

Name: _____ Date: _____

Piecewise Functions: Problem solving

In many areas, utility companies compete with others in order to gain business. For example, you may see numerous commercials for gas companies like Georgia Natural Gas or Scana. How can you determine which company is best for you? Well it will depend on how much you use, and each company tries to find ways to attract more clients than their competitors. Below is an advertisement for a fake electricity company "Lights and Power"

Cheapest Electricity in Town!

To 1,000 kWh—\$0.11 per kWh
 More than 1,000 to 1,500 kWh—\$0.18 per kWh
 More than 1,500 kWh—\$0.25 per kWh

No hidden fees! We promise!

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- According to the advertisement, how much does the first 1,000 kilowatt-hours (kWh) of electricity cost a customer? **\$110**
- Last month you used 1,200 kilowatt-hours of electricity.
 - How much did you pay for the first 1,000 kilowatt-hours? **\$110**
 - How much did you pay for the next 200 kilowatt-hours? **36**
 - How much did you pay total for the month? **146**
- Using the information from the advertisement determine the monthly cost for each of the following kilowatt-hours

Amount of kWh	Cost (\$)
700	77
800	88
900	99
1,000	110

Amount of kWh	Cost (\$)
1,100	128
1,200	146
1,300	164
1,400	182

Amount of kWh	Cost (\$)
1,500	200
1,600	225
1,700	250
1,800	275

4. Are you being rewarded or punished for using more electricity? Why do you say so?
 PUNISHED, YOU PAY MORE PER kWh AT EACH JUMP (2)

Let's compare to a competitor named Community Electric. Below is their pricing plan

Monthly Fee of \$20

- \$0.15 per kWh for usage up to 1,000
- \$0.05 per kWh for usage over 1,000

5. Using the information from the advertisement determine the monthly cost for Community electric for each of the following kilowatt-hours

Amount of kWh	Cost (\$)
700	125
800	140
900	155
1,000	170

Amount of kWh	Cost (\$)
1,100	175
1,200	180
1,300	185
1,400	190

Amount of kWh	Cost (\$)
1,500	195
1,600	200
1,700	205
1,800	210

6. Are you being rewarded or punished for using more electricity with Community Electric? Why do you say so?

REWARDED. THERE IS A PRICE DROP AT 1,000 kWh (2)

7. You live in a small one-bedroom apartment and generally don't use more than 1,000 kWh hours of electricity. Which company should you go with?

LIGHTS + POWER. \$60 CHEAPER (1pt)

8. At what usage of kWh would you change companies? Why?

AT 1,500 COMMUNITY ELECTRIC IS \$195 INSTEAD OF \$200 (2pt)

9. You tend to use different amounts of electricity in the summer (when you use the AC a lot) to the winter (when you use heat which is powered by natural gas). You typically sign a 1-year contract with your electric company. Based on the different usage of each month, which company would be better for you based on your electricity consumption?

kWh usage per month	480	510	680	850	1210	1840	2000	1750	1180	960	554	500	TOTAL
Lights & Power COST (\$)	52.80	56.10	74.80	93.50	147.80	285	325	262.50	142.40	105.60	60.94	55	1661.44
Community Electric COST (\$)	92	96.5	122	141.50	180.50	212	220	207.50	179	164	103.10	95	1752.10

SAVE \$90.91 PER YEAR WITH LIGHTS + POWER

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