Leaders: Connecting Agile Mind to Evaluation Frameworks - Danielson

Module Outcomes

This module connects Agile Mind tools and resources to Danielson's The Framework for Teaching. Leaders will review Agile Mind's system and make connections to key components of this framework. Leaders will observe an Agile Mind lesson, reflect on their observations related to the framework, and will script coaching conversations questions. Outcomes for this module include:

- Understand how Agile Mind supports teachers in progressing to higher levels of performance in Danielson's Framework for Teaching (FFT)
- Learn about an observation protocol that calibrates critical attributes from an observed lesson

Agile Mind Supports for Instruction

Independent Study 1: Deliver Instruction & Student Activity Sheets

- Directions
  - Review the Deliver Instruction and the Student Activity Sheets
  - Annotate: Add comments or add notes in another color connecting these planning resources to your focus Danielson components
    - See example note in red below
- Reflection
  - Related to your component, how do Agile Mind tools support teachers in delivering instruction at higher levels?

Focus FFT Components & Indicators Reference (your group will focus on ONE of these indicators - see name of doc!)	
3b. USING QUESTIONING AND DISCUSSION TECHNIQUES	**Indicators include:** • Questions of high cognitive challenge, formulated by both students and teacher • Questions with multiple correct answers or multiple approaches, even when there is a single correct response • Effective use of student responses and ideas • Discussion, with the teacher stepping out of the central, mediating role

	• Focus on the reasoning exhibited by students in discussion, both in give-and-take with the teacher and with their classmates • High levels of student participation in discussion
3c. ENGAGING STUDENTS IN LEARNING	**Indicators include:** • Student enthusiasm, interest, thinking, problem solving, etc. • Learning tasks that require high-level student thinking and invite students to explain their thinking • Students highly motivated to work on all tasks and persistent even when the tasks are challenging • Students actively "working," rather than watching while their teacher "works" • Suitable pacing of the lesson: neither dragged out nor rushed, with time for closure and student reflection
3d. USING ASSESSMENT IN INSTRUCTION	**Indicators include:** • The teacher paying close attention to evidence of student understanding • The teacher posing specifically created questions to elicit evidence of student understanding • The teacher circulating to monitor student learning and to offer feedback • Students assessing their own work against established criteria

Intensified Algebra I, Topic 25, Lesson 5: Comparing linear and exponential growth	
In today's lesson, you will focus on the following highlighted goals from this topic: Develop and understand the laws of exponents Simplify numerical and variable expressions involving exponents Learn how exponential growth and decay are represented in situations, tables, and graphs Determine whether a relationship represented by a table, rule, graph, or statement can be modeled by an exponential function	
Advice for Instruction	Corresponding Student Activity Book Pages

Lesson activities

OPENER (10 minutes)

Students consider a situation that involves comparing linear and exponential patterns in preparation for fuller treatment of this theme in today's lesson.

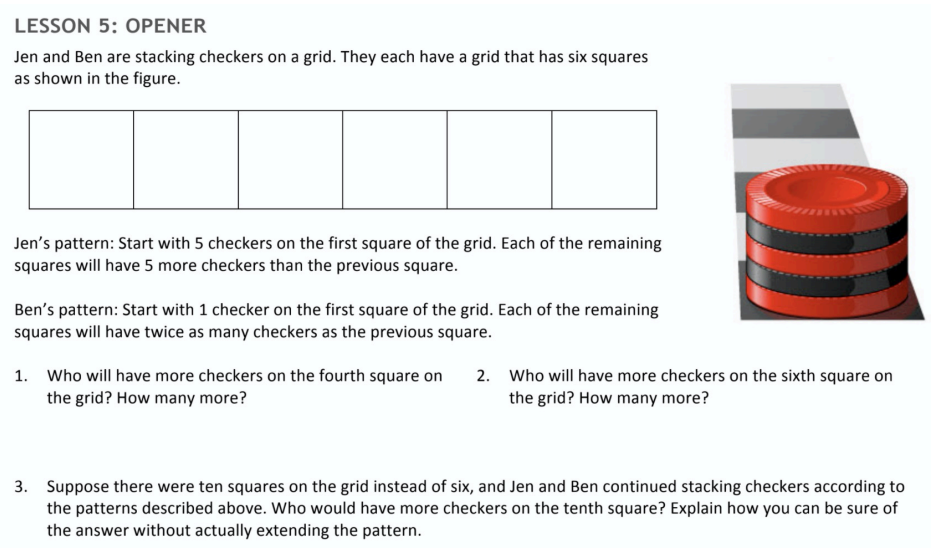
Online page 1

- Debrief the activity by asking students to share their answers to the Opener questions. **[SAB, questions 1-3]**
- For questions 1 and 2, be sure that students explain how they found the answers. Following a student explanation of method used (e.g., making a table, writing down a pattern (with or without making use of the grid provided), ask if other students used a different strategy. 3b - question with multiple approaches & (potentially) effective use of student responses and ideas
- For question 3, push students to explain why they know "Ben's method" will result in more checkers on the tenth square—and everything beyond it—based on reasoning related to the rate of growth for the two different "stacking checkers" methods. 3c - Learning tasks that require high-level student thinking and invite students to explain their thinking

Online page 2

- Use this page to preview the activities and learning goals for the day's lesson.

CORE ACTIVITY (30 minutes)



LESSON 5: OPENER

Jen and Ben are stacking checkers on a grid. They each have a grid that has six squares as shown in the figure.

Jen's pattern: Start with 5 checkers on the first square of the grid. Each of the remaining squares will have 5 more checkers than the previous square.

Ben's pattern: Start with 1 checker on the first square of the grid. Each of the remaining squares will have twice as many checkers as the previous square.

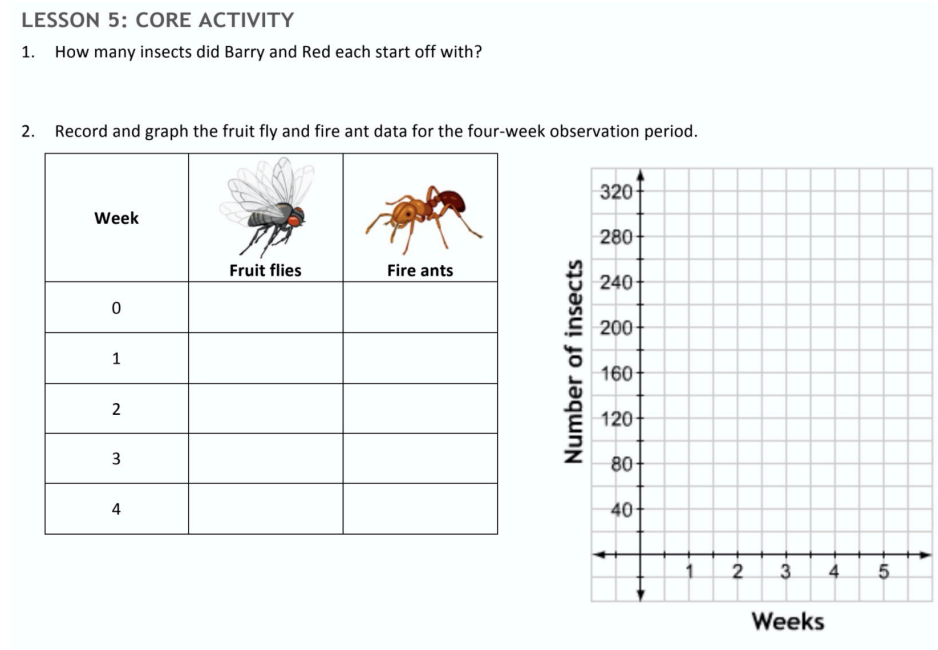
1. Who will have more checkers on the fourth square on the grid? How many more?
2. Who will have more checkers on the sixth square on the grid? How many more?
3. Suppose there were ten squares on the grid instead of six, and Jen and Ben continued stacking checkers according to the patterns described above. Who would have more checkers on the tenth square? Explain how you can be sure of the answer without actually extending the pattern.

In this activity, students explore two patterns of growth built through repeated addition and repeated multiplication. They generate and graph data, describe the growth in words, and examine the role of common differences and common multipliers in linear and exponential growth respectively. They connect the common differences (constant rate of change) to the linearity of the graph, and ultimately use the understanding built by executing and examining repeated calculation to write a function rule for each growth pattern.

Online pages 3-5

Students are introduced to a problem situation involving linear and exponential growth. They follow along with an animation to build a table and graph that model the situation.

- Page 3: Ask a student to read the text above the animation. Ask:
    - *What information is given in the problem situation?* **[SAB, question 1]**
    - *What are we going to explore?*
    - *Which insect do you conjecture will increase in population the most?*
- **Classroom strategy.** To increase investment in the upcoming animation, you can have the class take a vote. Students should record their vote on their student whiteboards while a student volunteer tallies and records the outcome.
- Play panel 1, pausing after the data for Week 3 is added. Ask students to fill in the rest of the Fruit flies column and then graph their results. **[SAB, question 2]**
- Play the remainder of panel 1 and panel 2 to validate student work.
- Play panel 3, pausing after the data for Week 3 is added. Ask students to fill in the rest of the Fire ants column and then graph their results. **[SAB, question 2]**
- Play the remainder of panel 3 and panel 4 to validate student work.
- Prior to launching page 4, have students answer questions in their Student Activity Book. **[SAB, questions 3-6]**



LESSON 5: CORE ACTIVITY

1. How many insects did Barry and Red each start off with?

2. Record and graph the fruit fly and fire ant data for the four-week observation period.

Week	Fruit flies	Fire ants
0		
1		
2		
3		
4		

3. How does the total number of fruit flies change each week?

4. How does the total number of fire ants change each week?

5. What type of function models the fruit fly data?

6. Does this same type of function model the fire ant data? Explain.

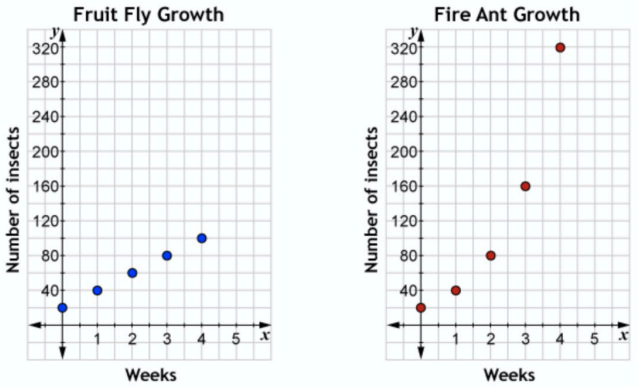
- Page 4: Use this page to review responses to questions 3 and 5. Ask:
    - *How do you know when a function is linear?*
    - *Is the fire ant population growth linear? How do you know?*
- Page 5: Use this page to review responses to questions 4 and 6. Ask:
    - *What is different about the growth rates of the two insects?*
    - *How is an exponential function different from a linear function?*

Online pages 6-7

Students compare linear and exponential growth in tabular and graphical representations.

- Display page 6 and have students respond to question 7 to identify and describe the meaning of the y-intercepts of the graphs. **[SAB, question 7]** Ask:
    - *How would the graph of the population of the fruit flies change if there were only 10 fruit flies at the beginning of the experiment?*
    - *How would the graph of the population of the fire ants change if there were only 10 fire ants at the beginning of the experiment?*
- Have students work through the puzzle on page 7. **[SAB, question 8]**
- **Classroom strategy.** Randomly select a student to come to the presentation computer to solve the puzzle. Prior to submitting the answer, ask the class if they agree with the solution. If they all agree, have them record the solution. Submit the answer to verify.
- Show page 8 and have students examine the two tables and the graph. **[SAB, question 9]**
- Solicit responses from students and reveal the checks to verify their work. Ask:

7. Compare the fruit fly and fire ant graphs. What do you notice about the y-intercept in each graph? How does the y-intercept relate to the situation being described?



8. Study the data in the table to determine the growth pattern for the populations of fruit flies and fire ants. Then use the appropriate operations and numbers to complete the puzzle.

+2	+1	+20	•2	-20	•1

Week	Fruit flies
0	20
1	40
2	60
3	80
4	100

Week	Fire ants
0	20
1	40
2	80
3	160
4	320

9. The populations of the two species of insects have different growth patterns.
    a. How is the pattern of change in the fruit fly data related to the shape of the graph?
    b. How is the pattern of change in the fire ant data related to the shape of the graph?

- *Which insect's population has an additive growth rate?*
- *Which has a multiplicative growth rate?*

PROCESS HOMEWORK (10 minutes)

Online page 9

Students process the homework due today.

CONSOLIDATION ACTIVITY (25 minutes)

Students work with a partner to compare linear and exponential growth.

Online pages 10-11

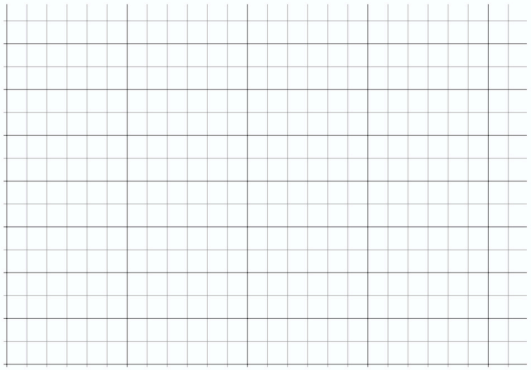
- Page 10: Have students work with a partner on the activity in their activity book. Students will explore linear and exponential growth, eventually coming to an understanding that exponential growth always exceeds linear growth.**[SAB, questions 1-6]**
- Page 11: Use the animation on this page to illustrate how the exponential growth of the fire ant population overtakes the linear growth of the fruit fly population and to summarize the comparison of linear and exponential growth.

LESSON 5: CONSOLIDATION ACTIVITY

For each of the following questions, complete the table and create a graph of the function. Then answer the questions.

1. Complete the table comparing the growth of a linear function, $y = 3x$, to the growth of an exponential function, $y = 3^x$. Then, graph each function on the provided grid.

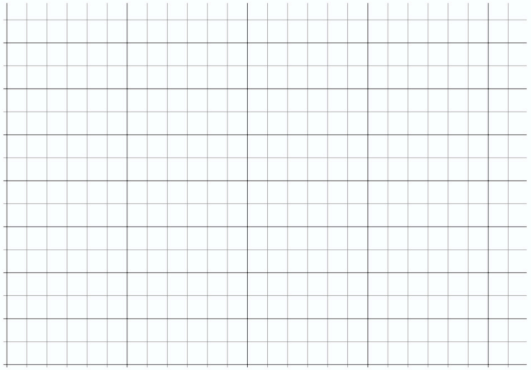
x	$3x$	3^x
0		
1		
2		
3		
4		
5		



2. What do you notice about the values of the two functions? Which function is increasing faster?

3. Complete the table comparing the growth of a linear function, $y = 4x - 3$, to the growth of an exponential function $y = 2^x$. Then, graph each function on the provided grid.

x	$4x + 3$	2^x
0		
1		
2		
3		
4		



4. What do you notice about the values of the two functions? Which function is growing faster? How do you know?

	5. Do you think the values of the exponential function will ever exceed the values of the linear function? Explain your answer. 6. Think back to the fire ant and fruit fly problem. What do you think will happen to the population of each insect as the number of weeks continues to increase?

Independent Study 2: Lesson Observation through FFT Component Lenses

Lesson Observation

- Directions
  - Read the Elements, Indicators, and Critical Attributes for your focus Component(s)
    - FTT Components 3b, 3c, and 3d
  - Observe the Agile Mind Lesson
    - Video Link: https://youtu.be/zmL5i7tSrSc?t=375 - video should start at 6:15
    - Video Script - script for 6:15 is on page 3 of this PDF
  - Pause video and note evidence of Elements, Indicators, and/or Critical Attributes for your focus Component(s).

Lens	3b
Evidence observed of Component's Elements, Indicators, and/or Critical Attributes	● ● ● ● ●

Lens	3c
Evidence observed of	●

Component's Elements, Indicators, and/or Critical Attributes	• • • •

Lens	3d
Evidence observed of Component's Elements, Indicators, and/or Critical Attributes	• • • • •

Independent Study 3: Sharing observation evidence and determining a Performance Rating

Full Educational Leadership Article: [Observing Classroom Practice]

Aligning Observed Evidence to FFT Rubric Protocol:

1. Read each evidence statement in the table above and align it to the language in the Unsatisfactory, Basic, Proficient, or Distinguished performance levels.
    a. Consider, "*Which collection of words in the rubric best summarizes or characterizes what the observer observed?*"
    b. Note the performance level next to each evidence statement as you correlate them.
2. For your focus component(s), determine which performance level, overall, this instruction aligns to, and provide key rationale in the table below.

Component	Performance Level Determination	Rationale
3b		
3c		
3d		

Independent Study 4: Post-observation reflection and possible next steps

Directions:

1. Using the language of the rubric's Critical Attributes, identify 1-2 next steps this teacher might take to build on their practice

Observed Critical Attributes	Language from more advanced Critical Attribute that this teacher could work towards

Agile Mind How-To Videos

Additional Resources Short videos to remind you of some of the “how-to’s” in Agile Mind.	
Video	Link
Logging in, Getting Help	https://youtu.be/Q8bfAJHG_Wg
Dashboard, Rosters, & Preferences	https://youtu.be/brpi_wu-L58
Student Accounts	https://youtu.be/yDROt-x32YI
Course Design & Course Contents	https://youtu.be/kAzytFs47PA
Course Materials	https://youtu.be/a9PNqgyGU5k
Professional Support	https://youtu.be/ZK17_bCB9AE
Advice for Instruction	https://youtu.be/eLIPZaS8JPM
Scheduling an Assignment	https://youtu.be/F9Dg6hXwBto
Student View of an Assignment	https://youtu.be/PiT-Wg7HeaI
Assignments on Smartphones	https://youtu.be/gdCV13sHnqA
Assignment Reports, Score & Review	https://youtu.be/c_2vmQddDCM
Scheduling a Quiz	https://youtu.be/83Z3VJ2x3tQ
Student View of a Quiz	https://youtu.be/cx-5dLFYF2s
Quiz Reports, Score & Review	https://youtu.be/t5seWTuWqwE
Creating Groups	https://youtu.be/hyXR27PAlYU
Google Translate & Read Aloud	https://youtu.be/RXqxorhEks0