1) Define the following and give an example to each one of them.(50 points)  
a)Which normal distribution has a wider spread:The one with mean 1 and standard deviation 2 or the one with mean 2 and standard deviation 1?Explain your answer.  
  
  
  
  
  
  
  
  
  
  
b)Determine the area under the standard normal curve that lies between -0.88 and 2.24.  
  
  
  
  
  
  
  
c)Obtain the z-score that has area 0.70 to its right   
  
  
  
  
  
  
  
d)Determine z 0.33  
  
  
  
  
  
  
  
e) Obtain the z-score for which the area under the standard normal curve to its left is 0.025.  
  
  
  
  
  
  
  
f)A variable is normally distributed with mean 68 and standard deviation 10.Find the percentage of all possible values of the variable that lie between 73 and 80.  
  
  
  
  
  
  
  
  
  
  
  
g) A variable is normally distributed with mean 0 and standard deviation 5 . Find the value that %15 of all possible values of the variable exceed.  
  
  
  
  
  
  
  
  
  
  
  
  
  
  
h) A variable is normally distributed with mean 6 and standard deviation 2 . Find the percentage of all possible values of the variable that exceed 5.  
  
  
  
  
  
  
  
  
  
  
i) A variable is normally distributed with mean 10 and standard deviation 3 . Find the Value that %35 of all possible values of the variable exceed.  
  
  
  
  
  
j)A variable is normally distributed with mean 2 and standard deviation 5 . Find the value X that %35 of all possible values of the variable are between X and 5  
  
  
  
  
  
  
  
  
  
  
  
  
  
  
  
  
  
2) Service (IRS) publishes annual figures on individual income tax returns in Statistics of Income ,Individual Income Tax Returns.  
For the year 2005, the IRS reported that the mean tax of individual income tax return was $10,319.In actuality the IRS reported that the mean tax of a sample of 292,966 individuals income tax returns from a total of more than 130 millions such returns .  
a) Identify the population under consideration.  
  
  
  
b)Identify the variable under consideration.  
  
  
  
  
c)Is the mean tax reported by IRS a sample mean or the population mean?  
  
  
  
d) Should we expect the mean tax ,x ,of the 292,966 returns sampled by the IRS to be exactly the same as the mean tax ,u of all individuals income tax tax returns for 2005?  
  
  
e)How can we answer questions about sampling error?For instance ,is the sample mean tax ,x , reported by IRS likely to be within $100 of the population mean tax, ,u?  
  
  
  
  
  
  
  
  
  
  
3) Air conditioning Service Contracts.   
An air conditioning contractor is preparing offer service contracts on the brand of compressor used in all of the units her company installs. Before she can work out the details she must estimate how long those compressors last on overage. The contractors anticipated this need and has kept details records on the lifetimes of a random sample of the 250 compressors. She plans to use the sample mean lifetime , x, of those 250 compressors as her estimate for the population mean life time ,u of all such compressors . If the lifetimes of this brand of compressors have a standard deviation of 40 months what is the probability that the contractor’s estimate will be within 5 months of the true mean.  
  
  
  
  
  
  
  
  
  
  
  
  
  
  
  
4) Fuel Expenditures . In estimating the mean monthly fuel expenditures ,u per household vehicle , the Energy information Administration takes a sample of size 6841. Assuming that 0’ =$20.65 determine the margin error in estimating ,u at the 95% level of confidence .  
  
  
  
  
  
5)Millionaires. Dr Thomas Stanley of Georgia State University has surveyed millionaires since 1973 . Among other information ,Stanley obtains estimates for the mean age ,u of all US millionaires. Suppose that 36 randomly selected US millionaires are the following ages in years.  
  
31 45 79 64 48 38 39 68 52  
59 68 79 42 79 53 74 66 66  
71 61 52 47 39 54 67 55 71   
  
  
Determine a 95% confidence interval for the mean age ,u of all U.S millionaires . Assume that the standard deviation of ages of all U.S millionaires is 13.0 years (Not: The mean of the data is 58.83 years.)