

Problem

- a) Dennis wants a new 4 gigabyte mp3 player for his birthday so he can upload all of his favourite tunes. He knows that a 4-minute song uses 4 megabytes of memory space. How many songs of this length could he upload to the hard drive of the mp3 player? NOTE: 1 gigabyte (gig or GB) = 1000 megabytes (meg or MB)
- b) When his Mom unexpectedly wins the grand prize at Monday night bingo, Dennis thinks his gift might be a 30 gig mp3 player instead of the smaller 4 gig model. How many 4-minute songs would fit on this model?
- c) Suppose the 30 gig model plays all the songs on its hard drive before repeating a song. How many 24-hour days would it take to play every song once?

Hints

Hint 1 - How many minutes are there in one hour? In one 24-hour day?

Solution

- a) Since 4 gigs = 4000 megabytes (megs, or mb), and one 4-minute song uses 4 mb, we see that 4000 mb holds $4000 \div 4 = 1000$ songs.
- b) Since 30 gigs = 30000 mb, the 30-gig player will hold $30000 \div 4 = 7500$ songs.
- c) At 4 minutes per song, 7500 songs take $7500 \times 4 = 30000$ minutes. Each day has 24 hours x 60 minutes per hour = 1440 minutes. Thus 7500 songs take $30000 \div 1440 = 20\frac{5}{6}$ days, or 20 days and 20 hours.