

## Math 105T Quantitative Reasoning Practice Exam

- Michael does not like toothpaste unless it has tartar control.*  
Assuming this statement is true, which of the following is false?

  - Michael does not like tartar.
  - Michael likes tartar control toothpaste.
  - Michael likes toothpaste without tartar control.
  - Michael does not like some toothpaste.
- In a Venn diagram, overlapping circles indicate

  - sets that potentially share common members.
  - disjoint sets.
  - sets of numbers.
  - subsets.
- Some lakes always freeze in the winter.*  
*Tahoe does not always freeze in the winter.*  
What can be deduced from these premises?

  - Tahoe is not a lake.
  - Tahoe sometimes freezes in the winter.
  - Nothing can be deduced.
  - Some lakes do not always freeze in the winter.
- We get two weeks of vacation this year. We are going camping for one week and skiing for one week, so we will have to visit Aunt Martha next year.*  
Which of the following propositions is the conclusion of this argument?

  - We get two weeks of vacation this year.
  - We are going camping for one week and skiing for one week this year.
  - We will have to visit Aunt Martha next year.
  - We need more vacation time this year.
- A box of 20 Crunchy Munchy cookies costs \$2.50 and a box of 40 Crunchy Munchy cookies costs \$4.00. One quart of milk costs \$1.50. Which of the following options costs less?

  - A box of 20 cookies with a quart of milk that costs \$1.50.
  - A box of 40 cookies that comes with a free quart of milk.
  - The cost of each option is the same.
- Which of the following is not a hidden danger with a calling plan that offers all calls of up to 20 minutes for just 99 cents.

  - the cost of reaching a friend's answering machine.
  - The cost per minute after the first 20 minutes.
  - The cost of a 20-minute call.
  - Monthly service fees.
- Suppose your car gets 28 miles per gallon of gasoline, and you are driving at 55 miles per hour. Find the amount of gas you use every hour.

  - 1.45 gallons
  - 1.96 gallons
  - 0.75 gallons
  - 0.51 gallons

8. You need to put carpet in a rectangular room that measures 12 feet by 17 feet at a cost of \$27.50 per square yard. Assuming that you can buy precisely the amount of carpet you need, how much will the carpet for the room cost?
- a. \$204.00  
b. \$623.33  
c. \$741.82  
d. \$1,870.00
9. Assuming that your heart beats 70 times per minute, how many times does your heart beat in 6 days?
- a. 25,200  
b. 201,600  
c. 604,800  
d. 36,288,000
10. Candi and Sandi ran an 80-meter race. When Candi crossed the finish line, Sandi had run only 72 meters. Then they ran a second race, with Candi starting 8 meters behind the starting line. Assuming that both runners ran at the same pace as in the first race, who won the second race?
- a. Candi  
b. Sandi  
c. They tied  
d. More information is needed.
11. Suppose that you begin with a red bucket containing 16 red marbles and a yellow bucket containing 16 yellow marbles. You move *five* marbles from the red bucket to the yellow bucket, and then you move any *four* marbles from the yellow bucket to the red bucket. Compare the number of yellow marbles in the red bucket to the number of red marbles in the yellow bucket.
- a. The number of red marbles in the yellow bucket is greater.  
b. The number of yellow marbles in the red bucket is greater.  
c. They are the same.  
d. More information is needed.
12. Suppose your bank account was worth \$5,000 at the beginning of last year. If your balance increased by 2% during the first half of the year and by 3% during the second half, what was your balance at the end of the year?
- a. \$5,250.00  
b. \$5,253.00  
c. \$5,125.75  
d. \$7,500.00
13. If 462 artists at a conference comprise 55% of all people at the conference, how many people are at the conference?
- a. 254  
b. 820  
c. 840  
d. 1190
14. The population of a town increased 60,450 to 195,610 in one decade. What was the percent change of the population?
- a. 69%  
b. 24%  
c. 224%  
d. 324%
15. Which is the largest number?
- a. 1.5 billion  
b. 1650 million  
c.  $2.3 \times 10^9$   
d.  $2.7 \times 10^{-11}$

16. How many years would it take a worker making \$16.00 per hour to earn \$8,000,000, assuming she works 260 8-hour days per year?
- 57 years
  - 241 years
  - 80 years
  - 2740 years
17. You drive an average of 750 miles per week in a car that gets 28 miles per gallon. With gasoline priced at \$2.40 per gallon, what would be the difference in total weekly cost for gasoline if you start driving an SUV that gets 20 miles per gallon?
- \$25.71 less
  - \$9.82 more
  - \$360.00 more
  - \$25.71 more
18. Consider a typical 30-year fixed-rate mortgage. During which of the following years is the highest portion of each payment applied toward principal?
- First year
  - Tenth year
  - Twentieth year
  - Thirtieth year
19. A random sample of dog owners revealed that 72% of them walked their dog at least 3 times a week, with a margin of error of 8%. Which of the following can be stated with 95% confidence?
- The actual percentage of dog owners who walk their dog at least 3 times a week is between 64% and 80%.
  - The actual percentage of dog owners who walk their dog at least 3 times a week is between 72% and 80%.
  - The actual percentage of dog owners who walk their dog at least 3 times a week is between 64% and 72%.
  - The actual percentage of dog owners who walk their dog at least 3 times a week is 72%.
20. A recent newspaper article stated that Snazzy's is the most popular restaurant in the city. The city council decided to sponsor its own survey to determine the accuracy of the article. Which of the following survey questions will give them the most accurate survey results?
- Which restaurant do you think is the most popular in the city?
  - Which restaurant in the city do you visit most often?
  - Which restaurant in the city do you think is the most crowded?
  - Do you agree that Snazzy's is the most popular restaurant in the city?
21. Use the following table, which describes the age distribution of U.S. senators in 1994, to answer the following question.

Under 50	50-59	60-69	70 and over
30	40	22	8

What is the angle measure of the region that represents ages 50-69?

- 167.4°
  - 223.2°
  - 42°
  - 139.5°
22. Which of the following pairs of variables is likely to have a negative correlation?
- The price of jet fuel and the price of an airline ticket
  - A person's height and the same person's weight
  - The unemployment rate and the number of homeless people
  - Price of gasoline and the number of SUVs sold

23. Which of the following statements describes a relationship that is *not* exponential?
- The price of houses in this neighborhood is increasing at the rate of 12% per year.
  - The number of bacteria is increasing at the rate of 18% per minute.
  - The temperature is increasing at the rate of  $7^\circ$  per hour.
  - The number of cars in the parking lot is decreasing at the rate of 15% per hour.
24. Suppose a leprechaun gives you a magic penny that doubles every night. How much money would you have after 6 days?
- \$0.32
  - \$0.64
  - \$1.28
  - \$2.56
25. If the half-life of a drug in the bloodstream is 7 hours, how much of the drug is left in the bloodstream 16 hours after a 320 milligram dose?
- 66 milligrams
  - 83 milligrams
  - 140 milligrams
  - 236 milligrams
26. The price of a computer is \$800 today, and its value decreases at the constant rate of \$250 per year. What will be the value of the computer after 3 months?
- \$50
  - \$300
  - \$550
  - \$738
27. An art studio offers 3 types of classes: sculpting (S), drawing (D), and oil painting (O). The table below shows how many classes students registered at the studio are taking.

Classes	Number	Classes	Number
S only	14	S and O only	12
D only	9	D and O only	2
O only	3	All 3	6
S and D only	10	None	7

How many students are taking sculpting or drawing, but not oil painting?

- 16
  - 23
  - 33
  - 63
28. Which of the following is a graph in which each point represents the values of two variables?
- Histogram
  - Scatter diagram
  - Pie chart
  - Bar graph
29. The lowest score on an exam was 62, the median score was 75, and the high score was 96. The range was
- 34.
  - 62.
  - 75.
  - 96
30. On a math exam, 25 students score below 83 and 25 students score above 83. The score of 83 therefore represents the
- mean.
  - median.
  - mode.
  - outlier.