest	A.SSE.3c
117	Finding a Whole When a Fraction is Known	6.RP.1
118	Estimating Area	6.G.1
119	Finding a Whole When a Percent is Known	6.RP.1

120	Volume of a Cylinder	8.G.2
Test 13		
Inv. 12	Volume of Prisms, Pyramids, Cylinders, and Cones; Surface Areas of Prisms and Cylinders	6.G.1, 6.G.2, 6.G.4, 8.G.9, G.GMD.1