Quantitative Reasoning Assessment

The Koppelman School of Business at Brooklyn College is in the process of seeking AACSB accreditation, which is the most prestigious accreditation for schools of business worldwide. As part of this process, the Koppelman School of Business has identified learning goals that are essential for business students. Quantitative reasoning is one of these learning goals.

This test consists of 30 questions that evaluate students’ knowledge in quantitative reasoning. There are three parts to the test: Part A consists of 10 problem-solving questions, Part B has 10 quantitative comparison questions, and Part C includes 10 data interpretation questions. Most of the questions are multiple choice questions. However, please note that there are a few multiple answers questions. Each question is worth 1 point. So the maximum possible number of points is 30 pts. You have 1 hour and 15 minutes to complete the test.

You are among a sample of business students who have been selected to take this test. This assessment is important to continuously improve the quality of education in the Koppelman School of Business. Therefore, it is critical that you put your best effort into this test. You will receive extra credit for this test (as determined by your instructor).

A. Problem Solving Questions (10 points)

Please circle the correct answer for each question.

1. A car got 33 miles per gallon using gasoline that cost $2.95 per gallon. Approximately what was the cost, in dollars, of the gasoline used in driving the car 350 miles?
   (A) $10
   (B) $20
   (C) $30
   (D) $40
   (E) $50

2. Which of the following numbers is farthest from the number 1 on the number line?
   (A) -10
   (B) -5
   (C) 0
   (D) 5
   (E) 10

3. Justin made a profit of $5 on the sale of a tie that cost him $15. What is the profit expressed as a percent of the cost? Round off to the nearest whole percent.
   (A) 33
   (B) 30
   (C) 15
   (D) 5
4. Which of the following integers are multiples of both 2 and 3? Indicate all such integers. Select all the correct answers.
   (A) 8
   (B) 9
   (C) 12
   (D) 21
   (E) 36

5. A computer company’s featured laptop cost $800 last year. This year, the laptop sold for 15% less than it did last year. Next year, after updates are made to the model, there will be a 25% price increase over this year’s price. What will be the price next year?
   (A) $810
   (B) $825
   (C) $840
   (D) 850
   (E) $880

6. If \( x < -3 \) and \( x^2 + 5x + 12 = 8 \), what is the value of \( x + 2 \)?
   (A) -4
   (B) -2
   (C) -1
   (D) 0
   (E) 3

7. A flower shop sells flowers in a ratio of roses to carnations of 5:2. The ratio of carnations to tulips sold is 5:3. What is the ratio of roses to tulips?
   (A) 2:3
   (B) 3:2
   (C) 5:3
   (D) 25:6
   (E) 25:9

8. Bob, Paul and Sam invest $50000 in a business. Amit invests $4000 more than Paul does and Paul invests $5000 more than Sam does. If the total profit was $70000, then which of the following is true? Indicate all correct statements.
   (A) The ratio of the investment of Bob, Paul and Sam is 11:15:10
   (B) The ratio of the investment of Bob, Paul and Sam is 12:17:21
   (C) The ratio of the investment of Bob, Paul and Sam is 12:5:4
   (D) The profit of Paul was $23800
   (E) The profit of Sam was $2000
9. If \( y \boxdot x = y^{2x} \) for all positive integers, then \((3 \boxdot 4) \boxdot 2 = \)
(A) \(3^8\)
(B) \(3^{12}\)
(C) \(3^{16}\)
(D) \(3^{24}\)
(E) \(3^{32}\)

10. The population of a town is 32000. It increases 15% annually. Which of the following statements is true? Indicate all correct options.
(A) It will be 42320 in two years
(B) It will be 42320 in three years
(C) It will be 36000 after one year
(D) It will 68000 after one year
(E) It will be 36800 after 2 year

B. Quantitative Comparison Questions (10 points)

Please circle the correct answer.

1. The average (arithmetic mean) of four numbers is 35

<table>
<thead>
<tr>
<th>The sum of the same four numbers</th>
<th>135</th>
</tr>
</thead>
</table>

(A) The quantity on the left is greater
(B) The quantity on the right is greater
(C) Both are equal
(D) The relationship cannot be determined without further information

2. A fair coin is tossed four times

<table>
<thead>
<tr>
<th>The chances of getting 4 heads</th>
<th>The chances of getting no heads</th>
</tr>
</thead>
</table>

(A) The quantity on the left is greater
(B) The quantity on the right is greater
(C) Both are equal
(D) The relationship cannot be determined without further information

3. The list price of a television set is \(t\) dollars

<table>
<thead>
<tr>
<th>The price of the TV in a sale offering a 20 percent discount</th>
<th>0.8t dollars</th>
</tr>
</thead>
</table>

(A) The quantity on the left is greater
(B) The quantity on the right is greater
(C) Both are equal
(D) The relationship cannot be determined without further information
4. \( x \) is positive

\[
\begin{array}{c|c}
\chi^{19} & \chi^{20} \\
\end{array}
\]

(A) The quantity on the left is greater
(B) The quantity on the right is greater
(C) Both are equal
(D) The relationship cannot be determined without further information

5. In a class of 32 students 75 percent are girls. 50 percent of the students study Spanish.

| The number of girls who study Spanish | 7 |

(A) The quantity on the left is greater
(B) The quantity on the right is greater
(C) Both are equal
(D) The relationship cannot be determined without further information

6. Two dice have sides numbered 1 to 6. When these two dice are rolled the score is the sum of the numbers on the upper faces.

| The probability of a score of 3 | The probability of a score of 2 |

(A) The quantity on the left is greater
(B) The quantity on the right is greater
(C) Both are equal
(D) The relationship cannot be determined without further information

7. \((x - 4)(x + 3) = 0\)

| \(x - 3\) | 0 |

(A) The quantity on the left is greater
(B) The quantity on the right is greater
(C) Both are equal
(D) The relationship cannot be determined without further information
8. This question and the next refer to the following graph, which shows the sales figures for a certain company in five consecutive years.

![Graph showing sales figures for 5 consecutive years from 1989 to 1993.](image)

<table>
<thead>
<tr>
<th>Percentage increase in sales from 1989 to 1991</th>
<th>Percentage fall in sales from 1991 to 1993</th>
</tr>
</thead>
<tbody>
<tr>
<td>(A) The quantity on the left is greater</td>
<td>(B) The quantity on the right is greater</td>
</tr>
<tr>
<td>(C) Both are equal</td>
<td>(D) The relationship cannot be determined without further information</td>
</tr>
</tbody>
</table>

9. Refer to the previous question

<table>
<thead>
<tr>
<th>The mean (average) of the 5 annual sales figures</th>
<th>The median of the 5 annual sales figures</th>
</tr>
</thead>
<tbody>
<tr>
<td>(A) The quantity on the left is greater</td>
<td>(B) The quantity on the right is greater</td>
</tr>
<tr>
<td>(C) Both are equal</td>
<td>(D) The relationship cannot be determined without further information</td>
</tr>
</tbody>
</table>

10. Total savings on 40 gallons of fuel bought at $1.152 per gallon instead of $1.245

| $3.70 |

(A) The quantity on the left is greater
(B) The quantity on the right is greater
(C) Both are equal
(D) The relationship cannot be determined without further information
C. Data Interpretation Questions (10 points)

Questions 1-4 are based on the following graphs

Distribution of Students at Flatbush High School

1. Suppose there were 1,100 students at Flatbush High School in 2005 and 1,300 students 2010. How many more freshmen attended the school in 2010 than in 2005? (Please circle the correct answer.)
   (A) 429
   (B) 200
   (C) 99
   (D) 33
   (E) 3

2. Suppose 1,100 students attended Flatbush High School in 2005. If two-thirds of the seniors were female, how many male seniors attended the school in 2005? (Please circle the correct answer.)
   (A) 99
   (B) 132
   (C) 216
   (D) 324
   (E) 400
3. Suppose 1,300 students attended Flatbush High School in 2010. If the ratio of faculty assigned to work with freshmen and sophomores was 1:13, how many faculty were assigned to work with freshmen and sophomores? (Please circle the correct answer.)
   (A) 30
   (B) 45
   (C) 55
   (D) 56
   (E) 100

4. If the number of juniors in 2005 and 2010 was the same, which of the following statements could be true? Select all that apply.
   (A) There were 988 students in 2005 and 1,300 students in 2010
   (B) There were 952 students in 2005 and 1,300 students in 2010
   (C) There were 987 students in 2005 and 750 students in 2010
   (D) There were 1,158 students in 2005 and 875 students in 2010
   (E) There were 1,064 students in 2005 and 1,400 students in 2010

Questions 5-7 are based on the following graph

Madagascar’s Export Partners (2014)

5. If Madagascar’s exports totaled 1.3 billion dollars in 2014, approximately what was the value, in millions of dollars, of the country’s exports to China? (Please circle the correct answer.)
   (A) 52
   (B) 78
   (C) 100
   (D) 325
   (E) 520
6. What is the approximate ratio of Madagascar’s total exports to France, the U.S., Germany, and China combined compared to Madagascar’s exports to all other countries? (Please circle the correct answer.)
   (A) 2/5
   (B) 1/2
   (C) 2/3
   (D) 3/2
   (E) 2/1

7. If Madagascar’s exports to France increased to 33% of Madagascar’s total exports in 2015, by approximately what percentage will exports to France increase as a percentage of all exports between 2014 and 2015? (Please circle the correct answer.)
   (A) 4%
   (B) 14%
   (C) 32%
   (D) 88%
   (E) 114%

Questions 8-10 are based on the following graphs

Number of Bear Sightings, Statewide

![Graph of Number of Bear Sightings, Statewide](image)
8. If Smithson County reported 20% of the bear sightings in the state in 2000, how many sightings were reported for that location? (Please circle the correct answer.)
   (A) 20
   (B) 25
   (C) 30
   (D) 40
   (E) 50

9. During the year that had the greatest increase in the number of sightings from the previous year, how many “on road” sightings were reported, assuming a typical distribution of bear-sighting types? (Please circle the correct answer.)
   (A) 20
   (B) 35
   (C) 40
   (D) 70
   (E) 80

10. According to the data given, in which year was there no change in the number of sightings from the previous year? (Please circle the correct answer.)
    (A) 2002
    (B) 2003
    (C) 2004
    (D) 2005
    (E) 2006