



# National Home Inspector Examination

## Development and Validation of the National Home Inspector Examination

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## What Is the National Home Inspector Examination?

The Examination Board of Professional Home Inspectors (EBPHI) contracts with a psychometric and test development firm to develop an examination to measure competence in home inspectors. The development of a content-valid examination begins with a clear and concise definition of the knowledge, skills, and abilities needed for competent job performance. Psychometricians work with experts in the field of home inspection to delineate critical job components using interviews, surveys, observation, and group discussions. The knowledge and skill bases for

the questions in the examination are derived from the practice of the home inspector as outlined in the *EBPHI Home Inspector Role Delineation Study, January 2003*.\*

The written examination assesses basic knowledge in the area of home inspection. The examination consists of 175 scored and 25 field test four-option multiple-choice questions covering four major content areas derived through the *2003 Home Inspector Role Delineation Study*. The chart below gives a brief outline of those domains:

Domains	Percentage of examination
I: Inspection Methods	26.78%, 53 items
II: Building Systems	42.50%, 85 items
III: Reporting	25.79%, 52 items
IV: Professional Practice	4.93%, 10 items

## Why Adopt the National Home Inspector Examination?

### National scope test provides optimum public protection

Public protection demands setting an appropriate standard for minimum competency of the regulated profession. Factors linked to geographic location such as market age of the profession, availability of appropriate professional education, relative experience of practitioners, market expectations and public perception of competence may

### Cost effective

The development of an examination is a long, complex and sometimes expensive process. By using the National Home Inspector Examination, states accrue the benefits of EBPHI's time, money, and research on this important program.

### Based on the actual practice of home inspection

The Examination Board of Professional Home Inspectors' attention to detail and exhaustive *EBPHI Home Inspector Role Delineation Study, January 2003* ensure the National Home Inspectors Examination covers home inspection job-related knowledge and skills. The examination also assesses competency in areas where lack of knowledge could cause harm to the public.

inappropriately reduce the minimum level of competence required if testing is developed based on local or regional criteria.

In addition, a nationally-based examination minimizes issues of multiple regulatory requirements for practitioners near state borders and facilitates reciprocity agreements among states.

### Legally defensible examination

The National Home Inspector Examination is both valid and reliable—two qualities needed to defend the examination against challenges. Validity means the examination is able to measure that which it is supposed to measure. Reliability is an index of how accurately the examination measures a candidate's skills. A test must be both valid and reliable to be considered a well-developed examination. As a result of these safeguards, the examination can accurately assess each candidate's competence to carry out the required duties of a home inspector.

### Examination on demand

For ease in testing, the computer-based National Home Inspector Examination is available on demand six days a week through a network of more than 220 electronic testing centers located throughout the United States.

## How Is the National Home Inspector Examination Developed and Maintained?

The Examination Board of Professional Home Inspectors promotes a minimum competency standard for the home inspection profession and serves the public through its quality assurance efforts. The autonomous board believes it is necessary to demonstrate that the individual worker is qualified to perform the required duties of home inspection without threat of harm to the public. Professional examinations have been developed to assess the minimum competency of entry-level workers in a variety of professions.

The Examination Board of Professional Home Inspectors, working with psychometric consultants, developed an examination using test methodology based on the American Psychological Association's *Standards for Educational and Psychological Testing*, the Equal Employment Opportunity Commission's *Uniform Guidelines for Employee Selection Procedures*, the National Commission for Certifying Agencies' Standards for Accreditation; the Council on Licensing, Enforcement and Regulation's *Resource Brief: Licensure Examinations*; and the American Education Research Association's *Standards for Educational and Psychological Testing*; and similar standards.

The development of an examination is a long and complex process. It requires rigorous testing of the examination's *validity*, or the ability of the test to measure that which it is supposed to measure. The validity of an examination involves the demonstration of at least two major qualities.

First, the content of the examination must be job related. Second, the examination should cover areas where lack of knowledge could cause harm to the public. These qualities make up some of the defining characteristics of what is called the content validity of the examination.

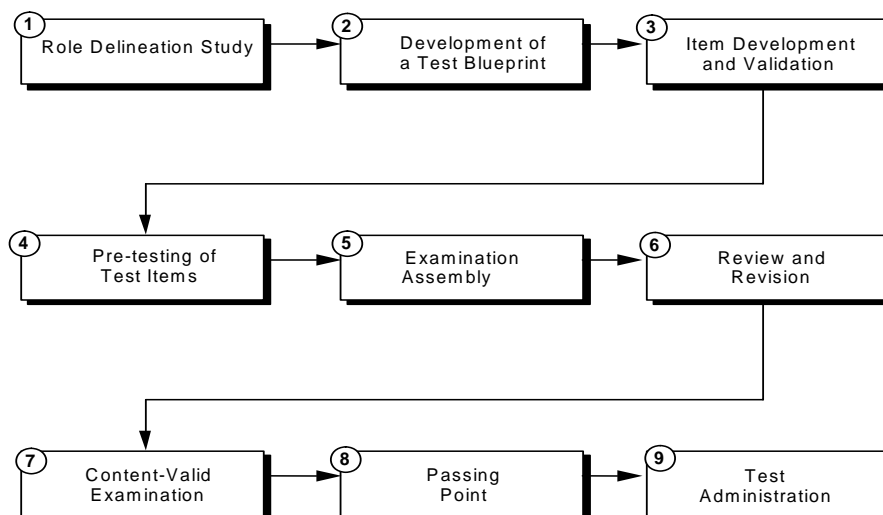
Another important characteristic in determining the quality of an examination concerns how reliable, or consistent, the examination is. *Reliability* is an index of how accurately the examination measures the candidate's skills. A test must be both valid and reliable in order for it to be considered a well-developed examination.

### Development of the National Home Inspector Examination

The written examination assesses basic knowledge in the area of home inspection. The examination consists of 175 scored and 25 field test four-option multiple-choice questions covering four major content areas derived through a home inspector role delineation study conducted in 2003. This study is conducted every five years to keep the content outline current.

The ability of the examination to accurately assess entry-level competence is based in large part on its content validity. The process of validating the content of the National Home Inspector Examination involves a rigorous, step-by-step process described on the following page. Table 1 is a diagram of the steps involved in the content validation process.

**Table 1: Steps in the Construction of a Content Valid Examination**



## 1. Role Delineation Study

*EBPHI Home Inspector Role Delineation Study, January 2003* allowed subject-matter experts to classify the job characteristics of a home inspector. Then, a validation survey was developed and sent to approximately 1,860 practicing home inspectors.

## 2. Development of a Test Blueprint

Based on the results of the *EBPHI Home Inspector Role Delineation Study, January 2003*, a test blueprint was created as a guide for determining the content of the examination.

## 3. Item Development and Validation

Written by a panel of home inspectors who practice in all regions of the United States, items (questions) pertain to the areas of performance outlined in the test blueprint. The items are reviewed and validated by at least three other subject-matter experts. In addition, all items have a verifiable reference source.

## 4. Pre-testing of Test Items

Each examination includes field test items. These items are not part of the scoring formula for the examination. Instead, these items are reviewed for performance issues, and, if there are not issues, the items are available for use as scored items on the examination.

## 5. Examination Assembly

Subject matter experts select the appropriate number of items from each content area and review the examination to verify the technical accuracy of each item. In essence, each item is evaluated again to verify that it is psychometrically sound, accurate, and content-valid.

## 6. Content Valid Examination

Once steps one through five are complete, a content valid examination has been assembled.

## 5. Review and Revision

Each year, the National Home Inspector Examination is reviewed to insure that it continues to be a valid measure of candidates' abilities. Unscored field tested items from previous versions of the examination are carefully

reviewed and statistically analyzed. Using statistical item analysis, inappropriate or questionable items are either revised or omitted from the item bank for future examinations. In addition, new items are developed and analyzed in accordance with the test blueprint.

## 6. Passing Point

A valid credentialing examination must have a defensible passing score. The cut-off score that separates examinees who pass from examinees who fail must be based on the minimum level of knowledge required to protect the stakeholders (e.g., employers, the public) from harm. A criterion-referenced approach called the Modified Angoff Technique was used to determine the cut score or passing point for the National Home Inspector Examination. This technique is currently considered by the testing profession to be one of the most defensible criterion-referenced methods available for setting passing points.

## 7. Test Administration

Test administration procedures must ensure consistent, comfortable testing conditions for all examinees. For secure examinations, procedures must address examinee admission into the room, display of information signs, security, time allocation, and other aspects of the administration. Testing facilities must meet guidelines that ensure security, proper room size, ventilation, rest room facilities, handicap accessibility, and noise control.

## 8. Psychometric Analysis

As part of the process of scoring the National Home Inspector Examination, various analyses are conducted. First is the item analysis, which reports how candidates for the test responded to each question for the purpose of assessing how difficult the question is and how effectively the question distinguishes between knowledgeable and unknowledgeable candidates. Item analysis is also useful in verifying that the scoring key is correct. Second, various statistics are computed to describe the quality of the examination as a measure of knowledge in home inspection. Finally, descriptive statistics are generated to evaluate how candidates perform on the examination.

## Reliability of the National Home Inspection Examination

In addition to content validity, an examination also must demonstrate that it is highly reliable, or consistent, in its measurement of minimum performance. Theoretically, if the test is reliable, an examinee should be able to obtain the same or similar score at two different testing times. Most statistical calculations of reliability estimates range from 0 to 1, with 1 indicating perfect reliability. Coefficients above .70 meet minimum standards. A high reliability estimate for an examination, like that of the

National Home Inspector Examination, is generally considered by most authorities to be .80 or above.

One measure of reliability that is used in the National Home Inspector Examination is called the Kuder-Richardson Formula 20 (KR-20), which is a measure of the internal consistency of the test. Internal consistency indicates the degree in which all examination questions measure common characteristics of the candidates. In other

words, it provides an indication of the homogeneity of the examination, or the ability of the test to measure a single content area. The better the examination is in measuring this single content area, the higher the reliability.

The National Home Inspector Examination's internal consistency reliability, standard error of measurement, decision consistency reliability, and cut-score reliability are closely monitored by EBPHI.

### **Determination of the Passing Standard**

Finally, a high-quality examination must have a defensible passing score. That is, the cut-off score that separates examinees who pass from examinees who fail is determined in a systematic and reasonable way, rather than arbitrarily. There are several ways to set passing points. The method used by EBPHI for its examination is a criterion-referenced approach called the Modified Angoff Technique.

This technique is currently considered by the testing profession to be one of the most defensible criterion-referenced methods available for setting passing points. It relies on the pooled judgments of content experts. A group of experts is asked to judge each item on the test. The

criterion used to judge each item is formed in a question: "What is the probability that a 'minimally acceptable' candidate *will* answer this item correctly?" This question prompts the judges to consider a group of minimally acceptable candidates and what proportion of that group will answer each item correctly.

The averages of the proportions, or probabilities, are multiplied by the total number of questions on the test. The result then represents the "minimally acceptable" score. The final passing score for the examination, determined by EBPHI, is based on this pooled judgment.

### **Summary and Conclusions**

The procedures used to develop the National Home Inspector Examination are well accepted for developing reliable and content-valid examinations. Each step in the test construction process is carefully documented. Multiple reviews by content and psychometric experts and the use of stringent criteria assure the validity of the test. Continuous evaluation of each examination's reliability maintains the consistency of the test to measure

examinees' skills accurately. As a result of all these safeguards, the examination can be considered valid and reliable with a sound method for determining passing points. These procedures greatly enhance the National Home Inspector Examination's ability to accurately assess each candidate's competence to carry out the required duties of a home inspector.

**For more information about EBPHI and the National Home Inspector Examination, see our website at [www.homeinspectionexam.org](http://www.homeinspectionexam.org) or call 847-298-7750.**