Progress Monitoring: Calculating Rate of Growth
Est. Time: 30 Minutes

Objective

Learn how to determine the average rate of growth in a student's performance in mathematics over a period of time.

Overview

Progress monitoring is a type of formative assessment in which student learning is evaluated on a regular basis to provide useful feedback about performance to both students and teachers. Though there are a number of methods for monitoring a student's progress, the most widely used is **general outcome measurement (GOM)**, sometimes referred to as **curriculum-based measurement (CBM)**. CBM consists of the frequent administration (e.g., once per month, every two weeks) of brief probes or tests, which includes sample items from every skill taught across the academic year. The teacher can then use this data to determine a student's:

- Rate of growth — Average growth of a student's mathematics skills over a period of time
- Performance level — An indication of a student's current mathematics skills, often denoted by a score on a test or probe

For Your Information

The primary purpose of progress monitoring in a multi-tiered system of supports (MTSS)—for example, response to intervention (RTI)—is to determine which students are not responding adequately to instruction. Progress monitoring should be implemented for each level of instruction (e.g., primary, secondary, tertiary). Depending on the level of instruction, teachers will evaluate rate of growth, performance level, or both.

- Primary (core instruction) – rate of growth or performance level
- Secondary (targeted instruction) – rate of growth and performance level
- Tertiary (intensive, individualized intervention) – rate of growth and performance level

Rate of growth is represented by the *slope* of a student's graphed scores—the direction and steepness of the line that connects the data points. When at least six data points have been plotted, a student's slope can be determined with a simple calculation using the following pieces of information:

- The score on the first probe
- The score on the last probe
- The first administration (e.g., week 1)
- The last administration (e.g., week 6)

Progress Monitoring: Calculating Rate of Growth

To determine Ozzie's rate of growth, the teacher gathers information from the graph on the right: the score on the first probe (4), the score on the last probe (10), the first administration (week 1), and the last administration (week 7). She then uses these steps to calculate Ozzie's rate of growth:

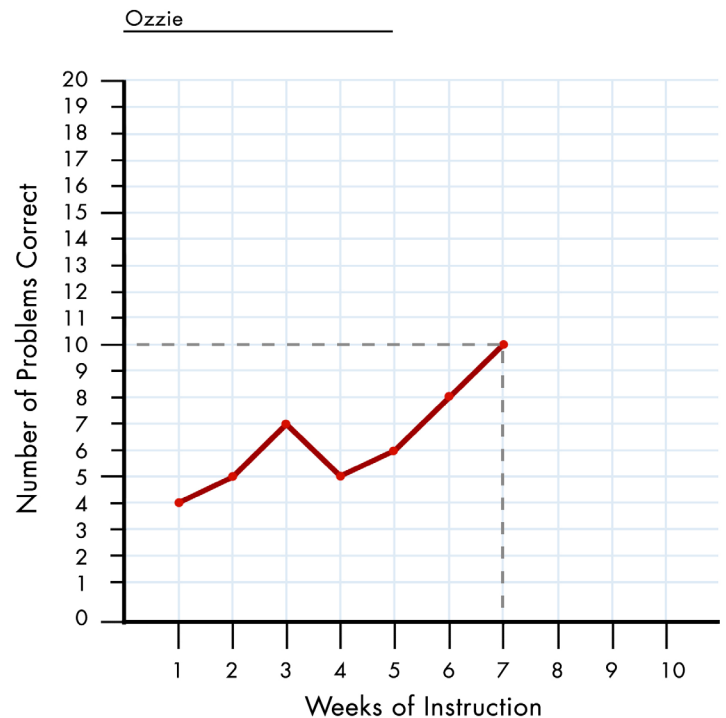**Step 1:** Subtract the score on the first probe from the score on the last probe.

10 – 4 = 6

Step 2: Subtract the week of the first administration from the week of the last administration.

7 – 1 = 6

**Step 3:** Divide the result of Step 1 by the result of Step 2.

6 ÷ 6 = 1

Ozzie

Ozzie's rate of growth (or slope) is 1. This indicates an average growth of 1 problem correct per week. The teacher will compare this number to the established criterion to determine whether this is an adequate rate of growth. The criteria for evaluating rate of growth vary depending on the progress monitoring measure being used (e.g., type of probe, grade level). A student's slope that is equal to or greater than the specified rate of growth indicates that the student is responding adequately to instruction. On the other hand, a student's slope that is less than the specified rate of growth indicates that the student is not responding adequately to instruction.
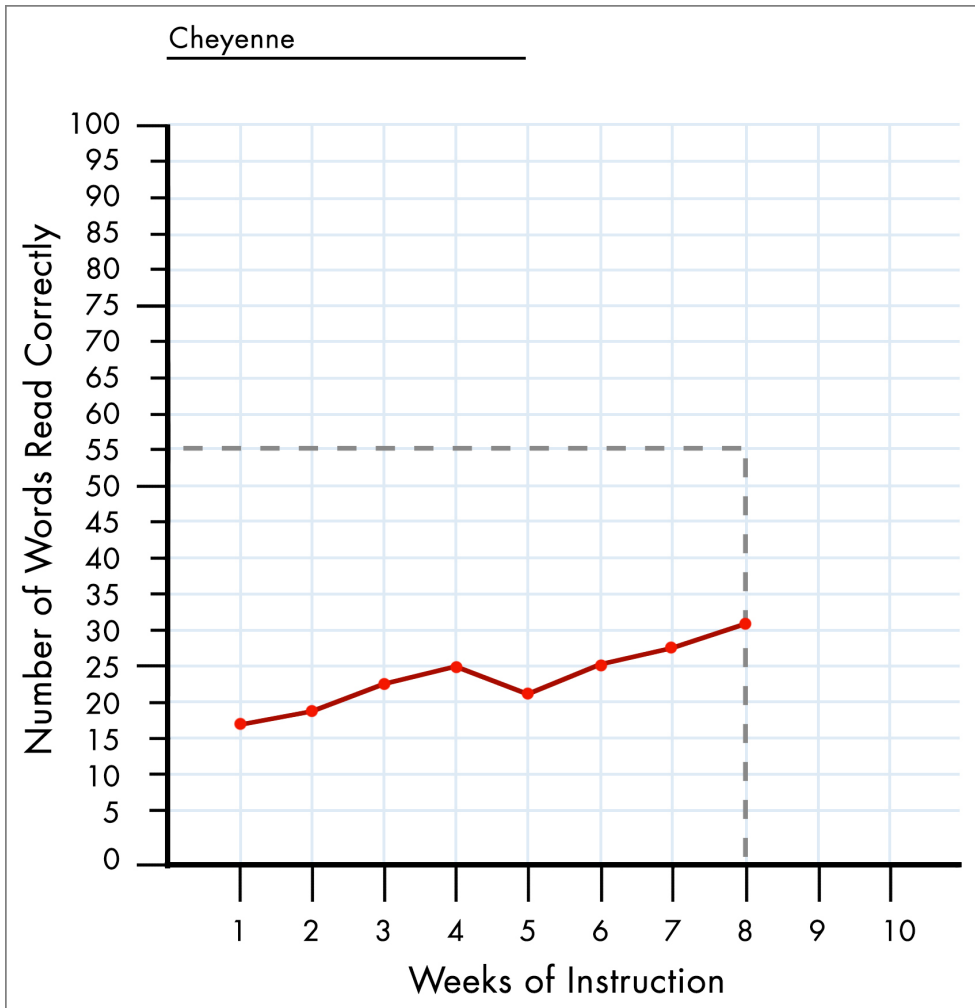
For Your Information

When calculating rate of growth, it is important to evaluate the appropriate data. For example, in the graph on the right, if the teacher calculates the student's rate of growth for the secondary level (i.e., targeted instruction) she would only use information pertaining to this level of instruction. Therefore, she would use 17 as the score on the first probe (not 11, which is the student's score on the first probe for the primary level). Similarly, she would use Week 7 for the first administration and 12 for the last.

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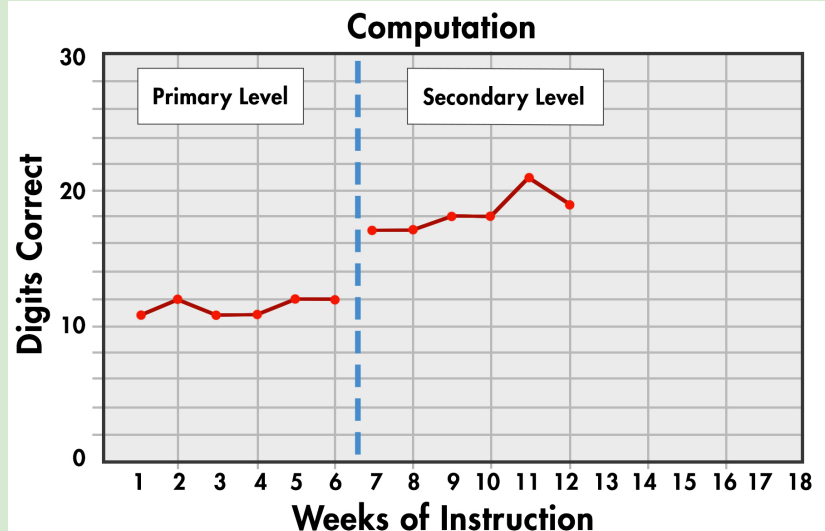
Progress Monitoring: Scoring Mathematics Computation Probes
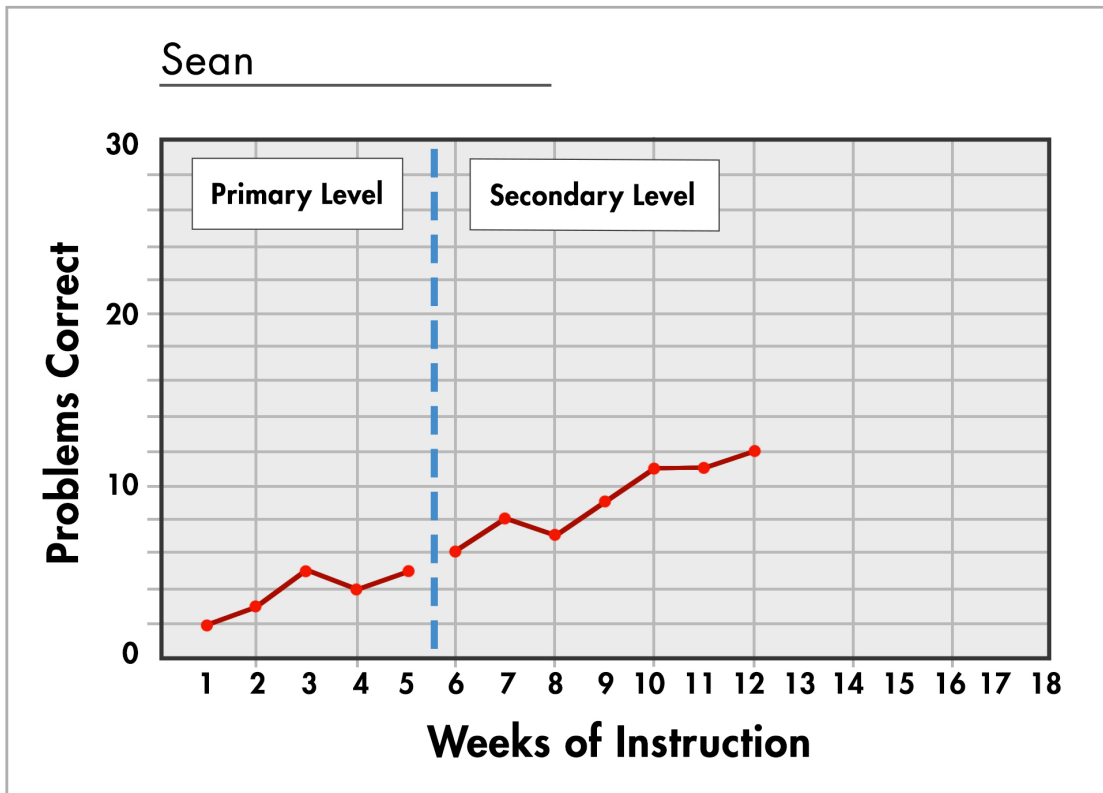
Activity

1. Using the progress monitoring data in the graphs below, calculate the rate of growth for Cheyenne and Sean.

Cheyenne

Cheyenne's Progress Monitoring Scores	
Week	Score
1	17
2	19
3	23
4	25
5	21
6	25
7	27
8	31

Number of Words Read Correctly (y-axis: 0 to 100)

Weeks of Instruction (x-axis: 1 to 10)

Progress Monitoring: Calculating Rate of Growth

Sean

Primary Level		Secondary Level	
Week	Score	Week	Score
1	2	6	6
2	3	7	8
3	5	8	7
4	4	9	9
5	5	10	11
		11	11
		12	12