WHAT TO KNOW ABOUT MATH CLASSES AT HIGHLINE

Questions to Consider:
1. What has your previous math experience been like – what was positive, what was negative?
2. What did you have to do to complete or succeed in math classes in high school? Do you think those same behaviors will help you pass math classes here at Highline? Why or why not?
3. What do you think math teachers are trying to teach you to do?
   Does the following assignment (used in a math class) fit with the things you listed in your answer to question #3? If not, what do you think the teacher is trying to get students to do?

Below is a headline and data table from an article in *The Seattle Times* on Jan. 17th, 2001.

**Minorities get searched more often by Patrol**

*But trooper’s chances of finding contraband higher among whites*

<table>
<thead>
<tr>
<th>Ethnicity</th>
<th>Total stops</th>
<th>Total searches</th>
<th>% of stops that resulted in searches</th>
<th>% of searches that found contraband</th>
</tr>
</thead>
<tbody>
<tr>
<td>White</td>
<td>283,064</td>
<td>5,688</td>
<td>2.0%</td>
<td>33%</td>
</tr>
<tr>
<td>Hispanic</td>
<td>20,648</td>
<td>984</td>
<td>4.8%</td>
<td>19%</td>
</tr>
<tr>
<td>Black</td>
<td>12,417</td>
<td>542</td>
<td>4.4%</td>
<td>25%</td>
</tr>
<tr>
<td>Asian</td>
<td>11,450</td>
<td>172</td>
<td>1.5%</td>
<td>13%</td>
</tr>
<tr>
<td>East Indian</td>
<td>2,560</td>
<td>22</td>
<td>0.9%</td>
<td>18%</td>
</tr>
<tr>
<td>Native American</td>
<td>2,434</td>
<td>228</td>
<td>9.4%</td>
<td>32%</td>
</tr>
</tbody>
</table>

Source: WA State Patrol

a) What is your initial reaction to the headline? To the subheadline?
b) Do the numbers in the table support the claims of the article? What does that suggest we should do in the future?
c) Use the data about Washington’s population from the previous page and proportions to argue whether the state patrol is or is not fair when deciding who to stop.
d) If all ethnicities acted and were treated exactly the same, how many stops should we expect of Whites, Hispanics, Blacks, and Asians?

4. Why do virtually all colleges have a math requirement for graduation? Why is math (beyond arithmetic) or trying to learn math important for, say, a future coach, interior designer, or English teacher?

5. Why would a person avoid taking math even though he or she knows it’s required for graduation? Is the person kidding him- or herself, and what could the college do to help him or her decide that it is necessary to start math sooner rather than later?

6. Why would a student skip class, do very little homework, and avoid taking notes in a math class? Why might the student still do this even when retaking the class after failing it?

Handout prepared by Erik Scott (math instructor), Office: Building 18 room 109, phone extension 3113
Categories of math classes

- Pre-college (any class numbered below 100) –
  - Rapidly covers material necessary for success in college-level math classes: be aware that we cover two years of high school math (Beginning and Intermediate Algebra) in one year!
  - Generally skill (computation)-based, and memorizing rules or formulas is usually enough to pass (meaning “get a ‘C’ or 1.7 in”) a class

- College (classes numbered 100 and above) –
  - Generally balances skill and concept understanding, so memorization is NOT enough to pass; reading the paragraphs in the textbook (not just the formula and example boxes) to understand principles is crucial
  - Many different tracks:
    - Math for the liberal arts (107)
    - Business algebra/calculus sequence (111, 112)
    - Science/Engineering calculus sequence (115,116,124,125,126, etc.)
    - Math for future teachers (180)
    - Statistics (210)

Class formats

- Traditional instruction – You meet with an instructor and about 30 classmates daily or twice a week; learning involves a combination of lecture, group activities, and discussion

- Computer-based instruction – You meet with an instructor and about 20 other students in a computer lab daily or twice a week; learning involves watching/listening to video clips and completing interactive tasks on a computer – the instructor spends more of his/her time working with students individually as needed

- Online instruction – You have an instructor with whom you interact via email, but most of your instruction comes from a book, software, or online activities you do at home on a more flexible schedule

- Hybrid courses – These courses are a blend (or hybrid) of traditional and online instruction; most of your instruction will take place in the online format, though you will meet with your classmates and the instructor for a few face-to-face class sessions throughout the quarter

Expectations of most math faculty

- You will study math almost daily, and spend an average of 10 – 15 hours each week outside of class working on math
- You will take the initiative to ask questions in class or come to the instructor’s office hours if you’re confused or have difficulty with an idea or skill
- You can pick up symbol patterns after being shown a small number of examples
- You can be detail-oriented when tasks require it
- You can do more than just repeat what was shown to you – test questions will usually be similar to, but not the same as, examples you did in class

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Dealing with Common Math Anxieties

Common fears and strategies to reduce them

Fear: “If I ask questions or do badly, my instructor will think I’m stupid.”

Tip: Introduce yourself to your instructor early in the quarter so you can trust he or she knows you as a person, not a “struggling student.”

Other things to know:
- Instructors expect you to have questions – if you don’t, they will generally create activities or lessons that involve more complex ideas because they are afraid the class is teaching less than you’re ready to learn.
- Be aware that some instructors prefer you ask questions outside of class, like in their office hours, because they want to make sure they have enough class time to cover the required material.

Fear: “When I take a timed test, I feel a lot of pressure due to the time limit.”

Tip: Practice like you’ll play – spend some of your study time practicing solving problems like you will in a test situation. Do this by
  - Picking about 5 problems from the textbook or old quizzes and write them on a separate page.
  - Close your books and notes and set them aside.
  - Set a timer (alarm clock, cooking timer) for 10 – 15 minutes for computation problems or 20 – 30 minutes for word problems, and see how much progress you can make in the time limit. You may discover that you don’t have to rush, or learn what mistakes you make when you do rush.

Fear: “I’m going to blank out on the tests.”

Tip: Pay close attention to how you study – do you spend time reading and thinking about the ideas separate from doing homework? If you mainly spend your time doing assignments, you’re not giving your brain a chance to stop and absorb the ideas.

Other strategies:
- When you get the test, do a “core dump” – write down a bunch of helpful facts on the front of the test so you have something to look at if you get nervous.
- Don’t plan on solving the test problems in the order they’re listed – start with those that you’re pretty sure you can do – it builds your confidence, allows you to ease your concerns about time pressure, and helps get your brain “in the math groove” so some ideas will just come to you as you do other problems.
- DON’T ERASE!! If you think an answer is wrong, cross it out, but leave it so you can look at it and try to find your error. Just like in writing, it’s usually easier to find and fix mistakes in something you already have than it is to start over from scratch.
- PAUSE AND BREATHE OR STRETCH!! If your body is uncomfortable, it puts additional pressure on your mind, and sometimes you won’t even realize it until you stop and stretch.
If you’re having trouble with math, try the following study strategy.

1. Get a notebook you will only use for your math class.

2. Create two sections in your notebook:
   - The first section (about half to two-thirds of the notebook) will be where you take your class notes and write your scratchwork for your homework.
   - The second section (the last half or third of your notebook) will be where you do your personal summary and review of the material.

3. In class:
   - **Attend class daily!** (This allows you to hear the ideas that you otherwise have to read from the book.)
   - Write down the examples the instructor shows on the board, along with any “big ideas” or key words the instructor seems to emphasize.
   - When the instructor asks you to practice a skill in class, try it, and ask questions!

4. Outside of class: (Do these things at least four times a week!)
   a. Spend some time trying to understand the ideas –
      - Open your notebook to the “personal summary and review” section, and start a new entry with that day’s date. Use a half-page (or more, if necessary) to write the information listed below.
      - Scan the relevant sections of the book and your class notes, then write a summary of the main ideas. Write your summary in words, and rewrite any helpful examples from the book or your in-class notes.
      - Write down two questions that point out what confuses you in the ideas or examples you just summarized.
      - Show your attempt to solve 3 – 5 related problems. Be sure to choose problems at different difficulty levels, and show your scratchwork/middle steps.
      - If you can’t finish any of the problems, write down a description of where and why you got stuck.
      - **Meet with your instructor once or twice a week to go over these notes and discuss your questions.**

   b. Work on your homework assignment!

5. When preparing for an exam: (Strategy provided by Kate Skelton, HCC math instructor)
   - A few days before a big test, make a list of the key ideas from each of the sections that will be on the exam. (You may be able to get this from your “personal summary” entries.)
   - Go through the homework problems for each section and pick out three problems for each main idea – one “easy,” one “medium,” and one “hard.” (Make sure you choose problems for which you have answers, like the odd-numbered book problems.)
   - Look at your list of problems and create tests that have problems covering most of the main ideas that will be on the exam. Take them (possibly under time pressure) to get a feel for what the exam will be like, so it’s not a shock on the day of the test.

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