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Corret Answers are located at the end of each chapter.

TRUE/FALSE - Write 'T' if the statement is true and 'F' if the statement is false.

1) A business process is a coordinated, standardized set of activities conducted by both people and equipment to accomplish a specific business task.
   - ◎ true
   - ◎ false

2) A **business analyst** is a data scientist who collects data to help an organization make effective business decisions.
   - ◎ true
   - ◎ false

3) Data is defined as information organized in a meaningful way to be useful to the user.
   - ◎ true
   - ◎ false

4) Information is defined as being data organized in a meaningful way to be useful to the user in a given context.
   - ◎ true
   - ◎ false

5) A data scientist is a liaison between decision makers and business analysts.
   - ◎ true
   - ◎ false

6) Operations analytics uses business analytics to measure and improve the efficiency and effectiveness of the company's operations.
   - ◎ true
   - ◎ false

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7) The third step in the SOAR analytics model is to **A**ccess the data.
   - ◎ true
   - ◎ false

8) Exploratory data visualization is used to communicate results of the analysis to decision makers and other stakeholders.
   - ◎ true
   - ◎ false

CHECK ALL THE APPLY. Choose all options that best completes the statement or answers the question.

9) A visualization may be used to help with which component of the SOAR model?
   A) Specify the Question
   B) Obtain the Data
   C) Analyze the Data
   D) Report the Results

MULTIPLE CHOICE - Choose the one alternative that best completes the statement or answers the question.

10) The difficulty a person faces in understanding a problem and making a decision as a consequence of having too much data.
   A) Data Complexity
   B) Data Overload
   C) Analytics Mindset
   D) Data Challenges

11) Which step of the SOAR model would usually involve computing an average?
   A) Specify the Question
   B) Obtain the Data
   C) Analyze the Data
   D) Report the Results

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12) Which step of the SOAR model most appropriately addresses the skill mentioned by EY's analytics mindset of "extract, transform and load relevant data"?
   A) Specify the Question
   B) Obtain the Data
   C) Analyze the Data
   D) Report the Results

13) Use of a dashboard to track relevant outcomes would be consistent with which component of the SOAR model?
   A) Specify the Question
   B) Obtain the Data
   C) Analyze the Data
   D) Report the Results

14) What type of question(s) works to explain "Why did net income increase even though sales did not?"
   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?

15) What type of question is used in finding the level of sales needed to break even (exactly zero profit)?
   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?

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16) What type of question is "How long will it take for Christmas products to arrive at our stores if we source the products from Mexico rather than Indonesia?"
    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?

17) What type of question is "Should we source our products from Mexico rather than Indonesia?"
    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?

18) What type of question is predicting whether borrowers will be able to repay their loans?
    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?

19) What type of question is used in determining how to maximize revenues if there is a trade war with another country?
    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?

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20) What term is used to refer to the accuracy, validity and consistency of data used and stored over time?

A) Data veracity
B) Data integrity
C) Data quality
D) Truthful data

21) Dashboards showing current company performance are usually associated with what type of updating?

A) Dynamic
B) Static
C) Opportunist
D) Monthly

22) How much data is there expected to be in existence by the end of 2025?

A) 175 terabytes
B) 175 zettabytes
C) 175 exabytes
D) 175 yottabytes

23) Which type of graphical summary is used by a company to track various measures?

A) Trackboard
B) Graphical interface
C) Dashboard
D) Web page

24) Which type of analyst addresses questions regarding sales forecasts for each product?

A) Operations analyst
B) Marketing analyst
C) Accounting analyst
D) Financial analyst

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25) Which type of analyst would help plan the production of each product?
A) Financial analyst
B) Operations analyst
C) Accounting analyst
D) Marketing analyst

26) Which of the following is the third step of the SOAR analytics model?
A) Access the Data
B) Acquire the Data
C) Analyze the Data
D) Address the Question

27) What term refers to all the items, events and interactions that determine a company's financial health?
A) Net Income
B) Business Value
C) Stock Price
D) Market Value

28) What term refers to the willingness and ability to specify business questions, extract high quality data, analyze the data and report the results?
A) Analytics mindset
B) Analytics skills
C) Statistical skills
D) Business mindset

29) Which common visualization type would be used to compare values?
A) Pie chart
B) Bar chart
C) Line Graph
D) Scatterplot

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30) The best visualization type to show the relative proportion of Tesla's domestic sales to China, to Europe and to the United States would be which of the following?

A) Bar chart
B) Pie chart
C) Line Graph
D) Scatterplot

31) The best visualization type to show the trend in sales over the past five years at Apple would be which of the following?

A) Bar chart
B) Line Graph
C) Histogram
D) Scatterplot

32) Which common visualization type would be used to evaluate the composition of values?

A) Pie chart
B) Bar chart
C) Line Graph
D) Scatterplot

33) A line graph would be used for which visualization purpose?

A) Comparison of values
B) Distribution of values
C) Trends of values over time
D) Relationships between values

34) A scatterplot would be used for which visualization purpose?

A) Comparison of values
B) Distribution of values
C) Relationships between values
D) Composition of values

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35) A full year's worth of Instagram posts and Twitter tweets before filtering or extraction would be considered to be which of the following?
A) Evidence
B) Knowledge
C) Information
D) Data

36) Which type of value chain is composed of the events and processes going all the way from the collection of data to the compilation of information to the ultimate business decision?
A) Data value chain
B) Knowledge value chain
C) Decision value chain
D) Information value chain

37) A specialist who knows how to work with, manipulate, and statistically test data is a:
A) data scientist.
B) data analyst.
C) data acquirer.
D) decision maker.

38) Data ethics should be considered as part of which step of the SOAR model?
A) Specify the Question
B) Analyze the Data
C) Obtain the Data
D) Report the Results

39) Which analytics type explicitly uses artificial intelligence?
A) Descriptive analytics
B) Diagnostic analytics
C) Adaptive or autonomous analytics
D) Predictive analytics

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40) Which type of visualization is a graphical representation that is useful for uncovering patterns and useful insights in the data, generally as part of descriptive or diagnostic analytics?
   A) Explanatory
   B) Descriptive
   C) Predictive
   D) Exploratory

41) Which type of visualization is used in communicating the findings of the analysis to interested stakeholders?
   A) Exploratory
   B) Diagnostic
   C) Prescriptive
   D) Explanatory

42) Which type of analyst would monitor the investments made in company assets and their expected risk and return?
   A) Operations analyst
   B) Financial analyst
   C) Accounting analyst
   D) Marketing analyst

43) Suppose a company has access to high quality data (not biased), but the data is five years old. Which quality of information might it be lacking?
   A) Reliability
   B) Relevance
   C) Clean data (not missing data)
   D) Verifiable data

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44) Based on the final spreadsheet in **Lab 1.1 Excel, Assessing Profitability of a Mowing Business**, what is the reason for the difference between Scenario 1 and Scenario 2?

1	**Base Scenario**		**Scenario 1**	**Scenario 2**
2			**per Lawn**	**per Lawn**
4	**Assumption: Total Lawns Serviced Each Month**		200	200
6	**Revenue**		$50	$50
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
21	**Margin per Lawn**		26.75	14.75
23	**Total Monthly Margin**		5350.00	2950.00

A) The number of lawns serviced each month
B) The fixed costs of the mowers
C) The cost of labor for each lawn mowed
D) The amount charged (the revenue earned) for each lawn mowed

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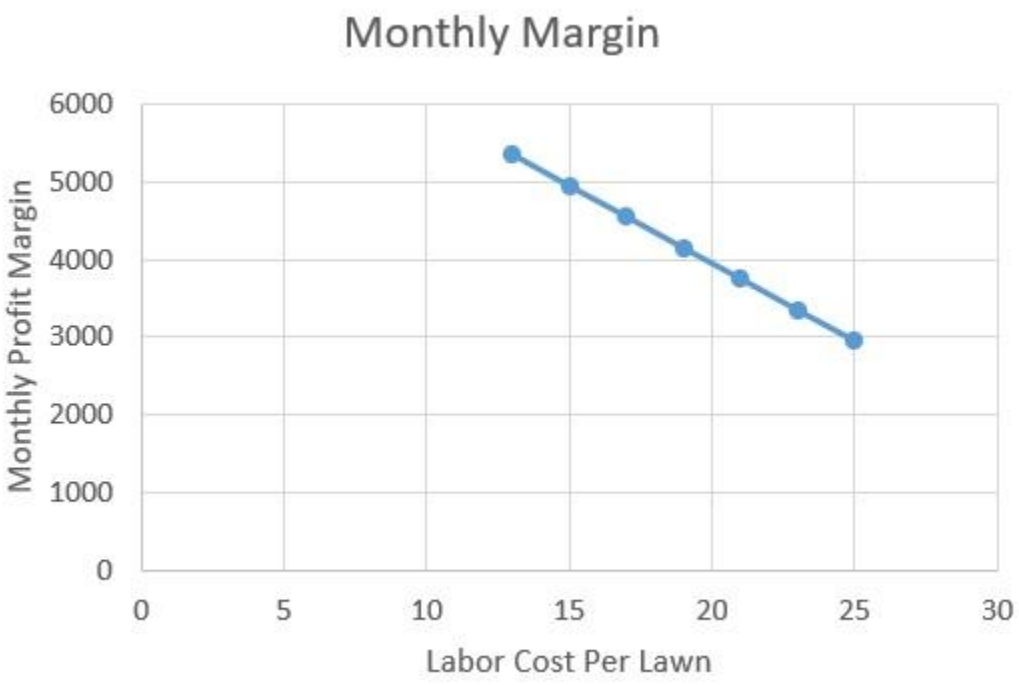
45) Based on the scatterplot in Lab 1.1 Excel, Assessing Profitability of a Mowing Business, if the labor cost per lawn is $25, what is the expected monthly profit margin?



A) $3,000
B) $5,300
C) $3,400
D) $4,500

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46) Based on this pivot table in **Lab 1.2 Excel, Assessing Customer Profitability,** which customer number is the most profitable?

	A	B
3	Row Labels	Sum of Gross Margin
4	2047	357.70
5	2088	212.23
6	2072	139.01
7	2081	137.78
8	2100	135.47
9	2060	118.74
10	2064	115.33
11	2087	114.85
12	2046	114.29
13	2086	107.41
14	2024	104.78
15	2063	96.45
16	2031	81.81
17	2018	76.79
18	2051	69.83
19	2032	66.62
20	2021	64.64
21	2079	64.00
22	2099	58.56
23	2044	56.39
24	2041	47.22
25	2067	44.94
26	2048	41.12
27	2074	38.18
28	2068	36.62

A) Customer 2087
B) Customer 2068
C) Customer 2047
D) Customer 2088

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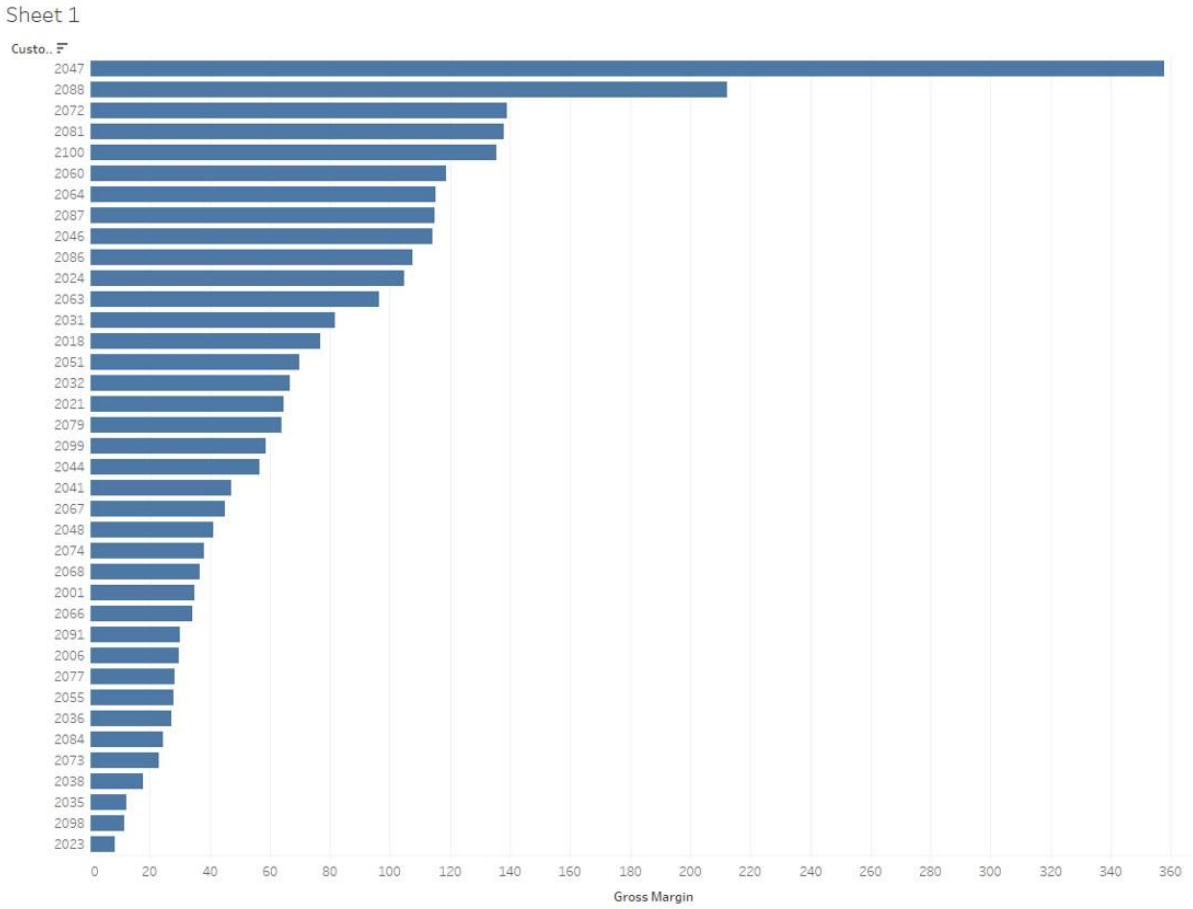
47) Based on this visualization in Lab 1.2 Tableau, Assessing Customer Profitability, which of the following customers are the most profitable?



A) Customer 2072
B) Customer 2081
C) Customer 2079
D) Customer 2074

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48) Based on this chart in **Lab 1.2 Power BI, Assessing Customer Profitability,** which of the following customers are the most profitable?

Customer #	Gross Margin
2047	357.70
2088	212.23
2072	139.01
2081	137.78
2100	135.47
2060	118.74
2064	115.33
2087	114.85
2046	114.29
2086	107.41
2024	104.78
2063	96.45
2031	81.81
2018	76.79
2051	69.83
2032	66.62
2025	64.64
2079	64.00
2099	58.56
2044	56.39
2041	47.22
2067	44.94
2048	41.12
2074	38.18
2068	36.62
2001	34.89
2066	34.12
2091	30.11
2006	29.77

A) Customer 2081
B) Customer 2100
C) Customer 2046
D) Customer 2006

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49) Based on this pivot table in **Lab 1.3 Excel, Assessing Product (SKU) Profitability,** which product number is the most profitable per dollar of sales?

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 Pluot)	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 (dried plum)	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

A) FRT-GRI
B) FRT-AVD
C) FRT-PIL
D) FRT-JAU

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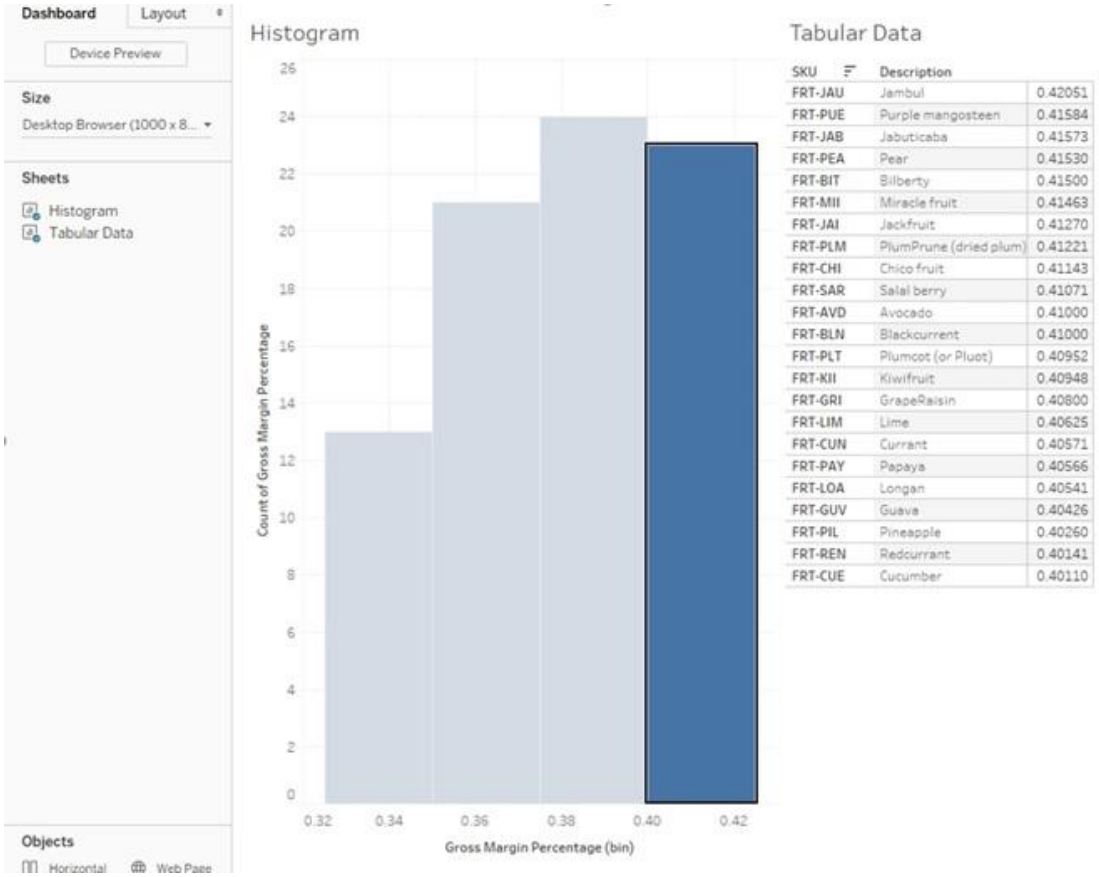
50) Based on the histogram in Lab 1.3 Tableau, Assessing Product (SKU) Profitability, how many products are in the lowest bin?



A) 13
B) 21
C) 24
D) 23

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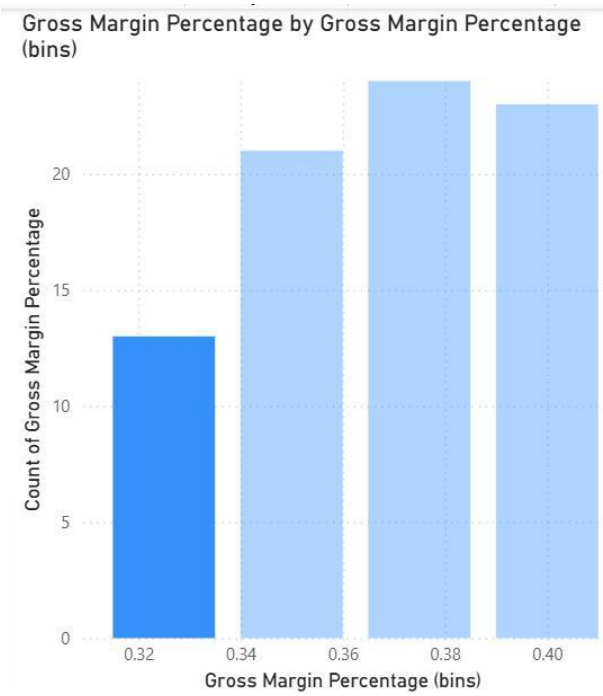
51) Based on the visualization in Lab 1.3 Power BI, Assessing Product (SKU) Profitability, what is the gross margin percentage of FRT-DAT in the lowest bin?



SKU	First Description	Average of Gross Margin Percentage
FRT-DAO	Damson	0.34
FRT-DAT	Date	0.35
FRT-FEO	Feijoa	0.34
FRT-GOS	Gooseberry	0.35
FRT-GRF	Grapefruit	0.34
FRT-HUR	Huckleberry	0.34
FRT-JUR	Juniper berry	0.34
FRT-LOA	Loquat	0.33
FRT-MUR	Mulberry	0.33
FRT-NEN	Nectarine	0.35
FRT-ORG	Orange	0.35
FRT-RAA	Rambutan	0.34
FRT-TAL	Tamarillo	0.34
Total	**Damson**	**0.34**

A) 0.34
B) 0.35
C) 0.36
D) 0.37

52) Which of the following is not an example of a GenAI product?

A) Copilot
B) ChatGPT
C) Unicorn
D) Gemini

53) When working with GenAI, the skilled analyst must understand what to generate the desired results?

A) Questions
B) Creating statements
C) Prompt engineering
D) Summarizing explanations

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54) Based on **Lab 1.4 Excel Subtotals by Date, Invoice and Customers using Excel Subtotal Command** and the Exhibit below, is this subtotal summarizing by date, invoice, or customer?

Date	Invoice#	Customer#	SKU	Description	Sales Price
10/11/2028	8053	3000	DJI-FLP	DJI OM Fill Light Phone Clamp	59
10/29/2028	8149	3000	DJI-FMK	DJI FPV Fly More Kit	299
		3000 Total			358
10/30/2028	8150	3001	DJI-AIR	DJI AIR 2S	999
		3001 Total			999
10/31/2028	8156	3002	DJI--SMC	DJI Smart Controller	749
		3002 Total			749
10/14/2028	8075	3003	DJI-MIN	DJI Mini Bag+	39
		3003 Total			39
10/8/2028	8029	3006	DJI-MIN	DJI Mini Bag+	39
		3006 Total			39
10/17/2028	8101	3008	DJI-2FI	DJI Air 2S ND Filters Set	99
		3008 Total			99
10/1/2028	8001	3009	DJI-AIR	DJI AIR 2S	999
10/3/2028	8012	3009	DJI-MMC	DJI Motion Controller	199
10/7/2028	8021	3009	DJI-MMC	DJI Motion Controller	199
		3009 Total			1397

A) Invoice
B) Date
C) Customer

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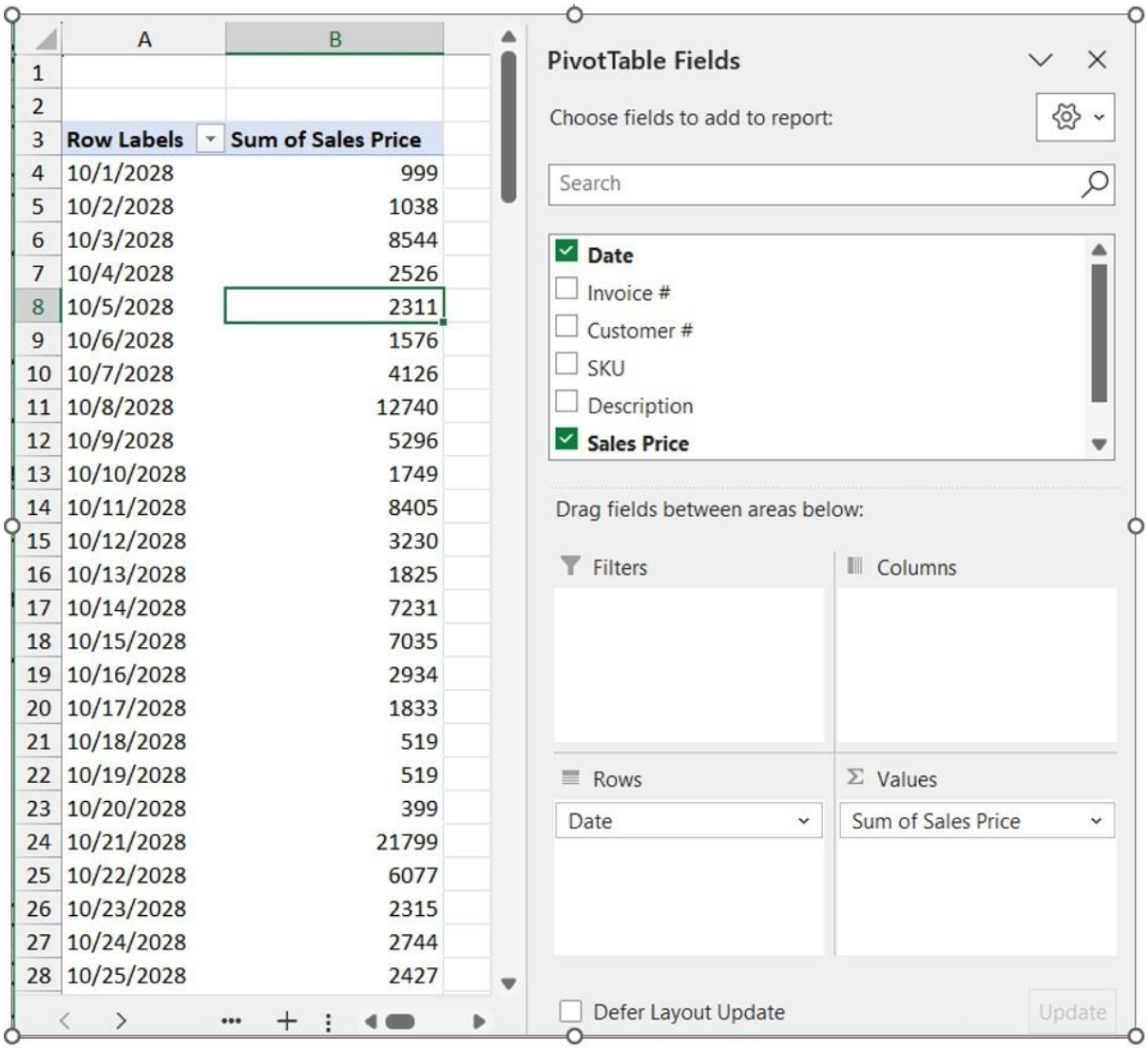
55) Based on Lab 1.5 Excel Subtotals by Date, Invoice and Customers using Pivot Tables and the Exhibit below, the pivot table summarizes sales by date. What would need to change to summarize sales by invoice #?



Row Labels	Sum of Sales Price
10/1/2028	999
10/2/2028	1038
10/3/2028	8544
10/4/2028	2526
10/5/2028	2311
10/6/2028	1576
10/7/2028	4126
10/8/2028	12740
10/9/2028	5296
10/10/2028	1749
10/11/2028	8405
10/12/2028	3230
10/13/2028	1825
10/14/2028	7231
10/15/2028	7035
10/16/2028	2934
10/17/2028	1833
10/18/2028	519
10/19/2028	519
10/20/2028	399
10/21/2028	21799
10/22/2028	6077
10/23/2028	2315
10/24/2028	2744
10/25/2028	2427

A) Replace Date with Invoice # in the Rows
B) Replace Sum of Sales Price with Sales Price in the ∑Values area
C) Replace Sum of Sales Price with Invoice # in the ∑Values area
D) Replace Date with Invoice # in the Rows and Sum of Sales Price with Sales Price in the ∑Values area

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ESSAY. Write your answer in the space provided or on a separate sheet of paper.

56) Why are business analysts needed, and what do they do?

57) What is the trade-off between reliable data (that reports the truth with minimal errors) and relevant data (that most closely addresses the question at hand)? When would you choose one over the other?

58) Walk through the steps of the SOAR model to address the question of predicting the needed level of production of iPhone sales for its next major model. What is an example of each step of the SOAR model?

59) Should a company be concerned with whether the data it uses to answer its questions violates customer privacy?

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60) Explain the difference between exploratory data visualizations and explanatory data visualizations. When would each be used?

61) What does it mean that the SOAR analytics model is recursive? Why is that?

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Answer Key

Test name: Chapter 01

1) TRUE
2) FALSE
3) FALSE
4) TRUE
5) FALSE
6) TRUE
7) FALSE
8) FALSE
9) [C, D]
10) B
11) C
12) B
13) D
14) B
15) D
16) D
17) D
18) C
19) D
20) B
21) A
22) B
23) C
24) B
25) B
26) C
27) B
28) A
29) B
30) B
31) B
32) A
33) C
34) C
35) D
36) D
37) A

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38) C
39) C
40) D
41) D
42) B
43) B
44) C
45) A
46) C
47) A
48) A
49) D
50) A
51) B
52) C
53) C
54) C
55) A
56) Essay
57) Essay
58) Essay
59) Essay
60) Essay
61) Essay

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