Math: A New Business Venture

Student will
- Use mathematical operations to solve real world situations.
- Utilize chart and analyze data to answer questions.

Copies for Each Student
- "The Story of the Opera"
- Activity Worksheet Part I & II

For the Teacher
- "The Story of the Opera"
- Activity Worksheet Part I & II
- ANSWER KEY

Getting Ready
- Map Pencils
- Pencils
- Extra Notebook Paper
- Dice

Instructional Time
One 45-minute class period

Introduction
Read "The Story of the Opera" with the class. Have the students discuss the idea that Manuelita owns her own business, a hotel with a kitchen that serves cupcakes.

Ask students: What kinds of services do hotels normally provide? What does Manuelita need to do as the owner to make her customers happy?

Then, ask the students to imagine that Manuelita and Miguel wanted to build a lemonade stand to attract more customers to her hotel. Have students give examples of the kinds of decisions they would have to make for this new business venture (i.e. pricing, supplies needed, location, etc.).

Guided/Independent Practice
Present both parts of the Activity Worksheet to the students. Read through the instructions with the students and answer any questions they may have concerning terms or any other contents of the worksheet.

- **Part I**: Have the students complete the chart and answer the questions that follow.
- **Part II**: The students will create a data sheet using a graph to display the results and write three reflections by answering questions listed.

Evaluation
1. Were the students able to complete the expense report with the total amounts?
2. Were the students able to complete the worksheet by answering the questions at 80% accuracy?
3. Were the students able to create a graph and answer the three reflection questions?

TEKS: Mathematics

Grade 6
(1) Mathematical Process Standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. (A. B.)

(2) Number and Operations. The student applies mathematical process standards to represent and use rational numbers in a variety of forms. (D)

(3) Number and Operations. The student applies mathematical process standards to represent addition, subtraction, multiplication, and division while solving problems and justifying solutions. (C. D. E.)

(5) Proportionality. The student applies mathematical process standards to solve problems involving proportional relationships. (A. B.)

(14) Personal Financial Literacy. The student applies mathematical process standards to develop an economic way of thinking and problem solving useful in one's life as a knowledgeable consumer and investor. (C)

Grade 7
(1) Mathematical Process Standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. (A. B. C. D. E. F. G)

(2) Number and Operations. The student applies mathematical process standards to represent and use rational numbers in a variety of forms. The student is expected to extend previous knowledge of sets and subsets using a visual representation to describe relationships between sets of rational numbers.

(3) Number and Operations. The student applies mathematical process standards to add, subtract, multiply, and divide while solving problems and justifying solutions. (A. B.)

(6) Proportionality. The student applies mathematical process standards to use probability and statistics to describe or solve problems involving proportional relationships. (C. D. E. G. H. I.)

Grade 8
(1) Mathematical Process Standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. (A. B. C. D. E. F. G.)

(2) Number and operations. The student applies mathematical process standards to represent and use real numbers in a variety of forms. (A)

References: http://oakdome.com/k5/mac/iworks-numbers/numbers-lemonade-stand.php

The Story of the Opera

Setting: Elizondo, a Basque village in Navarre, Spain

Manuelita, the owner of the Blue Bird Hotel, tends to her garden, thinking about Pépito, her betrothed since childhood. She laments his absence, as he is serving in the military in Cádiz. Although she has not received a letter from him in four months, or seen him in three years, she has been saving up her hotel profits in order to help Pépito come home sooner so that they can be married.

Meanwhile, Vertigo, a jack of all trades, fluba player, and owner of the Hotel Crocodile (the rival hotel in town), tries to persuade Manuelita to go on a date with him. Steadfast in her devotion to her fiancé, Manuelita rejects Vertigo's advances.

Later, Manuelita sees her old friend, Miguel, who is home from college in Madrid and searching for a wife. They recall their time together as children, and Miguel realizes that he and Manuelita were destined for each other. Miguel tells her that he and Pépito exchange letters and in their latest correspondence, Pépito had informed him that he is getting married. Upon hearing this, Manuelita rejoices because she is now sure that Pépito is still faithful to her.

Always one to stir up trouble, Vertigo secretly tries to convince Miguel that Manuelita will never love him because she is already engaged to Vertigo. But Miguel is not one to give up easily. When they sit down to eat Vertigo's famous gâteau Basque with a glass of apple cider, Miguel makes sure that Vertigo stuffs himself so full that he falls asleep at the table.

With Vertigo out of the way, Miguel expresses his feelings for Manuelita and tells her that if Pépito really cared, he would have never left her. This gives Manuelita pause. However, she maintains that she is completely devoted to her promise to Pépito and leaves Miguel alone to think about how he has hurt her feelings by speaking ill of Pépito.

Vertigo wakes up and realizes that his leg has fallen asleep. He jumps up from the chair in pain and Miguel says that he deserves it because Vertigo lied about being engaged to Manuelita. Vertigo admits that Manuelita "can't stand" him. Suddenly, he realizes that he is late for a church service in San Sebastián where he has promised to play a solo on his fluba! He runs away in a panic.

Manuelita comes out of her hotel. Miguel apologizes and says that he only wants her to be happy. He is so impressed by Manuelita's virtue and loyalty to Pépito that he volunteers to take the young soldier's place in the military so that Pépito may return to marry Manuelita.

When he returns from church, Vertigo, who is also the town's postman, announces that he has just found a letter that Pépito sent to Manuelita over a year ago. Miguel hurries to open it and reads with great joy that Pépito has married another woman!

Manuelita is shocked. How could Pépito betray her? After much deliberation, Manuelita realizes that her loyalty to Pépito was not out of love, but out of the obligation to keep the promise she made so many years ago. Seizing his chance, Vertigo quickly asks Manuelita to marry him, but Manuelita declares she will marry Miguel instead, as her feelings for him are true.

Though unhappy at his own misfortune, Vertigo cannot let a lucrative business opportunity pass him by. He agrees to bake the wedding cake and play his fluba for Miguel and Manuelita, who are ecstatic that they can finally be together.

Name: _____   Date: _____

Activity Worksheet Part I: Materials and Profit

Instructions: Manuelita and Miguel decide to build a lemonade stand to attract more customers to the hotel. Use the **Information Needed** to calculate the missing details from their first week of business in the chart below. Answer the questions that follow using the completed chart.

Information Needed
- Recipe to make a pitcher of lemonade:
  - 7 Cups of Water, 4 Lemons, 6 Sugar Cubes, and 5 Ice Cubes.
- Each pitcher makes 9 glasses of lemonade.
- The cost of making one pitcher is $1.37.
- Round the pitcher amounts up to the nearest full pitcher. Gross income is measured per glass.

WEEK 1	MATERIALS				PROFIT DATA ANALYSIS					
	Cups of Water	Lemons	Sugar	Ice	Glasses Sold	Number of Pitchers	Selling Price	Gross Income	Expenses (-)	Net Income
1					22		$0.50			
2					30		$0.65			
3					17		$.45			
4					59		$.90			
5					32		$0.71			
6					53		$0.85			
7					41		$0.95			

1. How much more gross income was earned on day 6 than on day 2? _____

2. How many pitchers were made on day 7? _____

3. How many lemons and cubes of sugar were used on day 4? _____

4. Which two days made the same number of pitchers, and what was the net income difference between them?   1) _____   2) _____

5. What were the total expenses for the week? _____

6. What was the net income for the week? _____

7. List three circumstances that may have caused price differences on different days.

Name: _____   Date: _____

Activity Worksheet Part II: Reflection

1. Create any type of graph to display the data you found in the chart.

2. What did you learn from this activity about running a business?

_____
_____
_____
_____

3. What two things would you change to make the business more successful?

_____
_____
_____
_____

4. What is one thing about the business that you would keep?

_____
_____
_____
_____

ANSWER KEY

Activity Worksheet Part I: Materials and Profit

Information Needed

- Recipe to make a pitcher:
  - ➢ 7 Cups of Water, 4 Lemons, 6 Sugar Cubes, and 5 Ice Cubes.
- Each pitcher makes 9 glasses of lemonade.
- The expense cost of one pitcher is $1.37.
- Round the pitcher amounts up to the nearest full pitcher. Gross income is measured per glass.

WEEK 1	MATERIALS				PROFIT DATA ANALYSIS					
	Cups of Water	**Lemons**	**Sugar**	**Ice**	**Glasses Sold**	**Number of Pitchers**	**Selling Price**	**Gross Income**	**Expenses (-)**	**Net Income**
1	**21**	**12**	**18**	**15**	22	**3**	$0.50	**$11.00**	**$4.11**	**$6.89**
2	**28**	**16**	**24**	**20**	30	**4**	$0.65	**$19.50**	**$5.48**	**$14.02**
3	**14**	**8**	**12**	**10**	17	**2**	$.45	**$7.65**	**$2.74**	**$4.91**
4	**49**	**28**	**42**	**35**	59	**7**	$.90	**$53.10**	**$9.59**	**$43.51**
5	**28**	**16**	**24**	**20**	32	**4**	$0.71	**$22.72**	**$5.48**	**$17.24**
6	**42**	**24**	**36**	**30**	53	**6**	$0.85	**$45.05**	**$8.22**	**$36.83**
7	**35**	**20**	**30**	**25**	41	**5**	$0.95	**$38.95**	**$6.85**	**$32.10**

1. How much more gross income was earned on day 6 than on day 2? **$25.55**

2. How many pitchers were made on day 7? **Five pitchers were made.**

3. How many lemons and cubes of sugar were used on day 4? **70 were used**.

4. On which two days were the same amount of pitchers made? What was the net income difference between them?
    1) **Day 2 and Day 5**   2) **$3.22**

5. What were the total expenses for the week? **$42.47**

6. What was the net income for the week? **$155.50**

7. List three circumstances that may have caused the price difference on different days.
    Examples: taste of the lemonade, the weather outside, the location of the stand, price of materials, competition with other businesses, etc.

ANSWER KEY

EXAMPLE Activity Worksheet Part II: Reflection

1.
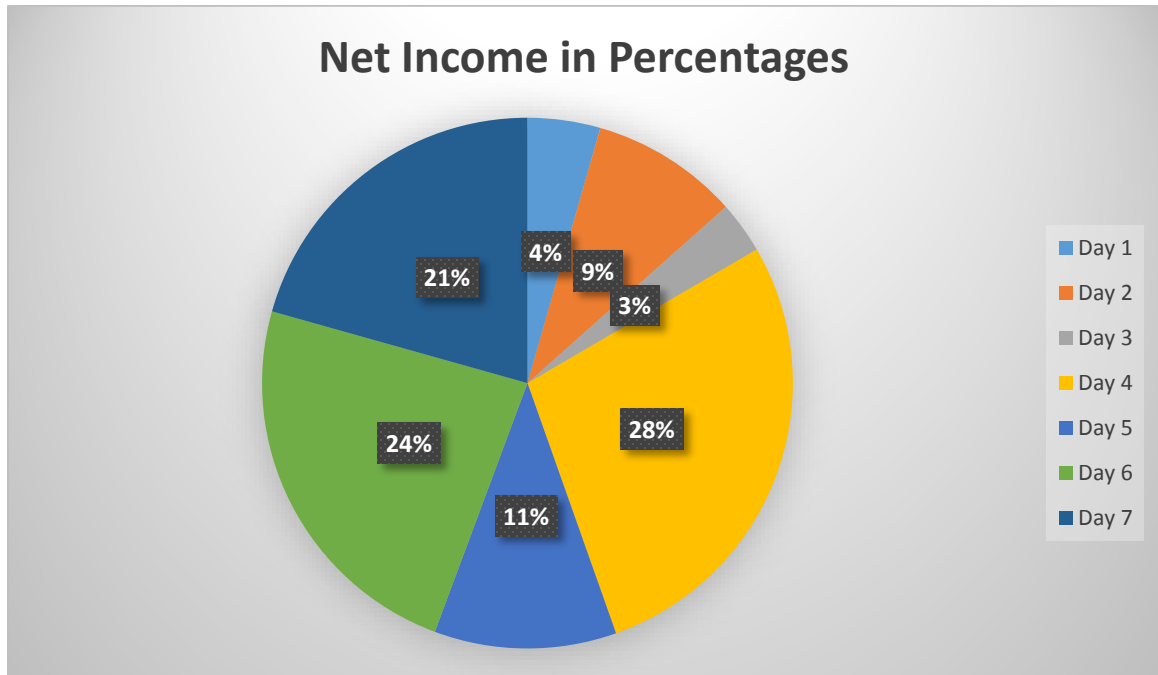
2. What did you learn from this experiment of having a business?
Answers will vary. It is left to the teacher to determine whether the student has answered the question appropriately.

3. What two things would you change to make your business more successful?
Answers will vary. It is left to the teacher to determine whether the student has answered the question appropriately.

4. What is one thing about your business that you would keep?
Answers will vary. It is left to the teacher to determine whether the student has answered the question appropriately.