Calibration of Parallel Forms of an Achievement Test in Applied Psychology at B. Ed Level

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Abstract
The test was constructed and calibrated to learn new techniques in test development and pass on this meaningful and educationally useful experience to the teachers and prospective teachers of training colleges in Pakistan. Another goal was to provide the detailed information to the prospective teachers, so that they could evaluate their instructional programme and students’ achievement effectively. Two parallel Forms of an achievement test in the subject of Applied Psychology, after defining learning outcomes, strictly in accordance with the table of specification, were constructed. Each form of an achievement test contained 20 multiple choice items. Eight clusters out of 42 Education Colleges of Punjab were selected by using table of random numbers. The selected clusters constituted a sample of 515 male & female students. Two Forms of the achievement test (A & B) were administered to the same sample without any interval. Students’ responses were scored and recorded for the item analysis. Item-analysis was done on three criteria i.e. Facility Index (F %), Discrimination Index (D) and phi-co-efficient (\( \phi \)). Effectiveness of distracters was also determined. Number of items rejected on all three criteria were (item no. 15 in Form of test A and items no. 5 and 15 in Form of test B). The effectiveness of distracters was also judged and 14 distracters (23%) in Form of test A and 12 distracters (20%) in Form of test B were found to be ineffective. The test of significance was applied and the value of z (14.24) showed that the difference between the mean performances of male & female students was statistically significant. Co-efficient of correlation between the scores on Form of an achievement test A and Form of an achievement B was 0.98 which showed the high reliability of the test. It was recommended on the basis of findings that University of Education should encourage their future researchers to conduct research on this pattern for the purpose of Standardization of tests in the field of Teacher Education.

Key Words: Test Construction; The Reliability of The Test; Test Analysis; Interpretation Of The Scores
Introduction

Achievement tests play an important role in education. These are norm-referenced tests that measure students’ level of achievement in different subjects by comparing their test performance with other students in a reference group. Testing of academic achievement is widespread throughout the world. Teachers give classroom tests to motivate students’ efforts to learn. The review of the teaching efforts and getting feedback from students determine strengths and weaknesses of teaching learning process the achievements and flaws of teaching.

Cooper & Kiger (2001) was in favour of “Making the assessment to fit the students.” In most cases assessment can easily be aligned with external standards (Gagnon & Collay, 2001). Assessment is not only related with students but teachers are also involved in the process. Jarvis (2002), who quoted Merricks from an article “Assessment in post compulsory Education”, in which it was pointed out that “Assessment is basic to learning: to student’s learning: to an academic’s learning about becoming better teachers and facilitators: to system learning about what they are doing well and less well”

Testing is a technology (Stufflebeam, et al, 2000) that requires high specialization and technical experts (Murphy, Davidshofer, 1998). Because of their objectivity and qualification, tests provide a mechanism for ensuring that schools and teachers do what they are supposed to do (Walsh and Betz, 2005, Kelly, 1999) Educational tests are employed for particular purposes. In this direction Popham (2004) Quoted that: “Different educational Purposes required differing education tests and differing uses of these tests.”

Ebel and Frisbie (1986) pointed to a different direction. “Test could be used to promote learning better if both teachers and schools systematically present test results to administrators and to the community as evidence of the educational progress of their students”. Achievement tests are an important aspect of class-room instruction and can increase or decrease academic progress defining on their quality and relevance. Achievement test has a great significance in all types of instructional progress of the individual.

Thorndike and Hagen (2001) state “The type of ability test that describes what a person has learned to do is called an achievement test”.Achievement tests play a central role in the evaluation of pupil-learning. They provide a relevant measure of many important learning out-comes and indirect evidence concerning others. In the words of Wiersma, W. and Jurs S.G. (2006) “Achievement test is a measure of knowledge and skills in a context area”. Muhammad Habibullah (November 2007) describes the objectives of testing in these words. “Tests answers to the questions, whether the students have requisite skill to enter into the course or not, what previous knowledge does the pupils possess.”

A Standardized achievement test is different from teacher-made test and has certain distinctive features, including a fixed set of items designed to measure a clearly defined achievement domain, specific directions for administering and scoring the test and norms based on representative groups of individuals like those for whom the test was designed. Gronlund (1985, P.264) argues in favour of standardized tests stating
“Standard content and procedure make it possible to give an identical test to individuals in different places at different times. The test norms provide a standard form of reference”. Item analysis is a set of procedures that provides us with the estimate of validity of each item (Shah, 2007).

It means to select the most suitable or appropriate, valid and discriminating items; to make the test more valid or reliable; the individual item performance by a group of examinees is compared to their performance on the whole test. Therefore, item analysis is a set of procedures that provides us with the estimate of validity of each item (Shah, 2000, pp. 55-56). Shah further quoted to mention the main objectives of item analysis as under:

i. It indicated which items are difficult, easy, moderately difficult or moderately easy. So, it provides an index of the difficulty value to each item.

ii. It also provides indices of the ability of the item to discriminate between inferior and superior students. So, it indicates the discrimination value of each item. This is known as item validity.

iii. It indicates the effectiveness of the distracters in multiple-choice items ... and determines the extent to which the distracters are effective in each item.

iv. It sometimes also indicates why a particular item in the test has not functioned effectively and how this might be modified so that its functional significance can be increased.

From the objectives given, it is clear that items can be analyzed qualitatively in terms of their content and form and quantitatively in terms of their statistical properties. In addition to the discussion, item analysis procedures allow the teacher to discover items that are: ambiguous, miss-keyed and non-discriminating and on this basis, he could improve the test items.

The selection of good items is always through item analysis. The analysis of student responses to objective test items is a powerful tool for test improvement. Item analysis indicates which items may be too easy or too difficult and which may fail to discriminate between the better and poorer students. Item analysis, sometimes, suggests why an item has not functioned effectively and how it might be improved. Ebel and Frisbie (1986) Shows the importance of item-analysis, stating that “A Test composed of items revised and selected on the basis of item analysis data, is almost certain to be much more reliable than one composed of an equal number of untested items”. The reliability of a test refers to the extent to which the test is likely to produce consistent scores. Teacher Education can be viewed as Pre-Service, and in-service training. The system of teacher education in this country suffered from stagnation and slow growth, since its importance was never fully realized.

It fails to acquaint teachers with comprehensive measurement and evaluation procedures. But worse is the fact that it suffers to evaluate student’s performance in a specific learning context. This makes teacher-education incomplete, valueless and worthless in our country.

The core of examination reforms lies in the improvement of test questions. This can take place only if the teachers, paper-setters and examiners are trained to acquire the scientific and rational methods of preparing question papers.
A battery of test items is one of such attempts in this direction (Natarajan). The idea of having a battery or store of question is not new. Various examining bodies and experienced teachers used to collect or construct their own batteries of different types of test items for evaluating the progress of their students (Millman, Jason, 5th ed. 2004). These batteries or stores of test items constituted a kind of question Bank, which could lead to the destination of standardization.

A test battery of known technical value can be built up for future use. The construction of written paper can then become a matter of judging the suitability of items of known technical value from a battery of test items. Outdated items can be weeded out over a period of time. Further it can be said that new items should be tried out and statistical evidences for their facility and discrimination may be ascertained. The most important outcome is the availability of a large number of questions to measure important abilities in a content area. Teacher and examiners will spend very little time making up class tests and university examinations and spend the time thus saved in analyzing responses and improvement of test items.

In Pakistan the process of developing semi standardized achievement tests and test battery was initiated by the first batch of M.Ed Students of IER Lahore in 1960. No doubt, a couple of tests also reached the level of standardization during last five decades but the pace was too slow to obtain the real advantages of the standardized achievement testing programme in Pakistan. In view of the weaknesses of the invalid and unreliable teacher-made tests, used in our examinations, it has become imperative to prepare more and more semi-standardized tests and academic achievement test-batteries in Pakistan so that after a suitable time period and as a result of the continuous purification of items, the goal of standardized tests could be achieved. To acquire this specific purpose, the researchers selected this topic for the study.

Statement of the Problems
The research study aimed at the “Calibration of Parallel forms of an achievement test in applied Psychology at B.Ed Level.”

Objectives of the Study
i. To determine the quality of items in the test of Applied Psychology at B.Ed Level.
ii. To select good items for the use of future researchers to reach the level of standardization.
iii. To make an initial attempt to develop an item bank in the specific area.

Rationale
Instructional work at B. Ed level is normally attached with the evaluation process. For the success of evaluation, careful construction and analysis of test items and getting high quality of test-items is imperative. Keeping in view this norm, the researcher developed a test in Applied Psychology at B.Ed. Level.

Research Methodology and Procedures
All students of B.Ed class of G.C.E.Ts and university colleges of education formed the population for the study. Out of 42, only eight clusters were selected keeping in view, the representation of different areas of the province through table of random numbers. The sample comprised 515 male & female students. Two parallel forms of an
achievement test (Form A + B) were designed in the subject of Applied Psychology at B.Ed level. Each test contained 20 multiple choice items.

The two tests were administered to the same sample one after the other without interval. Students’ responses were scored and recorded for the analysis. Item analysis was done on three criteria i.e facility index (F%), Discrimination (D) and Phi-co-efficient (\( \phi \)). Effectiveness of distracters was also determined. After scoring the test, papers were arranged in descending order both high-scoring group and low scoring group comprised 27% of the sample. Then, the value of ‘F’ was deduced with the help of this formula:

\[
F = \frac{(Nh + Ni)}{(2n)} \times 100
\]

Where,
Nh is the number of students in the high-scoring group.
Ni is the number of students in the low-scoring group,
n is the number of students in high or low-scoring group.
Norm for the acceptance of an item as good one, was the value of F% between 20% and 80%.

The values of ‘D’ for all items, were also calculated using formula

\[
D = \frac{N_{u} - N_{l}}{n}
\]

Items bearing value of D, less than 0.20 were discarded.

Phi-coefficient (\( \phi \)) of each item was computed using the following table & formula.

\[
\text{Phi-coefficient (} \phi \text{) } = \frac{ad - bc}{\sqrt{(a + b)(a + c)(b + d)(c + d)}}
\]

Where
a is the number of correct responses in the top 27%
b is the number of incorrect responses in the top 27%
c is the number of correct responses in the bottom 27%
d is the number of incorrect responses in the bottom 27%

<table>
<thead>
<tr>
<th>Correct</th>
<th>Incorrect</th>
</tr>
</thead>
<tbody>
<tr>
<td>Top 27%</td>
<td></td>
</tr>
<tr>
<td>a</td>
<td>B</td>
</tr>
<tr>
<td>Bottom 27%</td>
<td></td>
</tr>
<tr>
<td>c</td>
<td>D</td>
</tr>
</tbody>
</table>

The norm for acceptance was the same as in discrimination index.
The following table gives the final description of the quality of items in forms (A & B).

**Table 1: Quality of Items**

<table>
<thead>
<tr>
<th>Form of an achievement test</th>
<th>F%</th>
<th>Rejected items</th>
<th>( (\phi) )</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>2,15 (2)</td>
<td>3,4,7,9,14,15,17 (7)</td>
<td>15</td>
</tr>
<tr>
<td>B</td>
<td>5,15 (2)</td>
<td>5,15,16 (3)</td>
<td>5,15 (2)</td>
</tr>
</tbody>
</table>
On all the three bases (F%, D and $\phi$). One item (15) from test A and two items (5, 15) form test “B” were rejected.

The effectiveness of distracters were also judged and 14 distracters (23%) in form A (3 (c) 6 (a,b,d), 9 (b,d) 10 (b), 11 (b), 13 (c), 14 (d), 15 (a,c), 17 (b), 18 (b)) and 12 distracters (20%) in form B (3(a), 4(a,c), a (d), 12 12(c), 13(c), 15(d), 16(c), 17 (a), 19 (b), 20(c) were found to be ineffective.

To observe the interrelationship of the performances of students on Form A and in all the four courses was determined by compacting Coefficient of Correlation in case of form A and Form B Separately. Inter-relationship between course wise performances.

Table 2: Performance of Students According to Form A and Form B

<table>
<thead>
<tr>
<th></th>
<th>Form A</th>
<th></th>
<th>Form B</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>S1</td>
<td>S2</td>
<td>S3</td>
<td>S4</td>
</tr>
<tr>
<td></td>
<td>S1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>S1</td>
<td>1</td>
<td>.85</td>
<td>.95</td>
<td>.93</td>
</tr>
<tr>
<td>S2</td>
<td>.85</td>
<td>1</td>
<td>.94</td>
<td>.93</td>
</tr>
<tr>
<td>S3</td>
<td>.95</td>
<td>.94</td>
<td>1</td>
<td>.87</td>
</tr>
<tr>
<td>S4</td>
<td>.93</td>
<td>.93</td>
<td>.87</td>
<td>1</td>
</tr>
</tbody>
</table>

High positive values of “r” for all courses showed that the performances in all courses were inter-correlated with one another.

To determine the equivalent-forms reliability, the values of “r” in case of form A and B in all four courses, were also computed. These values were 0.98, 0.97 and 0.98. In order to determine the relationship between performances of total sample (515) on tests A and B in Applied psychology, the co-efficient of correlation was calculated and presented in the form of table for comparison.

Table 3: Relationship between Performances of samples on Parallel Forms

<table>
<thead>
<tr>
<th>Group</th>
<th>Form</th>
<th></th>
<th></th>
<th>A x A</th>
<th>B x B</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Form A</td>
<td>Form B</td>
<td>A x B</td>
<td>A x A</td>
<td>B x B</td>
</tr>
<tr>
<td>1</td>
<td>966</td>
<td>894</td>
<td>863604</td>
<td>933156</td>
<td>799236</td>
</tr>
<tr>
<td>2</td>
<td>731</td>
<td>747</td>
<td>546057</td>
<td>534361</td>
<td>558009</td>
</tr>
<tr>
<td>3</td>
<td>358</td>
<td>364</td>
<td>130312</td>
<td>128164</td>
<td>132496</td>
</tr>
<tr>
<td>4</td>
<td>938</td>
<td>968</td>
<td>907984</td>
<td>879844</td>
<td>937024</td>
</tr>
<tr>
<td>5</td>
<td>324</td>
<td>300</td>
<td>97200</td>
<td>104976</td>
<td>90000</td>
</tr>
<tr>
<td>6</td>
<td>418</td>
<td>363</td>
<td>151734</td>
<td>174724</td>
<td>131769</td>
</tr>
<tr>
<td>7</td>
<td>440</td>
<td>456</td>
<td>200640</td>
<td>193600</td>
<td>207936</td>
</tr>
<tr>
<td>8</td>
<td>390</td>
<td>434</td>
<td>169260</td>
<td>152100</td>
<td>188356</td>
</tr>
<tr>
<td>Sum</td>
<td>4565</td>
<td>4526</td>
<td>3066791</td>
<td>3100925</td>
<td>3044826</td>
</tr>
</tbody>
</table>

Correlation coefficient was 0.98 which showed that the test had high equivalent forms with one reliability of A and B forms were exceptionally high.

There were 515 students in the sample. The number of female students and male students were 331 and 184 respectively. In order to determine whether the difference between mean performances of female and male students was statistically significant or not, z-test was applied, using formula:
\[ z = \frac{M_1 - M_2}{\sqrt{\frac{(SD_1)^2}{N_1} + \frac{(SD_2)^2}{N_2}}} \]

Value of \( z \) was calculated to be 14.24 which was greater than 1.96 (the table value of “\( z \)” at .05 level of significance). So the Null hypothesis was rejected.

**Conclusion**

Items were rejected on all the three criteria (Item 15 of test A, 5, 15 of test B). 14 distracters in form of test A and 12 distracters of test B were found ineffective. \( Z \)-value for gender difference was 14.24 which was greater than 1.96 (the table value of “\( Z \)” at 0.05 level of significance). The co-efficient of correlation between form of test A and B was maximum and high positive (0.987). The values of “\( F \)” for form of Test A and test B were 0.33 and 0.13. Both values were less than the table value (2.95) which showed the difference was insignificant. As a result of data analysis and conclusions were drawn and recommendations were made for the refinement of research article.

**Recommendations**

The following recommendations were given for further study.

i. Item No 15 in form of test A and item 5 and 15 in test B may be replaced.

ii. The number of B.Ed courses and samples may be enhanced.

iii. Teachers may use the item of test-battery and prepare items, keeping in view this model.

iv. The teachers teaching B.Ed classes may select items from this test battery for internal assessment of their students.

v. An effort should be made to take greater number of samples from colleges of different areas so as to have sufficiently large and randomly representative population for the study.

vi. To facilitate scoring and recording results, it was suggested that separate answer sheets should be prepared and given to the students along with the test-format.

vii. A follow-up study of the present sample should be undertaken so as to calculate correlations between their performance on this test at present and their later achievement in psychology.

viii. University of education may facilitate their future researchers to conduct research on the same pattern for test standardization and establishing item bank in the University.

ix. After continuous process of test calibration, selected items may contribute as the part of an item-bank in the form of item cards and well maintained item files which may be used by the future researchers, to achievement the goal of standardization of this test.

x. The item analysis may also be done through Rasch Model.

**References**


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Appendix “A”

Applied Psychology – Test Form “A”

Note: Four Choices are given in each item. Encircle the best choice.

Q.1 Psychology, was initially, meant as the study of
   (a) Mind        (b) Soul
   (c) Conscious   (d) Behaviour

Q.2 Watson introduced a school of thought in Psychology, called
Q.3 The study of a child in which data are collected from different sources, is known as
(a) Case study   (b) Clinical study
(c) Experimental study  (d) Genetic study

Q.4 Modification of human behaviour, as a result of experience, is called
(a) Education  (b) Training
(c) Learning  (d) Practice

Q.5 “Pavlov” is known for his work on
(a) Development (b) Perception
(c) Conditioning  (d) Motives

Q.6 ‘Maslow’ gave the idea regarding
(a) Laws of learning  (b) Personality traits
(c) Hierarchy of needs  (d) Transfer of Training

Q.7 The psychologist who initially worked on intelligence, was
(a) Skinner  (b) Binet
(c) Watson  (d) Freud

Q.8 If a child’s Mental age and Chronological (actual) age are the same, his I.Q. score will be
(a) 90  (b) 100
(c) 110  (d) 120

Q.9 According to Terman, the I.Q. of a child, with average Intelligence lies between
(a) 50 and 69   (b) 70 and 89
(c) 90 and 109   (d) 110 and 129

Q.10 ‘Reinforcement’ is closely related to a law of learning, called
(a) Law of Readiness   (b) Law of Exercise
(c) Law of Effect   (d) Law of Association
Q.11  Cognitive development is directly associated with
(a) Physical Factors   (b) Emotional Factors
(c) Social Factors    (d) Mental Factors
Q.12  Thematic Apperception Test (T.A.T.) is an estimate of personality which is related to
(a) Sociometric techniques   (b) Self-reporting techniques
(c) Rating scale techniques (d) Projective techniques
Q.13  Gestalt meaning “organized wholes” is a word of
(a) English Language   (b) German Language
(c) French Language    (d) Latin Language
Q.14  Piaget described the stages of intellectual development in a definite sequence, which is
(a) Sensori-motor, pre-operational, concrete operational, formal operational.
(b) Sensori-motor, concrete operational, formal operational, pre-operational.
(c) Sensori-motor, formal operational, pre-operational, concrete operational.
(d) Sensori-motor, pre-operational, formal operational, concrete operational.
Q.15  A method of teaching based on learning theory of operant conditioning, was
(a) Team teaching   (b) Project method
(c) Dalton plan    (d) Programmed instruction
Q.16  Which one of the following, falls under secondary motives?
(a) Thirst     (b) Curiosity
(c) Pain      (d) Breathing
Q.17  Counselling which is goal free and proceeds according to the problem of the counslee, is called
(a) Directive Counselling   (b) Non directive counselling
(c) Elective Counselling   (d) Selective Counselling
Q.18  The place where a guidance teacher solves the problems of school children, is called
(a) Guidance centre   (b) Guidance Room
(c) Guidance Bureau   (d) Guidance Clinic
Q.19  The psycho-motor domain of educational objectives, was suggested by
(a) Bloom   (b) Harrow
(c) Krathwohl (d) Masia
Q.20  A person interested in collecting stamps, belongs to a category of personality traits, called
(a) Common trait   (b) Surface trait
(c) Unique trait    (d) Source trait
Appendix “B”
Applied Psychology – Test Form “B”

Note: Four Choices are given in each item. Encircle the best choice.

Q.1 Psychology is basically, a
(a) Social science   (b) Biological Science
(c) Mathematical Science   (d) Natural Science

Q.2 The first psychologist, was
(a) Socrates   (b) Aristotle
(c) Plato   (d) Epicurus

Q.3 Psychologically speaking, the primary task of the teacher is
(a) To provide solution to students’ problems   (b) To provide basis for the classification
(c) To stimulate and guide students learning   (d) To cover the content of the curriculum

Q.4 In a psychological experiment, the investigator attempts to have a control group, which is
(a) Identical in all respects to the experimental group.
(b) Different in all respects from the experimental group except for the factors under study
(c) Opposite in all respects to the experimental group except for the factors under study.
(d) Identical in all respects to the experimental group except for the factors under study.

Q.5 Point of view that there is a certain order or hierarchy of needs, has been advanced by
(a) Cannon   (b) Murray
(c) Piaget   (d) Maslow

Q.6 “Binet” is known for his work on
(a) Intelligence   (b) Motives
(c) Individual differences   (d) Learning

Q.7 Formula for calculating I.Q (Intelligence Quotient) is

\[
\text{Mental age} = \frac{\text{Chorono logical age}}{\text{Mental age}}
\]

(a) Mental age (b) Chronological age
(c) Mental age x 100 (d) Chronological age x 100

Q.8 B.F Skinner put forward the concept of
(a) Classical conditioning   (b) Operant conditioning
(c) Cognitive development   (d) Transfer of Training
Q.9 Sigmund Freud introduced a school of thought in psychology, called
(a) Behaviourism (b) Psycho-analysis
(c) Humanism (d) Structuralism

Q.10 The most psychologically sound method of reporting to parents about elementary school students, is
(a) The report card (b) The cumulative record
(c) Guidance conference (d) The personal data.

Q.11 Dependent and independent variables are related to a method of psychology, called
(a) Observational method (b) Experimental Method
(c) Case history method (d) Development method

Q.12 Theory that human personality is a combination of Id, Ego and super-ego, was introduced by
(a) Freud (b) Watson
(c) William James (d) Thorndike

Q.13 “Students should learn structure of a field of study”, this concept is related to
(a) Gagne’s approach to problem solving (b) Maslow’s self-actualization theory
(c) Ausubel’s Model of meaningful learning (d) Bruners model of Meaningful learning

Q.14 The founder of the client centered therapy of counseling, is
(a) David Ausubel (b) Carl Roger
(c) Burner (d) Gordon

Q.15 The function of counseling which classifies students into different ability groups, is denoted as
(a) Adjustive (b) Distributive function
(c) Adaptive function (d) Corrective function

Q.16 The concept of Cause and Effect, is related to child’s
(a) Physical development (b) Mental development
(c) Emotional Development (d) Social development

Q.17 Speech defects can be diagnosed and treated by employing
(a) Observational Method (b) Experimental method
(c) Clinical method (d) Differential Method

Q.18 The objective of highest order in cognitive domain, is to acquire the ability of
(a) Comprehension (b) Analysis
(c) Synthesis (d) Evaluation

Q.19 William James idea that “Human mind has certain inherited tendencies which are motive powers of all thoughts and actions” reflects
(a) Pawn theory of motivation (b) Need theory of Motivation
(c) Social theory of motivation (d) Instinct theory of motivation

Q.20 Unsocial and reserve people fall under a personality type, called
(a) Extroversion (b) Introversion
(c) Psycholoicism (d) Neuroticism
<table>
<thead>
<tr>
<th>Item No.</th>
<th>Test Form A</th>
<th>Test Form B</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>b</td>
<td>a</td>
</tr>
<tr>
<td>2.</td>
<td>a</td>
<td>b</td>
</tr>
<tr>
<td>3.</td>
<td>a</td>
<td>c</td>
</tr>
<tr>
<td>4.</td>
<td>c</td>
<td>d</td>
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<tr>
<td>5.</td>
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<td>d</td>
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<tr>
<td>6.</td>
<td>c</td>
<td>a</td>
</tr>
<tr>
<td>7.</td>
<td>b</td>
<td>d</td>
</tr>
<tr>
<td>8.</td>
<td>b</td>
<td>b</td>
</tr>
<tr>
<td>9.</td>
<td>c</td>
<td>b</td>
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<td>10.</td>
<td>c</td>
<td>c</td>
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<td>11.</td>
<td>d</td>
<td>b</td>
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<td>12.</td>
<td>d</td>
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