

# HEIghten® Quantitative Literacy Assessment

## Performance Level Descriptions

### Advanced

A typical student at the advanced level has demonstrated the ability to:

- reason through long, complicated word problems and extract relevant information to develop an appropriate model.
- recall and apply standard definitions, formulas or algorithms that are appropriate for a given problem.
- set up and solve a model in a real-world context with two or three variables.
- solve complex multistep problems.
- use and understand basic algebra to solve equations that model a problem, e.g., use variables appropriately, manipulate and simplify algebraic expressions.
- use and understand basic facts of Euclidean geometry to model and solve problems, e.g., know formulae for perimeter, area and volume, parallel and perpendicular lines.
- compute and interpret percents and percent change.
- read and interpret a chart or graph and extract data needed to solve a problem.
- solve problems using proportional reasoning.
- perform the four basic operations (addition, subtraction, multiplication and division) with integers, decimals and fractions.
- recognize when there is insufficient information provided to solve a problem.
- read and interpret relationships between quantities expressed in terms of equations, formulas or data representations.
- use correct mathematical terminology and notation for communicating results.

### Proficient

A typical student at the proficient level has demonstrated the ability to:

- reason through a problem in a real context, understand relevant nuances of context and translate to an equation to solve.
- apply solution strategy of “plugging in appropriate numbers” or using a relevant example.
- set up a model in a real-world context with two or three variables, but may have difficulty solving the model.
- solve simple multistep problems.
- recall and use basic algebra to solve equations that model a problem, but may have difficulty with algebraic manipulation.
- recall and use basic facts of Euclidean geometry to model and solve problems, but may not recall all the necessary facts.

- compute and interpret percents and percent change, but may have difficulty with percents greater than 100, and negative percent change.
- read a chart or graph, but may have difficulty interpreting the data presented.
- perform the four basic operations (addition, subtraction, multiplication and division) with integers and decimals, but not necessarily fractions.
- choose appropriate variables for data in a problem, e.g., let  $J$  be the number of cartons of juice purchased.
- read and interpret relationships between quantities expressed in terms of equations, formulas or data representations, but may have difficulty with multiple variables or complex data representations.
- recognize correct mathematical terminology and notation for communicating results, but may use terminology or notation incorrectly.

## **Developing**

A typical student at the developing level may sometimes:

- reason through simple word problems, but may react to surface features rather than apply quantitative reasoning.
- reason through a single-step word problem and translate to an equation to solve, but may have difficulty with complicated equations or calculations with large numbers.
- recognize when algebraic techniques are required to solve a problem, but may not recall the specific facts or techniques needed.
- recognize when facts from Euclidean geometry are required to solve a problem, but may not recall the specific facts or techniques needed.
- read a chart or graph, but may have difficulty extracting the data required to solve a problem.
- perform the four basic operations (addition, subtraction, multiplication and division) with integers, but not necessarily with decimals or fractions.
- read and interpret relationships between quantities expressed in terms of simple equations, well known formulas or simple data representations, but may have difficulty with multiple variables, new formulas or complicated data representations.
- identify that mathematical terminology and notation are needed to communicate results, but may use incorrect terminology or incomplete notation.