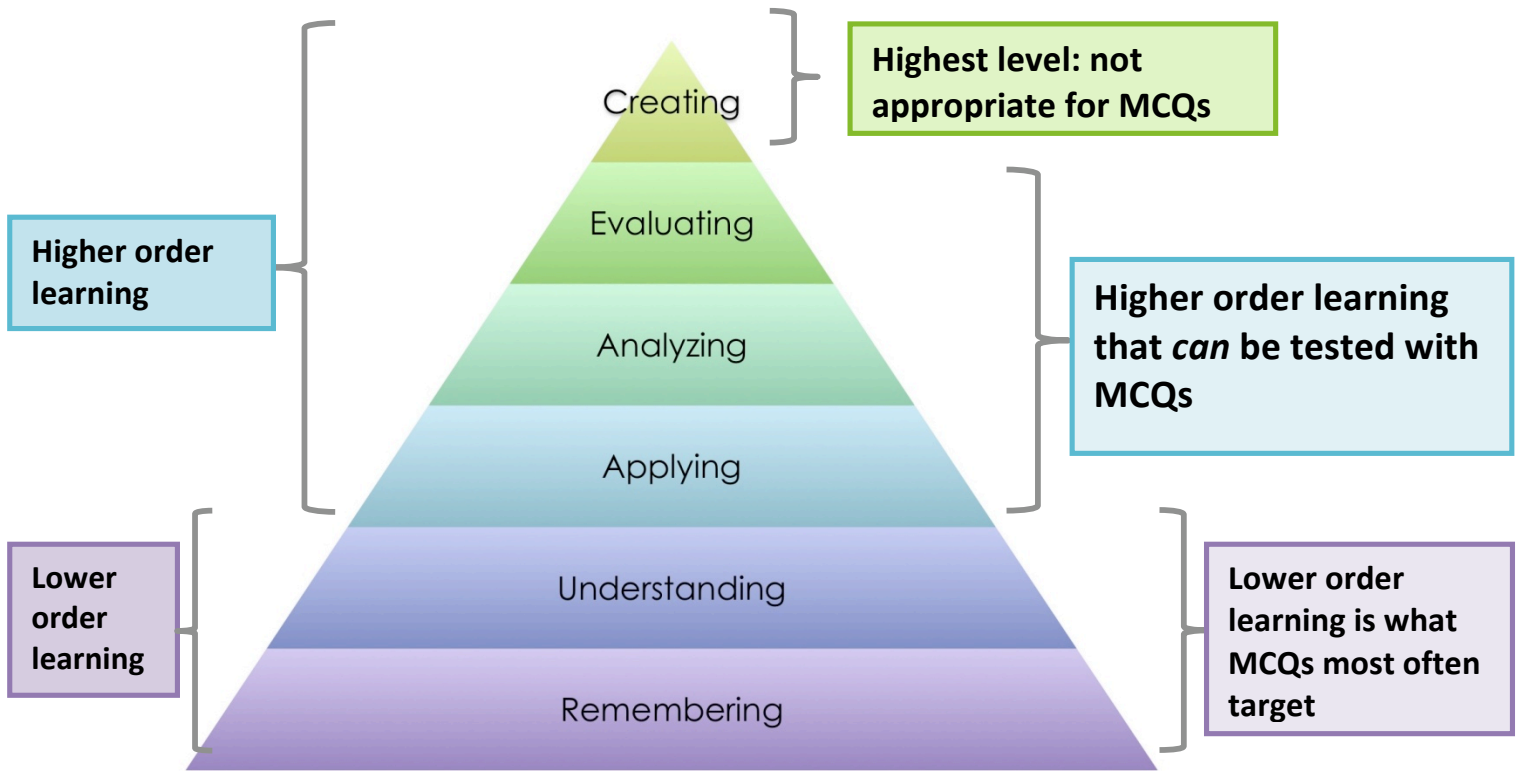


**Handout: Levels of Learning & Bloom’s Taxonomy<sup>1</sup>**



<sup>2</sup>

LEVEL	Definition
<b>Remembering</b>	Recalling information
<b>Understanding</b>	Identifying examples of a given term, concept, or principle. Interpreting the meaning of an idea, concept or principle.
<b>Applying</b>	Using information, rules and procedures in concrete situations.
<b>Analyzing</b>	Breaking information into parts to explore patterns and relationships. Analyzing charts, data to support conclusions.
<b>Evaluating</b>	Justifying a decision or a course of action.
<b>Creating</b>	Generating new ideas or products.

<sup>1</sup> Anderson, L.W., & Krathwohl, D. R. (Eds.). (2001). *A Taxonomy for Learning, Teaching, and Assessing: A Revision of Bloom's Taxonomy of Educational Objectives*. New York: Longman.

<sup>2</sup> Image from Purdue University, Reflections on Teaching and Learning Webpage:  
<http://blogs.itap.purdue.edu/learning/2012/05/04/review-of-idc-tools-to-assess-blooms-taxonomy-of-cognitive-domain/>

## Examples of Multiple Choice Questions that Test Lower Order Learning

Learning Outcome: to **recall** the author of a specific book.

1. Who is the author of "Das Kapital"?
  - A. Mannheim
  - B. Marx\*
  - C. Weber
  - D. Engels
  - E. Michels

(Carneson, Delpierre, & Masters, 1996).

---

Learning Outcome: to **identify** the meaning of a term.

2. Reliability is the same as:
  - A. consistency.\*
  - B. relevancy.
  - C. representativeness.
  - D. usefulness.

(Gronlund, 1998).

---

Learning Outcome: to **interpret** the meaning of an idea.

3. The statement that “test reliability is a necessary but not sufficient condition of test validity” means that:
  - A. a reliable test will have a certain degree of validity.
  - B. a valid test will have a certain degree of reliability.\*
  - C. a reliable test may be completely invalid and a valid test completely unreliable.

(Gronlund, 1998).

---

## Examples of Multiple Choice Questions that Test Higher Order Learning

Learning Outcome: to **apply** previously acquired knowledge to a given situation.

4. Which one of the following memory systems does a piano-tuner mainly use in his occupation?
- A. Echoic memory.\*
  - B. Short-term memory.
  - C. Long-term memory.
  - D. Mono-auditory memory.

(Carneson et al., 1996).

---

Learning Outcome: to **analyze** poetry and identifies patterns and relationships.

5. [The poem is included here.]

The chief purpose of stanza 9 is to:

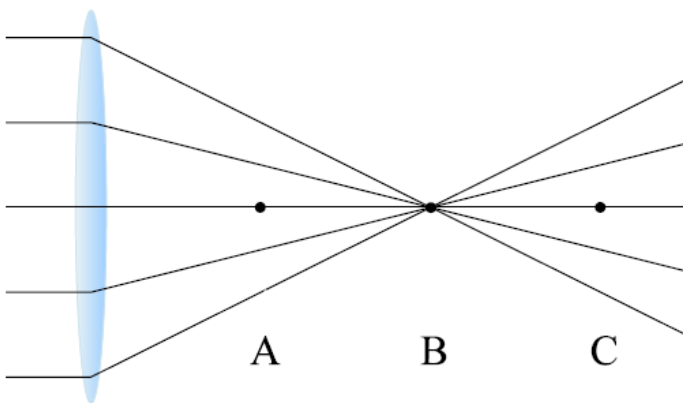
- A. Delay the ending to make the poem symmetrical.
- B. Give the reader a realistic picture of the return of the cavalry.
- C. Provide material for extending the simile of the bridge to a final point.
- D. Return the reader to the scene established in stanza 1.\*

(Burton, Sudweeks, Merrill, & Wood, 1991).

---

Learning Outcome: to **predict** effects of lenses on light trajectory.

6. In the diagram below, parallel light rays pass through a convex lens and converge to a focus. They can be made parallel again by placing a:



- A. Concave lens at point B.
- B. Concave lens at point C.
- C. Second convex lens at point A.
- D. Second convex lens at point B.

E. Second convex lens at point C.\*

(Burton et al., 1991).

Learning Outcome: to **make appropriate clinical decisions** based on laboratory data.

7. A 62 year-old woman with a history of confusion and constipation comes to the office for a follow-up visit. Laboratory investigations reveal a serum calcium of 2.9mmol/L, a creatinine of 146  $\mu$ mol/L, and a hemoglobin of 108 g/L.

Which one of the following would help confirm the diagnosis?

- A. Parathyroid hormone
- B. Serum protein electrophoresis\*
- C. 25-OH vitamin D
- D. Serum creatinine
- E. Abdominal ultrasound

(Touchie, 2012).

---

Learning Outcome: to **assess** the relative importance of various arguments towards supporting a given conclusion.

8. *Directions*: Read the following comments a teacher made about testing. Then answer the questions that follow by circling the letter of the **best answer**.

“Students go to school to learn, not to take tests. In addition, tests cannot be used to indicate a student’s absolute level of learning. All tests can do is rank students in order of achievement, and this relative ranking is influenced by guessing, bluffing, and the subjective opinions of the teacher doing the scoring. The teacher-learning process would benefit if we did away with tests and depended on student self-evaluation.”

Which one of the following propositions is most essential to the final conclusion?

- A. Effective self-evaluation does not require the use of tests.\*
- B. Tests place students in rank order only.
- C. Test scores are influenced by factors other than achievement.
- D. Students do not go to school to take tests.

(Gronlund, 1998).

---

Learning Outcome: to **evaluate** the most appropriate policies to accomplish a goal.

9. “Because of rapidly rising national defense expenditures, it is anticipated that Country A will experience a price inflation unless measures are taken to restrict the growth of aggregate private demand. Specifically, the government is considering either (1) increasing personal income tax rates or (2) introducing a very tight monetary policy.” If the government of Country A wishes to minimize the adverse effect of its anti-inflationary policies on economic growth, which one of the following policies should it use?
- A. The tight money policy because it restricts consumption expenditures more than investment.
  - B. The tight money policy, since the tax increase would restrict consumption expenditures.
  - C. The personal income tax increase since it restricts consumption expenditures more than investment.
  - D. Either the tight money policy or the personal income tax rate increases since both depress investment equally.

(Rationale: In the example above, adapted from Welsh, 1978, students must understand the concepts of price inflation, aggregate private demand, and tight monetary policy. They must also be able to analyze the information presented and, based on projected effects, choose the most appropriate policy. This question requires critical thinking and the complex application of economic principles learned in the course).

(Welsh, 1978 as cited in Improving multiple choice questions, 1990).

---

Learning Outcome: to **evaluate** the validity of an argument.

10. Consider the question, "What is meant by the charge that utilitarianism is too demanding?"

Now suppose the following answer is given:

"Utilitarianism requires moral people to respond to important moral concerns such as helping the less fortunate, while allowing immoral people to pursue their careers, family lives, and personal projects." What is wrong with this answer?

- A. Nothing - that answer is correct.
- B. It falsely describes what utilitarianism requires of moral people.
- C. It falsely describes what utilitarianism allows of immoral people.\*
- D. It relies on a false dichotomy between moral people and immoral people.

(Green, n.d.).

## References

- Burton, S., J., Sudweeks, R., R., Merrill, P., F., & Wood, B. (1991). How to prepare better multiple-choice test items: Guidelines for university faculty. [PDF document]. Retrieved from Brigham Young University Testing Centre Web site:  
<http://testing.byu.edu/info/handbooks/betteritems.pdf>
- Carneson J, Delpierre G and Masters, K (1996). Designing and managing multiple choice questions. Retrieved from Centre for Educational Technology, University of Capetown Web site: <http://web.uct.ac.za/projects/cbe/mcqman/mcqchp3.html>.
- Green, K. (n.d.). Sample multiple choice questions that test higher order thinking and application [PDF document]. Retrieved from Washington State University Office of Assessment of Teaching and Learning Web site: [http://oai.wsu.edu/large\\_classes/Sample%20multiple%20choice%20questions%20for%20higher%20order%20thinking\\_atl.pdf](http://oai.wsu.edu/large_classes/Sample%20multiple%20choice%20questions%20for%20higher%20order%20thinking_atl.pdf).
- Gronlund, N. E. (1998). *Assessment of student achievement*. Boston: Allyn and Bacon.
- Haladyna T., M., Downing, S., M., & Rodriguez, M., C. (2010). A review of multiple-choice item-writing guidelines for classroom assessment. *Applied Measurement in Education*, 15, 309-334.
- Improving multiple choice questions (1990). Centre for Teaching and Learning. Retrieved from University of North Carolina at Chapel Hill. Centre for Faculty Excellence Web site: <http://cfe.unc.edu/pdfs/FYC8.pdf>.
- Touchie, C. (2012). *The development of multiple-choice questions using the key-features approach* [PowerPoint slides]. Retrieved from Medical Council of Canada Web site: [http://www.mcc.ca/en/news/Faculty\\_visits/McGill.shtml](http://www.mcc.ca/en/news/Faculty_visits/McGill.shtml)
- Writing multiple-choice questions that demand critical thinking. Retrieved from Teaching Effectiveness Program, Teaching and Learning Center, University of Oregon Web site: <http://tep.uoregon.edu/resources/assessment/multiplechoicequestions/mc4critthink.html>.
- Zimmaro, D. M. (2010). Writing good multiple-choice exams [PDF document]. Retrieved from University of Texas at Austin, Center for Teaching and Learning Web site: <http://ctl.utexas.edu/assets/Evaluation--Assessment/Writing-Good-Multiple-Choice-Exams-04-28-10.pdf>.