NYC College of Technology
Mathematics Department *Updated Spring 2015: Niezgoda*

MAT1190 Final Exam Review

1. Determine whether the entire proposition is true or false, and explain why.
   a) $18+4=16$ and $4\times 6=24$ b) $18+4=16$ or $4\times 6=24$

2. Solve and graph the solution of the inequality:
   a) $3\le 2x-1<9$ b) $7x+5\le 9x-5$

3. a) Jonas earns $570 for 6 days of work. How much would he earn if he worked 15 days?
   b) How many Euros would you pay for $25 shirt? Assume that 1 Euro = $1.3.

4. a) A TV set that normally retails for $480 is on sale for 15% off. What is the sale price?
   b) The rectangle has a width of 9ft. and length of 3 ft. Find the area of the rectangle in square inches.

5. a) You deposit $12,000 in a saving account at an APR of 2% compounded monthly. How much money will you have after 7 years?
   b) You deposit $12,000 in a saving account at an APR of 2% compounded quarterly. How much money will you have after 7 years?
   c) How much money must you deposit today to have $ 12,000 in 5 years? Assume you put money in an investment with an interest rate of APR= 2% compounded quarterly?

6. a) Find the area and the perimeter of a rectangular wall that measures 12 feet long and 31 feet wide.
   b) Find the cost of painting such wall, if it costs $3.70 per square foot.

7. a) If you roll a fair, six sided die, what is the probability of getting either a 1 or a 2?
   (b) The winner of a raffle will receive a new TV. If 1000 raffle tickets were sold and you purchased 8 tickets, what is the probability of you winning the TV?
   c) What is the probability of meeting someone born in January or December? (Assume there are 365 days in a year)
   d) What is the probability of meeting someone not born in January? (Assume there are 365 days in a year)
   e) The probability that a city will be hit by a major hurricane in any single year is 0.09. What is the probability that the city will not be hit by a major hurricane in any single year?
   f) Find the probability of randomly selecting a red or a green marble if there are 9 blue, 2 red, 3 yellow and 6 green marbles in a bag.

8. The frequency distribution below indicates the scores of 47 people taking a statistics test.

Scores	Number of People
51 - 60	7
61 - 70	10
71 - 80	12
81 - 90	11
91 - 100	7

Construct a histogram of the frequency distribution.

9. A family has three children
   a) Find a sample space for the genders of three children in a family.
   b) What is the probability that the family has exactly two boys?
   c) What is the probability that the first child is a boy?

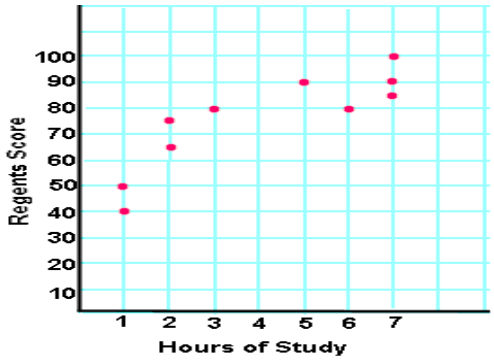
10. Heights of females are normally distributed with a mean of 64 inches and a standard deviation of 4 inches. Find the z-score of a female that is a) 59 inches tall; b) 70 inches tall

11. Solve and check the following system of equations for x and y:

$$5x - y = 20$$
$$4x + 3y = 16$$

12. A door has the outline of a semicircle on top of a rectangle. The diameter of the semicircle is the width of the rectangle. The length of the rectangle is 11feet and the width is 8 feet.
a) How much metal trim will be needed for the perimeter of the entire door?
b) What is the area of the door?

13. Consider the following scatter diagram (Regent Scores versus Hours of Study). State whether the diagram shows a positive correlation, a negative correlation, or no correlation and summarize any conclusions that can draw from the diagram.



. 14. The number of junk e-mails Chris received for six hours is shown as follows:

14, 4, 5, 2, 8, 3

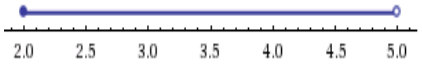
Find the mean, range and standard deviation for this sample. (Round to the nearest tenth. $s^2 = \frac{\sum (X - \overline{X})^2}{n-1}$)

15. a) Find the area under the standard normal distribution curve to the left of z = 1.81
b) Find the area under the standard normal distribution curve to the left of z = - 1.75
c) Find the area under the standard normal distribution curve to the right of z = 1.2
d) Find the area under the standard normal distribution curve to the right of z = - 0.9
e) Find the area under the standard normal distribution curve between z = - .27 and z = 1.04
f) Find the area under the standard normal distribution curve between z = -1.25 and z = - 0.35
g) Find the area under the standard normal distribution curve between z = .15 and z = 1.15

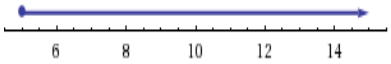
Answers to questions:

1. a) False. The statement contains of two distinct propositions. The first proposition is false and the second proposition is right, their conjunction is false.
b) True. The statement contains of two distinct propositions. The first proposition is false while the second proposition is right, thus their disjunction is true.

2. a) $2 \le x < 5$;



b) $x \ge 5$



3. a) \$1,425; b) 19.23 Euro

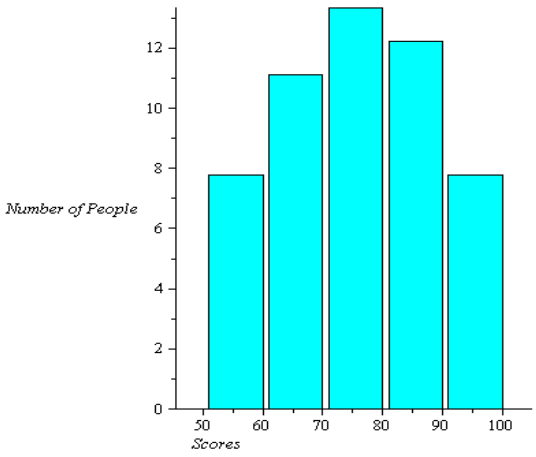
4. a) The price of the TV is \$408.
b) Area =3888 in^2.

5. a) \$13,801.68; b) \$13,798.47; c) \$10,860.75

6. a) Area =372 square feet; Perimeter = 86 ft. b) \$1,376.40

7. a) $\frac{1}{3}$; b) $\frac{1}{125}$; c) $\frac{62}{365}$; d) $\frac{334}{365}$; e) .91; f) 0.4

8.



9. a) The sample space for the genders of three children in a family {GGG, BGG, GBG, GGB, BBG, BGB, GBB, BBB}

b) The probability that the family has exactly two boys is $\frac{3}{8}$.

c) The probability that the first child is a boy is $\frac{1}{2}$.

10. a) z-score = -1.25; b) z-score = 1.5

11. x = 4, y = 0

12. a) 42.57 feet; b) 113.13 sq. feet

13. The diagram shows a positive correlation. One can infer that increasing the number of hours studying will likely result in a higher Regents Score.

14. Mean= 6, range= 12, standard deviation = 4.4

15. a) 0.965; b) 0.040; c) 0.115; d) 0.816; e) 0.457; f) 0.257;

g) 0.315