

MATH 103: Test 3
60 minutes [100 points]

Name _____

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Express the fraction as a percent.

1) $\frac{13}{80}$

1) _____

A) 16.25 %

B) 6.15 %

C) 61.54 %

D) 1.63 %

Solve the problem.

2) Jeans with an original price of \$44 are on sale at 25% off. What is the sale price of the jeans? (Round to the nearest cent, if necessary.) 2) _____

A) \$33.00

B) \$55.00

C) \$11.00

D) \$42.90

3) A dress regularly sells for \$130. The sale price is \$84. Find the percent decrease of the sale price from the regular price. 3) _____

A) 54.8%

B) 182.6%

C) 35.4%

D) 64.6%

The principal P is borrowed at simple interest rate r for a period of time t . Find the simple interest owed for the use of the money. Assume 360 days in a year and round answer to the nearest cent.

4) $P = \$300.00$

4) _____

$r = 4\%$

$t = 4$ months

A) \$4.00

B) \$348.00

C) \$304.00

D) \$48.00

The principal P is borrowed at simple interest rate r for a period of time t . Find the loan's future value, A , or the total amount due at time t . Round answer to the nearest cent.

5) $P = \$150$

5) _____

$r = 3\%$

$t = 4$ years

A) \$168.00

B) \$1018.00

C) \$162.00

D) \$154.50

Determine the present value, P , you must invest to have the future value, A , at simple interest rate r after time t . Round answer to the nearest dollar.

6) $A = \$250.80$

$r = 8\%$

$t = 4 \text{ years}$

A) \$194

B) \$190

C) \$194.80

D) \$197

6) _____

Solve the problem.

- 7) A mother invests \$2000 in a bank account at the time of her daughter's birth. The interest is compounded quarterly at a rate of 8%. What will be the value of the daughter's account on her twentieth birthday, assuming no other deposits or withdrawals are made during this period?

A) \$12,800.00

B) \$9750.88

C) \$3120.28

D) \$780.07

7) _____

- 8) The price of a home is \$180,000. The bank requires a 10% down payment. After the down payment, the balance is financed with a 15-year fixed-rate mortgage at 8%. Determine the monthly mortgage payment (excluding escrowed taxes and insurance) to the nearest dollar.

A) \$1536

B) \$1648

C) \$1548

D) \$1563

8) _____

Find the value of the annuity. Round to the nearest cent.

- 9) Periodic Deposit: \$1000 at the end of each year

Rate: 4.5% compounded annually

Time: 10 years

A) \$3302.43

B) \$10,802.11

C) \$34,510.43

D) \$12,288.21

9) _____

Solve the problem by applying the Fundamental Counting Principle with two groups of items.

- 10) An apartment complex offers apartments with four different options, designated by A through D.

A = number of bedrooms (one through four)

B = number of bathrooms (one through three)

C = floor (first through fifth)

D = outdoor additions (balcony or no balcony)

How many apartment options are available?

A) 240

B) 14

C) 16

D) 120

10) _____

- 11) You are taking a multiple-choice test that has 8 questions. Each of the questions has 4 choices, with one correct choice per question. If you select one of these options per question and leave nothing blank, in how many ways can you answer the questions? 11) _____
- A) 65,536 B) 12 C) 4096 D) 32

Use the Fundamental Counting Principle to solve the problem.

- 12) You want to arrange 6 of your favorite CD's along a shelf. How many different ways can you arrange the CD's assuming that the order of the CD's makes a difference to you? 12) _____
- A) 120 B) 720 C) 30 D) 36

Evaluate the factorial expression.

- 13) $\frac{6!}{(6-2)!}$ 13) _____
- A) 48 B) 360 C) 15 D) 30

Use the formula for ${}_nP_r$ to evaluate the expression.

- 14) $7P_4$ 14) _____
- A) 840 B) 5040 C) 1260 D) 210

Use the formula for ${}_nP_r$ to solve.

- 15) In a contest in which 8 contestants are entered, in how many ways can the 5 distinct prizes be awarded? 15) _____
- A) 672 B) 112 C) 6720 D) 336

Use the formula for ${}_nC_r$ to evaluate the expression.

16) $10C_4$

A) 1440

B) 210

C) 2520

D) 151,200

16) _____

Solve the problem.

- 17) From 10 names on a ballot, a committee of 4 will be elected to attend a political national convention. How many different committees are possible?

A) 5040

B) 151,200

C) 2520

D) 210

17) _____

Use the theoretical probability formula to solve the problem. Express the probability as a fraction reduced to lowest terms.

- 18) A single die is rolled twice. The set of 36 equally likely outcomes is $\{(1, 1), (1, 2), (1, 3), (1, 4), (1, 5), (1, 6), (2, 1), (2, 2), (2, 3), (2, 4), (2, 5), (2, 6), (3, 1), (3, 2), (3, 3), (3, 4), (3, 5), (3, 6), (4, 1), (4, 2), (4, 3), (4, 4), (4, 5), (4, 6), (5, 1), (5, 2), (5, 3), (5, 4), (5, 5), (5, 6), (6, 1), (6, 2), (6, 3), (6, 4), (6, 5), (6, 6)\}$. Find the probability of getting two numbers whose sum is greater than 10.

A) $\frac{1}{18}$

B) 3

C) $\frac{1}{12}$ D) $\frac{5}{18}$

18) _____

Solve the problem that involves probabilities with events that are not mutually exclusive.

- 19) The physics department of a college has 9 male professors, 8 female professors, 10 male teaching assistants, and 13 female teaching assistants. If a person is selected at random from the group, find the probability that the selected person is a teaching assistant or a female.

A) $\frac{21}{40}$ B) $\frac{23}{40}$ C) $\frac{9}{20}$ D) $\frac{31}{40}$

19) _____

- 20) There are 30 chocolates in a box, all identically shaped. There are 8 filled with nuts, 9 with caramel, and 13 are solid chocolate. You randomly select one piece, eat it, and then select a second piece. Find the probability of selecting 2 solid chocolates in a row.

A) $\frac{26}{145}$ B) $\frac{13}{75}$ C) $\frac{169}{900}$ D) $\frac{13}{870}$

20) _____