

Grade HS Smarter Balanced Assessment Item Specifications Fact Sheet

Claim 1 - Target L: Interpret functions that arise in applications in terms of the context.

Content Domain: Functions

Claim 1 Priority Cluster

Standards Assessed in Target L:

F-IF.4: For a function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the relationship. *Key features include: intercepts; intervals where the function is increasing, decreasing, positive, or negative; relative maximums and minimums; symmetries; end behavior; and periodicity.*

F-IF.5: Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes. *For example, if the function $h(n)$ gives the number of person-hours it takes to assemble n engines in a factory, then the positive integers would be an appropriate domain for the function.*

F-IF.6: Calculate and interpret the average rate of change of a function (presented symbolically or as a table) over a specified interval. Estimate the rate of change from a graph.

Achievement Level Descriptors

Level 1	Students should be able to interpret linear functions in context, and given the key features of a linear graph, they should be able to identify the appropriate graph.
Level 2	Students should be able to interpret quadratic and other polynomial functions in two variables in context of the situation, and given the key features of a graph of a polynomial function, they should be able to identify the appropriate graph. They should be able to specify the average rate of change from an equation of a linear function and approximate it from a graph of a linear function.
Level 3	Students should be able to graph various types of functions and interpret and relate key features, including range and domain, in familiar or scaffolded contexts. They should be able to specify the average rate of change of a function on a given domain from its equation or approximate the average rate of change of a function from its graph.
Level 4	Students should be able to interpret complex key features such as holes, symmetries, and end behavior of graphs and functions in unfamiliar problems or contexts.

Construct-Relevant Vocabulary

average rate of change, axis of symmetry, decreasing interval, end behavior of a graph, increasing interval, interval, limit, periodicity, relative maximum, relative minimum, symmetry, x-intercept, y-intercept

Allowable Stimulus Materials

written description of key features of a function, graphs of functions in the coordinate plane, tables containing domain and range values of functions, functions presented symbolically

Allowable Tools

Calculator