**Lesson/Unit Name:** Expressions, Functions, and Linear Models  
**Content Area:** Mathematics  
**Grade Level:** 9

### Dimension I – Alignment to the Depth of the CCSS

<table>
<thead>
<tr>
<th>The lesson/unit aligns with the letter and spirit of the CCSS:</th>
<th>The standards for this unit are clearly identified. As a Call to Action submission, the unit successfully brings together standards (and concepts) that may not regularly be taught together.</th>
</tr>
</thead>
<tbody>
<tr>
<td>☐ Targets a set of grade-level CCSS mathematics standard(s) to the full depth of the standards for teaching and learning.</td>
<td>Standards for Mathematical Practice are identified for each lesson. The unit discusses how each SMP will connect to the lesson and ways in which teachers can reinforce that SMP through class discourse. The SMPs are addressed on a lesson level and are appropriate. There are a few missed opportunities for SMP.2 when students are asked to decontextualize a situation then interpret the results in terms of context.</td>
</tr>
<tr>
<td>☐ Standards for Mathematical Practice that are central to the lesson are identified, handled in a grade-appropriate way, and well connected to the content being addressed.</td>
<td>The unit, on a whole, is emphasizing deeper conceptual understanding and attempts to link student thinking to the concept of covariation. Students have the opportunity to practice mathematical procedures during the lessons while also building a conceptual understanding. This balance is evident throughout the unit and helps students master challenging concepts.</td>
</tr>
<tr>
<td>☐ Presents a balance of mathematical procedures and deeper conceptual understanding inherent in the CCSS.</td>
<td></td>
</tr>
</tbody>
</table>

Rating: **3** – Meets most to all of the criteria in the dimension

### Dimension II – Key Shifts the CCSS

| The lesson/unit reflects evidence of key shifts that are reflected in the CCSS: | The lesson develops a strong focus in lessons 1 through 5 specific to covariation. Careful attention is given to the development of change in one and two variables. Lessons 1 through 5 focus strongly on the algebra and function standards. However, in lesson 6 an attempt to bring together the statistics standards is made and seems to have a different voice. Lessons 6 and 7 are not fully consistent with the flow of 1-5 but are close enough to show coherence across the unit. Greater coherence could be developed by ensuring that the last two lessons follow the spirit of the first five lessons. For example, encouraging students to write an equation by arriving at a similar delta y = m(delta x) and then shifting would help make Lesson 6 more similar in style to lessons 1-5. This would likewise allow opportunities to connect prior learning of covariation to the statistical standards. |
| ☑ Focus: Lessons and units targeting the major work of the grade provide an especially in-depth treatment, with especially high expectations. Lessons and units targeting supporting work of the grade have visible connection to the major work of the grade and are sufficiently brief. Lessons and units do not hold students responsible for material from later grades. | The unit does present a balance of rigor. Students are applying key learnings and engaging with mathematics in a relevant context. |
| ☑ Coherence: The content develops through reasoning about the new concepts on the basis of previous understandings. Where appropriate, provides opportunities for students to connect knowledge and skills within or across clusters, domains and learning progressions. | Throughout the unit, students are regularly able to engage in rigorous mathematics. They develop conceptual understanding through tasks, apply their learning through word problems, and carry out calculations fluently to build procedural skill. |
| ☑ Rigor: Requires students to engage with and demonstrate challenging mathematics with appropriate balance among the following: | |
| – **Application:** Provides opportunities for students to independently apply | |

**Overall Rating:** E – Exemplar
Mathematical concepts in real-world situations and solve challenging problems with persistence, choosing and applying an appropriate model or strategy to new situations.

- **Conceptual Understanding:** Develops students’ conceptual understanding through tasks, brief problems, questions, multiple representations and opportunities for students to write and speak about their understanding.

- **Procedural Skill and Fluency:** Expects, supports and provides guidelines for procedural skill and fluency with core calculations and mathematical procedures (when called for in the standards for the grade) to be performed quickly and accurately.

**Rating:** 3 – Meets most to all of the criteria in the dimension

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### Dimension III – Instructional Supports

The lesson/unit is responsive to varied student learning needs:

- Includes clear and sufficient guidance to support teaching and learning of the targeted standards, including, when appropriate, the use of technology and media.

- Uses and encourages precise and accurate mathematics, academic language, terminology and concrete or abstract representations (e.g., pictures, symbols, expressions, equations, graphics, models) in the discipline.

- Engages students in productive struggle through relevant, thought-provoking questions, problems and tasks that stimulate interest and elicit mathematical thinking.

- Addresses instructional expectations and is easy to understand and use.

- Provides appropriate level and type of scaffolding, differentiation, intervention and support for a broad range of learners.
  - Supports diverse cultural and linguistic backgrounds, interests and styles.
  - Provides extra supports for students working below grade level.
  - Provides extensions for students with high interest or working above grade level.

A unit or longer lesson should:

- Recommend and facilitate a mix of instructional approaches for a variety of learners such as using multiple representations (e.g., including models, using a range of questions, checking for understanding, flexible grouping, pair-share).

- The lessons use technology to support student learning. The unit plan provides guidance to help teachers understand the purpose of the unit and how each lesson fits into the context of the unit.

- There are a few grammatical and spelling errors that distract from reading the unit. While correct mathematical language is used, the unit contains typographical and grammatical errors. The unit should be carefully proof-read, including teacher notes, to ensure that plans are clear for instruction.

- Some of the teacher instructions are clear and provide a general overview. However, it would be beneficial (particularly for a new teacher) if the instructions were more detailed and specific to the individual task. For example, how would the PowerPoint be implemented in class instruction? What questions might a teacher ask? Many resources and supports are provided through this unit. However, it is not always clear how teachers are to implement the lessons. Information is on the main Word document, but additional resources are on the PowerPoint slide. While they often line up, it still would be helpful if a full instructional plan existed in one place for each given lesson; additional details on the daily lesson implementation will greatly support teachers in using this unit.

- The unit presents opportunities to engage students in productive struggle; however, little guidance is offered on how to facilitate this. It is unclear how the PowerPoint would be used – would the teacher give the problems then students would work in groups then discuss? Or would students have the PowerPoint on their own devices? More guidance needs to be provided on how to facilitate the information given.
Gradually remove supports, requiring students to demonstrate their mathematical understanding independently.

Demonstrate an effective sequence and a progression of learning where the concepts or skills advance and deepen over time.

Expect, support and provide guidelines for procedural skill and fluency with core calculations and mathematical procedures (when called for in the standards for the grade) to be performed quickly and accurately.

Rating: 2 – Meets many of the criteria in the dimension

Dimension IV – Assessment

The lesson/unit regularly assesses whether students are mastering standards-based content and skills:

- Is designed to elicit direct, observable evidence of the degree to which a student can independently demonstrate the targeted CCSS.
- Assesses student proficiency using methods that are accessible and unbiased, including the use of grade-level language in student prompts.
- Includes aligned rubrics, answer keys and scoring guidelines that provide sufficient guidance for interpreting student performance.

A unit or longer lesson should:

- Use varied modes of curriculum-embedded assessments that may include pre-, formative, summative and self-assessment measures.

A pre and final unit assessment are provided. The unit assessment provides students with opportunities to demonstrate mastery of all the standards mentioned. The rubric likewise provides in helping teachers measure student mastery, although additional guidance on how to score more open-ended problems may assist teachers in better measuring student progress.

There are curriculum-embedded assessments in the unit.

The lesson includes multiple assessments with answer keys for most activities. Some answers are missing, such as on Slide 32.

There are assessments built into the PowerPoints and tasks, however, most of the tasks involve pair or group work. It is not clear on whether students should be completing this in a group or as individual student work. Teacher notes on what to look for while students are working in pairs, or in groups, could be better used as a formative assessment if there were detailed notes on how to use the discussions students are having to assess understanding.

Rating: 3 – Meets most to all of the criteria in the dimension

Summary Comments

Lessons 1-5 of this unit are particularly strong and attend to the intent of the Call to Action. The algebra and function standards are developed in a novel way that strongly connects covariation ideas to rates of change and formal notation. Lessons 6 and 7 seem somewhat disconnected from these first five lessons, however they still fit in with the overall ideas of the unit.

Rating Scales

Rating Scale for Dimensions I, II, III, IV:

- 3: Meets most to all of the criteria in the dimension
- 2: Meets many of the criteria in the dimension
- 1: Meets some of the criteria in the dimension
- 0: Does not meet the criteria in the dimension

Overall Rating for the Lesson/Unit:

- E: Exemplar – Aligned and meets most to all of the criteria in dimensions II, III, IV (total 11 – 12)
- E/I: Exemplar if Improved – Aligned and needs some improvement in one or more dimensions (total 8 – 10)
- R: Revision Needed – Aligned partially and needs significant revision in one or more dimensions (total 3 – 7)
- N: Not Ready to Review – Not aligned and does not meet criteria (total 0 – 2)

Rating Descriptors
Descriptors for Dimensions I, II, III, IV:

3: Exemplifies CCSS Quality - meets the standard described by criteria in the dimension, as explained in criterion-based observations.
2: Approaching CCSS Quality - meets many criteria but will benefit from revision in others, as suggested in criterion-based observations.
1: Developing toward CCSS Quality - needs significant revision, as suggested in criterion-based observations.
0: Not representing CCSS Quality - does not address the criteria in the dimension.

Descriptor for Overall Ratings:
E: Exemplifies CCSS Quality – Aligned and exemplifies the quality standard and exemplifies most of the criteria across Dimensions II, III, IV of the rubric.
E/I: Approaching CCSS Quality – Aligned and exemplifies the quality standard in some dimensions but will benefit from some revision in others.
R: Developing toward CCSS Quality – Aligned partially and approaches the quality standard in some dimensions and needs significant revision in others.
N: Not representing CCSS Quality – Not aligned and does not address criteria.