Here is a partial sample exam so that you can have some practice with some diverse formatting and style of questions. **The actual test will differ and will be 4 or 5 pages. See also the study guide**.

Exam 1 Math 1010 - NAME _____

I'll fill out: exam_____ ASULearn engagement_____ classes missed_____ expected course letter grade____
expected value of course grade: .50exams +.30ASULearn engagement +.05class engagement +.15final project

Partial credit will be granted so do continue on with a problem even if you know that one part is wrong. **If part b) depends on part a), full credit can still be obtained for b) by showing the correct process.**

"Set up a formula with numbers substituted in for the variables" means that you should set up something similar to $100(1 + .049)^{100}$ (using the appropriate formula and numbers)

"**Show work**" means that you should show what numbers you plugged in to formulas to get an answer (i.e. 3*2 -1=7) but there is no need to explain in words.

PROBLEM 1):

a) If there are 500 different lottery tickets total, and you have purchased 2 of them, what is the probability you will win? Show work.

b) Discuss how the reward/risk ratio and probability relate in comparing real-life Powerball lotteries to the stock market.

c) What is the debt to income ratio of someone who has a monthly debt of $400 and a monthly income of $800? Show work.

d) Discuss how the debt-to-income ratio precipitated the 2008 recession?

e) What is a positive consequence of taking a periodic payout in the lottery?

PROBLEM 2): Yosef is taking out a loan to buy a condo. The interest rate was **6.75% compounded monthly** for 30 years. The loan amount was $84212.00.

a) Set up a formula with numbers substituted in for the variables in order to determine the required monthly loan payment

b) Solve for an answer for the required monthly payment.

c) How much interest ($) does he pay in total over the life of the loan? Show work.

d) Does your answer in c) make sense? If yes, just say so. If not, explain why not.

e) What is the interest ($) for the first month? Show work.

f) Why isn't the answer in part e) equal to the answer in part c) divided by 360, i.e. the average interest (where I obtained 360 by the number of months)?

Instead of paying the required monthly payment of 546.20 from part b), beginning with the first payment, Yosef decides to pay $600 each month. On Excel, we see the following:

Month #	Monthly Payment	Monthly Interest($)	Principle Paid	Loan Balance
277	$600.00	$6.01	$593.99	$473.73
278	$600.00	$2.66	$597.34	($123.61)

g) Use this Excel to determine how much he pays in total now. Show work.

h) How much total interest ($) does he pay over the life of the loan now? Show work.

i) How much total interest ($) did he save or lose by paying $600 a month instead of the total interest of $112,420 from 2c)? Show work.

j) Does your answer in part i) make sense? If yes, just say so. If not, explain why not.

k) Set up an equation with numbers that would have solved for how long it would take to pay off the loan this way (by paying $600 each month over the entire life of the loan) if I didn't have the Excel chart to give me the answer, but **DO NOT SOLVE.**

Part 2: Group Time

Work alone until I say it is ``group time." Then you may work alone or in groups (or a combination!). The idea is to give you opportunities to communicate course content with your peers, since this is one of ASU's main educational goals: ``Successful communicators interact effectively with people of both similar and different experiences and values." The only guidelines are that each person must eventually write up and turn in their own, the only resources you are allowed to use is each other, and you should spend the time inside the classroom effectively engaging.

PROBLEM 3): Themes and Big Picture Reflection

a) What algebraic operations were useful in deriving the _____ formula (where _____ is one of lump sum, periodic payment or loan payment)?

b) Summarize the philosophy of how we derived or proved the formula?

c) How do chance and probability relate to financial forecasts?

d) Name an instance in our course activities where the theme of local to global came into play. Discuss what was local and what was global in this context.

e) Explain why the average earned rate in Benjamin Franklin's Financial Legacy was not the same as the lent rate?

See the study guide for additional computations and concepts to review.