Quantitative Reasoning/Quantitative Literacy
Assessment Instrument

Directions: The Quantitative Literacy (QL)/Quantitative Reasoning (QR) Project at Lehman College is currently in the process of implementing new teaching strategies to strengthen students' quantitative reasoning skills. As part of this effort, we are trying to measure students' attitudes and QL/QR skills. The questions in this assessment instrument are part of this effort. This exercise will not be used in grading your performance in this class and you may refuse participation or skip any questions that you do not wish to answer. At the same time, we ask that you please try your best to respond to all the questions since your responses are very important to this research and will be treated with great respect and confidentiality. Thank you very much for your participation in this exercise!

Quantitative Reasoning or Quantitative Literacy may be thought of as "a 'habit of mind,' competency, and comfort in working with numerical data. Individuals with strong QL skills possess the ability to reason and solve quantitative problems from a wide array of authentic contexts and everyday life situations. They understand and can create sophisticated arguments supported by quantitative evidence, and they can clearly communicate those arguments in a variety of formats (using words, tables, graphs, mathematical equations, etc., as appropriate)" (Association of American Colleges and Universities 2010).

1. **What is the class (number) where you are filling out this questionnaire?**

_____

2. **What is the section where you are filling out this questionnaire? (If you don't know, please ask the instructor or indicate his or her name.)**

_____

3. **Please indicate the last 6 digits of your Social Security Number. NOTE: This information will never be used to link your answers directly to you, but rather to track data on student performance across courses.**

_____

4. **What is your sex?**

a. ○ Male
b. ○ Female

5. **What is your current age?**

_____

6. **Did you transfer to Lehman?**

a. ○ No
b. ○ Yes, from a community college
c. ○ Yes, from another college (but not a community college)

7. **Please indicate the single race or ethnicity that you most closely identify with:**

a. ○ White/Caucasian
b. ○ Black/African American
c. ○ Indian/Native American
d. ○ Asian or Pacific Islander
e. ○ Hispanic/Latino/Latina

8. **Were you born in the United States?**

a. ○ Yes (please go to Q #9)
b. ○ No (please answer Q #8a)

8a. What country were your born in?

_____

9. **Is English your first language?**

a. ○ Yes (please go to Q #10)
b. ○ No (please go to Q #9a)

9a. What is your first language?

10. **What is your current status at Lehman?**

a. ○ Freshman (30 or fewer credits)
b. ○ Sophomore (31 to 60 credits
c. ○ Junior (61 to 90 credits)
d. ○ Senior (91 to 120 credits)
e. ○ Graduate Student
f. ○ Other

11. **What is (are) your majors(s)? If undecided, please indicate below.**

_____

_____

12. **What is (are) your minor(s)? If undecided or none, please indicate below.**

_____

13. **Where did you attend high school? (Please check all that apply.)**

a. ○ Public high school in NYC, Yonkers or Mount Vernon
b. ○ Specialized public high school in NYC (Bronx Science, Brooklyn Poly, etc.)
c. ○ Public high school outside NYC/Yonkers/ Mount Vernon
d. ○ Private or parochial high school in US
e. ○ High school outside of US
f. ○ Earned a GED

14. **What was your average grade in high school? (If you don't know, please provide an estimate.)**

_____

15. **What was your average grade in high school mathematics classes? (If you don't know, please provide an estimate.)**

_____

16. **What is your current Grade Point Average (GPA)? If you don't know, please provide an estimate. If this is your first semester at Lehman, please write "No GPA".)**

_____

17. **What is your experience with the CUNY Proficiency Examination (CPE)?**

a. ○ Haven't taken it
a. ○ Taken, but haven't passed
b. ○ Taken and passed

18. **How many college-level math courses have you taken? (If you don't know, please provide an estimate.)**

_____

19. **How many college-level courses have you taken outside the math department that have had a very strong quantitative or mathematical focus? (if you don't know, please provide an estimate.)**

_____

Instructions: For each of the following questions, please fill in one circle indicating your extent of agreement or disagreement ranging from 1 (disagree strongly) to 5 (agree strongly). If you are not in a position to comment on a particular question, please indicate "Don't Know or Not Applicable (DK or N/A)." Please refer to the cover page of this survey for a definition of "quantitative reasoning."

		Disagree Strongly		Neutral		Agree Strongly	Don't Know or Not Applicable
a.	I enjoy mathematics and quantitative reasoning.	O 1	O 2	O 3	O 4	O 5	O DK or N/A
b.	I am good at mathematics and quantitative reasoning.	O 1	O 2	O 3	O 4	O 5	O DK or N/A
c.	I prefer classes that do not have any mathematics or quantitative elements.	O 1	O 2	O 3	O 4	O 5	O DK or N/A
d.	Mathematics and quantitative reasoning are important for my career goals.	O 1	O 2	O 3	O 4	O 5	O DK or N/A
e.	Mathematical and quantitative skills help me make intelligent decisions about my life.	O 1	O 2	O 3	O 4	O 5	O DK or N/A
f.	I like exploring problems using real data and computers.	O 1	O 2	O 3	O 4	O 5	O DK or N/A
g.	Mathematics and quantitative skills help me understand the world around me.	O 1	O 2	O 3	O 4	O 5	O DK or N/A
h.	I want to study more mathematics or statistics.	O 1	O 2	O 3	O 4	O 5	O DK or N/A
i.	I rarely encounter situations that require mathematical or quantitative skills outside of school.	O 1	O 2	O 3	O 4	O 5	O DK or N/A
j.	I am nervous about learning mathematics and quantitative skills.	O 1	O 2	O 3	O 4	O 5	O DK or N/A
k.	Strong mathematics and quantitative skills help students to do well in other classes.	O 1	O 2	O 3	O 4	O 5	O DK or N/A
l.	There is nothing creative about mathematics or statistics; it's just about memorizing facts, rules and formulas.	O 1	O 2	O 3	O 4	O 5	O DK or N/A
m.	Writing about mathematics and statistics makes it easier to learn.	O 1	O 2	O 3	O 4	O 5	O DK or N/A
n.	Mathematics and quantitative skills are important in everyday life.	O 1	O 2	O 3	O 4	O 5	O DK or N/A
o.	Mathematics and quantitative analysis are solitary activities, done by people in isolation.	O 1	O 2	O 3	O 4	O 5	O DK or N/A
p.	For me, mathematics and quantitative analysis rarely involve exploration, investigation or experimentation.	O 1	O 2	O 3	O 4	O 5	O DK or N/A
q.	Working in groups helps me learn mathematics and quantitative skills.	O 1	O 2	O 3	O 4	O 5	O DK or N/A
r.	I have had sufficient coursework in mathematics and quantitative reasoning to enable me to succeed in my career goals.	O 1	O 2	O 3	O 4	O 5	O DK or N/A
s.	I have had sufficient coursework in mathematics and quantitative reasoning to enable me to succeed in my personal goals.	O 1	O 2	O 3	O 4	O 5	O DK or N/A
t.	I have the mathematical and quantitative skills needed to critically evaluate the media and current events.	O 1	O 2	O 3	O 4	O 5	O DK or N/A

Note: Some of these questions have been adapted from the Dartmouth Mathematics Across the Curriculum Survey.

ASSESSMENT QUESTIONS

Question 1. Read the following statement and answer the following question.
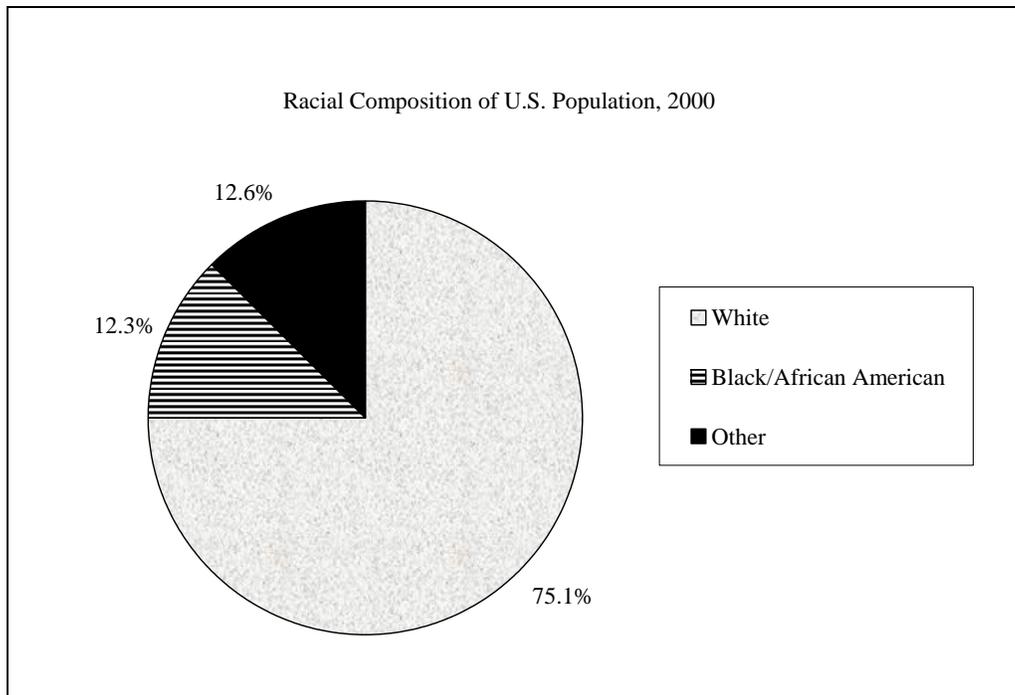
AIDS rates are higher among blacks than among whites in the United States.

1.   **Based on the statement above, which of the following is true?**

a.   There are more blacks than whites who have AIDS in the United States.
b.   The proportion of blacks who have AIDS is higher than the proportion of whites who have AIDS in the United
      States.
c.   Blacks are more likely than whites to die of AIDS in the United States.
d.   Whites are more likely than blacks to practice safe sex in the United States.

2.   **Suppose an admission ticket to The Louvre is 20 Euros, where 1 Euro is equivalent to 1.35 US dollars. What
      would the admission price be in US dollars?**

   a. $13.50   b. $14.80   c. $27   d. $35

3.   **Joe is working at a job where he makes $24,000 per year, paid out monthly at $2,000 per month. His
      employer tells him that he is going to get a 5% pay raise next year. What will he be making next year
      per month?**

   a. $2,055   b. $2,100   c. $2,500   d. $2,555

Question 4. Please answer the following question based on the chart below.

Racial Composition of U.S. Population, 2000

12.6%

12.3%

75.1%

White

Black/African American

Other

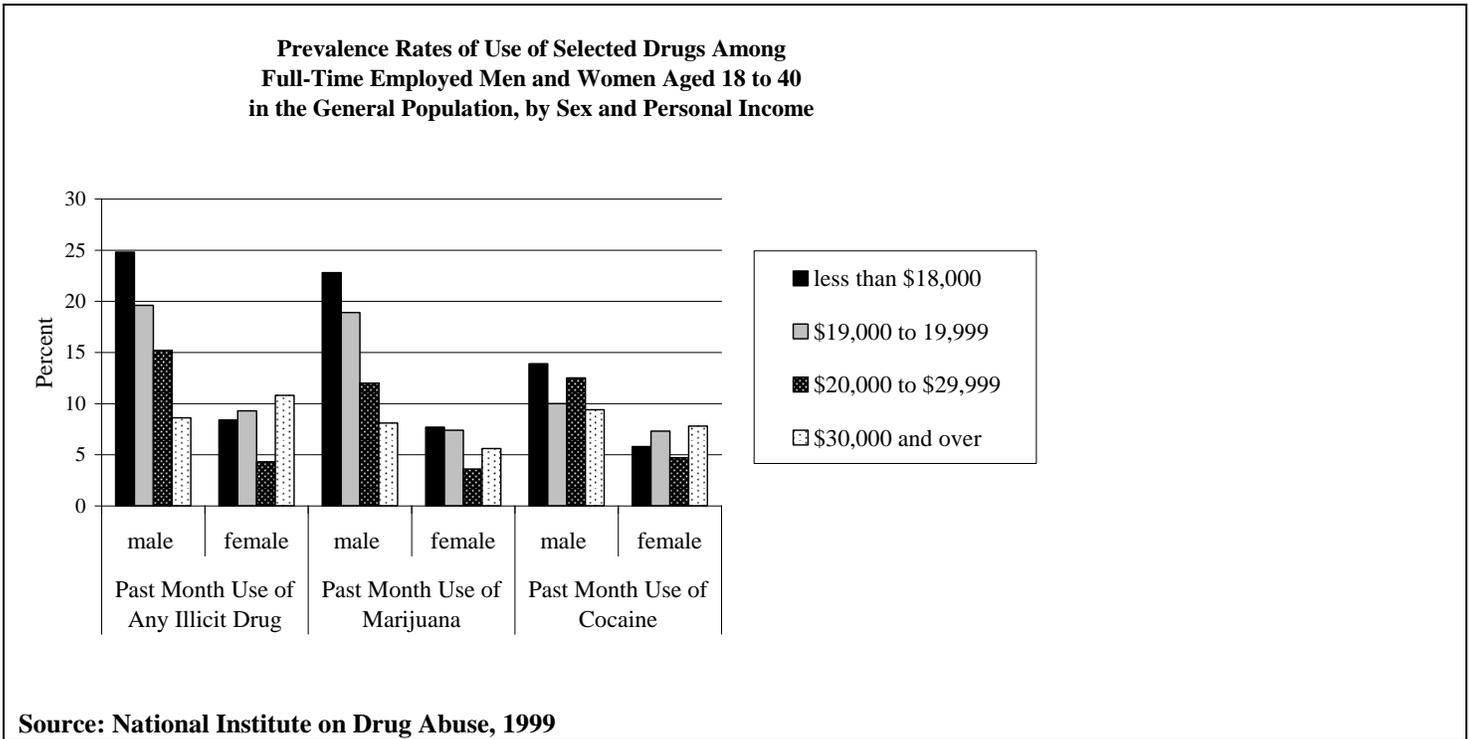Source: 2000 United States Census.

4.   Based on the pie chart above, what percent of the U.S. population was **non-white** in 2000?

   a.   12.3%   b.   12.6%   c.   24.9%   d.   75.1%

Questions 5-7. Please answer the following questions based on the following set of 7 numbers.

> **0, 0, 1, 1, 4, 4, 4**

5. **What is the median in the above set of numbers?**

   a.   0
   b.   1
   c.   2
   d.   4

6. **What is the mean/average in the above set of numbers?**

   a.   1
   b.   1.5
   c.   2
   d.   14

7. **What is the mode in the above set of numbers?**

   a.   0
   b.   1
   c.   4
   d.   all of the above

Questions 8-9. Please answer the following questions based the chart below.

**Prevalence Rates of Use of Selected Drugs Among
Full-Time Employed Men and Women Aged 18 to 40
in the General Population, by Sex and Personal Income**

Legend:
- less than $18,000
- $19,000 to 19,999
- $20,000 to $29,999
- $30,000 and over

Past Month Use of Any Illicit Drug (male, female); Past Month Use of Marijuana (male, female); Past Month Use of Cocaine (male, female)

Source: National Institute on Drug Abuse, 1999

8. **Approximately what percent of females earning $20,000 to $29,999 used cocaine in the past month?**

   a. 0%   b. 5%   c. 13%   d. 25%

9. **Among males, what seems to be the relationship between income and illicit drug use?**

a.   There doesn't appear to be any relationship between income and drug use.
b.   As the income of men rises, there are greater drug prevalence rates.
c.   As the income of men rises, there are lower drug prevalence rates.
d.   There is a curvilinear relationship between income and drug use--as income first rises, so does illicit drug use, but in the higher incomes categories there is declining illicit drug use.

Questions 10-12. Please answer the following questions (true/false) based on the table below.

The Demographic Characteristics of Full-time Physicians Ages 25-64
Compared to Full-time Workers, 2000

| | Race/Ethnicity | | | | | | | Gender | |
	Non-Latino White	Black	Asian	Latino	American Indian	Other		Male	Female
Physicians	74.5%	4.5%	14.4%	4.7%	0.1%	1.7%	Physicians	75.1%	24.9%
Full-time Workers	73.4%	11.9%	4.1%	9.8%	0.8%	N/A	Full-time Workers	57.7%	42.3%

N/A = Not Available.
Source: United States Census, 2000

10.　　True　　False　　The ratio of female to male physicians is approximately 1 to 3.

11.　　True　　False　　Approximately 1 in 10 full-time workers is American Indian.

12.　　True　　False　　Compared to full-time workers, physicians are disproportionately Asian.

Questions 13-14. Please answer the following questions based on the chart below.

Total Expenditures on Health as a Percent of the
Gross Domestic Product (GDP) for Selected Countries, 2000-2007
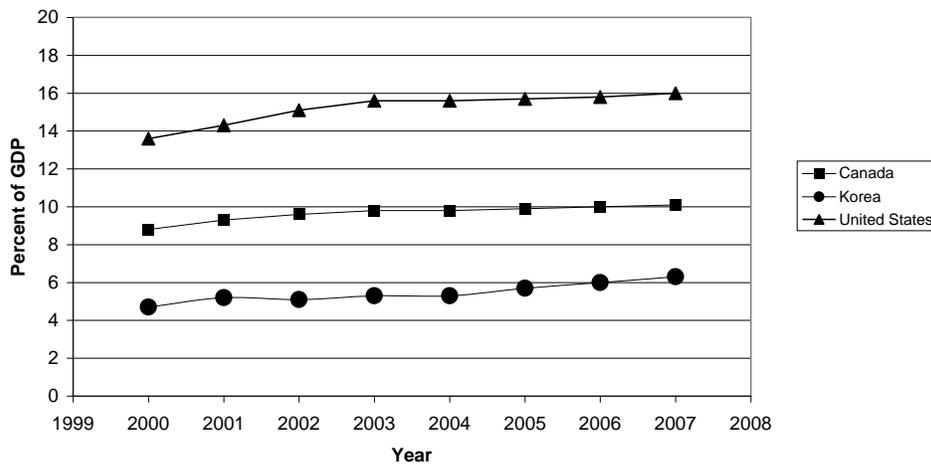
Source: Organisation for Economic Co-operation and Development (OCED) Health Data 2009.

13. In 2002, approximately what percent of the gross domestic product did Korea spend on health care?

　　a.　5%　　　　　b.　6%　　　　　c.　7%　　　　　d.　8%

14. Assuming health care costs continue to rise at the same average rate they did from 2000 to 2007 in the United States, approximately what percent of the GDP will the US be spending on healthcare in 2015?

　　a.　14 to 16%　　　b.　16 to 18%　　　c.　18 to 20%　　　d.　20 to 22%