

What's the Plan?

Common Core Standard

6.EE.B.6 Use variables to represent numbers and write expressions when solving a real-world or mathematical problem; understand that a variable can represent an unknown number, or, depending on the purpose at hand, any number in a specified set.

MP1: Make sense of problems and persevere in solving them.

MP2: Reason abstractly and quantitatively.

MP3: Construct viable arguments and critique the reasoning of others.

MP6: Attend to precision.

MP7: Look for and make use of structure.

The Task

Oakland Cell Phone Company offers the following options:

Number of Minutes	Cost	Overage
400	\$40.00	45¢ per min
800	\$60.00	40¢ per min
Unlimited	\$70.00	

Number of Texts	Cost	Overage
Pay as you go	15¢ per text	
300	\$5.00	10¢ per min
1000	\$10.00	10¢ per min
Unlimited	\$20.00	

Three friends are trying to determine the options for their new cell phone plan.

- Mitchell uses exactly 450 minutes and 200 texts per month.
- Lisa uses exactly 810 minutes and 1,200 texts per month.
- José uses exactly 700 minutes and 350 texts per month.

Based on the information above, choose an appropriate minute and text plan for Mitchell, Lisa, and José. Justify your reasoning.

Facilitator Notes

1. This task should be used as an *introductory* task for 6.EE.6. Allow students the time to work through the scenario without direction on the methods that could be used to solve. (Look for evidence of MP1 and MP2.)
2. When comparing strategies after students have completed the task, allow groups to share their methods. Students will determine they were each using the same substitution strategy. (Look for evidence of MP1, MP2, and MP7.)
3. Use this conversation as an introduction to variables and using a formula to solve problems. (Look for evidence of MP6.)
4. Be sure students are comparing the plan cost including overage fees. In some cases, paying for the ‘next step up’ plan will not always be the best deal. (Look for evidence of MP7.)
5. As an extension, consider having students choose the phone plan they would use, find the cost and justify their choice. (Look for evidence of MP3.)

Follow-Up Questions

1. What strategies did you use to find you answer?
2. How are the strategies the groups used to solve similar?
3. How are the strategies the groups used to solve unique?
4. What connections did you make to the problem?
5. Why is this important?

Solutions

Every month, Mitchell talks for 450 minutes and sends 200 texts.

Plan (Minutes)	Cost for Mitchell
400	$40 + 22.50$ in overages = \$62.50
800	\$60
Unlimited	\$70
Plan (Texts)	Cost for Mitchell
Pay as you go	\$30
300	\$5
1000	\$10
Unlimited	\$20

The best choice for Mitchell is the 800 minutes plan and the 300 texts plan

HSD Worthwhile Math Task

Every month, Lisa talks for 810 minutes and sends 1200 texts.

Plan (Minutes)	Cost for Lisa
400	$40 + 184.50$ in overages = \$224.50
800	$\$60 + 4$ in overages = \$64
Unlimited	\$70
Plan (Texts)	
Pay as you go	\$180
300	$\$5 + 90$ in overages = \$95
1000	$\$10 + 20$ in overages = \$30
Unlimited	\$20

The best choice for Lisa is the 800 minutes plan. Her overage charge would cost less than using the unlimited plan. She should sign up for the unlimited texts plan.

Every month, José talks for 700 minutes and sends 350 texts.

Plan (Minutes)	Cost for José
400	$40 + 135$ in overages = \$175
800	\$60
Unlimited	\$70
Plan (Texts)	
Pay as you go	\$52.50
300	$5 + 5$ in overages = \$10
1000	\$10
Unlimited	\$20

The best choice for José is 800 minutes plan. He could choose either the 300 or 1,000 text plan. Both would cost the same including the overage costs.

Follow up questions:

Students should come to the conclusion that they are all using the similar strategies to find their answers. Each of them at some point will need to multiply the number of excess minutes by the overage fee. The number of excess minutes would be their variable because it changes based on the person they are determining answers for. Students should see the importance of this based on making good financial decisions. Some may think each person should go for the most expensive plan because you never know how much you may talk or text. This would be a good time to discuss budgeting and how bills can add up. This lesson has the possibility to turn into a financial literacy lesson as well as good introduction into the purpose of variables.