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Chapter 1 End-of-Chapter Assignment Solutions
(Level 1) Multiple-Choice Questions

1. (LO 1.3) Which component of the AMPS model addresses the question of the best way for management accountants to communicate their analyses with decision-makers?
    a. Ask the question
    b. Master the data
    c. Perform the analysis
    d. Share the story
2. (LO 1.5) Which of the following is considered discretionary information for a company's accountants to provide?
    a. The break-even level of a new product
    b. The annual report submitted to shareholders detailing financial performance
    c. The federal tax return
    d. Sales information as part of the sales tax return
3. (LO 1.1) Which of the following value chain activities is considered to be a primary activity?
    a. Procurement
    b. Inbound logistics
    c. Human resources management
    d. Information technology
4. (LO 1.2) What requires context to create information?
    a. Knowledge
    b. Data
    c. Facts
    d. Data stores
5. (LO 1.4) The analysis of variances (e.g., actual performance is different from budgeted performance) is most often associated with which type of analytics?
    a. Descriptive analytics
    b. Diagnostic analytics
    c. Predictive analytics
    d. Prescriptive analytics
6. (LO 1.4) Summary statistics are most often associated with which type of analytics?
    a. Descriptive analytics
    b. Diagnostic analytics
    c. Predictive analytics
    d. Prescriptive analytics
7. (LO 1.4) Time series analysis is most often associated with which type of analytics?
    a. Descriptive analytics
    b. Diagnostic analytics
    c. Predictive analytics
    d. Prescriptive analytics

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8. (LO 1.6) Which of the following is not one of the four overarching ethical principles mentioned in the 2017 IMA Statement of Ethical Professional Practice?
    a. Competence
    b. Honesty
    c. Confidentiality
    d. Credibility
9. (LO 1.3) Which questions aim to more clearly understand why net income is decreasing when revenues are increasing?
    a. What happened? What is happening?
    b. Why did it happen? What are the root causes of past results?
    c. Will it happen in the future? What is the probability something will happen? Is it forecastable?
    d. What should we do based on what we expect will happen? How do we optimize our performance based on potential constraints?
10. (LO 1.3) What type of visualization is used to track overtime labor on a continuous, real-time basis?
    a. Dashboard with static display
    b. Dashboard with dynamic display
    c. Conditional formatting
    d. Bar chart for the past 10 months
11. (LO 1.3) Which management accounting question will require predictive analytics?
    a. Why did labor expenses increase over the past year as compared to prior years?
    b. Should the company rent or lease its headquarters office building?
    c. Can we forecast future sales for this company?
    d. Why did our cost structure (fixed and variable costs) change over the past year?

12. (LO 1.3) Which management accounting question will require prescriptive analytics?
    a. Why did the company perform worse this year than last year?
    b. Should the company manufacture its product, or should it outsource the production of its products to an outside contractor?
    c. Can we forecast future sales, earnings, and cash flows for this company?
    d. What was the total revenue last quarter?

13. (LO 1.2) A _____ is a person who analyzes accounting-related data to help an organization make effective business decisions.
    a. management accountant
    b. financial accountant
    c. data scientist
    d. computer programmer
14. (LO 1.2) A _____ is a person employed to acquire, maintain, curate, access, manipulate, and statistically test data to address business questions.
    a. management accountant
    b. financial accountant

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c. data scientist
d. computer programmer

15. (LO 1.2) If a manager is a decision-maker, and a data scientist is a developer, then what best describes a management accountant?
    a. An interpreter
    b. An expert at investments
    c. An intermediary
    d. A broker
16. (LO 1.5) Which of the following is mandatory information that a company's accountants is required to maintain?
    a. The cost drivers used to allocate overhead
    b. The calculation of the difference between actual and budgeted performance
    c. The product price that should be charged to maximize profits
    d. The amount of dividends paid to shareholders
17. (LO 1.5) Which entity sponsors the certification of management accountants as a CMA?
    a. Institute of Management Accountants
    b. Institute of Certified Public Accountants
    c. American Institute of Management Accountants
    d. Association of Certified Management Accountants
18. (LO 1.5) Which of the following applies to management accounting?
    a. There are required audits of management accounting information.
    b. Management accounting works to minimize the cost of compliance with regulatory entities.
    c. A source of management accounting data comes from a cost accounting system.
    d. Common output is the income statement.
19. (LO 1.3) Performing a regression falls into which of the following components of the AMPS model?
    a. Ask the question
    b. Master the data
    c. Perform the analysis
    d. Share the story

20. (LO 1.3) Which data visualization is used to evaluate trends of values over time?
    a. Bar Chart
    b. Pie Chart
    c. Scatterplot
    d. Line Graph

(Level 1) Discussion Questions

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1. (LO 1.1) Describe the primary activities in the value chain for your college or university. In your opinion, which primary activities create the most value?

   Suggested Solution: Answers will vary. Universities admit students (as inputs) and use their resources (curriculum, faculty, buildings, computers, and so on) to create a job-ready, educated graduate (the output). Arguably, the school creates value (as shown in Exhibit 1.1). If it is not creating value in one form or the other, it probably will not survive.

   1. INBOUND LOGISTICS are the activities associated with receiving and storing raw materials and other partially completed materials, and distributing those materials to manufacturing divisions when and where they are needed.
      - Universities hire faculty and faculty support, construct classrooms and faculty offices, create online teaching infrastructure, construct housing (where appropriate), etc.

   2. OPERATIONS are the activities that transform inputs into finished goods and services.
      - Professors and instructors develop curricula, create degree programs, instruct and assess students for performance.

   3. OUTBOUND LOGISTICS are the activities that warehouse and distribute the finished goods to customers.
      - Placement services, job fairs, employer relations, etc., help to place graduating students.

   4. MARKETING AND SALES ACTIVITIES identify the needs and wants of customers to attract them to the company's products and then buy them.
      - Universities market and advertise their degree programs and university services to prospective and current students.

   5. SERVICE ACTIVITIES provide support to customers after the products and services are sold to them. Service activities include warranty repairs, parts, instruction manuals, and phone or internet support.
      - Alumni programs and placement programs continue to support students after they have graduated.

2. (LO 1.1) Describe the primary activities in the value chain for an accounting firm that issues audit reports. In your opinion, which primary activities create the most value?

   Suggested Solution:

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1. INBOUND LOGISTICS are the activities associated with receiving and storing raw materials and other partially completed materials, and distributing those materials to manufacturing divisions when and where they are needed.
    - Accounting firms hire accounting staff. They also create software programs to access general ledger and journal transactions for assessment.

2. OPERATIONS are the activities that transform inputs into finished goods and services.
    - Accounting firm staff evaluate the financial transactions and assess whether the financial reports fairly represent the financial position of the company.

3. OUTBOUND LOGISTICS are the activities that warehouse and distribute the finished goods to customers.
    - Accounting firm staff ensures that financial reports and opinion rendered on those financial reports are transmitted to the focal company and submitted to the Securities and Exchange Commission (where appropriate).

4. MARKETING AND SALES ACTIVITIES identify the needs and wants of customers to attract them to the company's products and then buy them.
    - Accounting firm staff markets its services by bidding on audit jobs. It also does some general advertising.

5. SERVICE ACTIVITIES provide support to customers after the products and services are sold to them. Service activities include warranty repairs, parts, instruction manuals, and phone or internet support.
    - Accounting firm staff continue to support its clients through annual audit and quarterly reviews.

3. (LO 1.1) Give five examples of business processes at Tesla. How do they create business value for Tesla and its shareholders?

Suggested Solution:

Answers will vary. Here are five examples out of possibly thousands of processes that happen every day at Tesla. What is important is to find those that create the most value for Tesla and have to be performed by Tesla employees.

1. **Tesla procures automobile parts from auto suppliers** – Because of Tesla's unique styling, getting quality parts from its suppliers on a timely basis will support its manufacturing business.

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2. **Tesla manufactures batteries for its electric vehicle at its desired specifications** – The quantity and quality of its batteries are of critical importance to Tesla.
3. **Accepting and processing preorders from its customers** – Tesla receives some indication of the demand for each of its products, that helps with planning.
4. **Tesla markets its products** – Tesla works to get Tesla products in the front of mind for its customers.
5. **Tesla car and truck design –** Tesla designs its automobiles in a way that will appeal to its customers (for example, Cybertruck).

4. (LO 1.1) Describe where the management accounting role fits in the supporting activities of the firm in the value chain.

Suggested Solution:
Management accounting fits best within the FIRM INFRASTRUCTURE activities. These activities represent all of the activities needed to support the primary activities of the company, including the CEO, finance, accounting (including management accounting), and legal. Management accounting helps provide the information needed to run the business. We note that the definition of a management accountant is an accountant who analyzes accounting-related data to help an organization make effective business decisions, consistent with a supporting activity of the firm.

5. (LO 1.1) Why are marketing and sales activities considered to be a primary value chain activity? How do those activities create value?

Suggested Solution:
If no one is aware of the products and services provided, there is no value in providing those services. Marketing and sales activities increase knowledge, and ultimately, demand for the products and services provided.

6. (LO 1.1) In a manufacturing company, which primary value chain activity is supported by procurement?

Suggested Solution:
INBOUND LOGISTICS are the activities associated with receiving and storing raw materials and other partially completed materials, and distributing those materials to manufacturing divisions when and where they are needed. Procurement, as a supporting activity, supports the primary value chain activity of INBOUND LOGISTICS.

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7. (LO 1.2) What is the difference between the roles of the management accountant and the roles of the data scientist? Are both needed?

   Suggested Solution:
   A data scientist is a person employed to acquire, maintain, curate, access, manipulate, and statistically test data to address business questions. Data scientists maintain the data, create specific datasets to address specific questions, and know where the datasets are stored and how to access them. In contrast, a management accountant understands the decisions that management is making and what is needed to evaluate those decisions, they are also intimately familiar with the characteristics of the data and have a working knowledge of data quality, data analytics techniques and statistical tools. Both a data scientist and a management accountant have an important role to play in addressing management questions.

8. (LO 1.3) Describe the AMPS Model (or AMPS Data Analytics Model). How is it used to summarize the data analytics process?

   Suggested Solution:

   The AMPS Model provides a framework for addressing management accounting questions and performing data analytics. It includes four steps: (1) Ask the Question, (2) Master the Data, (3) Perform the Analysis, and (4) Share the Story. While recursive in nature, it works to form data-derived insights into management questions.

9. (LO 1.3) Why is the AMPS model considered to be recursive? What does that mean? What exactly is repeated?

   Suggested Solution:

   After completing all the steps of the AMPS model, the management accountant and the decision-maker often are more knowledgeable and better able to ask deeper, more refined questions, suggesting that the AMPS model should best be viewed as cyclical, or recursive, in nature.

   The management team may need to refine the question (ASK THE QUESTION); consider different, perhaps complementary data sources that better match the refined question (MASTER THE DATA); perform additional analytics (PERFORM THE ANALYSIS); and retell the story in each iteration (SHARE THE STORY) before the issue/problem/challenge can be finally addressed with some confidence.

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10. (LO 1.3) What is the difference between descriptive analytics and diagnostic analytics?

    Suggested Solution:
    While descriptive analytics works to address the question of "What happened?", diagnostic analytics works to address the question of "Why did it Happen?". They use different techniques to address these questions.

11. (LO 1.3) Why would you want to perform descriptive analytics before predictive analytics?

    Suggested Solution:
    Before predicting what will happen or the probability that something will happen, it is often important to determine what happened in the past.

12. (LO 1.3) Some argue that a picture is worth a thousand clicks. Argue for and against the use of data visualizations when sharing the story.

    Suggested solution:

    Increasingly, visualizations are preferred to written content to communicate results. For example, 91 percent of people prefer visual content over written content.[1] Why is that? Well, some argue that the brain processes images 60,000 times faster than text (and 90 percent of information transmitted to the brain is visual). However, sometimes it is hard to see precise numbers in a visual, so that would be one case where a table of numbers might be superior to a data visualization.

13. (LO 1.4) Why do descriptive analytics techniques use counts, totals, sums, and averages to help address the question, "What happened?".

    Suggested Solution:
    Descriptive analytics techniques often summarize what happened by using various descriptive statistics and simple visualizations such as bar charts, line graphs and pie charts, among other techniques.

[1] Zohar Dayan, "Visual Content: The Future of Storytelling," *Forbes*, April 2, 2018, https://www.forbes.com/sites/forbestechcouncil/2018/04/02/visual-content-the-future-of-storytelling/?sh=6517bfbe3a46, April 2, 2018 (accessed January 14, 2021).

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14. (LO 1.4) Identify three or four strategic questions management has that might be addressed by a management accountant using prescriptive analytics.

Suggested Solution:
Answers will vary.
What product sales price will maximize revenue?
What level of sales will allow the company to break even?
If the exchange rate changes by either two or three percent next year, how much will profits change?
Should the company make or outsource its manufacturing to other producers?

15. (LO 1.5) Management needs management accounting information to address strategic questions. Why, then, is this information considered to be discretionary?

Suggested Solution:
Because the information produced by management accountants is produced for internal purposes only, it is considered to be discretionary information because there is no law requiring it be provided to management**.** Managers simply decide what information they need and management accountants work to provide it.

16. (LO 1.5) Why is mandatory information produced even if the benefit to management is smaller than the cost to produce it? What potentially is the cost of noncompliance?

Suggested Solution:
If adequate tax filings or regulatory filings are not submitted on a timely basis, regulators might have cause to charge penalties or close the business which may cause management to lose their jobs. This lack of compliance may also be communicated to potential or existing shareholders, customers, lenders, and employees which may cause them not to interact with the company any longer.

17. (LO 1.6) Why is presenting results in a neutral way (not favoring one conclusion over another) consistent with an ethical approach to management accounting? When, if ever, should the management accountant depart from that approach?

Suggested Solution:
The fourth standard of the IMA Statement of Ethical Professional Practice labeled Credibility, suggests that Management accountants both 1) Communicate

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information fairly and objectively, and 2) Provide all relevant information that could reasonably be expected to influence an intended user's understanding of the reports, analyses, or recommendations.
If results are not presented in a neutral way, management cannot rely on their reports, analyses or recommendations. Management accountants can still communicate their hunches based on their experience, but should be directly addressed that the information may in fact exhibit bias.

18. (LO 1.6) Why is accountant competence consistent with an ethical approach to management accounting? If the accountant isn't competent (hasn't been trained, has inadequate expertise, etc.), what is his duty to do?

    Suggested Solution:
    The first standard of the IMA Statement of Ethical Professional Practice labeled Competence, suggests that Management accountants 1) maintain an appropriate level of professional leadership and expertise by enhancing knowledge and skills. This suggests that the management accountant be well trained and have sufficient expertise to handle the management accounting tasks before them. If they are not competent, they need to recuse themselves from those specific tasks.

(Level 1) Brief Exercises

1. (LO 1.1) Order the following primary value chain activities in the correct sequence.
    a. Marketing and sales activities
    b. Service activities
    c. Operations
    d. Outbound logistics
    e. Inbound logistics

    Solution: Inbound Logistics > Operations > Outbound Logistics > Marketing and sales activities > Service Activities

2. (LO 1.1) Match each primary value chain activity with its definition.
    a. Marketing and sales activities
    b. Service activities
    c. Operations
    d. Outbound logistics
    e. Inbound logistics

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Definition	Primary Value Chain Activity
The activities that transform inputs into finished goods and services (for example, turning wood into furniture)	Operations
The support of customers after the products and services are sold to them (for example, warranty repairs, parts, and instruction manuals)	Service activities
The activities that warehouse and distribute the finished goods to customers	Outbound logistics
Identification of customers' needs and wants to help attract them to the company's products and then buy them	Marketing and sales activities
The activities associated with receiving and storing raw materials and other partially completed materials, and distributing those materials to manufacturing divisions when and where they are needed	Inbound logistics

3. (LO 1.1) Link the examples of the supporting value chain activities to the correct term.
    a. Firm infrastructure
    b. Human resource management
    c. Technology
    d. Procurement

Example Activities	Supporting Value Chain Activity

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Attorneys writing contracts with suppliers	Firm infrastructure
Purchasing and installing supply chain software to evaluate supply chain performance	Technology
Purchasing raw materials to use in the manufacturing process	Procurement
Determining the cost of one square foot of decking board product	Firm infrastructure
Hiring new production line workers	Human resources

4. (LO 1.2) Indicate whether each of the following tasks is most likely to be performed by a manager, a management accountant, or a data scientist.
    a. Serve as a liaison between other professionals (Management accountant)
    b. Help management make effective decisions (Management accountant)
    c. Write scripts to extract data from databases (Data Scientist)
    d. Make decisions for the organization that are expected to maximize business value (Management)
    e. Create specific datasets to address specific questions (Data Scientist)
    f. Match management's questions to the data that might help to answer those questions (Management accountant)
    g. Acquire, maintain, curate, access, manipulate and statistically test data (Data Scientist)

5. (LO 1.3) Link the components of the analytics mindset with the components of the AMPS model.

Analytics Mindset Component	**AMPS Model Component** (Ask the question, Master the data, Perform the analysis, or Share the story)
Extract, transform, and load relevant data	Master the data
Apply appropriate data analytics techniques	Perform the analysis

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Interpret and share the results	Share the story
Ask the right questions	Ask the question

6. (LO 1.3) To MASTER THE DATA, a component of the AMPS model, we need to determine whether each type of data is categorical, alphanumeric, or numerical. Match each data item to its data type.

Data Item	**Data Type** (Categorical, Alphanumeric, or Numerical)
Item product number	Numerical
Sale or return (Yes or no)	Categorical
Product name	Alphanumeric
In stock (Yes or No?)	Categorical
Item price	Numerical

7. (LO 1.3) Match each management accounting task with the correct step in the AMPS model (ASK THE QUESTION, MASTER THE DATA, PERFORM THE ANALYSIS, or SHARE THE STORY).

Management accounting Task	**AMPS Model Component**
Gather datasets that show budgeted projections of the sales price per unit and related costs of production and marketing for the new product	Master the data
Evaluate the break-even level of sales for a new product	Perform the analysis

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Reporting the break-even level of sales using visualizations in a written report	Share the story
Ask management accounts to determine the break-even level of sales for a newly proposed product	Ask the question

8. (LO 1.3) Match each analytics type (descriptive, diagnostic, predictive and prescriptive) with the management accounting question.

Management accounting Question	**Analytics Type**
Why did it happen?	Diagnostic analytics
Will it happen in the future?	Predictive analytics
What should we do, based on what we expect will happen?	Prescriptive analytics
What happened?	Descriptive analytics

9. (LO 1.5) Label each of the following information items created by accountants as either discretionary information or mandatory information.
    a. Tax return to the Internal Revenue Service (Mandatory Information)
    b. Break-even analysis for the firm (Discretionary Information)
    c. A summary of the firm's fixed costs versus variable costs (Discretionary Information)
    d. Financial statements to banks to help them continuously monitor the firm's financial condition (Mandatory Information)
    e. Costs of leasing versus buying a new mainframe computer (Discretionary Information)
    f. Employee terminations submission to the U.S. Department of Labor to determine level of unemployment insurance a company is required to carry (Mandatory Information)

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10. (LO 1.5) Classify each of the following information items created by accountants as the result of either financial accounting or management accounting.
    a. Information provided to auditors to help them complete their audit of financial statements (Financial Accounting)
    b. Production budget (Management accounting)
    c. The allocation of costs to different jobs (Management accounting)
    d. Financial statements for shareholder use (Financial Accounting)
    e. The product price that maximizes profits for the company (Management accounting)
    f. Evaluation of different potential planning scenarios based on customer demand (Management accounting)

11. (LO 1.2) Match the following components of the information value chain to their definitions.
    a. Data
    b. Context
    c. Information
    d. Knowledge
    e. Decision

Definition	**Component of the Information Value Chain**
The setting surrounding the data; the event, statement, or situation in which the data can be fully understood and evaluated	Context
Data organized in a way that is useful to the user in a given context	Information
Understanding of or familiarity with information gained through learning	Knowledge
Raw facts that describe an event and have little meaning on their own	Data
A conclusion reached after consideration of knowledge gained	Decision

12. (LO 1.3) Match the components of the AMPS model to a variety of management accounting tasks.

Management accounting Task	**AMPS Model Component**

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	(Ask the question, Master the data, Perform the analysis, or Share the story)
Decide which management question to emphasize to help management assess possible strategies	Ask the question
Run a regression analysis to evaluate the impact of advertising	Perform the analysis
Extract data from the accounting system and prepare it for analysis in a pivot table	Master the data
Clean the data and get the datasets ready for analysis	Master the data
Publish financial results using visualizations	Share the story
Analyze how profits will change if fuel prices increase in the coming year	Perform the analysis

13. (LO 1.3) Match the components of the AMPS model to the management accounting task of proposing a budget for the next period.

Management accounting Task	**AMPS Model Component (Ask the question, Master the data, Perform the analysis, Share the story)**
1. Find appropriate past data to use to create the budget for the next period	Master the data
2. Use prediction techniques to forecast next period's budget	Perform the analysis
3. Share the budget with management in written form and using visualizations	Share the story
4. Clean the past data and make sure all parts of the data are relevant for analysis	Master the data
5. Identify the reporting period for the upcoming budget to be produced	Ask the question
6. Provide budget presentation to all interested parties	Share the story

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7. Compare the budgeted company sales projections to industry sales projections	Perform the analysis

14. (LO 1.4) Match each management accounting questions to the correct data analytics type:
    a. Descriptive analytics
    b. Diagnostic analytics
    c. Predictive analytics
    d. Prescriptive analytics

Management accounting Question	**Data Analytics Type (Descriptive, Diagnostic, Predictive, Prescriptive)**
What is the product mix our capacity allows us to make that will allow us to maximize profits?	Prescriptive analytics
Why did the product costs differ from the amount budgeted?	Diagnostic analytics
How many car batteries did we produce last week and last month?	Descriptive analytics
What do we expect car battery sales to be next quarter?	Predictive analytics

15. (LO 1.4) Match each management accounting question to the correct data analytics type:
    a. Descriptive analytics
    b. Diagnostic analytics
    c. Predictive analytics
    d. Prescriptive analytics

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Management accounting Question	Data Analytics Type
What should we do if the inputs for our products increase in price?	Prescriptive analytics
Why did sales, general, and administrative expenses increase relative to our closest competitor?	Diagnostic analytics
Which product is the most profitable one for our company?	Descriptive analytics
What is our expected profitability over the next five years?	Predictive analytics

16. (LO 1.4) Match each data analytics technique with the correct type of data analytics:

a. Descriptive analytics
b. Diagnostic analytics
c. Predictive analytics
d. Prescriptive analytics

Data Analytics Technique	Data Analytics Type
Computation of total sales by product over the past quarter	Descriptive analytics
Determining the difference between budgeted performance and actual performance	Diagnostic analytics
Considering the break-even level of products sold for a	Prescriptive analytics

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new product based on expected performance	
Creating sales forecasts	Predictive analytics
Evaluating production statistics based on comparison with past performance	Diagnostic analytics
Identifying percentage changes from last period to this period	Descriptive analytics

17. **(LO 1.6) Match each characteristic from the IMA Statement of Ethical Professional Practice to its Specific Standard (Competence, Confidentiality, Integrity or Credibility):**

Ethics Characteristic	**IMA Statement of Ethical Professional Practice to its Specific Standard (Competence, Confidentiality, Integrity or Credibility**
Mitigate actual conflicts of interest	Integrity
Communicate information fairly and objectively	Credibility
Maintain an appropriate level of professional leadership and expertise by enhancing knowledge and skills	Competence

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Refrain from using confidential information for unethical or illegal advantage.	Confidentiality
Report any delays or deficiencies in information, timeliness, processing, or internal controls in conformance with organization policy and/or applicable law.	Credibility
Contribute to a positive ethical culture and place integrity of the profession above personal interests	Integrity

(Level 1) Problems

1. (LO 1.4) Management is asking you to determine which of your company's products is most profitable in Arizona. This will help them determine their marketing plans to promote the product, and ultimately based on demand for its product, their expected production plans.

   Required: Using the four components of the AMPS model, explain each step in addressing management's question.

   Solutions will vary.

AMPS Model Component	**Detailed Steps in Determining Which Product is Most Profitable**
Ask the question	Which of our products sold in Arizona is the most profitable?
Master the data	Gather product sales price (revenue) and appropriate

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	costs (cost of goods sold, advertising costs, etc.)
Perform the analysis	Calculate gross profit, contribution margin, etc. by product. Determine whether total margin (total in dollars) or margin percentage is a better metric, etc.
Share the story	Communicate findings to management using tables, histograms, etc.

2. (LO 1.4) Analysis: Management is asking you to determine the break even level of sales for a new product (in units sold).

   Required: Using the four components of the AMPS model, explain each step a cost accountant would use in addressing management's question.

AMPS Model Component	**Detailed Steps in Determining the Break-even Level of Sales**
Ask the question	How many units need to be sold to break even?
Master the data	Gather fixed and variable costs.
Perform the analysis	Use goal-seek analysis, or appropriate calculations, to determine break-even level
Share the story	Communicate break-even level for each product by reports, tables and/or visualizations.

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3. (LO 1.3) Download the SkyDio Drone SKU dataset. Note the sales price and cost of each SKU (product). Use Excel to address the following questions. You may want to complete the Excel tutorial in Appendix A before attempting this assignment.

   Required:

   a. What is the SKU with the highest sales price? (Hint: Use =max() function to calculate) **SK2-PRK**
   b. What is the highest cost of any SKU? (Hint: Use =max() function to calculate) **$1,486**
   c. What is the SKU with the lowest sales price? (Hint: Use =min() function to calculate) **SK2-USB**
   d. What is the lowest cost of any SKU? (Hint: Use =min() function to calculate) **$11**
   e. What is the average sales price of the SKUs offered for sale (round to two digits)? (Hint: Use =average() functions to calculate). **$569.64**
   f. What is the median cost of the SKUs offered for sale? (Hint: Use =median() functions to calculate). **$81.5**

4. (LO 1.3) Download the DJI Mavic Drone SKU dataset. In Excel, calculate the gross margin (Sales Price – Cost) and gross margin percentage [(Sales Price – Cost)/Sales Price] for each SKU (product). You may want to complete the Excel tutorial in Appendix A before attempting this assignment.

   Required:

   a. What is the SKU with the highest gross margin? (Hint: Use =max() function to calculate) **DJI-AIF**
   b. What is the SKU with the highest gross margin percentage? (Hint: Use =max() function to calculate) **DJI-MIN**
   c. What is the SKU with the lowest gross margin? (Hint: Use =min() function to calculate) **DJI-GBA**
   d. What is the SKU with the lowest gross margin percentage? (Hint: Use =min() function to calculate) **DJI-IFB**
   e. What is the average and median gross margin of the SKUs offered for sale? (Hint: Use =average() and =median() functions to calculate). **Average Gross Margin is 183.25; Median Gross Margin is 117.5**
   f. What is the average and median gross margin percentage of the SKUs offered for sale (round to three digits)? (Hint: Use =average() and =median() functions to calculate). **Average = 0.387; Median 0.388**

5. (LO 1.3) Download the DJI Mavic Drone Sales Journal dataset in Excel. Note the sales price and cost of each sale. In Excel, calculate the gross margin (Sales Price – Cost) for each sale. Use a pivot table to determine the following. It may be helpful to

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perform this project after completing Lab 1.3 Excel, Lab 1.3 Tableau, or Lab 1.3 Power BI.

Required:

a. What are the total sales for SKU DJI-AIR? **$11,988**
b. What is the total gross margin for sales of SKU DJI-MMC? **$790**
c. Which product (SKU) had the highest sales during the month? **MAV-2II**
d. Which product (SKU) had the lowest gross margin during the month? **DJI-GBA**

6. (LO 1.3) Download the SkyDio Drone Sales Journal dataset in Excel. Note the sales price and cost of each sale. In Excel, calculate the gross margin (Sales Price – Cost) for each line of the invoice. Use a pivot table to determine the following. It may be helpful to perform this project after completing Lab 1.3 Excel, Lab 1.3 Tableau, or Lab 1.3 Power BI.

Required:

a. What are the total sales for SKU SK2-CIK? **$25,186**
b. What is the total cost for all sales of SKU SKY-BAT? **$1,386**
c. What is the total gross margin for SKU SK2-BEA? **$945**
d. Which product (SKU) had the highest sales during the month? **SKY-PRK**
e. Which product (SKU) had the lowest cost of sales during the month? **SK2-USB**
f. Which product (SKU) had the highest gross margin during the month? **SKY-PRK**

7. (LO 1.3) Download the SkyDio Drone Sales Journal dataset in Excel. Note the sales price and cost of each sale. In Excel, calculate the gross margin (Sales Price – Cost) for each line of the invoice. Use a pivot table to determine the following. It may be helpful to perform this project after completing Lab 1.3 Excel, Lab 1.3 Tableau, or Lab 1.3 Power BI.

Required:

a. What is the total gross margin earned from customer 3022? **$821**
b. What are the total sales for customer 3000? **$1,328**
c. What is the total cost of sales for customer 3039? **$885**
d. Which customer bought the most during the month? **Customer 3013**
e. Which customer bought the least during the month? **Customer 3008**
f. What was the total amount of customer sales for the month for the company? **$142,986.93**

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8. (LO 1.6) Santos Romero, a management accountant at PAM Transportation, has been around a long time. In fact, he's been around so long that he believes he knows what has made and will continue to make the company successful and profitable. Given that there are no external standards to follow in management accounting, he would like to pick and choose which specific data to show management in a way that highlights his preferred outcome.

Required:

1. Is Bob's approach ethical or not ethical? Explain.

Suggested Solution: Santos is certainly free to share his opinion with management, and can tell them his preferred outcome, as long as he clearly discloses to management the decisions he has made regarding the data analysis. Absent additional disclosures made directly to management, he should choose the data, perform the analysis, and share the results in an unbiased manner, and let management make the decisions in the way they like.

2. How can Santos provide management with various scenarios without overemphasizing his preferred outcome? If he does show various scenarios, what type of analytics is that (descriptive, diagnostic, predictive, or predictive)? Explain.

Suggested Solution: Prescriptive analytics shows a number of what-if analysis that allow the analyst to show different analyses, sensitivity analysis regarding the input, scenario analysis, etc.

9. (LO 1.5) Consider the chapter's opening story regarding the increased cost and increased price for Tesla's solar roof.

Required: Using the AMPS model, explain how Tesla could have avoided the following problems in each of these four areas:

1. What would be the appropriate question to determine the cost of a solar roof?

   Suggested Solution: What are the cost components? Is installation included. Are they fixed, variable or mixed in nature? Do they depend on scale?
2. What data would you use?

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Suggested Solution: Does the company have data on this car model? Are there other solar roofs they have installed, even if it is on other products such that Tesla might have appropriate data?

3. Since the type of question leads to the appropriate analytics techniques, which analytics technique fits the question you asked in letter a. above?
   Suggested Solution: Summary of past performance, Scatterplots, regression analysis, forecasts, etc.

4. What time of visualization would work to show your findings to Elon Musk and the Tesla management team?
   Suggested Solution: Descriptive statistics of past performance shown in tables or simple charts, scatterplots, regression results in tables, etc.

10. (LO 1.3) The following data visualization explains the relationship between total monthly profit margin and labor cost per lawn.

Required:

Suggested Solution:

a.What does the following data visualization tell us about the relationship between labor cost per lawn mowed and monthly (profit) margin (the extent to which revenues exceed expenses) as shown on the vertical axis?

As the labor cost per lawn goes up, the overall profitability (profit margin) declines. There is a negative relationship between the labor cost per lawn mowed and the monthly profit margin.

b. Is the data visualization above better or worse than the same data in the following tabular format? Explain.

The same data is shown in the table as is shown in the visualization; however, it is often easier to see trends using a line graph. If exact details of the decline in profitability as labor costs increase are needed, the table is likely best. If you're trying to view overall trends, the visualization (line graph) is likely the best way to report results to stakeholders.

11. (LO 1.1) Consider the Value Chain in Exhibit 1.2 as a guide and apply it to Apple:

Required:

Suggested Solution:

1. Give examples of the primary activities Apple employs at their company to create value with its iPhone product.

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INBOUND LOGISTICS are the activities associated with receiving and storing raw materials and other partially completed materials, and distributing those materials to manufacturing divisions when and where they are needed.

Apple meticulously designs its products – that is probably the area of greatest value creation. Apple and its contractors get necessary parts to create its iPhone products.

OPERATIONS are the activities that transform inputs into finished goods and services.

While Apple outsources most of its production to contractors (including FoxConn), it requires significant coordination with Apple to get the highest quality product.

OUTBOUND LOGISTICS are the activities that warehouse and distribute the finished goods to customers.

Apple and its contractors warehouse and distribute finished goods.

MARKETING AND SALES ACTIVITIES identify the needs and wants of customers to attract them to the company's products and then buy them.

Apple has a significant presence in marketing its products, and is probably the second biggest area of value creation after design.

SERVICE ACTIVITIES provide support to customers after the products and services are sold to them. Service activities include warranty repairs, parts, instruction manuals, and phone or internet support.

Apple provides warranty services and support for its products. Apple also maintains an app store, data storage, music and video store, etc. to both support its iPhone and serve as additional sources of revenue.

2. Where would you put a management accountant at Apple, in which supporting activity? Why does it fit best there?

Management accounting fits best within the FIRM INFRASTRUCTURE supporting activities. Management accounting provided the information needed to run the business at Apple to decide which products to manufacture and at what price, etc. We note that the definition of a management accountant is an accountant who analyzes accounting-related data to help an organization make effective business decisions, consistent with a supporting activity of the firm.

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12. (LO 1.3) In discussing the first step of the AMPS model, there is an axiom that states, "Your data won't speak unless you ask them the right data analysis questions". What does this mean in terms of matching the right question with the available data?

Required:

Let's say you are the CEO of Chipotle (an American chain of fast casual restaurants), and you are trying to decide whether to add a drive-through component to all your stores to increase sales and profits. What question would you ask to address this question, and what data would you seek to address this question directly (imagine you can find and use any available data to answer this question).

Suggested solution:
Answers will vary but questions include any of these possibilities and more:

Questions:
What is the return on investment for a drive-through component?
How much does a drive-through add in sales volume to a typical fast-food restaurant?
Is the sales per order greater for drive-through vs. in-store orders?
How much does drive-through cannibalize in-store orders?
How much does a drive-through system cost per store?
Which fast-food restaurant is most similar to Chipotle? Is there industry data available to analyze?

13. (LO 1.1) Consider the Information Value Chain in Exhibit 1.5.

Required: Imagine and improvise context for each of the following eight data items to turn them from data into information. What additional contextual information might be needed to evaluate the data?

Answers will vary.

1. The gross margin of the new drone product is 40%.

   Suggested context: Could we compare to the other drone products (whether for the focal company or for a competitor) to see how the focal company measures up?

2. The salespeople are demanding a 10% raise.

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Suggested context: Can we compare this raise to other salespeople in the industry, to sales people in general, or to other employees at the focal company to provide needed context?

3. The accountant found 123 errors in the journal entries.

   Suggested context: Are these big or small errors? Are they material or not? How many errors are typically made?

4. The product can no longer be manufactured in Vietnam due to export restrictions.

   Suggested context: Are other companies in the same situation? Is there something specific about our product that makes it such that it cannot be exported? Does this restriction happen often? Is the restriction permanent?

5. Profits at Netflix increased by 2.1%.

   Suggested context: Is that the increase in profits this month, this quarter or this year? How does it compare to the past?

6. Sales at Chipotle are expected to increase next year.

   Suggested context: Have sales at Chipotle been increasing in the past (this year)? Are sales increasing at other fast-food companies? Is GDP increasing and is that the reason for the increase?

7. Sales returns at Dillard's fell by 2% in January.

   Suggested context: Is that 2% compared to last year in January? Or last month? Does it tie to holiday sales? Is that unusual? Did sales increase?

8. Inventory of last year's Kubota model increased by 7% in May.

   Suggested context: Is inventory increasing because it has not sold as well? Does the inventory suggest obsolescence? Are sales increasing? Which Kubota model is it?

14. (LO 1.3) Chipotle has a goal of maximizing its profits over the next five years.

Required: For each of the following types of questions, imagine/improvise questions specific questions to support Chipotle's goal.

Answers will vary.

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1. What happened? What is happening?
   What was net income over the past five years?
2. Why did it happen? What are the root causes of past results?
   How different was net income as compared to competitors? Is income increasing at an increasing rate?
3. Will it happen in the future? What is the probability something will happen? Is it forecastable?
   What is the projected net income over the next five years?
4. What should we do based on what we expect will happen? How do we optimize our performance based on potential constraints?"
   How sensitive are future profits to an increase in meat (protein) and vegetable prices?

15. (LO 1.5) Consider the Senior Cost Position at HT Group in Exhibit 1.15 from the perspective of the AMPS model.

Required: Which characteristics of the job position are consistent with each component of the AMPS model? Are some components emphasized over others? Use specific items from "Key Roles and Responsibilities" and "The Ideal Candidate" in your response.

Answers will vary.

Ask the Question:

Investigate and resolve significant manufacturing variances to standard costs and significant variances to budgets and forecasts

Master the Data:

Conduct the monthly financial close of inventory-based transactions for approximately 40 organizations, including 6 factories

Perform the Analysis:

Strong analytical and problem-solving skills

Prepare actual vs. plan (budget) analysis. Prepare various financial analysis related to manufacturing costs, inventory, and expense information for various customers as needed for decision-making support.

Share the Story:

Exceptional written and verbal communication skills

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Ability to effectively translate results of detailed analysis into clear, concise, and actionable recommendations

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Chapter 1 Lab Solutions

Lab 1.1 Excel Solution

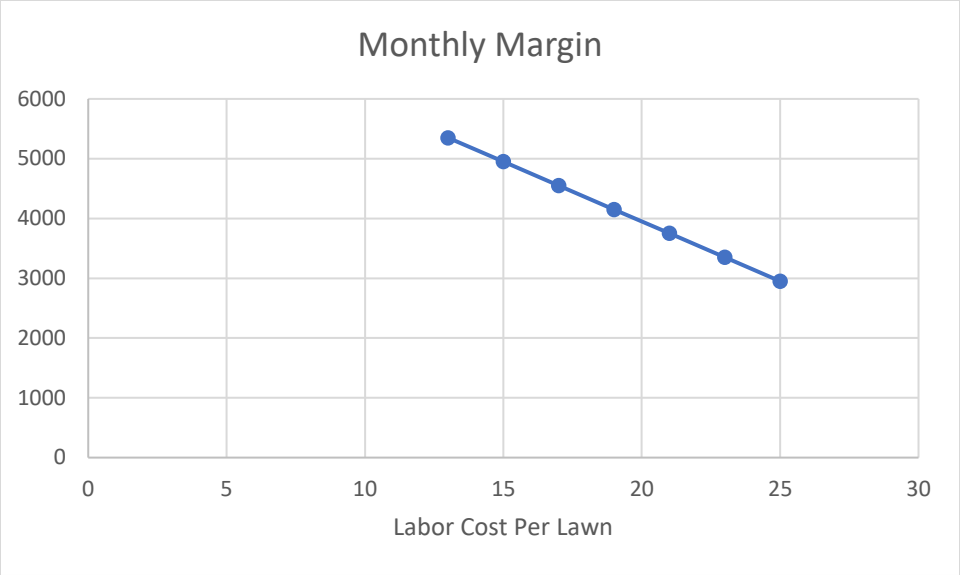
Lab 1.1 Excel Screenshot Submission 1: Take a screenshot of the completed spreadsheet, paste it into a Word document named "Lab 1.1 Excel SS.docx" and label the screenshot Submission 1.

	A	B	C	D
1	Base Scenario		Scenario 1	Scenario 2
2			**per Lawn**	**per Lawn**
3				
4	Assumption: Total Lawns Serviced Each Month		200	200
5				
6	**Revenue**		$50	$50
7				
8	**Costs**			
9		Monthly		
10	Truck	300	1.50	1.50
11	Mowers	300	1.50	1.50
12	Other Equipment	100	0.50	0.50
13	Labor (Average $13/yard or $25/yard)		13.00	25.00
14	Maintenance	100	0.50	0.50
15	Insurance	300	1.50	1.50
16	Fuel		3.00	3.00
17	Supplies		1.50	1.50
18	Advertising	50	0.25	0.25
19	Cost per Lawn		23.25	35.25
20				
21	Margin Per Lawn		26.75	14.75
22				
23	Total Monthly Margin		5350.00	2950.00

Lab 1.1 Excel Screenshot Submission 2: Take a screenshot of the scatter plot showing labor cost per lawn and monthly margin and paste it into the same Word document, and label the screenshot Submission 2.

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Lab 1.1 Excel Assessment Questions

	Questions	Answer
Assessment 1	What is the total monthly margin for scenario 1?	$5,350.00
Assessment 2	In scenario 1, what is the expected number of lawns that will be mowed each month?	200
Assessment 3	What is the total margin per lawn for scenario 1?	$26.75
Assessment 4	What is the total monthly margin for scenario 2?	$2,950
Assessment 5	In scenario 1, what is the cost of the monthly truck payment per lawn?	$1.50

Lab 1.1 Excel Analysis Questions

1. What is the reason for the difference between the margin per lawn in scenario 1 and in scenario 2?

   The biggest difference is the estimate of the cost of labor for each from $13/lawn to $25/lawn that makes a dramatic difference in the profitability of each job. This causes a difference between a margin of $26.75 and a margin of $14.75 per lawn.

2. Why might some lawns require $13/lawn of labor while others require $25/lawn of labor? Do the two rates suggest a difference in quality?

   All other things equal, the difference between the labor per lawn may just be the speed of the laborers, or the size of the lawn, or it could be that the landscaping/lawn mowing company may believe that it can provide higher quality service with two workers instead of one.

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3. To run this business, you'd have to leave a job where you earn $4,000/month. Given the results of the analysis, what do you choose and why?

   In scenario 1, according to our projections, you could make $5,350 per month, which is more than the benchmark $4,000 per month.
   However, in scenario 2, if the margin is only $2,950, that would obviously be less than the needed $4,000 per month.
   And assuming that these jobs are only available in the summer time, what would he do in the winter time when mowing jobs would not be as plentiful to get the needed $4,000?

Alt Lab 1.1 Excel Solution

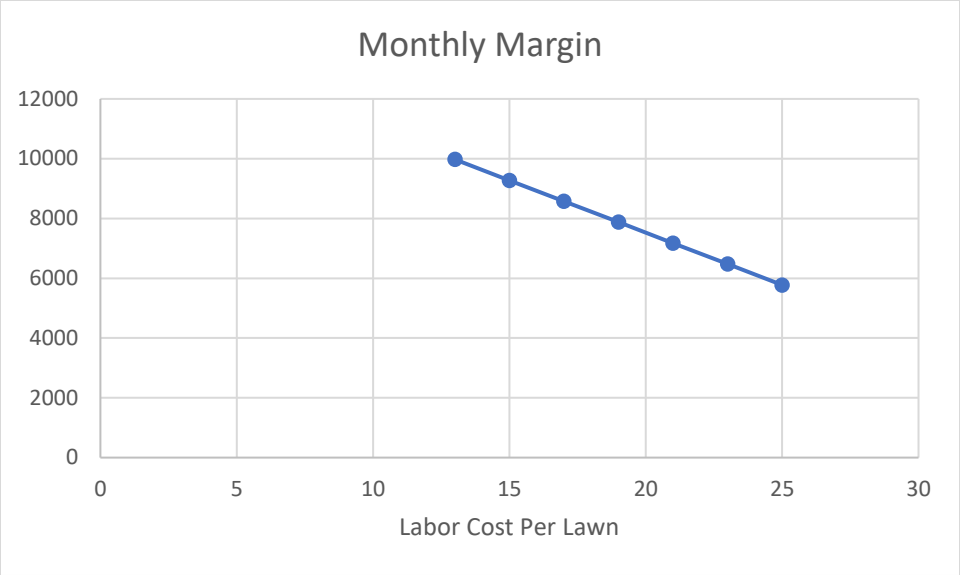
Alt Lab 1.1 Excel Screenshot Submission 1: Take a screenshot of the completed spreadsheet, paste it into a Word document named "Alt Lab 1.1 Excel SS.docx" and label the screenshot Submission 1.

	A	E	F	G
1	Base Scenario	Enhanced	Scenario 3	Scenario 4
2			**per Lawn**	**per Lawn**
3				
4	Assumption: Total Lawns Serviced Each Month		*350*	*350*
5				
6	**Revenue**		$50	$50
7				
8	**Costs**			
9		Monthly		
10	Truck	300	0.86	0.86
11	Mowers	300	0.86	0.86
12	Other Equipment	100	0.29	0.29
13	Labor (Average $13/yard or $25/yard)		13.00	25.00
14	Maintenance	100	0.29	0.29
15	Insurance	300	0.86	0.86
16	Fuel		3.00	3.00
17	Supplies		1.50	1.50
18	Advertising	300	0.86	0.86
19	Cost per Lawn		21.50	33.50
20				
21	Margin Per Lawn		28.50	16.50
22				
23	Total Monthly Margin		9975.00	5775.00

Alt Lab 1.1 Excel Screenshot Submission 2: Take a screenshot of the scatter plot showing labor cost per lawn and monthly margin, paste it into the same Word document, and label the screenshot Submission 2.

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Alt Lab 1.1 Excel Assessment Questions

	Questions	Answer
Assessment 1	What is the total monthly margin for scenario 3?	$9,975
Assessment 2	In scenario 3, what is the expected number of lawns that will be mowed each month?	350
Assessment 3	What is the margin per lawn for scenario 3?	$28.50
Assessment 4	What is the total monthly margin for scenario 4?	$5,775
Assessment 5	What is the cost per lawn in scenario 4 of the monthly mower payment? (round to two digits)	$0.86
Assessment 6	What is the cost per lawn in scenario 4 of the monthly truck payment? (round to two digits)	$0.86
Assessment 7	What is the cost per lawn in scenario 4 of the other equipment? (round to two digits)	$0.29
Assessment 8	What is the cost per lawn in scenario 3 of the monthly mower payment? (round to two digits)	$0.86
Assessment 9	What is the cost per lawn in scenario 3 of the monthly truck payment? (round to two digits)	$0.86
Assessment 10	What is the cost per lawn in scenario 3 of the other equipment? (round to two digits)	$0.29
Assessment 11	What is the margin per lawn for scenario 4? (round to two digits)	$16.50
Assessment 12	What would be the total monthly margin of scenario 4 if the number of lawns serviced were 400 instead of 350?	$6,800
Assessment 13	What would be the total monthly margin of scenario 3 if the number of lawns serviced were 400 instead of 350?	$11,600
Assessment 14	What would be the total monthly margin of scenario 4 if the number of lawns serviced were 250 instead of 350?	$3,725

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Assessment 15	What would be the total monthly margin of scenario 3 if the number of lawns serviced were 250 instead of 350?	$6,725

Alt Lab 1.1 Excel Analysis Questions

1. How did you get a monthly truck payment per lawn of $0.86?

The truck payment is calculated on a per-lawn basis, or $300/350 lawns for a total of $0.86/lawn.

2. How did you get a monthly maintenance charge per lawn of $0.29?

The monthly maintenance payment is calculated on a per-lawn basis, or $100/350 lawns for a total of $0.29/lawn.

3. Given these changed assumptions, does it make sense to leave your job, in which you earn $4,000/month? Given the results of the analysis, what do you choose and why? Is there anything else that you should consider? Explain.

In scenario 3, according to our projections, you could make $9,975 per month, which is more than the benchmark $4,000 per month.
In scenario 4, if the margin is only $5,775, which is still more than the needed $4,000 per month.
However, assuming that these jobs are only available in the summer time, what would he do in the winter time when mowing jobs would not be as plentiful to get the needed $4,000?
Other possible lines of business including fall leaf clean-up, snow clearing of sidewalks and driveways, etc., all might be possible.

Lab 1.2 Excel Solution

1. Return to the Sales_Transaction_Range spreadsheet, take a screenshot of the data including the new column for Invoice Amount, paste it into a word document named "Lab 1.2 Excel SS.doc" and label the screenshot submission 1.

(Source: Screengrab Microsoft Excel 365, Vernon Richardson)

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	A	B	C	D	E	F	G	H
1	Sales_Order_ID	Sales_Order_Date	Sales_Employee_ID	Customer_ID	Product_Code	Sales_Order_Quantity_Sold	Product_Sale_Price	Invoice Amount
2	20062	11/22/2024	1007	2001	2004	12	105	1260
3	20168	12/27/2024	1007	2001	2005	8	85	680
4	20383	3/4/2025	1007	2001	2004	5	105	525
5	20564	4/28/2025	1007	2001	2002	6	120	720
6	20140	12/20/2024	1006	2002	2001	5	95	475
7	20310	2/11/2025	1007	2002	2004	2	105	210
8	20308	2/11/2025	1006	2004	2004	8	105	840
9	20308	2/11/2025	1006	2004	2003	11	100	1100
10	20009	11/2/2024	1006	2005	2004	3	105	315
11	20233	1/16/2025	1006	2006	2003	7	100	700
12	20163	12/25/2024	1006	2007	2003	3	100	300

2. Return to the Sales_Transaction_Table spreadsheet, take a screenshot of the data including the new column for Invoice Amount, paste it into a word document named "Lab 1.2 Excel SS.doc" and label the screenshot submission 2.

(Source: Screengrab Microsoft Excel 365, Vernon Richardson)

	A	B	C	D	E	F	G	H
1	Sales_Order_ID	Sales_Order_Date	Sales_Employee_ID	Customer_ID	Product_Code	Sales_Order_Quantity_Sold	Product_Sale_Price	Invoice Total
2	20062	11/22/2019	1007	2001	2004	12	105	1260
3	20168	12/27/2019	1007	2001	2005	8	85	680
4	20383	3/4/2020	1007	2001	2004	5	105	525
5	20564	4/28/2020	1007	2001	2002	6	120	720
6	20140	12/20/2019	1006	2002	2001	5	95	475
7	20310	2/11/2020	1007	2002	2004	2	105	210
8	20308	2/11/2020	1006	2004	2004	8	105	840
9	20308	2/11/2020	1006	2004	2003	11	100	1100
10	20009	11/2/2019	1006	2005	2004	3	105	315
11	20233	1/16/2020	1006	2006	2003	7	100	700
12	20163	12/25/2019	1006	2007	2003	3	100	300

Lab 1.2 Excel Assessment Questions

	Questions 1-5	Answer
		Lab 4-1E
Assessment 1	When you enter raw data into Excel before formatting it, what is it called?	Range
Assessment 2	When you create a Total row in a Table, what is the default measure?	Sum
Assessment 3	What is the total sum of the Product_Sale_Price column in the worksheet "Sales_Transaction_Table"?	14,665.00
Assessment 4	What is the sum of the Product_Sale_Price column for only Product_Code 2003 in the worksheet "Sales_Transaction_Table"?	3,800.00
Assessment 5	How many different employees have created Sales Orders in the worksheet "Sales_Transactions_Table"?	2.00

Lab 1.2 Excel Analysis Questions

1. How does interacting with your Excel data in a table provide more benefits than interacting with your Excel data in a range?

Answers may vary, but tables are beneficial because of the way the auto-format to extend to a new column when you input a header title, how calculations reference header names instead of cells which can make interpreting formulas easier, and the way the formulas update all the way down a column. Additionally, tables offer the benefit of being able to add totals and to easily filter and sort the data.

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2. Even though there are many benefits to working with Excel data in tables, describe a time that you would prefer your data to be in a range instead of a table?

Answers will vary, but one possible answer is when you are just using Excel for quick calculations there is little need for the robustness of tables.

Alt Lab 1.2 Solution

1. Return to the Purchase_Orders_Range spreadsheet, take a screenshot of the data including the new column for Invoice Amount, paste it into a Word document named "Alt Lab 1.2 Excel SS.doc," and label the screenshot Submission 1.

(Source: Screengrab Microsoft Excel 365, Vernon Richardson)

Purchase_Order_ID	Purchase_Order_Date	Purchase_Employee_ID	Supplier_ID	Quantity_Purchased	Raw_Material_Purchase_Price	raw_materials_description	supplier_st	supplier_city	PO Amount
20500	11/1/2024	1009	3	3	19.99	Malt - Barley	AR	Fayetteville	59.97
20501	11/5/2024	1009	2	10	29	Hops	WA	Mabton	290
20502	11/10/2024	1009	2	6	29	Hops	WA	Mabton	174
20503	11/13/2024	1008	1	12	44.99	Malt - Wheat	MN	Minneapolis	539.88
20504	11/16/2024	1009	1	4	19.99	Malt - Barley	MN	Minneapolis	79.96
20505	11/19/2024	1008	2	12	19.99	Malt - Barley	WA	Mabton	239.88
20506	11/23/2024	1009	1	5	19.99	Malt - Barley	MN	Minneapolis	99.95

2. Return to the Purchase_Orders_Table spreadsheet, take a screenshot of the data including the new column for Invoice Amount, paste it into a Word document named "Alt Lab 1.2 Excel SS.doc," and label the screenshot Submission 2.

(Source: Screengrab Microsoft Excel 365, Vernon Richardson)

Purchase_Order_ID	Purchase_Order_Date	Purchase_Employee_ID	Supplier_ID	Quantity_Purchased	Raw_Material_Purchase_Price	raw_materials_description	supplier_st	supplier_city	PO Amount
20500	11/1/2024	1009	3	3	19.99	Malt - Barley	AR	Fayetteville	59.97
20501	11/5/2024	1009	2	10	29	Hops	WA	Mabton	290
20502	11/10/2024	1009	2	6	29	Hops	WA	Mabton	174
20503	11/13/2024	1008	1	12	44.99	Malt - Wheat	MN	Minneapolis	539.88
20504	11/16/2024	1009	1	4	19.99	Malt - Barley	MN	Minneapolis	79.96
20505	11/19/2024	1008	2	12	19.99	Malt - Barley	WA	Mabton	239.88
20506	11/23/2024	1009	1	5	19.99	Malt - Barley	MN	Minneapolis	99.95

Alt Lab 1.2 Excel Assessment Questions

Assessment 1	What is the total sum of the Raw_Material_Purchase_Price column in the worksheet "Purchase_Orders_Table"?	$1,567.65
Assessment 2	What is the sum of the Raw_Material_Purchase_Price column for only Raw_Materials_Description of Hops in the worksheet "Purchase_Orders_Table"?	$493.00
Assessment 3	How many different employees have created Purchase Orders in the worksheet "Purchase_Orders_Table"?	2
Assessment 4	What is the sum of the Raw_Material_Purchase_Price column for only Raw_Materials_Description of Malt-Barley in the worksheet "Purchase_Orders_Table"?	$399.80
Assessment 5	What is the sum of the Raw_Material_Purchase_Price column for only Raw_Materials_Description of Malt-Wheat in the worksheet "Purchase_Orders_Table"?	$674.85
Assessment 6	How many purchase orders (a count) have been made with suppliers in Fayetteville?	18
Assessment 7	How many purchase orders (a count) have been made with suppliers in Mabton?	16

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Assessment 8	How many purchase orders (a count) have been made with suppliers in Minneapolis?	18
Assessment 9	What is the earliest Purchase_Order_Date?	11/1/2024
Assessment 10	What is the latest Purchase_Order_Date?	4/21/2025
Assessment 11	How many different suppliers have Purchase_Orders been placed with?	3
Assessment 12	How many purchase orders (a count) were made with Supplier 3?	18
Assessment 13	With which supplier were the lowest number of Purchase_Orders placed?	2
Assessment 14	What is the total sum of the Quantity_Purchased column in the worksheet "Purchase_Orders_Table"?	344
Assessment 15	What is the total sum of the PO Amount column in the Worksheet "Purchase_Orders_Table"?	10357.76

Alt Lab 1.2 Excel Analysis Question

1. Do you assume that the amount of raw materials ordered fluctuates over time? Why? How could you check that?

Answers will vary, but yes, it is a safe assumption that raw materials ordered should fluctuate over time due to different product and customer demand. We could begin with the data we have and construct a line chart indicating the quantity purchased over time.

2. What other data might be interesting to add to this table to further your analysis?

Answers will vary, but some additional data that would be helpful would be coupling the purchase data with sales data to understand if the products ordered reflect changing demand. Recipe data could also be useful in better understanding how much of each raw material should be ordered.

Lab 1.3 Excel Solution

1. **Lab 1.3 Excel Submission Screenshot 1:** Take a screenshot of your detailed listing of fruit products sold from the 0.4 to 0.425 gross margin percentage range, paste it into a Word document named “Lab 1.3 Excel Submission.docx”, and label the screenshot Submission 1.

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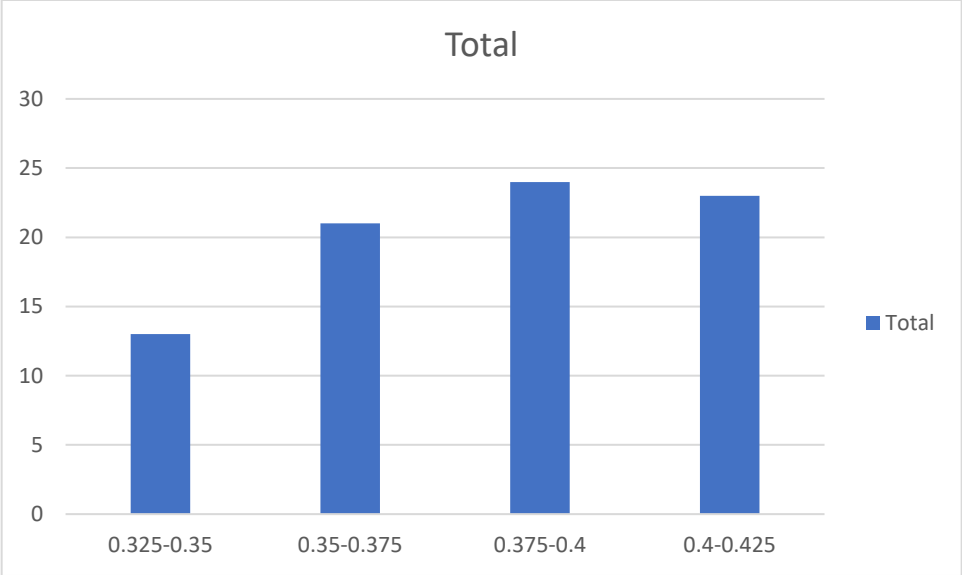
SKU	Description	Sales Price per Pound	Cost per pound	Gross Margin	Gross Margin Percentage
FRT-SAR	Salal berry	1.12	0.66	0.46	0.411
FRT-REN	Redcurrant	1.42	0.85	0.57	0.401
FRT-AVD	Avocado	1	0.59	0.41	0.410
FRT-PUE	Purple mangos	1.01	0.59	0.42	0.416
FRT-BIT	Bilberty	2	1.17	0.83	0.415
FRT-PLT	Plumcot (or Pl	2.1	1.24	0.86	0.410
FRT-BLN	Blackcurrent	2	1.18	0.82	0.410
FRT-PIL	Pineapple	0.77	0.46	0.31	0.403
FRT-PLM	PlumPrune (dr	1.31	0.77	0.54	0.412
FRT-CUN	Currant	1.75	1.04	0.71	0.406
FRT-PEA	Pear	1.83	1.07	0.76	0.415
FRT-PAY	Papaya	1.06	0.63	0.43	0.406
FRT-CHI	Chico fruit	1.75	1.03	0.72	0.411
FRT-MII	Miracle fruit	2.05	1.2	0.85	0.415
FRT-LOA	Longan	1.85	1.1	0.75	0.405
FRT-LIM	Lime	0.96	0.57	0.39	0.406
FRT-CUE	Cucumber	1.82	1.09	0.73	0.401
FRT-KII	Kiwifruit	2.32	1.37	0.95	0.409
FRT-JAU	Jambul	1.95	1.13	0.82	0.421
FRT-JAI	Jackfruit	0.63	0.37	0.26	0.413
FRT-JAB	Jabuticaba	0.89	0.52	0.37	0.416
FRT-GUV	Guava	0.94	0.56	0.38	0.404
FRT-GRI	GrapeRaisin	1.25	0.74	0.51	0.408

(Source: Screengrab Microsoft Excel 365, Vern Richardson)

Lab 1.3 Excel Submission Screenshot 2: Take a screenshot of your histogram as a pivot chart, paste it into the same Word document, and label the screenshot Submission 2.

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(Source: Screengrab Microsoft Excel 365, Vern Richardson)

Lab 1.3 Excel Assessment Questions

	Questions 1-5	Answer
		Lab 1.3 Excel
Assessment 1	Which of these products has the highest gross margin percentage?	**Jambul**
Assessment 2	What word do we use to describe the different groupings in a histogram?	**Bin**
Assessment 3	Which gross margin percentage bin does the Goji Berry SKU fit in?	0.35 - 0.375
Assessment 4	Which gross margin percentage bin does the FRT-COU SKU fit in?	0.35 - 0.375
Assessment 5	How many products (SKUs) have gross margin percentages in the 0.325 - 0.35 range?	13

Lab 1.3 Excel Analysis Questions

1. **Why would Fruitopia consider not carrying SKUs with low gross margin percentages?**
   Answers will vary. Since Fruitopia makes less money per dollar sales of a fruit on these items, Fruitopia may wish to emphasize other products with a higher gross margin percentage.
2. **What other considerations should Fruitopia consider when carrying SKUs than just the gross margin percentages realized?**

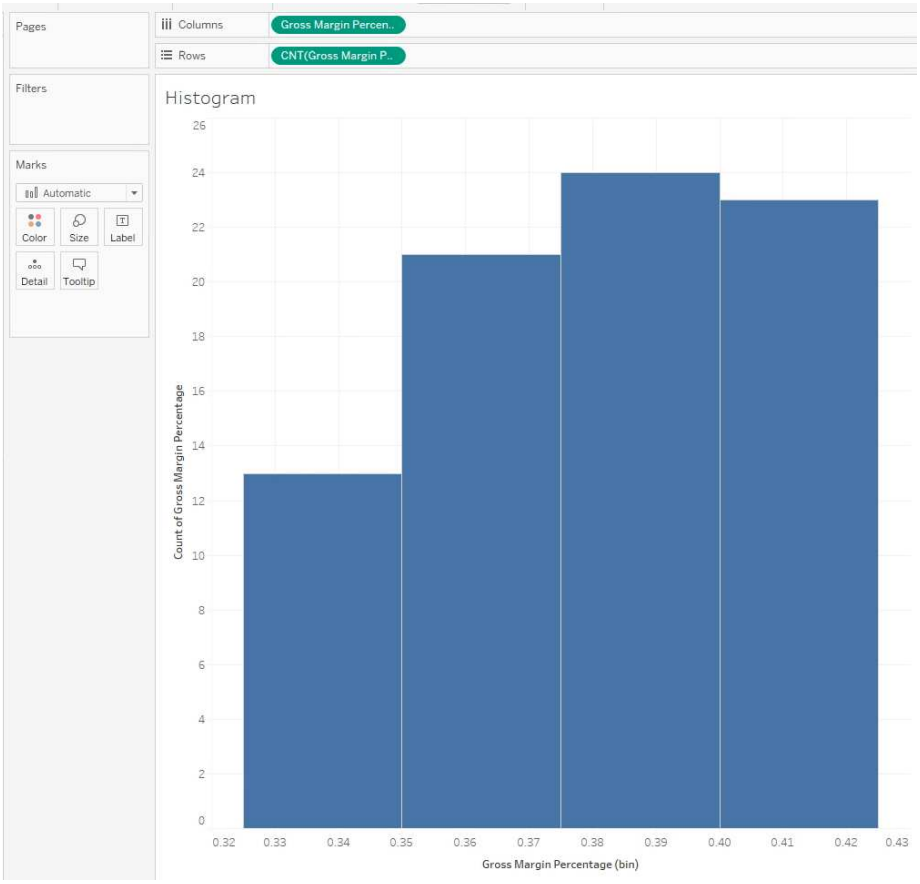
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Answers will vary. Some other considerations might include the rate at which product goes bad, shipping costs, or gross margin percentages of other possible SKUs, among others.

Lab 1.3 Tableau Solution

1. **Lab 1.3 Tableau Submission Screenshot 1:** Take a screenshot of your histogram, paste it into a Word document named "Lab 1.3 Tableau Excel Submission.docx" and label the screenshot Submission 1.

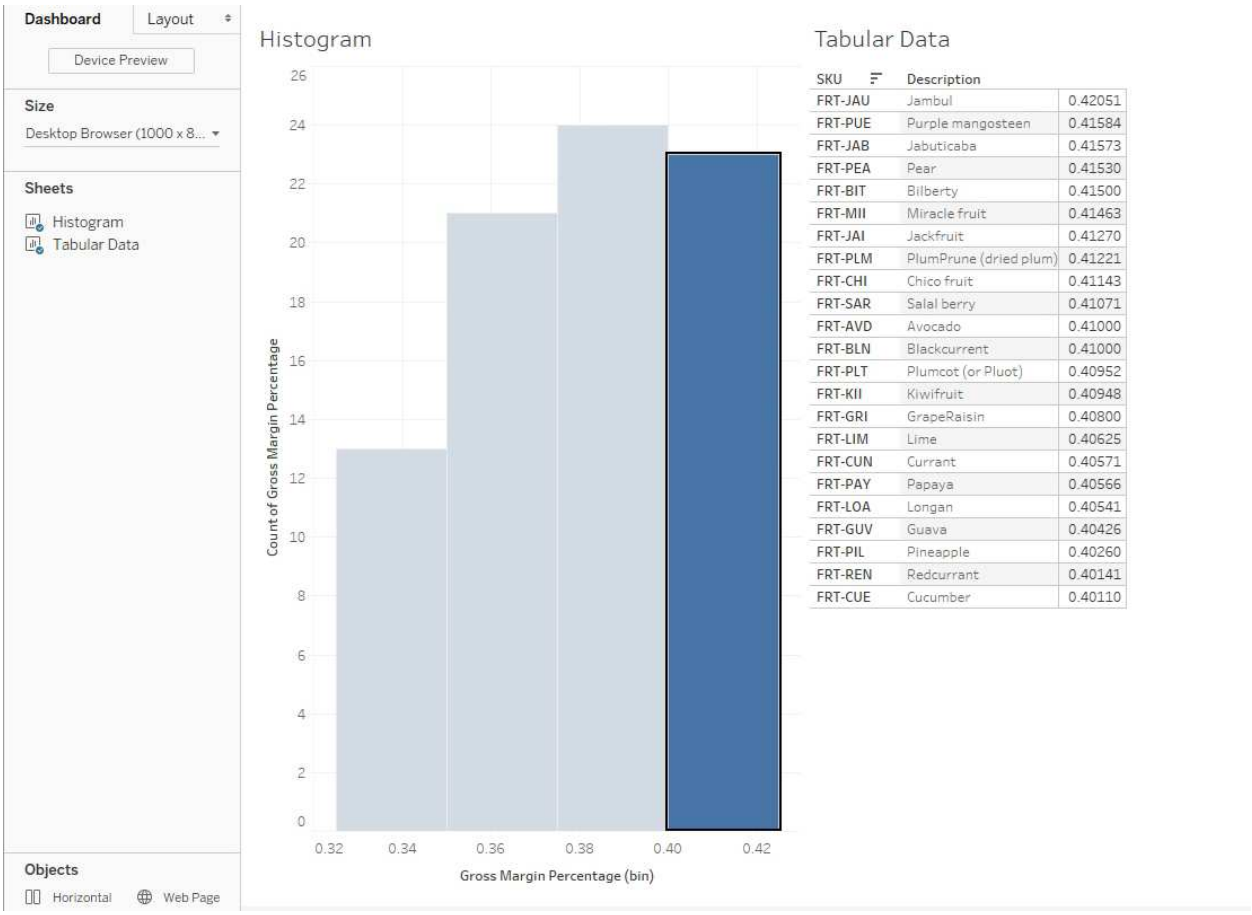


(Source: Screengrab Tableau, Vernon Richardson)

Lab 1.3 Tableau Submission Screenshot 2: Take a screenshot of your dashboard, paste it into the same Word document, and label the screenshot Submission 2.

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(Source: Screengrab Tableau, Vernon Richardson)

Lab 1.3 Tableau Assessment Questions

	Questions 1-5	Answer
		Lab 1.3 Tableau
Assessment 1	What is the size of each bin?	**0.025**
Assessment 2	Is this dataset negatively (left) or positively (right) skewed?	left
Assessment 3	Which gross margin percentage bin does the FRT-COU SKU fit in?	0.35 - 0.375
Assessment 4	How many products (SKUs) have gross margin percentages in the 0.325 - 0.35 range?	13
Assessment 5	How many products (SKUs) have gross margin percentages in the 0.35 - 0.375 range?	21

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Lab 1.3 Tableau Analysis Questions

1. **In two sentences, discuss why adjusting bin size to a smaller or larger interval impacts the way the data is interpreted.**

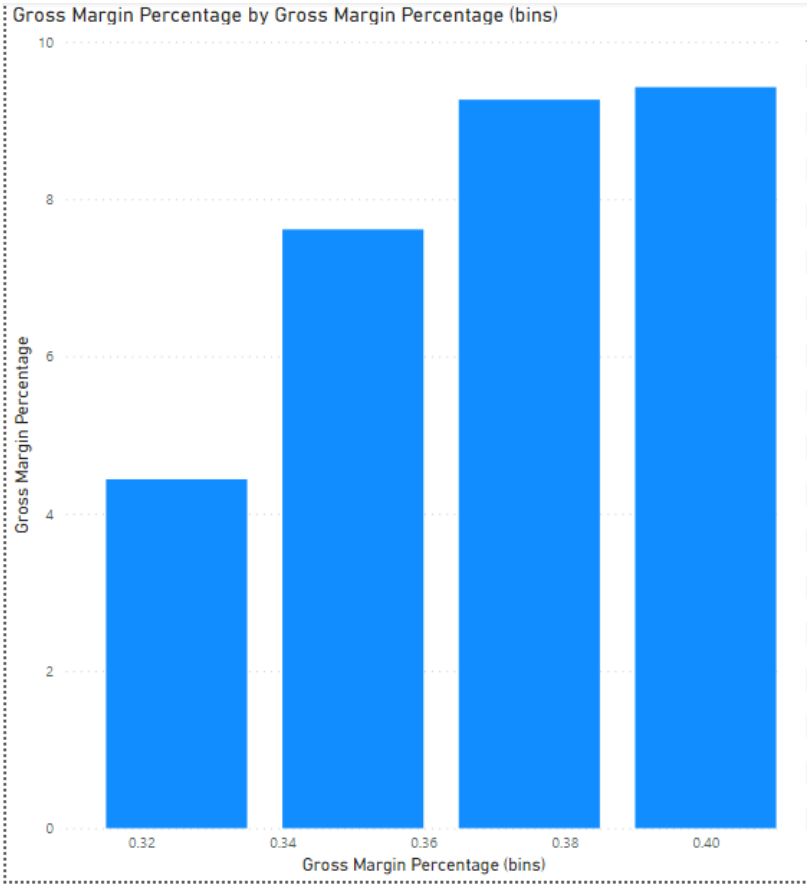
   Smaller intervals might be able to show more detail, but at the same time may be so small to not be able to show overall trends. There are advantages and disadvantages of using both smaller or larger bin sizes in a histogram setting.

2. **Identify one meaningful insight from this dataset to share with management and write it down in two sentences.**

   Answers will vary depending on the insight drawn.

Lab 1.3 Power BI Solution

Lab 1.3 Power BI Submission Screenshot 1: Take a screenshot of your histogram, paste it into a Word document named "Lab 1.3 Power BI Submission.docx" and label the screenshot Submission 1.

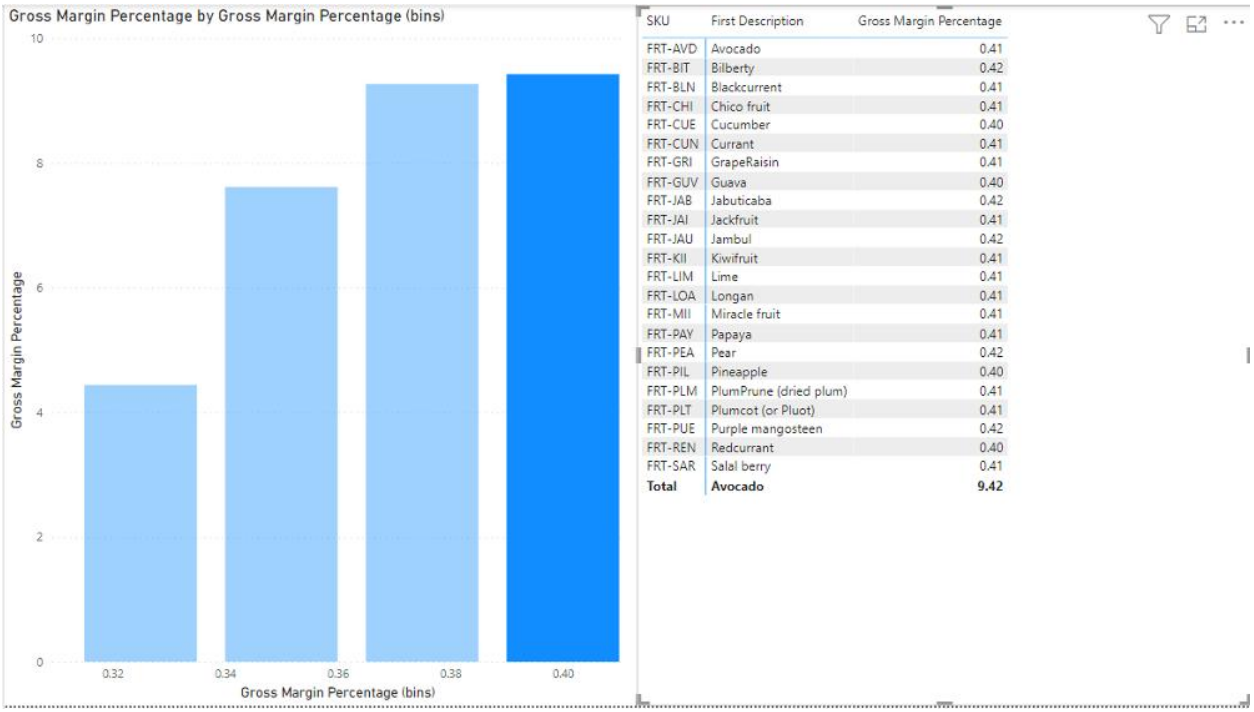


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(Source: Screengrab Power BI, Vernon Richardson)

Lab 1.3 Power BI Submission Screenshot 2: Take a screenshot of your dashboard, paste it into the same Word document, and label the screenshot Submission 2.



SKU	First Description	Gross Margin Percentage
FRT-AVD	Avocado	0.41
FRT-BIT	Bilberry	0.42
FRT-BLN	Blackcurrent	0.41
FRT-CHI	Chico fruit	0.41
FRT-CUE	Cucumber	0.40
FRT-CUN	Currant	0.41
FRT-GRI	GrapeRaisin	0.41
FRT-GUV	Guava	0.40
FRT-JAB	Jabuticaba	0.42
FRT-JAI	Jackfruit	0.41
FRT-JAU	Jambul	0.42
FRT-KII	Kiwifruit	0.41
FRT-LIM	Lime	0.41
FRT-LOA	Longan	0.41
FRT-MII	Miracle fruit	0.41
FRT-PAY	Papaya	0.41
FRT-PEA	Pear	0.42
FRT-PIL	Pineapple	0.40
FRT-PLM	PlumPrune (dried plum)	0.41
FRT-PLT	Plumcot (or Pluot)	0.41
FRT-PUE	Purple mangosteen	0.42
FRT-REN	Redcurrant	0.40
FRT-SAR	Salal berry	0.41
Total	**Avocado**	**9.42**

(Source: Screengrab Power BI, Vernon Richardson)

Lab 1.3 Power BI Assessment Questions

	Questions 1-5	Answer
		Lab 1.3 Power BI
Assessment 1	Which SKU had the lowest gross margin percentage?	**Mulberry**
Assessment 2	Which SKU had the highest gross margin percentage?	Jambul
Assessment 3	Which size of bin was selected in this lab?	**0.025**
Assessment 4	Which bin has the largest number of SKUs?	0.40 - 0.425

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Assessment 5	How many products (SKUs) have gross margin percentages in the 0.325 - 0.35 range?	13

Lab 1.3 Power BI Analysis Questions

1. **In two sentences, discuss why adjusting bin size to a smaller or larger interval impacts the way the data is interpreted.**

   Smaller intervals might be able to show more detail, but at the same time may be so small to not be able to show overall trends. There are advantages and disadvantages of using both smaller or larger bin sizes to help see the overall trend.

2. **Which products would you recommend dropping from the inventory list? What are the possible reasons for continuing to carry products with low gross margin percentages?**

   The products (SKUs) that have the lowest gross margin percentages would certainly be candidates for removal from the inventory list. However, if the products are still creating a positive impact on profits, might it make sense to continue to carry? Also, some companies like to carry additional products to be a one-stop shop where all possible alternative products are available so the customer knows they "can get anything there".

Alt Lab 1.3 Solution

Alt Lab 1.3 Screenshot Submission 1: Take a screenshot of your histogram, paste it into a word document named "Alt Lab 1.3 Excel Submission.docx", label the screenshot Submission 1.

Bins	*Frequency*
0.425	7
0.45	4
0.475	7
0.5	5
More	0

(Source: Screengrab Microsoft Excel 365, Vern Richardson)

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Alt Lab 1.3 Screenshot Submission 2: Take a screenshot of your detailed listing of fruit products sold from the 0.475 to 0.50 gross margin percentage range, paste it into the same Word document, and label the screenshot Submission 2.

SKU	Description	Sales Price	Cost	Gross Margin	Gross Margin %
PED-T3A	T3PA Add-On	69.99	36.4	33.59	0.480
PED-T3P	FB T3PA-Pro 3-	129.99	66.14	63.85	0.491
FLI-HOX	T-Flight Hotas	39.99	20.53	19.46	0.487
COM-FCS	T16000M FCS F	172.35	89.15	83.2	0.483
FLI-HO1	T-Flight Hotas	59.99	30.17	29.82	0.497

(Source: Screengrab Microsoft Excel 365, Vern Richardson)

Alt Lab 1.3 Assessment Questions

Assessment 1	What is the gross margin (dollars) for SKU FLI-16H?	$44.77
Assessment 2	What is the gross margin (dollars) for SKU WHL-T3P?	$194.87
Assessment 3	What is the gross margin (dollars) for SKU PED-T80?	$42.41
Assessment 4	What is the gross margin (dollars) for SKU FLI-STX?	$18.95
Assessment 5	What is the gross margin percentage for SKU FLI-16H (in decimals to three places)?	0.460
Assessment 6	What is the gross margin percentage for SKU WHL-T3P (in decimals to three places)?	0.457
Assessment 7	What is the gross margin percentage for SKU PED-T80 (in decimals to three places)?	0.446
Assessment 8	What is the gross margin percentage for SKU FLI-STX (in decimals to three places)?	0.474
Assessment 9	What was the highest gross margin percentage among all the SKU's(in decimals to three places)?	0.497
Assessment 10	How many total SKU's are there?	23
Assessment 11	How many SKU's are in the 0.4-0.425 bin?	7
Assessment 12	How many SKU's are in the 0.425-0.45 bin?	4
Assessment 13	How many SKU's are in the 0.45-0.475 bin?	7
Assessment 14	How many SKU's are in the 0.475-0.5 bin?	5
Assessment 15	How many SKU's are in the 0.5-0.525 bin?	0

Alt Lab 1.3 Analysis Questions

1. **What are the reasons a company should target high gross margin percentage SKUs?**

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High gross margin percentages represent areas that are very profitable for the company. They are items that the company may want to promote more heavily to the customer.

2. **What are the reasons a company should attempt to promote less heavily those products with low gross margin percentage?**

Products with high gross margin percentages represent products that are more profitable for the company. Those products with low gross margin percentages may be less emphasized as they don't bring as great of profitability as other products.

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