

2023 MCAS Sample Student Work and Scoring Guide

Grade 10 Mathematics

Question 6: Constructed-Response

Reporting Category: Geometry

Standards: [GEO.G-GPE.B.5](#) - Prove the slope criteria for parallel and perpendicular lines and use them to solve geometric problems (e.g., find the equation of a line parallel or perpendicular to a given line that passes through a given point).

[MI.G-GPE.B.5](#) - Prove the slope criteria for parallel and perpendicular lines and use them to solve geometric problems (e.g., find the equation of a line parallel or perpendicular to a given line that passes through a given point).

Item Description: Given a line graphed on a coordinate plane, determine its slope, create an equation of a parallel line, determine whether another line is parallel, and create an equation of a perpendicular line passing through a given point.

Calculator: Not allowed

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Scoring Guide

Select a score point in the table below to view the sample student response.

Score*	Description
4A	The student response demonstrates an exemplary understanding of the Geometry concepts involved in proving the slope criteria for parallel and perpendicular lines and using them to solve geometric problems. The student calculates the slope of a graphed line, creates an equation of a line parallel to it, analyzes a different line, and creates an equation of a line perpendicular to it, which passes through a given point.
4B	
3	The student response demonstrates a good understanding of the Geometry concepts involved in proving the slope criteria for parallel and perpendicular lines and using them to solve geometric problems. Although there is significant evidence that the student was able to recognize and apply the concepts involved, some aspect of the response is flawed. As a result, the response merits 3 points.
2	The student response demonstrates a fair understanding of the Geometry concepts involved in proving the slope criteria for parallel and perpendicular lines and using them to solve geometric problems. While some aspects of the task are completed correctly, others are not. The mixed evidence provided by the student merits 2 points.
1	The student response demonstrates a minimal understanding of the Geometry concepts involved in proving the slope criteria for parallel and perpendicular lines and using them to solve geometric problems.
0	The student response contains insufficient evidence of an understanding of the Geometry concepts involved in proving the slope criteria for parallel and perpendicular lines and using them to solve geometric problems. As a result, the response does not merit any points.

*Letters are used to distinguish between sample student responses that earned the same score (e.g., 4A and 4B).