

Introduction:

These tasks are classroom-embedded student exit ticket—a short assessment at the conclusion of lesson 5 and 7 in the storyline unit "[Why Don't Antibiotics Work Like They Used To?](#)". Each exit ticket is designed as a quick, formative check on student understanding after they have figured out key information related to how bacteria grow and react to antibiotics.

STANDARDS:

These tasks are intended to assess progress toward the Performance Expectations (PEs) in the unit by focusing on the following lesson-level targets that build student understanding toward the PEs:

Lesson 5: Develop and use a (mathematical) model generate data to support explanations of how the spots of bacteria appeared so quickly in the Petri dishes to predict the scale and quantity of population size of bacteria on our Petri dishes.

Lesson 7: Use mathematical thinking to develop mathematical representations (tables and graphs) of phenomena (changes in population size over time) to support claims of why it takes multiple doses of antibiotic to wipe out a large bacterial population.

ANNOTATION KEY

EQUITY	SCENARIOS	SEPs	DCIs	CCCs	SENSE-MAKING	ASSESSMENT PURPOSE
Supporting a wide range of diverse students.	Information provided to elicit performances.	Opportunities to demonstrate science and engineering practices.	Opportunities to demonstrate understanding of disciplinary core ideas.	Opportunities to demonstrate understanding of crosscutting concepts.	Opportunities for reasoning about phenomena and problems.	Highlights how the task features connect to intended assessment use.

✓ STRENGTHS

This task surfaces student understanding of ideas tied directly to the lesson-level activities, providing a **quick formative check on student understanding and meeting the goals of the assessment.** 

The majority of the questions **elicit some reasoning** using aspects of the targeted dimensions. The connection to the SEPs and CCCs (when present) are especially clear.    

The task can be **easily administered and evaluated**, allowing it to inform instruction flexibly. 

The learning performances helps **make explicit the specific assessment target** for the exit ticket. 

The task **includes affective questions about student experiences** that provide a powerful example of how exit tickets can be used to build and inform more inclusive and meaningful experiences for all students. 

! OPPORTUNITIES FOR IMPROVEMENT

Because of the grainsize of these items, it is sometimes **difficult to see how they connect/reveal student progress toward the grade-level expectations of the PEs**—for example, how does bacterial growth rate connect to evolution DCIs? It would be helpful if the exit tickets included guidance about how they surface student understanding relative to the PE targets of the unit (show more of the unpacking/mapping process).     

It would be helpful if the exit ticket included **support for how to connect student responses to instructional moves**, especially relative to the affective questions to better support all learners.  

How does this task support all students?

- ✓ These kinds of tasks include several [features that support all learners](#). By including tasks that help monitor student thinking and progress on a lesson-to-lesson basis, these tasks help ensure that all students are making progress toward their learning goals. The tasks require sense-making, balancing quick checks on understanding (which could be conducive to rote memorization) with signaling the need for reasoning and application. Additionally, these tasks use simple language and multiple modalities (graphs, text) to support student understanding of the questions as well as their responses. The selected-response approach to the questions limits the need for writing, helping to ensure that all students, including those who may struggle with the production of written English, can make their thinking visible.
- ✓ Importantly, this task uses the multiple choice, exit ticket format to collect information about students experiences in their science classroom. This is a unique and powerful way to include classroom culture as part of the formative assessment process, while simultaneously showing students that their ideas and experiences are important.

SUMMARY

Overall, these task focuses on surfacing student understanding related to specific learning experiences in the classroom. The tasks provide quick checks on student understanding that can help teachers and students ensure that all students have meaningful learning experiences in the classroom that build toward the targeted PEs.

SUGGESTED IMPROVEMENTS

This task would be improved if the scoring guidance included clearer guidance about 1) how student responses should be interpreted and used in instruction, and 2) how the questions connect to the targeted PEs.

How should this task be used?

These tasks should be used as intended—with the curriculum they are part of to monitor day-to-day progress of student thinking, and to inform classroom experiences flexibly. Additionally, these questions could be used as a model for multiple choice questions that still require multi-dimensional thinking and reasoning. If these questions are used this way, educators and developers should make sure they address the opportunities for improvement identified above.