



MAT Basics:
Test Structure and
Score Interpretation

PEARSON

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Table of Contents

Acknowledgments	iv
Introduction.....	1
Test Structure and Administration	2
Development of the Test.....	2
The MAT Analogy.....	3
MAT Content and Relationship Objectives	4
Test Administration	5
Scoring and Reporting Procedures	6
Score Reports and Transcripts	6
Interpreting MAT Scores	10
Interpreting Scaled Scores and Percentile Ranks.....	10
Using MAT Scores as Criteria for Admission.....	11
Glossary	14
References	16
Figures	
1 MAT Content and Relationship Objectives.....	4
2 Sample Official Score Report	8
3 Sample Official Transcript	9

Acknowledgments

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Introduction

The *Miller Analogies Test* (MAT) was originally developed in 1926 by Dr. W. S. Miller of the University of Minnesota, where the test was refined during the 1920s and 1930s and administered to all incoming graduate students at that institution in 1940. After the MAT gained favorable attention from a number of institutions, The Psychological Corporation assumed publication of the test in 1947 to manage its development and use on a larger scale. Since then the test has been used for graduate school admissions by university programs throughout the United States. The MAT is currently developed and administered by Pearson.

The information presented in this document is intended to familiarize graduate school deans, faculty, and admissions professionals with how the MAT is structured, administered, and scored, and to suggest how the test results can be interpreted and used in admission decisions. This information is intended to ensure the proper interpretation and use of test results by university officials, and minimize the potential for unfair consequences to graduate school applicants.

Additional publications are also available on the MAT website: “Understanding Analogies,” showing the usefulness of the analogy item format for measuring important cognitive skills; “MAT Reliability and Validity,” including research results related to the reliability and validity of the MAT and a summary of research findings related to the validity of the test; and “Predicting Performance with the *Miller Analogies Test*,” a comparison of predictive validity data obtained from independently conducted meta-analyses of MAT and GRE research.

Also available only to qualified professionals, the printed *MAT Technical Manual* contains detailed data for the current normative sample, the current percentile ranks, and a compendium table that can be used to compare the previous percentile ranks with the current percentile ranks.

To request a copy of the *MAT Technical Manual*, or to offer suggestions regarding the MAT or about this or any other related publications, please contact MAT Customer Relations at the following email address: MATScoring.Services@Pearson.com.

Test Structure and Administration

Development of the Test

For over 60 years, the publisher of the MAT has followed formal test construction procedures to ensure that all test forms retain the same basic item types as earlier forms, maintain similar proportions of the content domains sampled, produce reliability estimates comparable to previous forms, and enable direct comparisons with current normative data. Pearson, the current publisher, has extensive experience in developing tests with a high degree of reliability and validity.

The MAT is a high-level norm-referenced standardized test requiring the solution of problems stated as analogies. Psychologists suggest that the analogy format represents an efficient and effective way to sample reasoning processes and to measure verbal comprehension, inductive reasoning, and analytical intelligence (Gentner, Holyoak, & Kokinov, 2001; Gentner & Markman, 1997; Holyoak & Thagard, 1996; Sternberg, 1977, 1985, 1988). The MAT has been designed to measure these same cognitive processes. It is also designed to measure background knowledge critical to the commencement of study in graduate school and includes test items with content from the humanities, social sciences, natural sciences, and mathematics.

The MAT consists of 120 partial analogies that candidates are asked to complete in 60 minutes. One hundred of these items are operational items that determine candidates' scores and are reported on individual Official Score Reports to the candidates and on Official Transcripts to institutions. Each test form also contains 20 experimental items that are not counted in candidates' scores but are being field-tested for future use on MAT test forms. The experimental items are embedded within each test form so that candidates are unable to identify them. New MAT test forms are developed regularly and are composed of previously used MAT items, items recently field-tested, and new items being field-tested.

New experimental items for the MAT are written and reviewed by independent subject-matter experts, under the direction of Pearson professionals, to reflect the desired content and analogical relationships. Item writers and reviewers are provided with standardized instructions to guide them in their efforts. MAT item development procedures have been designed to ensure the generation of high-quality test items that cover the range of difficulty and content necessary, but do not require candidates to display extensive knowledge in any specific subject. All new MAT test items are reviewed by independent subject-matter experts and by Pearson measurement specialists for content appropriateness, and by editorial staff for style and format consistency. Each item is also reviewed to eliminate language, symbols, or content that may be considered offensive or inappropriate. Only items that are judged as acceptable are considered for field-testing on MAT test forms.

Data from field testing is used to analyze the statistical properties of each item. Both traditional test statistics and item response theory (IRT; the Rasch model) statistics are used to determine the difficulty and discriminating power of each item. Only the items that are suitable in terms of psychometric properties and content are selected for the construction of new test forms.

To be considered effective measures of content knowledge and analytic reasoning, MAT test items selected for use on a test form must meet specific criteria:

- Solving MAT analogy items requires subject matter or vocabulary knowledge that is reasonable to expect most American college students to have acquired through undergraduate education and through general reading and experience.
- The correct answer to each analogy item involves the recognition of a specific type of analogical relationship.
- Items must represent a comparable range of statistical difficulty as items on current MAT forms.

The MAT Analogy

A MAT analogy is a statement suggesting that two terms are related to each other in the same way that two other terms are related to each other. In a MAT item, one term in the analogy has been replaced with four options, only one of which correctly completes the analogy (see also the “Understanding Analogies” document).

MAT analogies involve both content knowledge and analytical reasoning. Content knowledge is required to understand the meanings of the terms in the item, and analytical reasoning is necessary to recognize the analogical relationship between terms. Solving MAT analogies involves recognizing a relationship between two given terms and then looking for the same relationship between a third given term and one of four possible answer options. The candidate is expected to select the option that creates a valid analogy, as illustrated in the following example:

Table : Bill :: (a. chair, b. direct, c. gesture, d. shelve) : Motion

The first step in solving this item is to decide which two of the three terms in the stem form a complete pair—either “*Table* is related to *Bill*” (the first term is related to the second term) or “*Bill* is related to *Motion*” (the second term is related to the fourth term).

In this example, it may seem difficult to identify any relationships between these three terms, particularly if the terms are considered as nouns. However, each of these words can also be used as a verb: to table or postpone something for later consideration; to bill or invoice a customer for a purchase; to motion or gesture to someone. Looking at the item this way may not help much, either, until it is seen as a combination of nouns and verbs.

Thus, the analogy is “*Table* is to *bill* as *shelve* is to *motion*.” To table a legislative bill is to delay consideration of it and, similarly, to shelve a motion also means to delay consideration of it. The two terms in each pair are related in the sense that one term is an action taken with regard to the other. Each incorrect option has some relationship to one or more of the three given terms but does not form a valid analogy. As this example illustrates, MAT analogies involve an analytical reasoning process in the context of a specific content area—in this case, social science.

MAT Content and Relationship Objectives

As the example on the previous page illustrates, MAT items involve both the cognitive processes necessary to identify analogous pairs of terms and the background knowledge required to understand the ideas represented by the terms. MAT test forms are composed of analogy items that reflect the content and relationship objectives listed in Figure 1.

MAT Content Objectives
General — Life experience, work, general reading
Humanities — Art history, comparative religion, ethics, history, literature, modern and classical languages, philosophy, music, visual arts
Language — Composition and rhetoric, grammar, word connotations, word meanings, word parts, word pronunciations and sounds
Mathematics — Algebra, arithmetic, finance, geometry, numbers, probability, statistics
Natural Sciences — Astronomy, biology, chemistry, earth science, ecology, environmental science, geology, physical geography, physics, public health
Social Sciences — Anthropology, civics, criminology, economics, education, geography, political science, psychology, sociology

MAT Relationship Objectives
Semantic — Word meanings
<i>Similarity/Contrast</i> (synonyms, definitions, similarities, antonyms, contrast, differences)
<i>Intensity</i> (size, degrees, magnitudes, extents)
<i>Completion</i> (parts of expressions, split phrases, words)
Classification — Hierarchical relationship, classification, inclusion
<i>Category</i> (member/class, class/member, subordination, superordination)
<i>Membership</i> (members of same class or category, coordination)
<i>Whole-Part/Part-Whole</i> (whole-to-part, part-to-whole)
Association — Characterization, predication, affiliation
<i>Object/Characteristic</i> (attribute, description, lacking quality, source, component, location, setting)
<i>Order</i> (sequence, reciprocal, by-product, transformation)
<i>Agent/Object</i> (cause/effect, creator/creation, function of, action taken by, purpose for, tool used by)
Non-Semantic — Logical/mathematical, phonetics
<i>Equality</i> (logical/mathematical equivalence, numerical fractions, multiples, negation)
<i>Letter/Sound</i> (letter patterns, sound patterns, rhymes, homophones, similar sounds)

Figure 1: MAT Content and Relationship Objectives

Test Administration

The MAT is administered continuously through a network of Controlled Testing Centers (CTCs) that have been established at colleges and universities throughout the United States and Canada, and at a few overseas sites, to serve their own students as well as members of the local community. In addition to the hundreds of CTCs, Pearson has an extensive network of authorized MAT examiners within the United States and throughout the world. Candidates who live more than 100 miles from a CTC may apply to Pearson to take the MAT with one of these examiners.

The MAT is only administered in computer-based test (CBT) format. When approved by Pearson, each CTC is provided with the downloadable computer application and instructions needed to administer the test. All test administrations must be conducted in a secure proctored environment as specified by Pearson.

There are no fixed national MAT test dates. Each CTC determines when and how often it administers the MAT. Candidates make arrangements directly with the CTC most convenient to them to take the test. All CTC Test Administrators are provided with a manual of directions to ensure adherence to the standardized administration procedures established for the test.

All CTCs must be located in facilities that are accessible to individuals with disabilities according to provisions established by the Americans With Disabilities Act (ADA, P.L. 101–336). Candidates who require special accommodations in order to take the MAT are expected to notify the CTC of their needs at the time a test date is scheduled so that appropriate arrangements can be coordinated.

Scoring and Reporting Procedures

Following the administration of the MAT, candidates' test data are immediately processed by Pearson. For each MAT test administration, electronic scoring procedures are used to determine whether each operational item has been answered correctly. Raw score totals (the number of correct responses) are then calculated, and the appropriate raw-score-to-scaled-score tables are used to determine each candidate's scaled score. A scaled-score-to-percentile-rank table is then used to determine the appropriate percentile rank that corresponds to the scaled score. Quality assurance checks are in place at various stages in the scoring process to ensure that no errors are made and that there are no delays in processing candidates' scores.

The MAT test results are stored in computer files from which Official Score Reports and Official Transcripts are generated. Results are mailed to candidates and to all designated score recipient institutions typically within 10–15 business days of receipt by Pearson. Candidates may request additional Official Transcripts by mailing in a request form available on the MAT website. Scores that are more than five years old are not reported.

Beginning in January 2013, all Official Score Reports provided to candidates and all Official Transcripts provided to schools reflect the current percentile ranks that are based on the performance of all MAT candidates who took the test for the first time between January 1, 2008, and December 31, 2011 ($n = 125,910$). Each Official Score Report and Official Transcript includes a scaled score, a percentile rank based on the performance of individuals from the current norm group who indicated the same graduate field of study as the candidate, and a Total Group percentile rank based on the performance of the total norm group. The scaled scores range from 200–600, and the percentile ranks range from 1–99.

Score Reports and Transcripts

At the conclusion of a test administration, a candidate will receive a printed unofficial Preliminary Score Report immediately at the test center, and following verification of the scores by Pearson will be provided with an Official Score Report. Following score processing, Pearson will also send an Official Transcript to each school requested by the candidate.

However, a candidate may choose not to have his or her score reported. If a candidate chooses the “No Score Option” at the time of testing, there will be no reportable record of that administration for that candidate. Pearson also reserves the right to cancel any score that may have been obtained in a questionable manner. When a score is canceled, the candidate has an opportunity to provide additional information about the situation and may be required to retest (at no additional charge) to verify the original score. Reasons for score cancellations are not disclosed to anyone except the candidate.

The Preliminary Score Report

The Preliminary Score Report that each candidate receives at the test center is not considered official and is clearly marked as pending verification by Pearson and not equivalent to an Official Score Report or Transcript. Even though the Preliminary Score Report accurately reports

the candidate's MAT scores, Pearson does not consider a candidate's scores to be official until after verifying that testing conditions were appropriate and that nothing has compromised the validity of the individual's performance.

The Official Score Report

After a candidate's MAT score data are processed and the scores are verified, a personal Official Score Report is mailed to the candidate. Printed on the Official Score Report is a statement informing the candidate that "This is not an Official Transcript." This statement is to indicate that the scores shown cannot be presented to schools as a substitute for an Official Transcript, and that under no circumstances should an institution accept a personal Official Score Report as an Official Transcript.

The Official Transcript

Accredited institutions of higher education and approved fellowship or scholarship organizations are provided with candidates' complete score information on printed Official Transcripts. In addition to requests made at the time of testing for Official Transcripts to be sent to schools, candidates may also make such requests online at any time.

To ensure score authenticity, institutions should only accept Official Transcripts provided by Pearson. Scores listed on the Official Transcript indicate all MAT scores obtained during the five years prior to the date of the candidate's most recent MAT administration. Under no circumstances are scores more than five years old reported to any institution or candidate.

Depending on when the Official Transcript was requested, it may display percentile ranks from the previous norm period or from the current one. Beginning in January 2013, all scores reported include scaled scores and the current percentile ranks. For any scores obtained before January 2013, the original percentile ranks have been converted to their current equivalents and are reported based on the most recent norms. Because candidates may have requested Official Transcripts prior to January 2013, a school may have received Official Transcripts with previous percentile ranks rather than current percentile ranks. In such cases, a compendium table available in the current edition of the *MAT Technical Manual* (Pearson, 2012) can be used to compare percentile ranks based on the previous norms to those based on the current norms. Scaled scores earned at any time since October 2004 are comparable without conversion.

Sample Official Score Report and Official Transcript

Figures 2 and 3 on the following pages show a sample Official Score Report and a sample Official Transcript. As shown in Figure 2, the Official Score Report indicates the scaled score and percentile ranks for the candidate's most recent attempt at the MAT, along with the candidate's name, the candidate's most recent MAT test date, and number of times the candidate has taken the MAT. As shown in Figure 3, the Official Transcript indicates all of this same information and also includes the school information and the candidate's MAT score history.

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Pearson
19500 Bulverde Road
San Antonio, TX 78259

**SCORE REPORT
MILLER ANALOGIES TEST**



Scaled Score: 410
Percentile for Intended Major: 71
Percentile for Total Group: 70

Official Transcripts sent to the following schools:

University of Sample City
Sample State University
Sample State College—School of Education

Information about this Score Report is located in the MAT Candidate Information Booklet and at www.milleranalogies.com. Pearson does not provide a Scaled Score to Raw Score conversion.

JANE A. EXAMPLE

Test Date: 01/10/2013
Test Attempts: 2

Scaled Score = Standardized score based on items answered correctly and test form difficulty.
Percentile Rank = % of examinees from the current norm group earning lower than a given score.

THIS IS NOT AN OFFICIAL TRANSCRIPT

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Figure 2: Sample Official Score Report

Sample University
School of Education
Building 12, Room 1234
10000 Sample Street
Sample City, ST 10000



OFFICIAL TRANSCRIPT

Pearson

19500 Bulverde Road
San Antonio, TX 78259
1-800-622-3231

Examinee Name: Jane A. Example
Examinee Address: 1000 Sample Street
Sample City, ST 10000
Examinee Phone: (100) 100-1000
Social Security #: XXX-XX-1234
Date of Birth: 01/01/1990
Intended Major: Education

Test Date	Scaled Score	Total Group PR	Intended Major PR
01/10/13	410	70	71
05/01/12	406	64	65
10/01/11	402	58	58
02/01/11	398	52	52

Scaled Scores (SS) are based on the number of items correct.

Percentile Ranks (PR) indicate the percentage of candidates from the current norm group who received a scaled score lower than a given score.

- PRs obtained from January 2013 on are based on the current norms, which are determined from the performance of all first-time MAT candidates from January 1, 2008 through December 31, 2011.
- Any PRs obtained prior to January 2013 were originally based on the previous norms (January 2004 through December 2007) but for reporting purposes on this Transcript have been converted to the current PRs.
- The Total Group PR compares the candidate's scaled score to the total norm group.
- The Intended Major PR compares the candidate's scaled score to the candidates from the norm group who indicated a major in the same major field as the candidate.

For suggestions regarding score interpretations and for information about the appropriate use of these test scores, please refer to the "MAT Basics" document available on the MAT website: www.milleranalogies.com

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Figure 3: Sample Official Transcript

Interpreting MAT Scores

Research has shown the MAT to be a strong predictor of subsequent academic performance (Kuncel & Hezlett, 2007a, 2007b; Kuncel, Hezlett, and Ones, 2004). Nevertheless, MAT scores should never be used as the only criterion for admission, nor should rigid cut scores be used with MAT or any other admissions instrument. MAT scores represent only one among several criteria to consider in admissions decisions, and overweighting test score results or using rigid cut score limits may inadvertently exclude otherwise worthy candidates.

Pearson does not establish or suggest passing scores for individual MAT scores, and each school is responsible for determining how MAT scores are best used. When used along with other information available to admissions committees, MAT scores represent a valuable tool for evaluating applicants to graduate programs. Even though no single test score can possibly assess all of the requisite knowledge and skills necessary for success in a graduate program, MAT scores can contribute significantly to the quality of the admissions process when used as part of an application package that consists of information from multiple sources about that candidate's academic achievement and potential. The MAT is intended to fairly and accurately reflect certain abilities acquired through individuals' educational experiences over an extended time. MAT scores should always be evaluated in the context of these experiences.

Graduate schools using the MAT are encouraged to examine the relationship between entering students' MAT scores and their subsequent performance in the academic program. This locally obtained information will provide the best assistance in score interpretation and will most effectively enable a program to differentiate candidates who are likely to be successful from those who are not likely to be successful in that program.

Interpreting Scaled Scores and Percentile Ranks

MAT scaled scores and percentile ranks reflect the general academic ability and specific content knowledge of the candidates in the current normative sample. When constructing multiple forms of the same test, there are always slight variations in the level of difficulty between forms, regardless of the stringent item selection criteria used. For this reason, a given raw score obtained from different test forms may not always reflect the same level of performance. To adjust for these differences, MAT test forms are equated by converting raw scores to scaled scores on a common scale (determined through IRT analysis and linear conversions of IRT ability scores). The use of psychometric procedures to equate raw scores on a common scale also facilitates the determination of percentile ranks—the percent of candidates in the current norm group who received a scaled score lower than a given score.

When interpreting candidates' MAT scores, please note that while the intervals between scaled scores are equal, the intervals between percentile ranks are not. In a normal distribution, scaled scores tend to cluster around the 50th percentile. The effect of this clustering is that a difference of one or two scaled score points near the mean results in a greater change in percentile rank than a change of one or two scaled score points at the extremes.

Scaled Scores

The MAT scaled scores represent equal units on a continuous scale, ranging from 200–600. Because scaled scores represent equated scores, scaled scores earned during one MAT test administration are comparable to scaled scores earned during another test administration, even though different forms of the test are administered. The method used to determine the scaled scores and the scale on which they are reported (200–600) have remained unchanged since October 2004, making the MAT scaled scores especially useful for longitudinal tracking.

Percentile Ranks

Percentile ranks range from 1–99. Because percentile ranks are based on performance relative to the current norm group, they are particularly useful for explaining an individual’s performance relative to others. For example, a candidate with a Total Group percentile of 50 scored higher on the MAT than 50% of the candidates from the current total norm group.

Comparing Older MAT Percentile Ranks to Current Percentile Ranks

All MAT scores are currently reported on Official Transcripts as scaled scores and current percentile ranks, with all percentile ranks obtained before January 2013 converted to current equivalents. Even though percentile ranks are more useful than the scaled scores for comparing individual candidates, percentile ranks obtained prior to January 2013 were based on the performance of the previous normative sample—all first-time MAT candidates from January 1, 2004, through December 31, 2007. For this reason, the current percentile ranks are not directly comparable to previously earned percentile ranks. MAT percentile ranks listed on transcripts issued prior to January 2013 may be compared to the current percentile ranks by using the compendium table included in the current edition of the *MAT Technical Manual* (Pearson, 2012).

Using MAT Scores as Criteria for Admission

The MAT can be an important tool in the admissions process and a guide in placing students appropriately. For example, MAT standardized test results provide information about the abilities of applicants, which may offset problems that arise from the variability in standards among schools and geographical regions.

Graduate schools may use MAT scores to construct local norms to facilitate the evaluation of candidates. The MAT may also be useful in suggesting academic support needed by candidates. In the process of reviewing MAT scores with additional information about a candidate applying for admission to a program, schools may find some discrepancies that require further investigation. The following examples represent some common conflicting pieces of information and include suggestions for ways to resolve them.

Candidates With High MAT Scores and Low Grades

Older applicants may have learned a great deal since leaving school and may have become more motivated than in the past. A competent student from a highly competitive institution might also have received grades that may not reflect their ability to succeed in a graduate program. A student who carried an unusually heavy credit load, held a demanding job, or helped raise a

family while previously attending school might also have received lower grades than he or she would have otherwise. If nothing in the applicant's record provides an explanation for the discrepancy, the applicant may be able to help in clarifying the matter.

Candidates With High Grades and Low MAT Scores

In the case of some candidates who have been out of school for several years, low scores may indicate that subject matter has been forgotten, or may suggest a lack of recent experience in taking standardized tests. In the case of younger candidates, it may be useful to know whether they came from schools with comparatively lenient academic standards. In such cases, it may have been relatively easy for a student to earn high grades, but those grades may not mean the same as those obtained at more competitive institutions.

It may also be useful to examine course grades for apparent patterns, such as subject areas in which a candidate received the highest grades or any noticeable changes in grades received from year to year. Because recent performance for some individuals may be the best indicator of future performance, it could be revealing to note any noticeable rise or decline in recent grades received.

If these considerations do not help to explain a discrepancy between high grades and low MAT scores, the candidate may be able to provide an explanation. At the time the MAT was taken, the candidate may have been ill, been under some unusual personal stress, or be subject to high test anxiety. Other test results or other tools used to evaluate candidates for admission may provide useful comparisons by showing similarly inconsistent results in relation to grades.

Candidates With Multiple MAT Scores

Candidates are permitted to take the MAT multiple times. Since all MAT scores received during the previous five years are reported on Official Transcripts, it is important for institutions to have established guidelines for interpreting multiple scores that are consistently applied to all applicants. Historically, repeating MAT candidates have, on average, shown scaled score gains on their second attempt at the test, with a resulting change in percentile rank depending on the distance of the scaled score from the mean. The significance of any score increase must always be interpreted relative to the standard error of measurement (see the "MAT Reliability and Validity" document).

When considering score gains, remember that repeat candidates may be highly motivated individuals who believe that repeating the test will increase their scores. However, score gains, especially over short periods of time, are not necessarily reflective of increased academic knowledge or ability.

Candidates From Non-English-Speaking Backgrounds or Countries Outside the United States or Canada

For MAT scores to accurately reflect a candidate's academic ability, candidates must be fluent in the English language. Otherwise, they may not fully understand the content and nature of the relationship being explored by each analogy.

Because the MAT has been developed for use with candidates who have been educated in the United States, the impact of foreign educational and cultural experiences must also be considered when interpreting test results. There is no foreign language edition of the MAT, and the use of dictionaries or other aids is not permitted. The number of MAT candidates indicating a language background other than English or identifying themselves as non-U.S. citizens is relatively small (fewer than 4% and 3%, respectively), but available data show distinct differences between these candidates and those identifying themselves as primary English speakers and U.S. citizens. Pearson suggests that schools consider using a measure of English language proficiency as an aid to interpreting the significance of MAT scores for candidates from non-English language backgrounds or from countries other than the United States or Canada.

Candidates With Disabilities

A variety of special testing arrangements that comply with ADA requirements are available to accommodate candidates with disabilities. These accommodations are intended to minimize, as much as possible, the effect of a given disability upon an individual candidate's MAT score. The resulting score is intended to be an accurate reflection of a candidate's true academic ability as measured by the MAT.

The MAT Official Transcript does not indicate whether a candidate received special accommodations during a test administration. As with any other candidate, it is particularly important for institutions to consider MAT scores in the light of other applicant information when evaluating individuals with disabilities for admissions.

Glossary

Experimental Items—Test items that do not count towards candidates’ scores but, instead, are being field-tested to determine whether they can be used as operational items on future test forms. (See “Operational Items”)

Field Test—An experimental administration of test items as a way to acquire examinee performance data in order to determine the items’ suitability for use as future operational items.

Item Response Theory (IRT)—A mathematical model that relates the characteristics of test items and estimates of candidates’ ability or proficiency to the probability of a positive response, such as the correct answer to an item.

Longitudinal Tracking—The tracking of particular data (e.g., mean entering MAT scores) over a long period of time (e.g., 5 years) to establish trends.

Mean (*M*)—The average of a set of scores computed by adding all of the scores together and then dividing by the total number of scores.

Meta-Analysis—A method of research that analyzes the results of several independent studies by combining them to determine an overall effect or the degree of relationship between variables.

***N*-count (*n*)**—The total number of individuals who make up a sample (e.g., the number of candidates who took a test).

Normative Sample/Norm Group—The group of individuals (sample) earning scores on a test whose score data are used to determine scaled scores and/or percentile ranks.

Norm-Referenced Standardized Test—A measurement in which an individual’s scores are interpreted by comparing them to scores obtained from a defined group of individuals (a norm group or normative sample) whose scores have been used to determine scaled scores and/or percentile ranks.

Norms—Data that summarize the performance of a norm group (or normative sample) by showing how earned scores compare to one another, such as by listing scaled scores and corresponding percentile ranks.

Operational Items—Items on a test that are used to determine candidates’ scores.

Percentile Rank (PR)—A whole number between 1 and 99 that represents the proportion of individuals from the normative sample who earned lower than a given score on a test.

Predictive Validity—Evidence for validity based on how accurately test data (e.g., admission test scores) are able to predict criterion measures obtained at some later time (e.g., a grade point average earned after admission).

Raw Score—The number of items answered correctly by a candidate on a test.

Reliability—An estimate of the dependability of test scores in terms of the degree of consistency between administrations.

Scaled Score—A standardized test score on a specified common scale (e.g., 200–600) with a designated mean and standard deviation that is derived from a raw score (or an ability estimate). Scaled scores are especially useful for comparing performance of individuals or groups over time.

Standard Error of Measurement (SEM)—An estimate (based on group data) of the variation in scores earned on repeated administrations of the same test by the same individual, in the absence of practice effects or change in the underlying ability.

Validity—Validity refers to the extent to which evidence supports appropriate interpretations and inferences from test scores regarding characteristics of a person measured (e.g., knowledge or ability) or performances other than those measured (e.g., subsequent performance or achievement).

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