



## Midterm Review

### Math 0310: Basic Concepts for Business Math and Statistics

**INSTRUCTIONS:** This set of problems is meant to help you practice the kind of material that may appear on your midterm and does not represent exactly what your midterm will look like. There may be questions on your midterm that are unlike questions on this review and vice versa. No question on the review will be duplicated exactly on the midterm. Your midterm will consist of 25 multiple choice questions, so you should bring a scantron with you on the day of your midterm exam.

**MIDTERM CALCULATOR POLICY:** You are allowed to use a basic calculator during the midterm. You are NOT allowed to use a scientific or graphing calculator. Any calculator that is used must be a nonprogrammable calculator that is not capable of accessing the internet or interfacing with any other device, has a single line display, and has math operation keys that do not exceed addition, subtraction, multiplication, division, square root, percent, and negation (plus/minus). Using a smartphone as a calculator is strictly forbidden.

1) Simplify the expression by applying the distributive property and combining like terms.  
 $-9(7r + 10) + 8(10r + 2)$

2) Evaluate the expression for the given substitution.  
 $3x + 7y + 2; x = 2, y = 9$

3) Simplify the expression by applying the distributive property.  
 $-(2z - 3w + 5y)$

4) Find the cardinal number for the set.  
 $A = \{6, 12, 18, \dots, 66\}$

5) Perform the operation and simplify the answer to the lowest term.  
 $-\frac{4}{5} - \left(-\frac{7}{10}\right)$

6) Perform the operation and simplify the answer to the lowest term.  
 $-\frac{5}{14} \div \left(-\frac{4}{9}\right)$

7) Use the order of operations to simplify the expression.

$$86 - 6 \cdot 3 \cdot 2$$

8) Write the set using roster method.

E is the set of even numbers between 3 and 7

9) Determine whether the statement is true or false.

$$\{5, 10\} \subseteq \{6, 8, 10, 12\}$$

10) Determine whether the statement is true or false.

$$\{4\} \in \{2, 4, 6, 8, 10, \dots\}$$

11) Find the intersection.

$$\{e, f, g, h, i\} \cap \{h, i, j, k, l\}$$

12) Find the union.

$$\{3, 5, 7, 13\} \cup \{0, 3, 8, 13\}$$

13) Perform the operation and simplify the answer to the lowest term.

$$\frac{22}{7} - 3$$

14) A jar contains 16 marbles: 5 blue, 8 green, and 3 yellow.

What is the probability of selecting a blue marble or a green marble from the jar?

15) Find the number of subsets of the set.

$$C = \{12, 13, 14\}$$

16) The table displays the length of stay for vacationers at a small hotel.

Number of days stayed	Frequency
2	6
3	2
4	4
5	10
6	27
7	8
8	1

What is the probability that a vacationer will stay for less than 5 days? Express the answer in fraction.

17) This pictograph shows sales of compact disks (CDs) for a popular rock band over seven consecutive years.

Year	CD Sales
2014	⊙⊙
2013	⊙⊙⊙⊙⊙⊙
2012	⊙⊙⊙⊙⊙⊙⊙⊙
2011	⊙⊙⊙⊙⊙⊙⊙⊙⊙
2010	⊙⊙⊙⊙⊙
2009	⊙⊙⊙⊙⊙⊙
2008	⊙⊙⊙

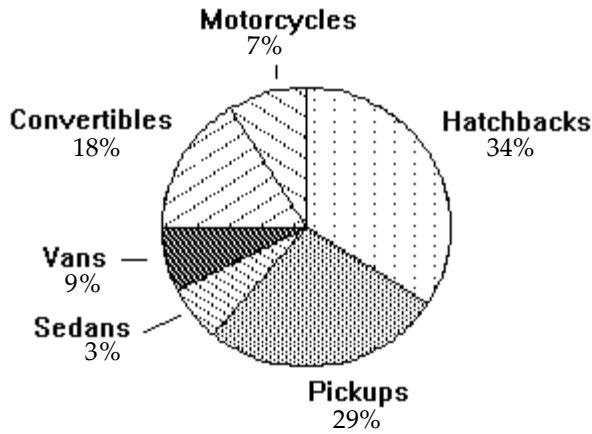
⊙ = 10,000 CDs

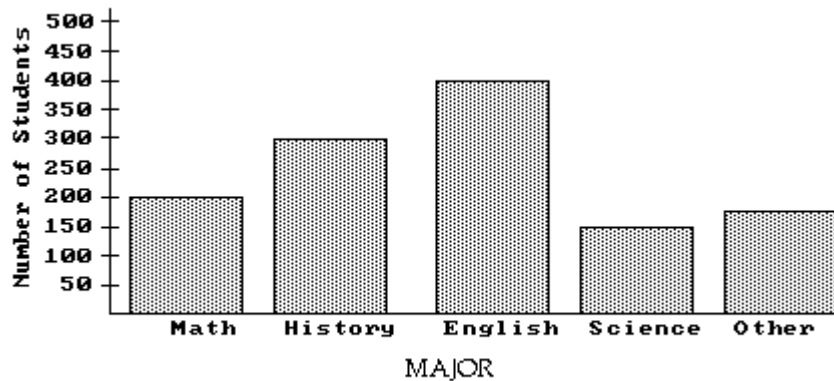
Between which two consecutive years was the greatest decline in sales?

18) Find the mean of the following data set?

10, 5, 8, 3, 14

19) A survey of the 7409 vehicles on the campus of State University yielded the following circle graph. What percentage of the vehicles are either vans or convertibles?

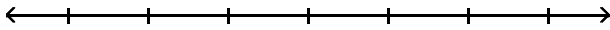




- 20) The bar graph above shows the number of students by major in the College of Arts and Science. What is the median number of students taking History, Science, and Math?
- 21) The following test scores were recorded for a student: 72, 67, 65, 61, 67, 53, 63. Find the mean, median, and mode.
- 22) Find the amount of interest earned by the deposit. Round to the nearest cent.  
\$3820 at 7.6% compounded semiannually for 3 years
- 23) Solve the linear equation.  
 $12(4x - 4) = 9x - 8$
- 24) Solve the linear equation.  
 $11 - 4(x + 3) = 12 - 5(x + 2)$
- 25) Evaluate the expression for the given substitution.  
 $x^4 + 4y$  ; when  $x = -4$  and  $y = -2$ .
- 26) Write the percentage as simplified fraction or mixed fraction.  
59%
- 27) Write the fraction in percent notation to the nearest tenth of a percent.  
 $\frac{3}{8}$
- 28) Write the percentage as a decimal.  
28.3%

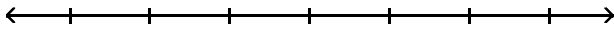
29) Solve the inequality. Graph the solution set and write it in interval notation.

$$-3(2x + 13) < -9x - 12$$

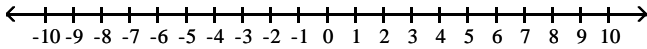


30) Solve the inequality. Graph the solution set and write it in interval notation.

$$6r + 9 \geq 4r + 1$$

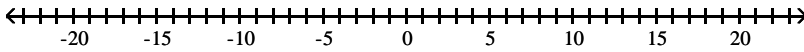


31)  $-9 < 4b + 3 \leq 7$



32) Solve the absolute inequality and graph the solution set.

$$|g - 4| < 2$$



33) Find the future value of the deposit. Round to the nearest cent.

Deposit \$4340 at an annual interest rate of 6% compounded semiannually for 2 years.

34) The parking lot at a medical center has 50 cars in it. 38% of the cars are two-door. How many cars are two-door?

35) 48% of what number is equal to 52.8?

36) On a biology test, a student got 25 questions correct but did not pass. On a second attempt, the student got 35 questions correct. What was the percent of increase?

37) Find the amount of discount and the price after discount. Round to the nearest cent.

Original price: \$570 Rate of discount: 30%

38) Find the simple interest. Round to the nearest cent.

Principal = \$900

Rate = 2%

Time in years = 7

39) 45 is what percent of 600?

40) Linda deposited \$3,500 in an account that pays  $6\frac{1}{2}\%$  simple interest for 4 years.

- a. How much interest will she earn in 4 years?
- b. What will be the total value of the account after 4 years?

41) The sales tax on a bookcase is \$11.20. If the bookcase cost before tax is \$280, what is the sales tax rate?

42) Solve the proportion.

$$\frac{x}{39} = \frac{4}{13}$$

43) If the probability of rain is 16%, what is the probability that it won't rain?

44) Find the probability of getting a number greater than 4 when a die is rolled one time.

45) Use the order of operations to simplify the expression.

$$|-4| - 4^2 - (-4 - 5)$$

Answer Key

Testname: 0310 MIDTERM REVIEW SPRING 2019

1)  $17r - 74$

2) 71

3)  $-2z + 3w - 5y$

4)  $n(A) = 11$

5)  $-\frac{1}{10}$

6)  $\frac{45}{56}$

7) 50

8) {4, 6}

9) False

10) False

11) {h, i}

12) {0, 3, 5, 7, 8, 13}

13)  $\frac{1}{7}$

14)  $\frac{13}{16}$

15) 8

16)  $\frac{6}{29}$

17) Between 2013 and 2014

18) 8.0

19) 27%

20) 200 students

21) mean: 64    median: 65    mode: 67

22) \$958.01

23)  $\frac{40}{39}$

24) 3

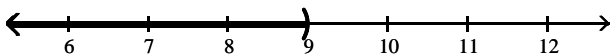
25) 248

26)  $\frac{59}{100}$

27) 37.5%

28) 0.283

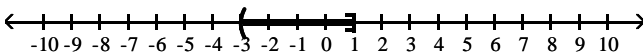
29)  $(-\infty, 9)$



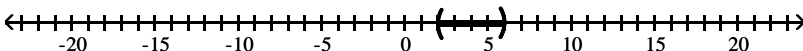
30)  $[-4, \infty)$



31)  $(-3, 1]$



32)  $(2, 6)$



## Answer Key

Testname: 0310 MIDTERM REVIEW SPRING 2019

33) \$4884.71

34) 19 cars

35) 110

36) 40%

37) \$171.00, \$399.00

38) \$126.00

39) 7.5%

40) \$910; \$4,410

41) The sales tax rate is 4%.

42)  $x = 12$

43) 84%

44)  $\frac{1}{3}$

45) -3