

# Item Analysis Explanation

The item difficulty is the percentage of candidates who answered the question correctly. The recommended range for item difficulty set forth by CASTLE Worldwide, Inc., is between 92.00 (easy) and 30.00 (difficult). However, there are some instances where ratings slightly above 92.00 or below 30.00 are acceptable.

The discriminating power is a rating that denotes whether or not the question can discriminate between those candidates who possess the minimally acceptable level of knowledge to become certified and those candidates who do not. CASTLE's recommendation for the discriminating power is a positive rating at or above 0.15. The discriminating power is stronger the closer it nears 1.

Item: ITEM001      Category: Proj\_Org&Admin      Classification: 0603

Item Difficulty: 47.22      Weighting - Correct: 1.000  
 Discriminating Power: 0.051      Incorrect: 0.000

Response (* = Key)	Number Choosing	Percent Choosing	Mean of Scores	Distractor Effectiveness
A	91	50.56	118.88	-0.04
B	1	0.56	111.00	-0.04
C*	85	47.22	120.69	0.08
D	3	1.67	107.00	-0.11
E	0	0.00	0.00	0.00

We require that the distractor effectiveness is positive for the key.

The asterisk here denotes the key.

When the data in this column are lower than 3%, the accompanying distractor might not be plausible. These particular data are suspicious because there were more respondents that chose distractor A than the key. A key verification and distractor B and D revision is necessary in this situation.

The data in this column represent the average score that individuals who chose this response option received on the overall examination.

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Item: ITEM008      Category: Document      Classification: 0501

Item Difficulty: 69.49      Weighting - Correct: 1.000  
Discriminating Power: 0.305      Incorrect: 0.000

Response (* = Key)	Number Choosing	Percent Choosing	Mean of Scores	Distractor Effectiveness
A	25	14.12	111.68	-0.22
B*	123	69.49	122.38	0.28
C	16	9.04	113.50	-0.13
D	13	7.34	115.85	-0.07
E	0	0.00	0.00	0.00

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The statistics for this particular item are considered acceptable for the following reasons:

- The difficulty is neither too high or too low
- The discriminating power is substantially higher than 0.15
- No response options were chosen less than 3% of the time
- A large majority of examinees chose the correct answer
- The distractor effectiveness for the key is positive

NOTE: There is no distractor "E" with this item.

## Glossary

**Anchor Exam** An examination form that sets the standard of passing for a given series of examinations.

**Certification** Authorized declaration validating that one has fulfilled the requirements of a given profession and may practice in the profession.

**Classification System** A systematic arrangement of examination content in groups or categories according to specified criteria. CASTLE Worldwide, Inc. uses a six digit coding system to represent the domain, task, and knowledge or skill a specific question covers.

**Computer Based Testing (CBT)** Refers to delivering examinations via computers. The examination questions are presented to candidates on a computer screen. Candidates choose their answers using the computer's mouse or keyboard, and their responses are recorded by the computer, rather than on an answer sheet.

**Content Domain** A body of knowledge, skills, and abilities defined so that items of knowledge or particular tasks can be clearly identified as included or excluded from the domain.

**Cut Score** A specified point on a score scale at or above which candidates pass or are accepted and below which candidates fail or are rejected. This is also sometimes called the passing score or passing point.

**Discrimination** The ability of a test or a test question to differentiate among qualified and unqualified individuals by measuring the extent to which the individual display the attribute that is being measured by the test or test question.

**Distractor** The options that are not correct answers. Distractors must be plausible; hence, they distract the less qualified test-taker from the correct answer.

**Equating** A process used to convert the score from one form of a test to the score of another form so that the scores are equivalent or parallel.

**Equator** Questions that are on all forms of an examination, including the anchor form. These questions are used to equate test forms.

**Inter-rater Reliability** Consistency of judgments made about candidates by raters or sets of raters.

**Internet-Based Testing** Computer-based testing. However, rather than send the examination to each testing center on computer media (compact disc), the examination is delivered via a secure, password-protected Web site. The examination and the candidate's answers are uploaded to the test provider's secure server. Test security is assured through configuration management, controlled loading, and availability.

**Item** A test question that consists of a stem, correct response, and distractors.

**Item Analysis** The process of assessing certain characteristics of test questions, specifically the question difficulty, the discrimination power, the candidates' mean scores, and the distractor effectiveness.

**Item Difficulty** The percentage of candidates answering a question correctly. This value can be computed to provide data about first-time candidates, retake candidates, ability level, etc.

**Job Analysis Study** Also known as role delineation study. The method of identifying the tasks performed for a specific job, or the knowledge, skills, and abilities required to perform a specific job.

**Key** The correct answer in a list of options.

**Knowledge Statement** An organized body of factual or procedural information is called knowledge.

**Minimally Qualified Candidate** An individual's competence in a particular job role can be seen as a continuum ranging (theoretically) from the complete lack of ability to the highest level of mastery. The term *minimum competence* suggests that the individual is capable of filling the role with sufficient mastery to not harm the public or the profession.

**Options** The list of possible answers for a question including the correct answer.

**Performance Domain** The major responsibilities or duties of a specific field of study. Each domain may be characterized as a major heading in an outline format and may include a brief behavioral description.

**Psychometrics** The design, administration, and interpretation of quantitative tests that measure psychological variables such as aptitude, intelligence, skill, and learning.

**Raw score** The unadjusted score on a test, usually determined by counting the number of correct answers.

**Reliability** The reliability of a test refers to the consistency of the test result. We interpret the reliability of a test as a measure of the likelihood that if we gave the test again under the same conditions, we would then observe the same scores.

**Role Delineation Study** Also known as job analysis study. The method of identifying the tasks performed for a specific job or the knowledge, skills, and abilities required to perform a specific job.

**Scaled Score** A score to which raw scores are converted by numerical transformation (e.g. standardized scores).

**Score** Any specific number resulting from the assessment of an individual. A number that expresses accomplishment either absolutely in points earned or by comparison to a standard.

**Scoring Formula** The formula by which the raw score on a test is obtained. The simplest scoring formula is the raw score equals the number of questions answered correctly.

**Skill Statement** The proficient physical, verbal, or mental manipulation of data, people, or objects is called skill. Skill embodies observable, quantifiable, and measurable performance parameters and may be psychomotor or cognitive in nature.

**Standard Error of Measurement** The standard deviation of the hypothesized distribution of test score means if multiple samples from which to compute the mean were available. We interpret the standard error of mean as a measure of variability we would observe in multiple sample or test administrations.

**Stem** The body of the question including any scenarios or qualifying information.

**Subject Matter Expert** A person with expertise in a given field or profession. Subject matter experts are used to develop the content of examinations.

**Task Statement** A comprehensive statement of work activity that elaborates upon the performance or content domain. Each task statement details a particular work activity in such a way that the series of task statements will offer a comprehensive and detailed description of each performance domain. In particular, task statements should answer the following questions:

- **What** activity do you perform?
- **To Whom** or **To What** is your activity directed?
- **Why** do you perform this activity?
- **How** do you accomplish the activity?

**Test Specification** A content outline that specifies what proportion of the test questions will deal with each content area.

**Validation** The process of rating each test question in order to determine how important, critical, and frequently the content tested by a specific question is used for a specific job.

**Validity** Refers to the quality of the inferences made from a test score/result. If the purpose of a particular examination is to certify a minimally qualified candidate in a particular profession, then the question we ask is whether minimal qualification can be inferred from the examination. Alternatively, validity can be conceptualized as the accuracy of the test score.

Traditional definition: Are we measuring what we intend to measure?

**Weighted Scoring** Scoring in which the number of points awarded for a correct response is not the same for all questions on a test.

## Background Information on CASTLE Worldwide, Inc.

Founded in 1987 as Columbia Assessment Services, Inc., CASTLE Worldwide has grown into the sixth-largest certification and licensure testing company in the United States based on our ability to develop quality products and offer superior customer service to organizations of all sizes. CASTLE Worldwide is built on a history of developing quality high-stakes examinations for organizations that license or certify the expertise of professionals in fields ranging from medical technology to engineering to physical fitness. Tests can be developed for certification or licensure of professionals, to assess the knowledge and skills of employees for training purposes or as a pre-employment check for potential hires. CASTLE's psychometricians are trained to develop and validate assessment tools that measure whether or not a professional can perform his or her job-related duties with competence.

As a full-service company, CASTLE offers a broad array of products and services designed to meet the varied needs of business, educational, governmental, and professional organizations. Our hallmarks include high-quality, cost-effective development procedures; technological innovation and leadership; and our responsive customer service to clients and candidates. More than 50 organizations look to CASTLE Worldwide for assistance with their testing, training, learning, and certification programs.

CASTLE Worldwide offers its clients an extensive international network of test administration sites. Our secure Internet-based delivery system allows us to provide proprietary content directly to clients and their candidates any time of day, anywhere in the world. Internet-based practice tests and training programs make learning and studying convenient and self-paced. We offer our clients the expertise gained through years of service in leadership positions with the National Organization for Competency Assurance (NOCA), the National Commission for Certifying Agencies (NCCA), and the Council on Licensure, Enforcement, and Regulation (CLEAR).

CASTLE Worldwide's psychometric staff lends its expertise to leading industry publications including *Certification: A NOCA Handbook* and the revised *Standards for Educational and Psychological Testing*, published by the American Educational Research Association, the American Psychological Association, and the National Council on Measurement in Education. CASTLE Worldwide is located in Research Triangle Park, North Carolina.



CASTLE Worldwide, Inc. • 900 Perimeter Park Drive, Suite G • Morrisville, NC 27560