

PROFESSIONAL EXAMINATION SERVICE
(2007)

THREE LEVELS OF COGNITIVE BEHAVIOR

Adapted from Bloom and Levine

Note:

It should be noted that this scheme of cognitive levels is hierarchical. Items written to tap the higher levels of cognitive functioning will, in most cases, require the examinee to use lower level cognitive skills as well.

Level I: Knowledge

This type of cognitive behavior involves remembering and understanding previously learned material. A knowledge-type item might require an individual to demonstrate the interrelationship among given facts. Understanding the relationship between one piece of information and another is indicative of this level of item.

Example:

The best definition of the term “protoplasm is:”

- 1) A complex colloidal system made up of water, proteins and fats.
- 2) Anything capable of growth by a regular progressive series of changes into a more complex unit.
- 3) A complex mixture of proteins, fats, and carbohydrates that is capable of responding to changes in its environment.
- *4) A complex colloidal system of proteins, fats, carbohydrates inorganic salts and enzymes which manifests life.

Explanation:

The item requires both recognition and understanding of the term “protoplasm” as well as the relationship between the components of “protoplasm” and the whole organism.

Level 2: Interpretation

This type of cognitive behavior builds on the depth of understanding a theory (how and why something is done) as opposed to recalling a fact or definition. An interpretive-type item might present a problem to the examinee. The problem should require application of and extrapolation from established theory, technique or principle. This type of item might also require analysis of complex material and reduction to its components. Understanding the structure and the ways in which concepts are organized within a theory demonstrates this level of cognitive functioning.

Example:

A control and preventive program to significantly reduce the neonatal mortality rate in America should initially be directed toward:

- 1) Achieving early diagnosis and management of asphyxia.
- *2) Establishing the causes of premature births and developing appropriate methods of prevention.
- 3) Discovering the environmental and genetic origins of birth defects.
- 4) Improving the management of the intrapartum to control the risks of birth trauma.

Explanation:

The item requires knowledge of the components of the concept neonatal mortality rate; understanding of the factors contributing to the concept and application of theory to a given set of data (the current problem).

Level 3: Problem Solving and Evaluation

This type of cognitive behavior involves synthesis of elements into a comprehensive whole. A Problem Solving and Evaluation-type item might involve the formulation of a procedure or plan to solve a problem stated in the premise. To arrive at the procedure or plan (hence, the solution to the problem) requires a reorganization of the information given in the premise in conjunction with the examinees conceptual knowledge derived from nursing practice. The problem presented in the premise should require the application of standards accepted in the field to evaluate qualitative or quantitative data. Arriving at a solution or methodology toward a solution of the presented problem demonstrates this level of cognitive behavior.

Examples:

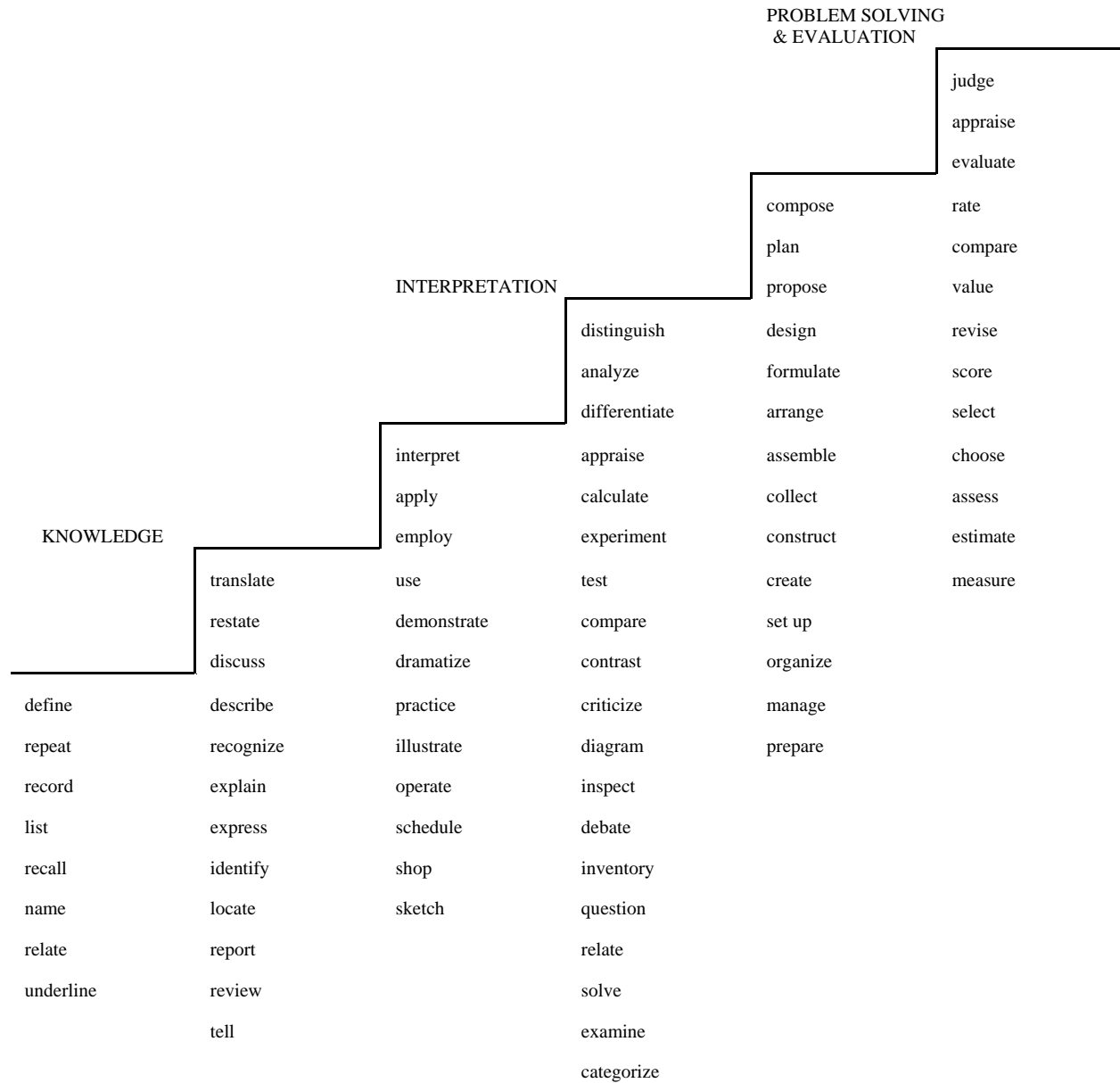
A recently graduated professional nurse is looking for a staff position where professional education and growth will be promoted. Of the possibilities open to her, the one most likely to meet her needs is the agency which:

- *1) Offers a dynamic and relevant staff development program for nurses.
- 2) Pays generous salaries and permits a staff member to take any course he/she wishes.
- 3) Offers a number of positions above staff level and has frequent salary increments.
- 4) Believes in promotion from within the staff and has rapid turnover.

TASK AND ACTION VERBS COMMONLY ASSOCIATED WITH THE THREE LEVELS OF COGNITIVE BEHAVIOR¹

Note: The following list of verbs might be useful to you, as an item writer, as a way to differentiate between activities requiring higher and lower levels of cognitive functioning. For example, lower levels of cognitive functioning might involve a simple cognitive activity such as defining or recalling a theory or body of facts.

By comparison, higher levels of cognitive behavior, such as problem solving and evaluation, might require a number of cognitive activities. Some, but not all of these activities, will be at the higher cognitive levels. For example, a case study item might be written so that the examinee would have to demonstrate knowledge of the theory, analysis, and evaluation of the situation as well as the development of a plan to solve the problem.



¹Adapted from Marybelle Savage