Task 3: What is the level of measurement of the following variables?

a. The number of downloads of different bands’ songs on iTunes.  
 Discrete variable because there is distinct measurement. 1,2,3 and so on. It cannot be 1.2 song downloaded. Also it is also ratio variable because there is meaningful zero (No downloads) with interval properties (10-20 downloads and 30-40 downloads have same difference)

b. The names of the bands that were downloaded.  
 Nominal variable because each band has their own identity and has a meaning, has no meaningful order.

c. The position in the iTunes download chart.

Ordinal variable because position tells us the order of ranking; first, second, third.

d. The money earned by the bands from the downloads.

Ratio variable because there is meaningful zero (No money earned) and it has properties of interval variable ($20 -$30 dollars and $40- $50 dollars have same difference)

e. The weight of drugs bought by the bands with their royalties.

Ratio variable because there is meaningful zero (0 lb. drugs) and there is same difference between (20 – 30) lbs. and (25-35) lbs. of drug.

f. The type of drugs bought by the bands with their royalties.

Categorical and Nominal variable because type of drugs can be categorized by names (cocaine, marijuana) and there is no meaningful order.

g. The phone numbers that the bands obtained because of their fame.

Nominal and categorical variable because there is no meaningful order and each phone number has their own owner(distinction)

h. The gender of the people giving the bands their phone numbers.

Binary variable because there is 2 distinct gender category; Male and Female. It can be categorical as well because gender is categorized.

i. The instruments played by the band members.

Nominal and categorical variable because they are categorized and each instrument has distinct usefulness and there is no order/ranking.

j. The time they had spent learning to play their instruments.

Continuous variable because time spent can be infinite between high and low value and it is also ratio variable because there is meaningful zero (No time spent on learning to play instrument) and range between any two values have same different. 10 to 20 minutes with 30 to 40 minutes.

Task 4: Say I own 857 CDs. My friend has written a computer program that uses a webcam to scan the shelves in my house where I keep my CDs and measure how many I have. His program says that I have 863 CDs. Define measurement error. What is the measurement error in my friend’s CD-counting device?

Measurement error is the difference between the actual value and value from the measurement.

In the above case we know the actual count of CD's in the shelve (857) and the count we got from the program (863). There is a difference of 6 CDs which is the measurement error.

Task 5: Sketch the shape of a normal distribution, a positive skewed distribution and a negative skewed distribution.

.

