Background Knowledge Probes & Anticipation Guides
Introductory Statistics

Background Knowledge Probe

In response to each problem below, circle the number (1-4) that best represents your current knowledge. If you circle (4), please go ahead and solve the problem on the attached sheet.

I. Suppose that you have a bag of M&M candies (plain, no peanuts) that contains 22 light brown, 20 dark brown, 18 yellow, 14 green, 12 orange, and 11 red M&Ms. If you draw one of these M&Ms out at random, what are the probabilities that it will be:

   (a) yellow?  (b) red?  (c) neither yellow nor red?

   1. I have no idea how to solve this problem  
   2. I once knew how to solve problems like this, but have forgotten  
   3. I think I could solve it, given enough time  
   4. I'm sure I can solve it right now

II. In Smallville, 8% of all adults over 50 have diabetes. If a clinic in this community correctly diagnoses 95 percent of all persons with diabetes as having the disease, and incorrectly diagnoses 2% of all persons without diabetes as having the disease. What is the probability that an adult over 50 diagnosed by this clinic as having diabetes actually has the disease?

   1. I have no idea how to solve this problem  
   2. I once knew how to solve problems like this, but have forgotten  
   3. I think I could solve it, given enough time  
   4. I'm sure I can solve it right now

III. In Lost Wages, Nevada, incompatibility is given as the reason for 60% of all divorces. What is the probability that three of the next six divorce cases filed in this city will claim incompatibility as the reason? (Use the attached table)

   1. I have no idea how to solve this problem  
   2. I once knew how to solve problems like this, but have forgotten  
   3. I think I could solve it, given enough time  
   4. I'm sure I can solve it right now
FIRST CONCEPT REVIEW: STANDARD DEVIATION

Circle the one variable in each row that you would expect to have the largest relative standard deviation:

1. adult humans’ heights  
2. domestic dogs’ weights  
3. oral language skills of 12-year-olds  
4. hours students spend in this classroom
**ConcepTest**

Liquid hazardous waste is disposed of by pumping it down injection wells. Which well location would be the most suitable to use for an injection well?

**Why?**

A   B   C

Thanks to Dr. David McConnell for permission to use his Geology Conceptest above.
Anticipation Guide
(Misconception/Preconception Check)

What is it? At the beginning of class, the instructor presents the students with a series of statements or questions that focus on the key concepts (or most persistent misconceptions) to be learned in class. Students respond with true/false, their best guess, prediction, or hypothesis.
Anticipation Guide (+ Why)

Procedure
1. Identify major concepts in the reading or lesson.
2. Create statements that question certain notions, beliefs, or opinions or that may challenge what students already know. Write your questions or statements in the numbered boxes and then make a copy for each student.
3. Hand out the guide and briefly explain the statements. Have students mark their responses of agreement or disagreement in the "Before Reading" column.
4. Have students give reasons for their opinions by answering the "Why?" question on the left under each statement. Groups or partners can discuss their thinking.
5. Have students read the text. During reading, the students can refer to the guide and take notes.
6. After reading or other follow-up activities, have students mark the "After Reading" column and fill in the "Why?" section on the right under each statement.
7. Conduct a discussion comparing the before and after results. Your discussion should refer to evidence in the text and should cover students' reasons for changes in their before and after answers.
## Anticipation Guide for a Text on Computers

A = Agree strongly   a = Agree somewhat   d = Disagree somewhat   D = Disagree strongly

### Before Reading

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<tr>
<td>1.</td>
<td>Computers are better teachers than humans.</td>
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<td></td>
<td>Why?</td>
<td>Why?</td>
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<td>2.</td>
<td>In the future, computers will wage war on us.</td>
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<td></td>
<td>Why?</td>
<td>Why?</td>
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<td>3.</td>
<td>Life would be easier without computers.</td>
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<td></td>
<td>Why?</td>
<td>Why?</td>
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<td>4.</td>
<td>A computer would make a good president.</td>
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<td>Why?</td>
<td>Why?</td>
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### After Reading

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Adapted from: Zwiers, Jeff. *Building Reading Comprehension Habits in Grades 6-12: A Toolkit of Classroom Activities*  
International Reading Association, 2004
# ANTICIPATION GUIDE

*(Language Arts Example)*

**Animal Farm**

Directions: In the column labeled *me*, place a check next to any statement with which you tend to agree. Be prepared to defend and support your opinions with specific examples. After reading *Animal Farm*, place a check next to those statements with which you think George Orwell would agree.

<table>
<thead>
<tr>
<th>Me</th>
<th>George Orwell</th>
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- It is a good idea to be distrustful of political leaders.
- Those who work harder than others should be paid more.
- When someone is unable to work, she/he should be supported by the government.
- People are generally motivated by self-interest.
- Power eventually corrupts those who have it.
The Minute Paper

Please answer each question in 1 or 2 sentences:

1. What was most useful or meaningful thing(s) you learned during this session?

2. What question(s) remain uppermost in your mind as we end this session?


The "Muddiest" Point

What was the "muddiest" point in this session? (In other words, what was least clear to you?)


