Assignment example

Science, Mathematics

You must show your work on all problems. You may type your answer right into this document. Total points for project: 45 points. Part I. Basic Computations

1. A discount store sold plastic cups for $2. 75 each and ceramic cups for $5. 50 each.

a. If 500 cups were sold for a total of $1897. 50, how many cups of each type were sold? (5 points)

Answer:

1 x + 1 y = 500Equation. 1

2. 75 x + 5. 50 y = 1897. 50 Equation. 2

Eliminate y

multiply (Equation 1)by -5. 5

-5. 5 x -5. 5 y = -2750

2. 75 x + 5. 5 y = 1897. 5

Add the two equations

-2. 75 x = -852. 50

Divide by 2. 75

x = 310

Therefore, as per equation. 1

1 x + 1 y = 500

310 + 1 y = 500

1 y = 500

1 y = 190

y = 190

plastic cups numbers 310

ceramic cups numbers 190

b. What was the dollar value of each type of cup sold? (5 points)

Answer:

Let Plastic Cups = P and Ceramic Cups= C

P + C = 500

P = 500 - C

P x 2. 75 + C x 5. 50 = 1897. 5

(500 - C) x 2. 75 + C x 5. 50 = 1897. 5

1375 - C x 2. 75 + Cx5. 50 = 1897. 5

Cx2. 75 = 522. 5

C = 190

P = 500 - 190

P = 310

Hence,

Plastic = 310 x 2. 75 = 852. 50

Ceramic = 190 x 5. 5= 1045. 00

2. Cora Zayas is a buyer for a large manufacturing company . She can purchase 200 pounds of chemicals for $85. She can also purchase mixing vats for $500 each. Sales tax on all products is 6% of the total cost of the order. Shipping costs for her order will be a flat $40.

a. At this same rate, how much would 4, 000 pounds of chemicals cost? (5 points)

Answer:

For 200 lbs price is $85 , sales tax is 6% and shipping cost is $ 40

So,

Total cost for 200lbs = 85 x 0. 06 + 40= $130. 1

Hence for 4000 lbs= 130. 1/ 200 x 4000= $2600

Or if there is no consideration of tax and shipping cost then

200 lbs of chemicals = $85

1 lbs= 85/200 lbs

4000 lbs= 85/2000 x 4000= $ 1700

b. This month she doesn't know yet how many mixing vats she will need to order. Let y = number of mixing vats required. Write an equation using y that she can use to determine the total amount of her order. Assume no chemicals are ordered, only vats. (5 points)

Answer:

Cost = 40+500(1. 06)Y

OR

y = (4000 lbs) x (1 vat/200 lbs)

y = 20 vats needed

Part II. Case Study

3. Campus Painters offers house-painting services by hiring college students to paint during their breaks between semesters. Malachai started the business when he was in college and now he owns and manages the small service-oriented business by providing price quotes, hiring student painters, purchasing supplies, and advertising their services. He currently employs 22 painters and pays them $10. 50 per hour for painting and " prep-work" (scraping old paint, caulking, cleaning and removing bugs from the areas that are to be painted).

In order to be profitable, Malachai has learned to provide superior service to

his customers, including free price quotes. He builds in his profit-margin of 25% to all quotes by first computing his total costs, then adding 25% of that number to determine how much to charge the customer. Using his knowledge of the expenses for labor, supplies, and equipment, he has developed the following information:

1 gallon of paint will cover approximately 400 square feet

For every 2 gallons of paint for a wall, you need 1 gallon of paint for the trim

Malachai has a deal with the local paint store and can get any paint he wants for $25 per gallon

[Note: Malachai cannot purchase ½ a gallon of paint.]

Every job requires 5 tubes of caulk ($3 each) and 5 clean paint brushes ($4. 50 each)

Malachai finds that a painter can apply a gallon of paint in about 8 hours

a. (5 points) Martin just finished working on a job in which he spent 6 hours on Monday doing prep-work and 8. 5 hours on Wednesday painting. How much money does Malachai owe him?

Answer:

(prep+paint) x wage rate

(6+8. 5)*10. 5 = $152. 25

For profit, as the margin is 25%. (cost*(1+profit percentage))= cost

($152. 25*1. 25)=$ 190. 3

b. (5 points) The Marks family needs to get the outside of their house painted, including the siding as well as the white trim. Malachai estimates that area of the exterior of the house is about 8, 000 square feet. Based on

the condition of the Marks' house he also estimates that he will need 2 workers for 8 hours to do the prep-work. How much should Malachai quote for the cost of this job, including labor, supplies, and profit?

Answer:

((wall paint+trim paint)x25)+((2. 5(caulk)+5(paint brushes))= Supply Cost

20+10 x 25 + 3 x 5 + 4. 5 x 5= $ 787. 5

It tells us outright that it will take 8 hours for the prep work so: (pay rate*# of prep hours)= prep labor cost or

($10. 5 x 8)=$84

the amount of hours to finish the project will be

(# of gallons x hours per gallon) or (30x8)= 240

amount need to pay the painters for all that labor. This is (pay rate*# of hours of labor) or ($10. 5 x 240)=$2520.

The cost will be (Total materials+Total labor)x1. 25 or (787. 5+2520)x1. 25 or $ 4134. 4

c. (5 points) Write a formula reflecting the price estimate for a house based on the number of square feet that need to be painted. Assume that Malachai can accurately estimate the painted area (in square feet) and the amount of time it takes to complete the prep-work on a job.

Answer:

Price = [(Labor x 10. 50) + (Square feet / 400 X 25) + 37. 50(cost of caulk and brush)]. 25

d. (10 points) What do you think? Using the evidence from above, explain in a well-structured essay the importance of accurate cost estimates in a service-oriented business such as this. Research at least one other service-

oriented business such as a restaurant, dry-cleaners, house-cleaning service and describe how they set their prices. Be sure to describe the information that is used to prepare the estimate, using a real example.

Sound Pricing strategy is crucial for financials matters of a business. Price alone do not impact the decision of purchasing dinner for customers. Therefore one must set prices while keeping in mind the food supply and various other factors like the place, vicinity, discount, tax etc.

The standard method of setting prices for menu items is based upon " food cost," according to the following formula:

Food Cost Percentage = (Cost of Raw Food Ingredients) / (Selling Price) x 100

For example, if the raw ingredients of a bread cost $0. 50 and the baker sells the bread for $5. 00, then the Food Cost Percentage is 0. 5/5 = 0. 1 or 10%. Food Cost percentage varies with the location , target of the owner and market competitiong. then the food cost percentage number is used to calculate the selling price of the item. For example, let's say the baker wants the Food Cost Percentage to be 20% or 0. 2, Then, his selling price is equal to the Cost of the Raw Ingredients divided by the Food Cost Percentage, or 0. 5 / 0. 2 = $2. 5. Thus, the baker decides to sell his bread for $2. 5.

Sales Forecasts

Total Sales ($) = Number of Meals Sold x Average Check ($)

Works Cited

Restaurant Business. (n. d.). Retrieved May 2, 2012, from Starting Restaurant. com: http://starting-restaurant. com/2011/04/how-to-set-an-effective-pricing-strategy-for-your-new-restaurant-business/

Smith, K. (2009). Mathematics. California: Thomson Higher Education.

Requirements

Write your essay in this document – do not save it in a separate file.

You must clearly state your position.

You must use well-structured paragraphs using proper grammar, spelling, and sentence structure.

This is not an " opinion" question – you must offer evidence to support your position, using properly-cited sources.

Your answer must be between 150-250 words (about 1 page of text).

You must cite at least one source (book, website, periodical) using APA format. Do not use unreliable sources such as Wikipedia, and Yahoo! Answers.

You must reference your source at the end of your paper.

Answer: