While written in jest (by the second author), this true/false item illustrates a common problem — items for which the stem is unclear. Depending on your perspective, Options 1, 2, and 3 might be true; alternatively, 1, 2, and 3 might be false while 4 is true.

In this true/false example, there are vague terms in the options that provide cues to the testwise examinee. For example, the term “may” in Options 1, 2, and 3 cues the testwise examinee that those options are true. Option 4 is harder to guess — what does “usually” mean? Research has shown that these vague frequency terms do not have a shared definition. Experts would not agree on whether the fourth option is true or false.

The flaws in this item are more subtle. The difficulty is that the examinee has to make assumptions about the severity of the disease, the age of the patient, and whether or not the disease has been treated. Different assumptions lead to different answers, even among experts.

Note that in each sample flawed item, the stem is unclear, the options contain vague terms, or the options are partially correct. In each instance, a group of experts would have difficulty reaching a consensus on the correct answer.

**The way to a man's heart is through his**

1. aorta
2. pulmonary arteries
3. pulmonary veins
4. stomach

**In the clinical assessment of chronic pain,**

1. the physician's personal attitude concerning pain may affect medical judgement
2. unpleasant emotions may be converted to complaints of bodily pain
3. pain may have a symbolic meaning
4. facial appearance or body posture is usually a clue to the severity of the pain

**In children, ventricular septal defects are associated with**

1. systolic murmur
2. pulmonary hypertension
3. tetralogy of Fallot
4. cyanosis
“None of the above” is used as an option

The phrase “None of the above” is problematic in items where judgement is involved and where the options are not absolutely true or false. If the correct response is intended to be one of the other listed options, knowledgeable students can be faced with a dilemma because they have to decide between a very detailed perfect option and the one that you have intended as correct. They can often construct an option that is more correct than the one you intended to be correct. Use of “none of the above” essentially turns the item into a true/false item; each option has to be evaluated as more or less true than the universe of unlisted options. It will often be possible to fix such items by replacing “none of the above” by an option that means roughly the same thing but is more specific. For example, in an item asking an examinee to specify the most appropriate pharmacotherapy, replacing “none of the above” by “no drug should be given at this time” will eliminate the ambiguity of “none of the above.”

Stems are tricky or unnecessarily complicated

Sometimes, item writers can take a perfectly easy question and turn it into something so convoluted that only the most stalwart will even read it. This item is a sample of that kind of item. The notation in I: through V: is complex; having to rank order Roman numerals after working through that notation is irrelevant and unnecessarily difficult.

Which city is closest to New York City?

A. Boston
B. Chicago
C. Dallas
D. Los Angeles
E. none of the above

If students select E, you don’t know if they are thinking about Philadelphia or London.

Arrange the parents of the following children with Down’s syndrome in order of highest to lowest risk of recurrence. Assume that the maternal age in all cases is 22 years and that a subsequent pregnancy occurs within 5 years. The karyotypes of the daughters are:

I: 46, XX, -14, +T (14q21q) pat
II: 46, XX, -14, +T (14q21q) de novo
III: 46, XX, -14, +T (14q21q) mat
IV: 46, XX, -21, +T (14q21q) pat
V: 47, XX, -21, +T (21q21q) (parents not karyotyped)

A. III, IV, I, V, II
B. IV, III, V, I, II
C. III, I, IV, V, II
D. IV, III, I, V, II
E. III, IV, I, II, V
Additional Templates

A (patient description) has a (type of injury and location). Which of the following structures is most likely to be affected?

A (patient description) has (history findings) and is taking (medications). Which of the following medications is the most likely cause of his (one history, PE or lab finding)?

A (patient description) has (abnormal findings). Which [additional] finding would suggest/suggests a diagnosis of (disease 1) rather than (disease 2)?

A (patient description) has (symptoms and signs). These observations suggest that the disease is a result of the (absence or presence) of which of the following (enzymes, mechanisms)?

A (patient description) follows a (specific dietary regime). Which of the following conditions is most likely to occur?

A (patient description) has (symptoms, signs, or specific disease) and is being treated with (drug or drug class). The drug acts by inhibiting which of the following (functions, processes)?

A (patient description) has (abnormal findings). Which of the following (positive laboratory results) would be expected?

(time period) after a (event such as trip or meal with certain foods), a (patient or group description) became ill with (symptoms and signs). Which of the following (organisms, agents) is most likely to be found on analysis of (food)?

Following (procedure), a (patient description) develops (symptoms and signs). Laboratory findings show (findings). Which of the following is the most likely cause?

A (patient description) dies of (disease). Which of the following is the most likely finding on autopsy?

A patient has (symptoms and signs). Which of the following is the most likely explanation for the (findings)?

A (patient description) has (symptoms and signs). Exposure to which of the (toxic agents) is the most likely cause?

Which of the following is the most likely mechanism of the therapeutic effect of this (drug class) in patients with (disease)?

A patient has (abnormal findings), but (normal findings). Which of the following is the most likely diagnosis?

See Appendix B for additional examples.
Types of Questions

- Guess my drug
- Guess my toxic exposure
- Guess my diet
- Guess my mood
- Predict physical findings
- Predict lab findings
- Predict sequelae
- Identify underlying cause/diagnosis
- Identify cause of drug responses
- Identify drug to administer

Sample Lead-ins and Option Lists

Which of the following is (abnormal)?
   Options sets could include sites of lesions; list of nerves; list of muscles; list of enzymes; list of hormones; types of cells; list of neurotransmitters; list of toxins, molecules, vessels, spinal segments.

Which of the following findings is most likely?
   Options sets could include list of laboratory results; list of additional physical signs; autopsy results; results of microscopic examination of fluids, muscle or joint tissue; DNA analysis results; serum levels.

Which of the following is the most likely cause?
   Options sets could include list of underlying mechanisms of the disease; medications that might cause side effects; drugs or drug classes; toxic agents; hemodynamic mechanisms, viruses, metabolic defects.

Which of the following should be administered?
   Options sets could include drugs, vitamins, amino acids, enzymes, hormones.

Which of the following is defective/deficient/nonfunctioning?
   Options sets could include list of enzymes, feedback mechanisms, endocrine structures, dietary elements, vitamins.

Given the pedigree, what is the likelihood that the next child (specify gender) will have the disease?