

NAEP Runners Task - Student Work Samples

TCE 432A - Week 4, Day 7

Purpose: Analyze these authentic student responses to understand the range of student thinking about speed, distance, and time relationships.

Response 1: Complete Response

Location: ../Student Work (NAEP)/Response1.png

Key Features: - Correctly identifies Runner 1 as constant speed (equal intervals) - Correctly identifies Runner 2 as increasing speed (increasing intervals) - Provides clear reasoning about relationship between distance traveled and time

Analysis Questions: - What evidence shows this student understands the concept? - What mathematical language do they use?

Response 2: Essential Response

Location: ../Student Work (NAEP)/Response2.png

Key Features: - Correctly identifies both runners' speeds - Reasoning is present but may be less detailed or precise - Demonstrates understanding but explanation could be more complete

Analysis Questions: - What does this student understand? - What additional prompting might help them elaborate?

Response 3: Partial Response

Location: ../Student Work (NAEP)/Response3.png

Key Features: - May correctly identify one runner but not both - Reasoning shows partial understanding - Some misconceptions may be present

Analysis Questions: - What specific misconception appears? - What does the student understand correctly? - What instructional move would help?

Response 4: Unsatisfactory Response

Location: ../Student Work (NAEP)/Response4.png

Key Features: - Incorrect identification of speed changes - Reasoning shows fundamental misunderstanding - May confuse intervals with speed

Analysis Questions: - What's the root misconception? (Equal intervals = equal speed?) - What prior knowledge might be missing? - How would you help this student?

For Class Discussion:

Range of Understanding: - What's the progression from Response 4 → Response 1? - What instructional scaffolds bridge these levels?

Designing Activities: - How can we help students who think “equal intervals = equal speed”? - What hands-on experience would clarify the relationship? - How do motion sensors (Phyphox) help make this concept visible?

Connection to Readings: - **AS Ch 12:** What evidence reveals student thinking? - **Boaler Ch 8:** How do we use this assessment FOR learning (not just grading)?