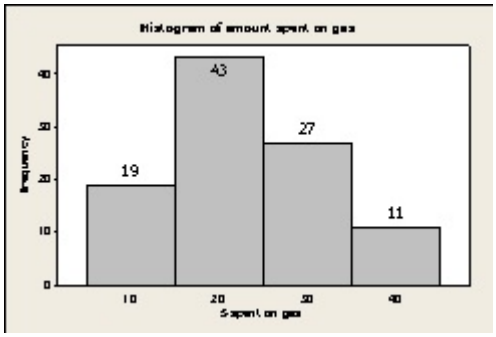
Test 1a Math 1P98 October 2005 14 5:15 to 6:15

Name .....
Student Number..... Box number .....

You may bring a non graphing calculator and a half piece of coloured paper with hand writing on both sides. Answers should be rounded to at least 3 sig dig (more digits are fine) and left as fractions when specified. Write your answers on the dotted line where applicable. Sentence answers are not required, but do include units where applicable
.....

[7] **1.** Consider 100 people, shown on the histogram, who filled their tank at a gas station.



a. Find the mean amount spent. Include the formula used.

b. The class width of the histogram is .....

c. The class containing the median **does / does not** contain the mode. Circle one choice.

d. The histogram is **symmetrical / skewed right / skewed left** . Circle one of these.

e. A sample of five other people came and filled their tank, paying $34.50, $45.60, $26.40, $51.70 and $37.22. ***(round to nearest cent)***

The mean amount spent by these people is $.....

The standard deviation of the amount spent is $.....

[1] **2.** In a field there are 3 white horses, 2 brown horses and 1 black horse. A random horse sees you at the fence and comes toward you. A second horse comes over beside the first. What is the probability that neither horse is brown?

[2] **3.** The probability a guest will start eating dessert is 0.8. The probability he will eat all of the dessert, given that he starts eating it, is 0.6.

a. The probability a guest will not start eating dessert is:

b. The probability that a guest will start eating a dessert but not finish it is:

[6] **4.** At a coffee shop near a university , a survey took place to find the age of the customers. The results are shown in the dotplot, each dot represents one person.

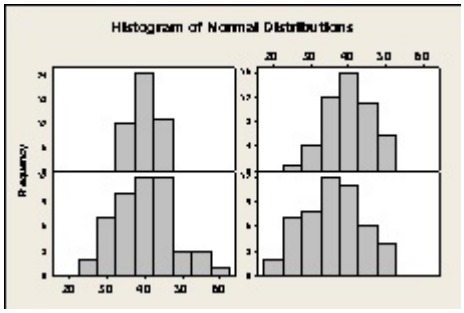
a. Make a labeled box plot of this data.

b. What is the range?..... c. What is the interquartile range? .....

[2] **5.** Each of the four of the histograms of random normal data has the same x and y scale.

a. Which of the histograms has the largest standard deviation?

b. Which of the histograms has the smallest mean?



[7] **6.** In the Thousand Islands area at the end of Lake Ontario the predominant vegetation and presence of buildings for a group of islands was recorded.

	no buildings	1 building	2 buildings	total
rock only	10	2	0	12
grass	7	10	5	22
trees	3	8	10	21
total	20	20	15	55

A kayak stops at a random island from this group. Find the probability that the island will have: (***leave answers as fractions in lowest terms***)

a. rock only .....

b. 1 building given that it has grass .....

c. trees given that it has no buildings.....

d. trees and 2 buildings .....

e. either no buildings or is rock only .....

f. Two people set off in kayaks each going to a different random island. What is the probability the first person goes to an island with no buildings and the second goes to an island with 2 buildings?

[3] **7. Cumulative Distribution Function**

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Normal with mean = 25 and standard deviation = 4
 x  P( X <= x )
20     0.105650
```

From the diagram and the above Minitab output,

point **a** is at x = ...,
point **b** is at the inflection point of the curve and is at x = ...

The shaded area is .....

[4] **8.** The occurrence of a highway service station with a problem such as no gas or renovations, during a long trip, follows a Poisson distribution with a mean of 2 per 900 km. ***Show formula and substitution and answer as on assignment***.
Find the probability that for this distance there are 1 or fewer with problems.

[9] **9.** The distance travelled in the on ramp merge lane before crossing into the 401 highway lane forms a normal distribution with population mean 350 m and standard deviation 80 m (***Include a shaded diagram and formula for each part***)

a. What is the probability that a vehicle will travel less than 290 m?

The probability is .....

b. What is the probability that a vehicle will travel between 150 and 250 m ?

The probability is .....

c. Consider the 20% of people who are nervous about going on to the highway and wait as long as possible. What is the minimum distance of this group?

The distance is .....m

[3] **10.** A paint store has a machine that squirts 17 different colours into base paint to get the required tint. Each squirt has a fixed volume.

a. The number of ways a paint shade can be made requiring 3 different colour squirts of this volume from the machine is :

b. Now 4 of the colours are empty, if a person came in and chose a random colour requiring 3 different squirts of this volume, what is the probability that the paint tint can be made ?

[6] **11.** A raffle ticket costs $2 . The first prize is a camera worth $352. There are also 15 prizes of $12 gift certificates. There are 400 tickets sold.

a.Fill in the spaces on the following probability distribution

x (net winnings			
P(x)			

b. Calculate the expected winnings for one ticket, showing the formula.

c. Write the formula, but do not calculate, the standard deviation of the winnings.

[3] **12.** There are 20 canoes for rent on the beach at a park. Only 5 of them have bailers. If one does not have a bailer the renter has to walk back to the rental store and get one.

a. The probability that a random canoe does not have a bailer is:

b. The canoes are all turned over so bailers are not visible. What is the probability that the first one you find with a bailer is the third one you look into? **(include formula)**

[4] **13.** The probability that a member of a dog walking club takes his dog for a walk on a certain day is 0.4 . Consider a sample of 14 dog owners in this club. ***(include formula, number substitution and answer)***

a. Find the probability that at least 2 will walk their dogs that day.

b. What is the expected number to walk their dogs?