

General Instructions:

- Due 2/20/2008
- Provide responses to sections (a), (b), and (d) – (g). **Sections (c) and (h) are not required.**
- Please label your paper so I understand what sections are being answered!
- Write complete and correct English sentences.
- Use tables and graphs where requested, and to make your results easier to read.
- E-mail preferred; paper copy is ok. Text should be word-processed – but it’s ok to hand-draw graphs **if they are neat.**
- There’s a lot of work – teams will probably have an easier time! Teams of up to 3 members are allowed.
- Include names of all team contributors on the 1st page **and in the name of any file you send me by email.**

CELL-PHONE PLAN COMPARISON

	Anytime minutes included	Charge for each extra minute	Mobile-to-mobile minutes	National Long Distance	Nights and Weekends
Company A:					
Plan A1: \$49.99	600	\$0.45	Unlimited	Included	Unlimited (after 9 pm)
Plan A2: \$59.99	900	\$0.35	Unlimited	Included	Unlimited (after 7 pm)
Company B:					
Plan B1: \$39.99	450 with rollover	\$0.45	Unlimited	Included	3000 min (after 9 pm)
Plan B2: \$49.99	600 with rollover	\$0.40	Unlimited	Included	unlimited (after 9 pm)
Company C:					
Plan C1: \$45.00	300	\$0.40	Unlimited	Included	Unlimited (after 9 pm)
Plan C2: \$60.00	700	\$0.40	Unlimited	Included	Unlimited (after 9 pm)

Each plan requires a two-year contract.

- Determine the total cost of each plan for the life of the contract, assuming that you stay within the allotted anytime minutes provided by each contract.
- If you expect to use 600 anytime minutes and 2500 night and weekend minutes per month, which plan provides the best deal? If you expect to use 600 anytime minutes and 3500 night and weekend minutes, which plan provides the best deal?
- Ignoring any night and weekend usage, if you expect to use 425 anytime minutes each month, which option provides the best deal? What if you use 750 anytime minutes per month?
- Each monthly charge includes a specific number of peak time minutes in the monthly fee. Write a function for each option, where C is the monthly cost and x is the number of anytime minutes used.
- Graph each of the functions from part (d).
- For each of the companies A, B, and C, determine the average price per minute for each plan, based on no extra minutes used. For each company, which plan is better?
- Now, looking at the three plans that you found to be the best for Companies A, B, and C, in part (f), which of those three seems to be the best deal?
- Based upon your own cell phone usage, which plan would be the best for you?

SOURCE: Based on rates from the websites of the companies: ATTWireless, Cingular, and Sprint PCS, for area code 76201 on October 4, 2004. (www.attwireless.com, www.cingular.com, www.sprint.com)

Example – part of a response for (a):

(a) Total cost of a contract, without extra minutes

Let N be the number of months in the contract, and M the contract amount per month

If a customer stays within the included “anytime” minutes, then the total cost of the contract is

$$C = N \cdot M$$

This table lists the total cost of each contract, without extra minutes:

Plan	Contract length (Months)	Contract amount per month	Total cost
A1	24	49.99	\$1,199.76
A2			
...			