SINGLE ITEMS

In the single item format, a problem is presented as a direct question or an incomplete statement, and four answer choices appear below the question. The following question is an example of a single item. This question tests knowledge of Mathematics competency 023: *The mathematics teacher understands how to apply the techniques of coordinate geometry to solve problems.*

Two lawn sprinklers installed at coordinates (4, 4) and (11, 4) produce a circular spray of water with a radius of 4. What are the coordinates of the points at which these two sprays intersect?

A. $\left[7.5, 4 + \dfrac{\sqrt{15}}{2}\right]$, $\left[7.5, 4 - \dfrac{\sqrt{15}}{2}\right]$

B. $(0, 7.5)$, $(3.75, 7.5)$

C. $\left[4 + \dfrac{\sqrt{15}}{2}, 7.5\right]$, $\left[4 - \dfrac{\sqrt{15}}{2}, 7.5\right]$

D. $(7.5, 0)$, $(7.5, 3.75)$

Suggested Approach

Read the question carefully and critically, eliminate any obviously wrong answers, select the correct answer choice, and mark it on your answer sheet.

After reading the question critically, you will understand that since the two sprinklers share the same *y*-coordinate value, the intersection of the resulting circles must occur at the midpoint of the *x*-coordinate values. Therefore, responses B and C can be eliminated; you may want to cross them out or mark them with an X. As you continue to think about the problem, you will also realize that since the circles intersect at two points, one of the points must be above the center of the circle and the other below the center. The *y*-coordinate values in response D both fall below the centers of the two circles. Therefore, response D can also be eliminated as a correct response. This leaves response A as the correct response.

ITEMS WITH STIMULUS MATERIAL

Some questions are related to stimulus material. Examples of stimulus material included on the test are maps, tables, graphs, flowcharts, and word problems.

The following question depends on stimulus material; to answer this question correctly, you must apply the information in the question to the information provided in the chart. This question tests knowledge of Mathematics competency 032: *The mathematics teacher understands sequences, series, summations, and the binomial expansion and their application in the problem-solving process.*