

Deconstructing Multiple-Choice Questions

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- Erika Artukovic
- Holly Ordway
- Isabelle Sacramento-Grilo



Which sequence correctly lists the Earth's layers in order from the surface to the interior?

- A. lithosphere, asthenosphere, lower mantle, outer core, inner core
- B. asthenosphere, lithosphere, mantle, outer core, inner core
- C. core, mantle, crust
- D. crust, lower mantle, asthenosphere, lithosphere, outer core, inner core
- E. crust, asthenosphere, lithosphere, mantle, core

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The United States entered World War II as a result of

- A. the systematic genocide of European Jews by Hitler's Nazi Germany.
- B. the Japanese bombing of Pearl Harbor.
- C. France asking for help in the fight against the Axis powers.
- D. the Germans failing to achieve superiority during the Battle of Britain.



Possible Usage

- Introduce a topic, pre-lecture
- Short bouts of lecture with questions interspersed
- Long lecture with questions as debrief
- Outside of class as pre-class preparation
- Formal assessments: tests, quizzes, etc.
- Others?? It's up to you!

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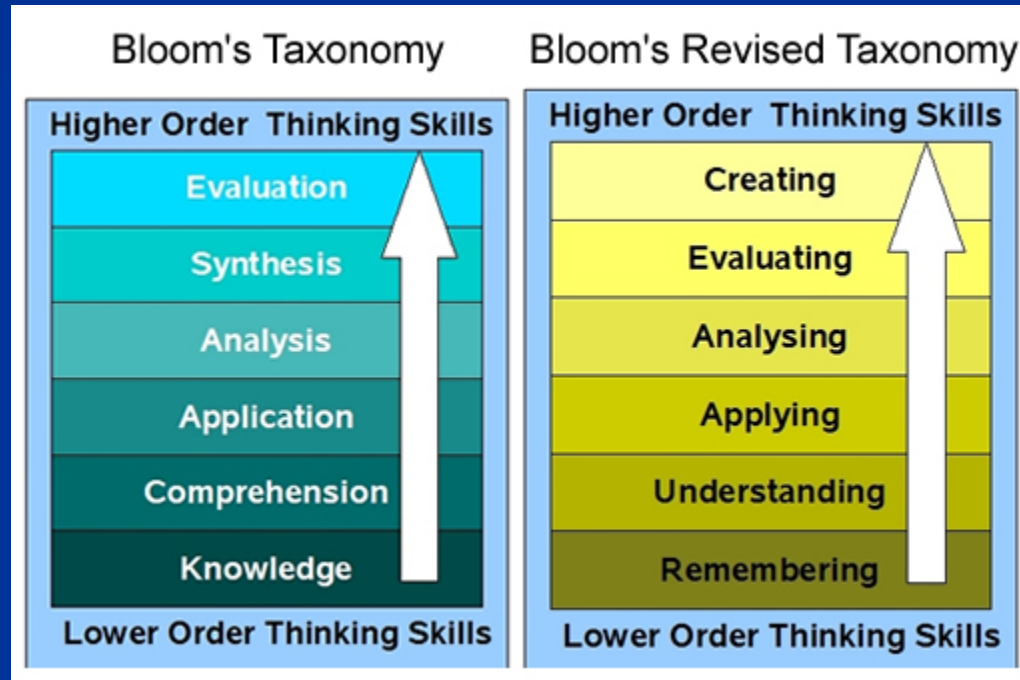
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Bloom's Taxonomy

- Cognitive domains



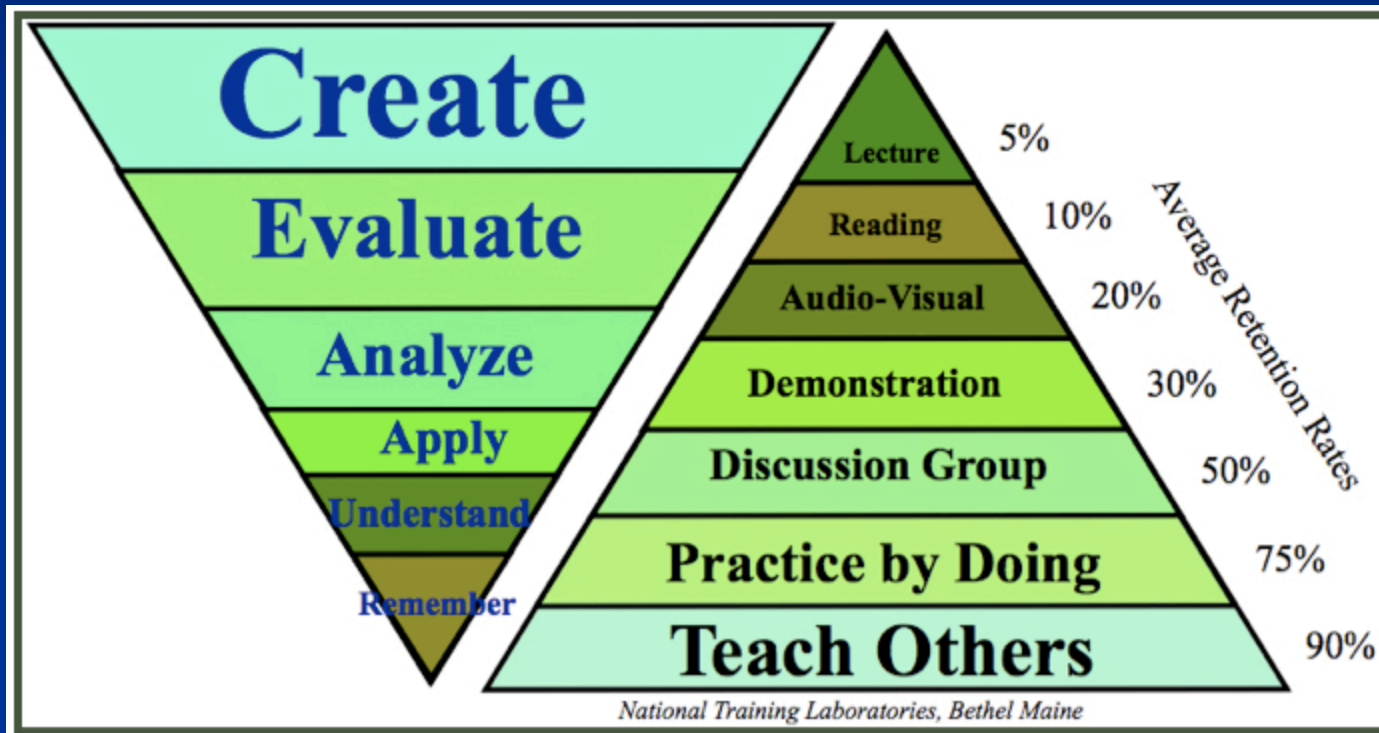
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Some Perspective



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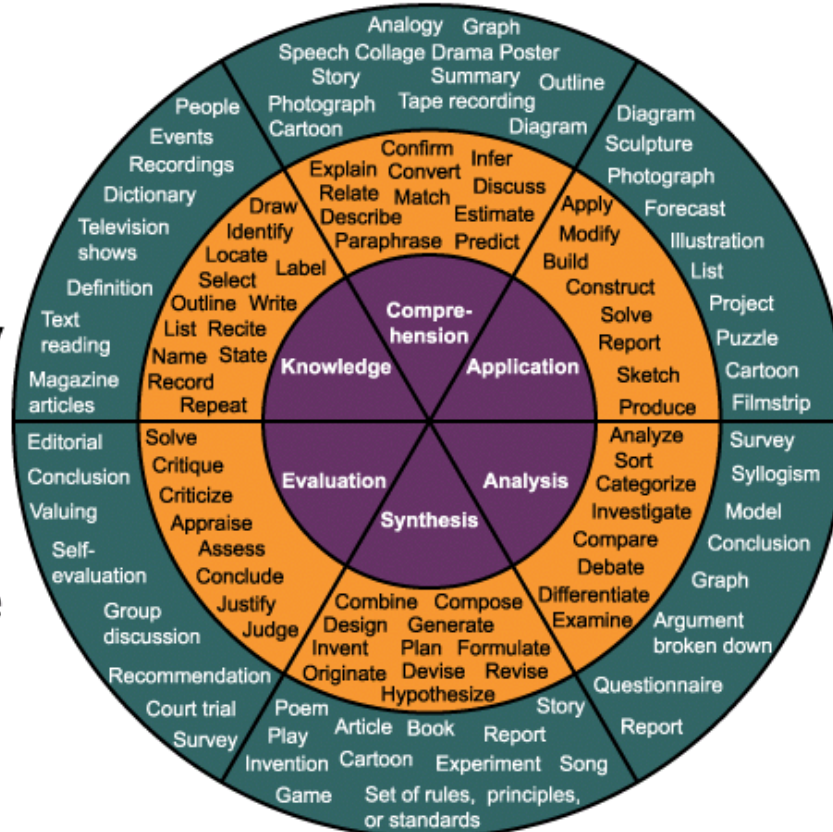
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"Magic" Verbs

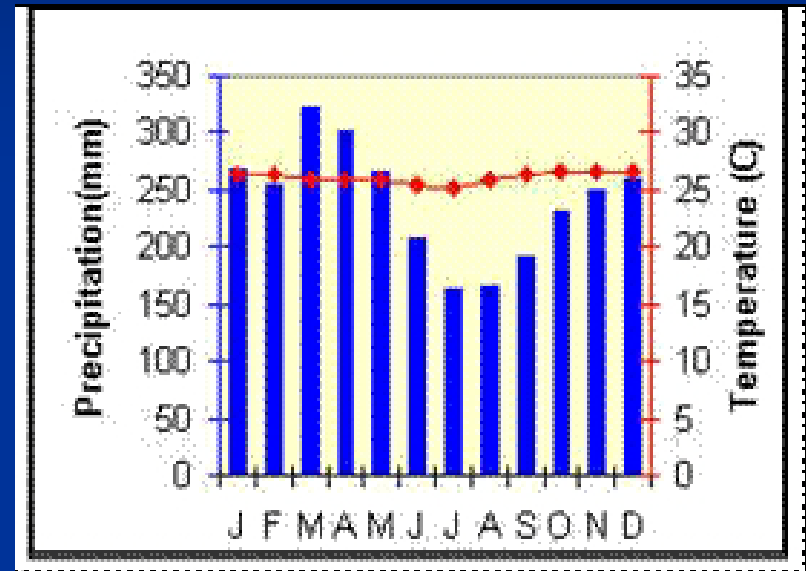
Verb
Wheel
Based on
Bloom's
Taxonomy

-  Domain
-  Appropriate verbs
-  Student products



This climograph is most likely from an area

- A. close to the poles.
- B. close to the mid-latitudes.
- C. close to the equator.
- D. in the center of a large desert.
- E. in the center of a large continent.



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Each of three high jumpers barely clears 1.8 m during a competition. The first jumper jumps almost straight up and lands right next to where he started. The second jumper gets a running start and lands 3 m from his initial position. The third jumper runs super fast, jumps over the bar, and lands in Texas. Who was in the air the longest?

- A. the first jumper
- B. the second jumper
- C. the third jumper
- D. They were all in the air for the same amount of time.

The logo for CATS (Collaboration of Astronomy Teaching Scholars) features the letters 'CATS' in a large, bold, gold-colored font. The background of the logo includes a stylized orange and yellow map of the United States with white lines radiating from a point on the West Coast, and a partial view of a planet's surface on the left.

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In Hamlet's soliloquy "To be, or not to be," what line best answers his question "Why should I not kill myself?"

- A. 'tis nobler in the mind to suffer / The slings and arrows of outrageous fortune.
- B. 'tis a consummation / Devoutly to be wish'd.
- C. The undiscover'd country...makes us rather bear those ills we have / Than fly to others that we know not...
- D. the native hue of resolution / Is sicklied o'er with the pale cast of thought.



Rules of Thumb

- Stay on target.
- Avoid jargon and “spy talk”.
- Remove unnecessary information.
- Don’t give it away in the stem.
- Don’t give it away in the choices.

The logo for CATS (Collaboration of Astronomy Teaching Scholars) features the acronym 'CATS' in a large, bold, gold-colored font. To the left of the text is a partial view of a planet's horizon. The background of the banner is a dark blue space scene with a starry field and a stylized map of the United States in the bottom right corner, with white lines radiating from a point on the map, suggesting a network or collaboration.

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Stay On Target

- What are you really trying to ask?
- Are you combining too many concepts in a single question?
- How will you know if you got the desired result?
 - consider this in your choices as well
 - “both...and”, “either...or”
 - Can it be answered correctly for the wrong reason?

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Avoid Jargon and “Spy Talk”

- Don't use unnecessary jargon when simple words will suffice.
- Don't make them have to “decode” the question in order to figure out how to answer.
 - Be careful with negatives, i.e. “not” and “false”
- Ask precisely what you want to know, in no uncertain terms (literally)!

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A good month for going to the beach in Chile is

- A. January.
- B. April.
- C. July.
- D. October.



It is summer in the southern hemisphere during

- A. January.
- B. April.
- C. July.
- D. October.



Avoid Unnecessary... Everything

- Too much “set-up”?
- Description too “cute”?
- Do you get lost just reading the question because it’s so long?
- Obviously wrong distractors, i.e. “funny” or “joke” answers
- Be careful with “none/all of the above”

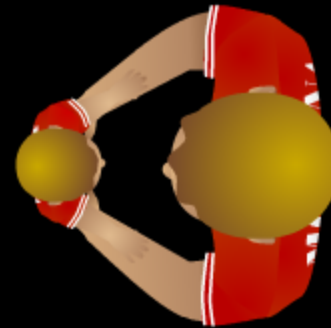
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Joey's dad had just picked out a 49er's jersey (identical to his own) as a gift for Joey's second birthday. Excited upon realizing how well they matched, he raised Joey high in the air and spun him around in celebration.



Which of the following statements is not true concerning the scene?

- A) Mom can see the 49er logo on the front of Joey's shirt.
- B) Mom can read "Montana" on the back of Joey's shirt.
- C) Dad can see the 49er logo on the front of Joey's shirt.
- D) Dad can read "Montana" on the back of Joey's shirt.



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Don't Give It Away...

- in the stem.
 - very long stems often have unwitting verbal clues
- in the choices.
 - if one answer is much longer or shorter than the others, this can be a clue
 - stick to parallel construction whenever possible
 - don't use unreasonable distractors

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Some scientists believe that Pluto is

- A. an escaped moon of Neptune.
- B. usually the farthest planet from the Sun.
- C. the name of Mickey Mouse's dog.
- D. all of the above
- E. none of the above



Pluto is sometimes called a planet and sometimes a moon of Neptune. It is sometimes called a planet because it

- A. has an orbit very much like the orbits of the other planets.
- B. orbits the Sun rather than Neptune.
- C. is sometimes farther from the Sun than Neptune.
- D. is larger than the planet Mercury.

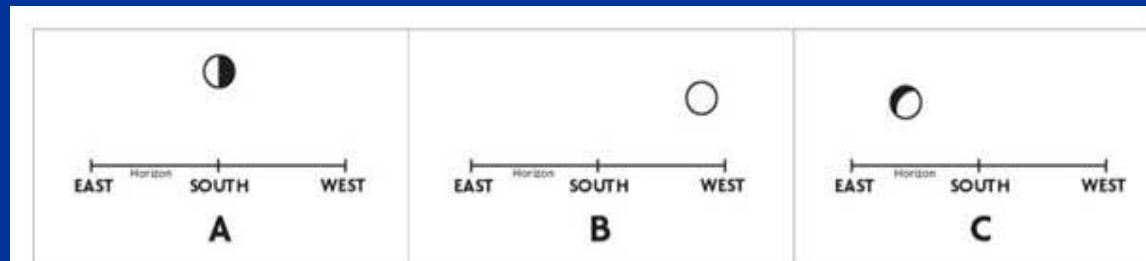
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Which of the situations shown below occurs at a time closest to sunset?



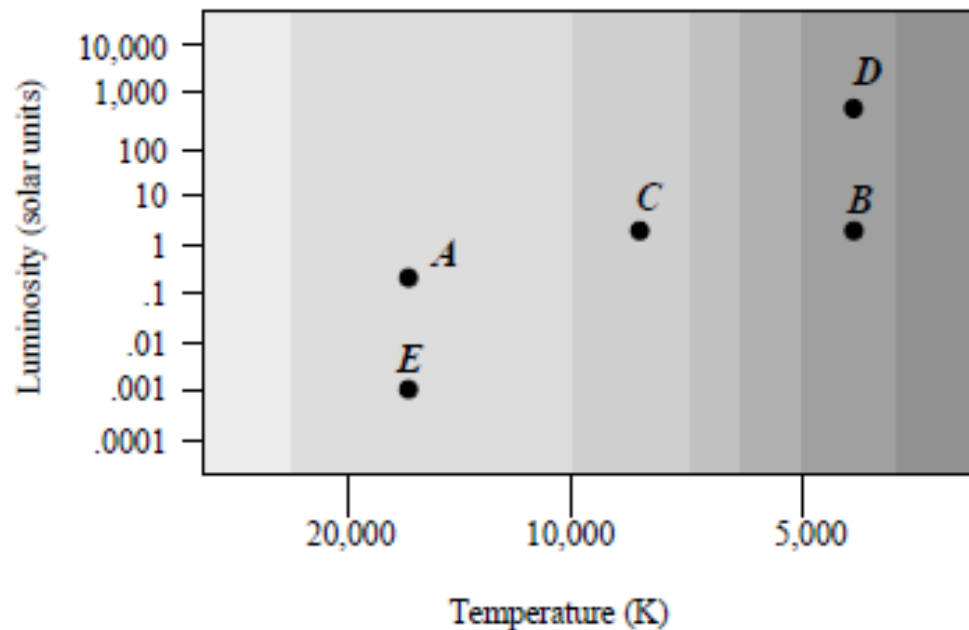
Use the graph at right to answer the next questions.

35. Which object(s) is(are) giving off just as much energy as object B?

- a. object D
- b. object C
- c. both D and C
- d. none of the above

36. Which of the following is the correct ranking for the sizes of objects A – E?

- a. $E = A > C = B > D$
- b. $D = B > C > A = E$
- c. $D > B = C > A > E$
- d. $E > A > C = B > D$
- e. none of the above



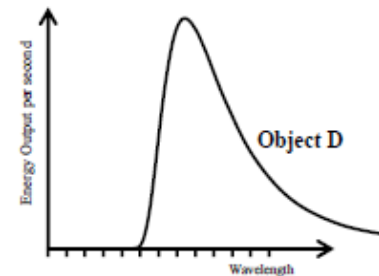
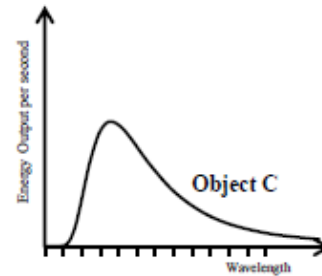
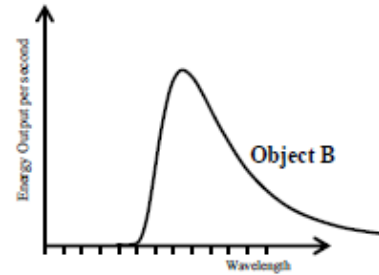
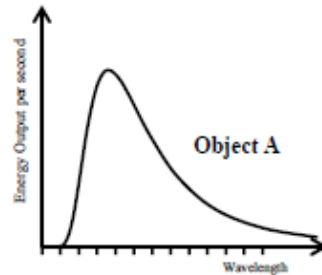
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Use the energy output versus wavelength graphs for objects A – D, shown below to answer the next questions. The axes on each graph are identical.



41. Which, if any, of the other objects has the same temperature as object B?
- Object A
 - They are all the same temperature.
 - Object C
 - Object D
 - There is insufficient information to answer this question.
42. Which of these objects is the smallest?
- Object A
 - Object B
 - Object C
 - Object D
 - There is insufficient information to answer this question.
43. Which, if any, of the objects could be approximately the same size as object D?
- Object A
 - Object B
 - Object C
 - More than one of the objects could be the same size as object D.
 - None of the above.

