**Section 25.APPENDIX A Statistical Test Equating – Licensure Testing System**

The Z-score formula set forth below will be used in all cases except where none of the scorable items on a test form has appeared on any previous test form. In such cases, the linear equating formula will be used.

Z-Score Formula

The following formula is used for z-score equating.

1. Define:

|  |  |  |
| --- | --- | --- |
|  | = | the mean raw score achieved on the new test form's scorable items |
| sx | = | the standard deviation of X |
|  | = | the mean raw score achieved on the previous test form's scorable items |
| sy | = | the standard deviation of Y |
| Xi | = | a given raw score on the new test form |
| Yi | = | the raw score equivalent to Xi expressed in the raw score metric of form Y |

2. Set zx = zy



3. In order to find the equivalent passing score on the new form, solve for Xi, where Yi = the passing score on the previous form rounded to one decimal place.



The linear equating formula is as follows.

1. Define:

|  |  |  |
| --- | --- | --- |
|  | = | mean total test score on a new test form |
| s | = | variance of total test scores on the new form |
|  | = | mean of common items on the new form |
|  | = | variance of common item scores on the new form |
|  | = | covariance of total test and common item set for the new form |
|  | = | number of candidates taking the new form |

, , , , , and  are corresponding statistics for the previous test form

2. Compute estimated descriptive statistics for the total group (i.e., candidates from new and previous test form administrations).

|  |  |  |
| --- | --- | --- |
|  | = |  |
|  | = |  |
|  |  |  |

|  |  |  |
| --- | --- | --- |
| where n | = | the smaller of nx or ny |

|  |  |  |
| --- | --- | --- |
|  | = |  |
|  | = |  |
|  | = |  |
|  | = |  |
|  | = |  |
|  | = |  |

3. In order to find the equivalent passing score on the new form, solve for Xi, where Yi = the passing score on the previous form rounded to one decimal place.

|  |  |  |
| --- | --- | --- |
|  | = |  |

(Source: Amended at 37 Ill. Reg. 8379, effective June 12, 2013)