

## Introduction to Statistics

### Activity 7.2a

NAME:

### Birth Weights

Birth weights of babies in the United States can be modeled by a normal distribution with mean 3300 grams (about 7.3 pounds) and standard deviation 570 grams (about 1.3 pounds). Babies weighing less than 2500 grams (about 5.5 pounds) are deemed to be of low birth weight.



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- i) Data from the *National Vital Statistics System* indicate that in 2004 there were 4,112,052 births in the United States. A total of 331,772 babies were of low birth weight. From these data, what **proportion** of births in 2004 were of low birth weight?
  
- j) How does this proportion compare to the probability calculated by the normal model during the lecture?
  
  
  
  
  
  
  
  
  
  
- k) Similarly, in 2004, they found 2,697,819 babies born between 3000 and 4000 grams. Calculate the **proportion** of these births to the total population. (recall in 2004 there were 4,112,052 births)
  
  
  
  
  
  
  
  
  
  
- l) How does this proportion compare to the probability calculated by the normal model during the lecture?

- m) Based on your answers to parts j and l, does the normal model appear to be doing a reasonable job of predicting how often these outcomes occur?
- n) What proportion of newborns weigh less than 5500 gs? [*Hint*: Use online z-score calculator]
- o) How little would a baby have to weigh to be among the lightest 2.5% of all newborns? (This number is called the 2.5th **percentile** of the birth weight distribution.) [*Hint*: Start with a sketch. Then go to the online z-score calculator, clear your previous entries and put in the appropriate value under “Probability, P(.....)”, and press calculate. Then you will have the z-score, how do you turn this into a weight?]
- p) How much would a baby have to weigh to be among the heaviest 10% of all newborns?