[Fact Pattern #1]
Proper Propeller, Inc. plans to manufacture a newly designed high-technology propeller for airplanes. Proper Propeller forecasts that as workers gain experience, they will need less time to complete the job. Based on prior experience, Proper Propeller estimates a 70% cumulative learning curve and has projected the following costs.

Cumulative number of units produced	Manufacturing Projections	
	Average cost per unit	Total costs
1	$20,000	$20,000
2	14,000	28,000

[1] Gleim #: 1.3.99 -- Source: CMA 0408 1-146

(Refers to Fact Pattern #1)
If Proper Propeller produces eight units, the total manufacturing cost will be

A. $62,643
B. $54,880
C. $112,000
D. $50,660

- Answer (A) is incorrect. The amount of $62,643 results from using an incorrect learning curve.
- Answer (B) is **correct**. Learning curve analysis is used to project productivity gains resulting from the increased rate at which people perform tasks as they gain experience. The underlying assumption of learning curve analysis is that workers gain productivity at a predictable rate as they gain experience with a new process. In this situation, the company is assuming that the total costs required for each doubling of output will be 70% of the costs required for the previous doubling. The effects of Proper Propeller's projected learning curve can be calculated as follows:

Batch	Cumulative Units Produced	Cumulative Average Cost	Cumulative Total Cost
1	1	$20,000	$20,000
2	2	$14,000 ($20,000 × 70%)	28,000
3	4	$9,800 ($14,000 × 70%)	39,200
4	8	$6,860 ($9,800 × 70%)	54,880

- Answer (C) is incorrect. The amount of $112,000 results from ignoring the learning curve after the second unit.
- Answer (D) is incorrect. The amount of $50,660 results from improperly summing the cumulative average cost figures.

[2] Gleim #: 1.1.28 -- Source: CMA 0408 2-010
Which one of the following statements concerning approaches for the budget development process is **correct**?

A. Since department managers have the most detailed knowledge about organizational operations, they should use this information as the building blocks of the operating budget.
B. The top-down approach to budgeting will not ensure adherence to strategic organizational goals.
C. With the information technology available, the role of budgets as an organizational communication device has declined.
D. To prevent ambiguity, once departmental budgeted goals have been developed, they should remain fixed even if the sales forecast upon which they are based proves to be wrong in the middle of the fiscal year.

- Answer (A) is **correct**. Since department managers have the most detailed knowledge about organizational operations, they should use this information as the building blocks of the operating budget.
- Answer (B) is incorrect. , while a top-down approach can help make strategic goals more consistent, it cannot ensure adherence.
- Answer (C) is incorrect. information technology makes budgeting easier, not less relevant as a means of organizational communication.
- Answer (D) is incorrect. any budget should be adapted to changing circumstances.

[3] Gleim #: 1.5.145 -- Source: CMA 0408 1-176

Johnson Software has developed a new software package. Johnson's sales manager has prepared the following probability distribution describing the relative likelihood of monthly sales levels and relative income (loss) for the company's new software package.

Monthly Sales In Units	Probability	Income(Loss)
10,000	.2	$(4,000)
20,000	.3	10,000
30,000	.3	30,000
40,000	.2	60,000

If Johnson decides to market its new software package, the expected value of additional monthly income will be

A. $25,000
B. $24,000
C. $24,800
D. $23,200

- Answer (A) is incorrect. The amount of $25,000 results from improperly weighting the monthly sales units, rather than the income and loss figures, by the probabilities.
- Answer (B) is incorrect. The amount of $24,000 results from failing to account for the $4,000 loss at the 10,000-unit sales level.
- Answer (C) is incorrect. The amount of $24,800 results from improperly treating the $4,000 from the 10,000-unit level as income rather than as a loss.
- Answer (D) is **correct**. Expected value is a means of associating a dollar amount with each of the possible outcomes of a probability distribution. The outcome yielding the highest expected value (which may or may not be the most likely one) is the optimal alternative. The expected value of each outcome, and of the project as a whole, can be determined through the preparation of a payoff table, as follows:

Monthly Sales In Units	Probability		Income (Loss)		Expected Value
10,000	.2	×	$(4,000)	=	$ (800)
20,000	.3	×	10,000	=	3,000
30,000	.3	×	30,000	=	9,000
40,000	.2	×	60,000	=	12,000
					$23,200

[4] Gleim #: 1.2.62 -- Source: CMA 1289 4-11

All of the following are assumptions underlying the validity of linear regression output except

A. The standard deviation of the errors is constant.
B. Certainty.
C. The mean of the errors is zero.
D. The errors are normally distributed.

- Answer (A) is incorrect. It is an assumption of the regression model.
- Answer (B) is **correct**. Linear regression is based on several assumptions; for example, that there is no change in the environment, that errors in the values of the dependent variables are normally distributed with a mean of zero, that the standard deviation of these errors is constant, that the values of the dependent variables are statistically independent of each other, and that the independent variables are not correlated with each other. However, regression is only a means of predicting the future; it cannot provide certainty.
- Answer (C) is incorrect. It is an assumption of the regression model.
- Answer (D) is incorrect. It is an assumption of the regression model.

[5] Gleim #: 1.2.65 -- Source: CMA 0408 1-137

A company has accumulated data for the last 24 months in order to determine if there is an independent variable that could be used to estimate shipping costs. Three possible independent variables being considered are packages shipped, miles shipped, and pounds shipped. The quantitative technique that should be used to determine whether any of these independent variables might provide a good estimate for shipping costs is

   A. Linear programming.
   B. Linear regression.
   C. Flexible budgeting.
   D. Variable costing.

- Answer (A) is incorrect. linear programming is a mathematical technique used to optimize a linear function subject to certain constraints.
- Answer (B) is **correct**. Regression analysis, also called least-squares analysis, is the process of deriving the linear equation that describes the relationship between two (or more) variables with a nonzero coefficient of correlation.
- Answer (C) is incorrect. flexible budgeting is the calculation of the quantity and cost of inputs that should have been consumed given the achieved level of production.
- Answer (D) is incorrect. variable costing is a costing technique that treats only variable manufacturing costs as product costs.

[6] Gleim #: 1.1.27 -- Source: CMA 0408 2-008

Which one of the following is **not** an advantage of a participatory budgeting process?

   A. Communication between departments.
   B. Coordination between departments.
   C. Control of uncertainties.
   D. Cost congruence.

- Answer (A) is incorrect. participatory budgeting involves extensive communication between departments.
- Answer (B) is incorrect. participatory budgeting involves extensive coordination between departments.
- Answer (C) is **correct**. Uncertainties can be prepared for, but they cannot be subjected to human control through any budget process.
- Answer (D) is incorrect. goal congruence is one of the advantages of participatory budgeting.

[Fact Pattern #2]

The College Honor Society sells hot pretzels at the home football games. The pretzels are sold for $1.00 each, and the cost per pretzel is $.30. Any unsold pretzels are discarded because they will be stale before the next home game.

The frequency distribution of the demand for pretzels per game is presented as follows.

Unit Sales Volume	Probability
2,000 pretzels	.10
3,000 pretzels	.15
4,000 pretzels	.20
5,000 pretzels	.35
6,000 pretzels	.20

[7] Gleim #: 1.5.126 -- Source: CMA 1289 5-21

(Refers to Fact Pattern #2)
The estimated demand for pretzels at the next home football game using a deterministic approach based on the most likely outcome is

  A. 4,000 pretzels.
  B. 4,400 pretzels.
  C. 6,000 pretzels.
  D. 5,000 pretzels.

- Answer (A) is incorrect. The figure of 4,000 pretzels assumes each outcome is equally likely.
- Answer (B) is incorrect. The estimated demand using an expected value approach is 4,400 pretzels.
- Answer (C) is incorrect. The figure of 6,000 pretzels is merely the greatest demand.
- Answer (D) is **correct**. A deterministic approach assumes that a value is known with certainty. If that value is deemed to be the most likely outcome, assumed demand will be 5,000 pretzels, the volume with the highest probability (35%).

[8] Gleim #: 1.6.159 -- Source: CMA 0408 1-141

Which one of the following techniques would **most** likely be used to analyze reductions in the time required to perform a task as experience with that task increases?

  A. Regression analysis.
  B. Sensitivity analysis.
  C. Learning curve analysis.
  D. Normal probability analysis.

- Answer (A) is incorrect. regression analysis, also called least-squares analysis, is the process of deriving the linear equation that describes the relationship between two (or more) variables with a nonzero coefficient of correlation.
- Answer (B) is incorrect. sensitivity analysis is used to reveal how sensitive expected value calculations are to the accuracy of the initial estimates.
- Answer (C) is **correct**. Learning curve analysis is used to project productivity gains resulting from the increased rate at which people perform tasks as they gain experience.
- Answer (D) is incorrect. normal probability analysis is used to determinate whether the distribution of a set of data is statistically normal.

[9] Gleim #: 1.2.67 -- Source: CMA 0408 1-139

In order to analyze sales as a function of advertising expenses, the sales manager of Smith Company developed a simple regression model. The model included the following equation, which was based on 32 monthly observations of sales and advertising expenses with a related coefficient of determination of .90.

Sales = $10,000 + (2.5 × Advertising expenses)

If Smith Company's advertising expenses in one month amounted to $1,000, the related point estimate of sales would be

- A. $12,500
- B. $11,250
- C. $2,500
- D. $12,250

- Answer (A) is **correct**. The simple regression equation can be solved as follows:

$$
\begin{aligned}
\text{Sales} \;=\;& \$10{,}000 + (2.5 \times \text{Advertising expenses}) \\
=\;& \$10{,}000 + (2.5 \times \$1{,}000) \\
=\;& \$10{,}000 + \$2{,}500 \\
=\;& \$12{,}500
\end{aligned}
$$

- Answer (B) is incorrect. The amount of $11,250 results from improperly multiplying the answer by the coefficient of determination.
- Answer (C) is incorrect. The amount of $2,500 includes only the advertising expense.
- Answer (D) is incorrect. The amount of $12,250 results from improperly applying the coefficient of determination to the advertising expense.

[Fact Pattern #3]
A computer store sells four computer models designated as P104, X104, A104, and S104. The store manager has made random number assignments to represent customer choices based on past sales data. The assignments are shown below.

Model	Random Numbers
P104	0-1
X104	2-6
A104	7-8
S104	9

[10] Gleim #: 1.5.143 -- Source: CMA 688 5-26

(Refers to Fact Pattern #3)
In running a simulation of the computer demand, the following numbers are drawn in sequence: 2, 8, and 6. The simulation indicates that the third customer will purchase.

    A. Model X104.
    B. Model S104.
    C. Model P104.
    D. Model A104.

- Answer (A) is **correct**. The third customer is simulated by the third number drawn. Therefore, the third customer's purchase is represented by the number 6. The numbers 2 through 6 correspond to model X104. Thus, the third customer is expected to purchase model X104.
- Answer (B) is incorrect. Model S104 corresponds to number 9.
- Answer (C) is incorrect. Model P104 corresponds to numbers 0 and 1.
- Answer (D) is incorrect. Model A104 corresponds to numbers 7 and 8.

[11] Gleim #: 1.1.30 -- Source: CMA 0408 2-012

Marietta Thomas, Amador Corporation's vice president of planning, has seen and heard it all. She has told the corporate controller that she is "....very upset with the degree of slack that veteran managers use when preparing their budgets." Thomas has considered implementing some of the following activities during the budgeting process.

1. Develop the budgets by top management and issue them to lower-level operating units.
2. Study the actual revenues and expenses of previous periods in detail.
3. Have the budgets developed by operating units and accept them as submitted by a company-wide budget committee.
4. Share the budgets with all employees as a means to reach company goals and objectives.
5. Use an iterative budgeting process that has several "rounds" of changes initiated by operating units and/or senior managers.

Which one of these activities should Amador implement in order to **best** remedy Thomas' concerns, help eliminate the problems experienced by Amador, and motivate personnel?

A. 2, 4, and 5.
B. 2 and 3.
C. 1 only.
D. 2 and 4.

- Answer (A) is **correct**. Steps 2, 4, and 5 are appropriate for alleviating Amador's budget problems. Step 1 should not be performed because a budget imposed from the top is more likely to encounter resistance. Step 3 should not be performed because operating units will tend to consider only their own interests when preparing budgets.
- Answer (B) is incorrect. operating units will tend to consider only their own interests when preparing budgets.
- Answer (C) is incorrect. a budget imposed from the top is more likely to encounter resistance.
- Answer (D) is incorrect. , while studying previous periods and sharing the budget with all employees are important steps to correcting Amador's problems, incrementally improving the budget through an iterative process is also crucial.

[Fact Pattern #4]

Stan Berry is considering selling peanuts at the Keefer High School football games. The peanuts would cost $.50 per bag and could be sold for $1.50 per bag. No other costs would be incurred to sell the peanuts. All unsold bags can be returned to the supplier for $.30 each. Berry estimated the demand for peanuts at each football game and constructed the payoff table that follows.

Demand (Bags)	Probability of Demand	Action (Bags to Stock)			
		20	30	40	50
20	.2	$20	$18	$16	$14
30	.4	$20	$30	$28	$26
40	.3	$20	$30	$40	$38
50	.1	$20	$30	$40	$50

[12] Gleim #: 1.5.140 -- Source: CMA 690 5-18

(Refers to Fact Pattern #4)
The maximum that Stan Berry should pay for perfect information so that he could always stock the correct number of bags of peanuts is

   A. $30.00
   B. $.80
   C. $2.60
   D. $10.40

- Answer (A) is incorrect. The most Stan would pay for perfect information is the difference between expected profit with perfect information and expected profit without perfect information.
- Answer (B) is incorrect. The most Stan would pay for perfect information is the difference between expected profit with perfect information and expected profit without perfect information.
- Answer (C) is **correct**. Expected value analysis estimates future monetary value based on forecasts and their related probabilities of occurrence. The expected value is found by multiplying the probability of each outcome by its payoff and summing the products. The expected value of perfect information is the difference between the expected value under certainty and the expected value of the optimal decision under uncertainty. The expected value under certainty equals the sum of the products of the profit maximizing payoffs of perfect forecasts and the related probabilities.

20% × $20 =	$ 4.00
40% × $30 =	12.00
30% × $40 =	12.00
10% × $50 =	5.00
Expected payoff with perfect info.	$33.00

  Thus, with perfect information, the proprietor could achieve an average profit of $33 per game. Without perfect information, the expected value is only $30.40. Accordingly, up to $2.60 could be paid for perfect information ($33 - $30.40).
- Answer (D) is incorrect. The most Stan would pay for perfect information is the difference between expected profit with perfect information and expected profit without perfect information.

[13] Gleim #: 1.2.50 -- Source: CIA 595 II-46

The internal auditor of a bank has developed a multiple regression model which has been used for a number of years to estimate the amount of interest income from commercial loans. During the current year, the auditor applies the model and discovers that the r^2 value has decreased dramatically, but the model otherwise seems to be working okay. Which of the following conclusions are justified by the change?

  A. Changing to a cross-sectional regression analysis should cause r^2 to increase.
  B. Regression analysis is no longer an appropriate technique to estimate interest income.
  C. Some new factors, not included in the model, are causing interest income to change.
  D. A linear regression analysis would increase the model's reliability.

- Answer (A) is incorrect. Cross-sectional regression analysis is inappropriate. The auditor is trying to estimate changes in a single account balance over time.
- Answer (B) is incorrect. Regression analysis may still be the most appropriate methodology to estimate interest income, but the auditor should first understand the factors that may be causing r^2 to decrease. The reason may be a systematic error in the account balance.
- Answer (C) is **correct**. The coefficient of determination (r^2) is the amount of variation in the dependent variable (interest income) that is explained by the independent variables. In this case, less of the change in interest income is explained by the model. Thus, some other factor must be causing interest income to change. This change merits audit investigation.
- Answer (D) is incorrect. Linear regression models are simpler models, but the auditor should be searching for a systematic error in the account balance or applying a more complex model.

[14] Gleim #: 1.2.64 -- Source: CMA 0408 1-136

For cost estimation, simple regression differs from multiple regression in that simple regression uses only

    A. One independent variable, while multiple regression uses more than one independent variable.
    B. One dependent variable, while multiple regression uses all available data to estimate the cost function.
    C. Dependent variables, while multiple regression can use both dependent and independent variables.
    D. One dependent variable, while multiple regression uses more than one dependent variable.

- Answer (A) is **correct**. Simple regression uses the algebraic formula for a straight line, $y = a + bx$, where x is the independent variable. Multiple regression is used when there is more than one independent variable. Multiple regression allows a firm to identify many factors (independent variables) and to weight each one according to its influences on the overall outcome ($y = a + b_1x_1 + b_2x_2 + b_3x_3 +$ etc.).

- Answer (B) is incorrect. simple regression uses the algebraic formula for a straight line, $y = a + bx$, where x is the independent variable. Multiple regression is used when there is more than one independent variable. Multiple regression allows a firm to identify many factors (independent variables) and to weight each one according to its influences on the overall outcome ($y = a + b_1x_1 + b_2x_2 + b_3x_3 +$ etc.).

- Answer (C) is incorrect. simple regression uses the algebraic formula for a straight line, $y = a + bx$, where x is the independent variable. Multiple regression is used when there is more than one independent variable. Multiple regression allows a firm to identify many factors (independent variables) and to weight each one according to its influences on the overall outcome ($y = a + b_1x_1 + b_2x_2 + b_3x_3 +$ etc.).

- Answer (D) is incorrect. simple regression uses the algebraic formula for a straight line, $y = a + bx$, where x is the independent variable. Multiple regression is used when there is more than one independent variable. Multiple regression allows a firm to identify many factors (independent variables) and to weight each one according to its influences on the overall outcome ($y = a + b_1x_1 + b_2x_2 + b_3x_3 +$ etc.). Both methods use only one dependent variable.

[15] Gleim #: 1.1.22 -- Source: CMA 0408 2-001

All of the following are advantages of the use of budgets in a management control system **except** that budgets

   A. Limit unauthorized expenditures.
   B. Force management planning.
   C. Promote communication and coordination within the organization.
   D. Provide performance criteria.

- Answer (A) is **correct**. Budgets serve many roles. They force management to plan ahead, communicate organizational goals throughout the organization, and provide criteria for future performance evaluations.

- Answer (B) is incorrect. forcing management planning is an advantage of using budgets.

- Answer (C) is incorrect. promoting communication and coordination within the organization is an advantage of using budgets.

- Answer (D) is incorrect. providing performance criteria is an advantage of using budgets.

[16] Gleim #: 1.1.25 -- Source: CMA 0408 2-006

All of the following are advantages of top-down budgeting as opposed to participatory budgeting, **except** that it

   A. Increases coordination of divisional objectives.
   B. Reduces the time required for budgeting.
   C. Facilitates implementation of strategic plans.
   D. May limit the acceptance of proposed goals and objectives.

   - Answer (A) is incorrect. , since a top-down budget is imposed by upper management, coordinating the objectives of separate divisions is simplified.
   - Answer (B) is incorrect. , since a top-down budget is coordinated from above, it is less time-consuming than obtaining lower-level input.
   - Answer (C) is incorrect. , since a top-down budget is coordinated from above, the implementation of strategic plans is centralized and thus simplified.
   - Answer (D) is **correct**. Since a top-down budget is imposed by upper management, it has less chance of acceptance (also called buy-in) by those on whom the budget is imposed.

[17] Gleim #: 1.3.97 -- Source: CMA 0408 1-144

A manufacturing company has the opportunity to submit a bid for 20 units of a product on which it has already produced two 10-unit lots. The production manager believes that the learning experience observed on the first two lots will continue for at least the next two lots. The direct labor required on the first two lots was as follows:

   - 5,000 direct labor hours for the first lot of 10 units
   - 3,000 additional direct labor hours for the second lot of 10 units

The learning rate experienced by the company on the first two lots of this product is

   A. 62.5%
   B. 60.0%
   C. 80.0%
   D. 40.0%

- Answer (A) is incorrect. This percentage results from improperly dividing the 5,000 hours spent on the first lot by the 8,000 total hours spent on both lots.
- Answer (B) is incorrect. This percentage results from improperly dividing the 3,000 hours spent on the second lot by the 5,000 hours spent on the first lot.
- Answer (C) is **correct**. Learning curve analysis is used to project productivity gains resulting from the increased rate at which people perform tasks as they gain experience. The underlying assumption of learning curve analysis is that workers gain productivity at a predictable rate as they gain experience with a new process. For this company, a total of 8,000 hours was spent to complete two lots of product. The cumulative average spent on the two lots was therefore 4,000 hours per lot (8,000 ÷ 2). This cumulative average of 4,000 is 80% of the 5,000 hours that were spent on the first lot. The learning curve is therefore 80%.
- Answer (D) is incorrect. This percentage results from improperly dividing the 3,000 hours spent on the second lot by the 5,000 hours spent on the first lot and taking the complement.

[Fact Pattern #5]

Aerosub, Inc. has developed a new product for spacecraft that includes the production of a complex part. The manufacture of this part requires a high degree of technical skill. Management believes there is a good opportunity for its technical force to learn and improve as they become accustomed to the production process. The production of the first unit requires 10,000 direct labor hours. Management projects an 80% learning curve and wants to produce a total of eight units.

[18] Gleim #: 1.3.94 -- Source: CMA 0408 1-142

(Refers to Fact Pattern #5)
Upon completion of the eighth unit, Aerosub's cumulative average direct labor hours required per unit of the product will be

   A. 5,120 hours.
   B. 10,000 hours.
   C. 8,000 hours.
   D. 6,400 hours.

- Answer (A) is **correct**. The underlying assumption of learning curve analysis is that workers gain productivity at a predictable rate as they gain experience with a new process. A common assumption is that the number of hours required for each doubling of output will be 80% of the hours required for the previous doubling. The effects of Aerosub's projected learning curve on this product can be calculated as follows:

Batch	Cumulative Units Produced	Cumulative Average Labor Hours
1	1	10,000
2	2	8,000 (10,000 × 80%)
3	4	6,400 (8,000 × 80%)
4	8	5,120 (6,400 × 80%)

- Answer (B) is incorrect. The number 10,000 results from failing to take the learning curve effect into account at all.
- Answer (C) is incorrect. The projected number of hours after two units is 8,000.
- Answer (D) is incorrect. The projected number of hours after four units is 6,400.

[19] Gleim #: 1.5.152 -- Source: CMA 0408 1-183

Which one of the following four probability distributions provides the highest expected monetary value?

Alternative #1			Alternative #2	
Prob	Cash Inflows		Prob	Cash Inflows
10%	$ 50,000		10%	$ 50,000
20%	75,000		20%	75,000
40%	100,000		45%	100,000
30%	150,000		25%	150,000

Alternative #3			Alternative #4	
Prob	Cash Inflows		Prob	Cash Inflows
10%	$ 50,000		10%	$150,000
20%	75,000		20%	100,000
40%	100,000		40%	75,000
30%	125,000		30%	50,000

A. Alternative #4.
B. Alternative #1.
C. Alternative #3.
D. Alternative #2.

- Answer (A) is incorrect. the expected value of Alternative #4 is only $80,000.
- Answer (B) is **correct**. When monetary outcomes and probabilities can be reasonably estimated, a payoff table can be constructed to determine the best course of action:

	Alternative #1			Alternative #2	
Probability	Payoffs	Expected Value	Probability	Payoffs	Expected Value
10%	$ 50,000	$ 5,000	10%	$ 50,000	$ 5,000
20%	75,000	15,000	20%	75,000	15,000
40%	100,000	40,000	45%	100,000	45,000
30%	150,000	45,000	25%	150,000	37,500
Total		$105,000	Total		$102,500

	Alternative #3			Alternative #4	
Probability	Payoffs	Expected Value	Probability	Payoffs	Expected Value
10%	$ 50,000	$ 5,000	10%	$150,000	$15,000
20%	75,000	75,000	20%	100,000	20,000
40%	100,000	40,000	40%	75,000	30,000
30%	125,000	37,500	30%	50,000	15,000
Total		$97,500	Total		$80,000

- Answer (C) is incorrect. the expected value of Alternative #3 is only $97,500.
- Answer (D) is incorrect. the expected value of Alternative #2 is only $102,500.

[20] Gleim #: 1.1.33 -- Source: CMA 0408 2-016

All of the following are disadvantages of top-down budgeting as opposed to participatory budgeting, **except** that it

A. May limit the acceptance of proposed goals and objectives.
B. Reduces the time required for budgeting.
C. May result in a budget that is not possible to achieve.
D. Reduces the communication between employees and management.

- Answer (A) is incorrect. , since a top-down budget is imposed by upper management, it has less chance of acceptance (also called buy-in) by those on whom the budget is imposed.
- Answer (B) is **correct**. Since a top-down budget is coordinated from above, it is less time-consuming than obtaining lower-level input.
- Answer (C) is incorrect. a budget established without lower-level input may contain unrealistic goals.
- Answer (D) is incorrect. reduced communication between employees and management is a disadvantage of top-down budgeting.

[21] Gleim #: 1.5.128 -- Source: CMA 1289 5-23

(Refers to Fact Pattern #2)
The conditional profit per game of having 4,000 pretzels available and selling all 4,000 pretzels is

   A. $800
   B. $1,200
   C. $2,800
   D. $2,100

- Answer (A) is incorrect. The amount of $800 assumes 2,000 are sold.
- Answer (B) is incorrect. The cost of 4,000 pretzels is $1,200.
- Answer (C) is **correct**. Each pretzel costs $.30. Thus, the cost of 4,000 pretzels is $1,200 (4,000 × $.30). Selling 4,000 pretzels at $1 each produces revenue of $4,000. Subtracting the $1,200 of costs from the $4,000 of revenue results in a conditional profit of $2,800.
- Answer (D) is incorrect. The amount of $2,100 assumes 3,000 are available and 3,000 are sold.

[22] Gleim #: 1.1.38 -- Source: CMA 0408 2-021

Diana Stinson, Cherry Valley, Inc.'s factory manager, had lost her patience. Six months ago, she appointed a team from the production and service departments to finalize the allocation of costs and setting of standard costs. They were still feuding, so she hired Brennan and Rose, a large consulting firm, to resolve the matter.

All of the following are potential consequences of having the standards set by Brennan and Rose **except** that

   A. Brennan and Rose may not fully understand Cherry Valley's manufacturing process, resulting in suboptimal performance.
   B. There could be dissatisfaction if the standards contain costs that are not controllable by the unit held responsible.
   C. Employees could react negatively since they did not participate in setting the standards.
   D. The standards may appear to lack management support.

- Answer (A) is incorrect. Brennan and Rose may not fully understand Cherry Valley's manufacturing process, resulting in suboptimal performance.
- Answer (B) is incorrect. there could be dissatisfaction if the standards contain costs that are not controllable by the unit held responsible.
- Answer (C) is incorrect. employees could react negatively since they did not participate in setting the standards.
- Answer (D) is **correct**. Standards concocted by an outside firm, lacking the intimate knowledge that employees would have, may appear to lack management support.

[23] Gleim #: 1.5.132 -- Source: CMA 688 5-20

The following table contains the profit outcomes for each state of nature and decision combination for a firm

	States of Nature		
	S1	S2	S3
Decision 1	$ 24	$14	$ (6)
Decision 2	$ 20	$10	$ 5
Decision 3	$(20)	$ 8	$15
Probabilities	0.10	0.50	0.40

The expected value of perfect information for this firm in this case is

A. $6.40
B. $9.00
C. $8.60
D. $8.40

- Answer (A) is **correct**. The first step is to determine the expected value without perfect information by formulating a payoff matrix. For example, the expected payoff for the combination of State of Nature S1 and Decision 1 is $2.40 (10% probability × $24 outcome). The entire payoff matrix is

	S1	S2	S3	Total
Decision 1	$ 2.40	$7.00	$(2.40)	$7.00
Decision 2	2.00	5.00	2.00	9.00
Decision 3	(2.00)	4.00	6.00	8.00

Thus, the best decision under conditions of uncertainty is Decision 2 (expected value = $9). If the decision maker knew exactly when each state of nature would occur, the decision would correspond to the maximum profit opportunity for that state of nature. For instance, if S1 is certain, the most profitable decision is Decision 1 ($24). Thus, the expected payoff given perfect information is $15.40.

State of Nature	Profit	Probability	Payoff
1	$24	10%	$2.40
2	14	50	7.00
3	15	40	6.00

The expected value of perfect information is therefore $6.40 ($15.40 − $9.00).
- Answer (B) is incorrect. The best decision under conditions of uncertainty is $9.00.
- Answer (C) is incorrect. The expected value of perfect information is the difference between the expected payoff with perfect information and the expected payoff without perfect information.
- Answer (D) is incorrect. The payoffs from Decisions 1 and 3 equal $8.40 ($2.40 + $6.00).

[24] Gleim #: 1.6.158 -- Source: CMA 0408 1-187

Susan Hines has developed an estimate of the earnings per share for her firm for the next year using the following parameters.

Sales	$20 million
Cost of goods sold	70% of sales
General & administrative expenses	$300,000
Selling expense	$100,000 plus 10% of sales
Debt outstanding	$5 million @ 8% interest rate
Effective tax rate	35%
Common shares outstanding	2 million

She is now interested in the sensitivity of earnings per share to sales forecast changes. A 10% sales increase would increase earnings per share by

A. 7.0 cents per share.
B. 13.0 cents per share.
C. 10.4 cents per share.
D. 20.0 cents per share.

- Answer (A) is incorrect. The amount of 7.0 cents per share results from assuming an increase in fixed selling costs.
- Answer (B) is **correct**. Sensitivity analysis reveals how sensitive expected value calculations are to the accuracy of the initial estimates. Sensitivity analysis is thus useful in determining whether expending additional resources to obtain better forecasts is justified.

	Original Projection	10% Increase
Sales	$20,000,000	$22,000,000
Cost of goods sold	(14,000,000)	(15,400,000)
Gross profit	$ 6,000,000	$ 6,600,000
Selling expenses	(300,000)	(300,000)
G&A expenses	(2,100,000)	(2,300,000)
Operating income	$ 3,600,000	$ 4,000,000
Interest expense	(400,000)	(400,000)
Earnings before taxes	$ 3,200,000	$ 3,600,000
Income taxes	(1,120,000)	(1,260,000)
Net income	$ 2,080,000	$ 2,340,000
Earnings per share	$ 1.04	$ 1.17

- Answer (C) is incorrect. The amount of 10.4 cents per share results from incorrectly assuming an increase in interest expense.
- Answer (D) is incorrect. The amount of 20.0 cents per share results from failing to take the variable portion of selling expenses into account or failing to deduct the extra income taxes.

[Fact Pattern #6]

Donehart Corporation produces agricultural vehicles. Most of the component parts for these vehicles are subcontracted to reliable vendors. The final assembly of all vehicles is accomplished at Donehart's plant. Donehart's Engineering Department has developed a new fuel injection system that can be produced in-house because of the availability of production capacity. The first production run of the new fuel injection system has already been completed in-house. This 80-unit production run took 60 direct labor hours per unit to produce based on the cumulative average labor hours per fuel injection unit. Donehart has experienced an 80% learning curve with similar products, and this experience indicates that learning tends to cease by the time 640 systems are produced. Donehart's direct labor cost (including employee benefits) is $18 per direct labor hour. Donehart's management must decide whether to continue producing the fuel injection system or to subcontract the work. Donehart's purchasing agent has received a proposal from Midland, Inc., a company specializing in fuel injection systems. From past contracts, Midland has proven to be efficient and reliable. The terms of Midland's proposal are outlined below.

- Donehart must supply all materials required for the fuel injection system units.
- The first 80 units produced by Midland will require direct labor input at the rate of 56 hours per unit. Current direct labor cost is $20 per hour.
- The direct labor cost charged to Donehart will be the hourly rate in effect at the time the work is performed. Midland is currently negotiating its labor contract, which includes a 4% increase in direct labor cost and should be applicable when Donehart signs the contract.
- A learning curve factor of 75% will be applied through the first 640 units produced, and all benefits derived from the learning factor will accrue to Donehart.
- Donehart must pay the actual labor cost incurred plus a 5% margin.

[25] Gleim #: 1.3.87 -- Source: Publisher

(Refers to Fact Pattern #6)
If Donehart manufactures the units in-house, how many total hours will it take to complete 1,000 units?

    A. 24,330 hours.
    B. 8,294.4 hours.
    C. 27,955.2 hours.
    D. 19,660.8 hours.

- Answer (A) is incorrect. The time required to complete 1,000 units if subcontracted to Midland, Inc. is 24,330 hours.
- Answer (B) is incorrect. The time required to complete the remaining 360 units after the learning curve is 8,294.4 hours.
- Answer (C) is **correct**. The total hours required to complete a project with a learning curve is found by adding the total labor hours required to produce the last set of units on the learning curve with the remaining number of units times the final hours per incremental unit. The following chart shows the final hours per incremental unit:

Batch Number	Cumulative Units Produced	Average Labor Hours per Unit	Cumulative Total Hours	Hours Spent on Batch	Number of Units in Batch	Hours Spent on Each Unit in Batch
1	80	60	4,800	4,800	80	60
2	160	48	7,680	2,880	80	36
3	320	38.4	12,288	4,608	160	28.8
4	640	30.72	19,660.8	7,372.8	320	23.04

After the fourth batch, it is assumed that the learning curve will have peaked. Thus, all units produced thereafter will require 23.04 hours. To complete 1,000 units, 360 must be produced after the fourth batch. This fifth batch will require 8,294.4 hours (360 units × 23.04 hours per unit). This number added to the 19,660.8 hours required to complete the 640 hours on the learning curve equals 27,955.2 hours.

- Answer (D) is incorrect. The time required to complete the 640 units on the learning curve is 19,660.8 hours.

[26] Gleim #: 1.5.150 -- Source: CMA 0408 1-181

The sales manager of Serito Doll Company has suggested that an expanded advertising campaign costing $40,000 would increase the sales and profits of the company. He has developed the following probability distribution for the effect of the advertising campaign on company sales:

Sales increase (units)	Probability
15,000	.10
30,000	.35
45,000	.10
60,000	.25
75,000	.20

The company sells the dolls at $5.20 each. The cost of each doll is $3.20. Serito's expected incremental profit, if the advertising campaign is adopted, is

A. $93,000
B. $6,500
C. $46,500
D. $53,000

- Answer (A) is incorrect. The amount of $93,000 results from failing to take the cost of advertising into account.
- Answer (B) is incorrect. The amount of $6,500 results from treating the expected unit increases as expected profit amounts.
- Answer (C) is incorrect. The amount of $46,500 results from treating the expected unit increases as expected profit amounts and failing to take the cost of advertising into account.
- Answer (D) is **correct**. When monetary outcomes and probabilities can be reasonably estimated, a payoff table can be constructed to determine the best course of action [Serito's incremental profit on each doll sold is $2.00 ($5.20 − $3.20)]:

Unit Sales Increase		Probability		Expected Unit Increase		Incr. Profit		Expected Profit
15,000	×	0.10	=	1,500	×	$2	=	$ 3,000
30,000	×	0.35	=	10,500	×	$2	=	21,000
45,000	×	0.10	=	4,500	×	$2	=	9,000
60,000	×	0.25	=	15,000	×	$2	=	30,000
75,000	×	0.20	=	15,000	×	$2	=	30,000
						Expected gross profit		$93,000
						Cost of advertising		(40,000)
						Expected net profit		$53,000

[27] Gleim #: 1.1.32 -- Source: CMA 0408 2-015

Which one of the following items would **most** likely cause the planning and budgeting system to fail? The lack of

   A. Top management support.
   B. Input from several levels of management.
   C. Historical financial data.
   D. Adherence to rigid budgets during the year.

- Answer (A) is **correct**. Top management's belief in and support of the planning and budgeting process is the single most important element in its success.
- Answer (B) is incorrect. input from several levels of management is helpful, but not the most essential element of successful budgeting.
- Answer (C) is incorrect. the lack of historical data is not fatal to an adequate planning and budgeting process.
- Answer (D) is incorrect. willingness to adapt to changing circumstances is crucial to the success of any planning and budget system.

[28] Gleim #: 1.3.98 -- Source: CMA 0408 1-148

(Refers to Fact Pattern #1)
If Proper Propeller produces eight units, the average manufacturing cost per unit will be

   A. $9,800
   B. $1,647
   C. $14,000
   D. $6,860

- Answer (A) is incorrect. The amount of $9,800 is the cumulative average cost after four units.
- Answer (B) is incorrect. The amount of $1,647 is the cumulative average after eight batches, not eight units.
- Answer (C) is incorrect. The amount of $14,000 is the cumulative average cost after two units.
- Answer (D) is **correct**. Learning curve analysis is used to project productivity gains resulting from the increased rate at which people perform tasks as they gain experience. The underlying assumption of learning curve analysis is that workers gain productivity at a predictable rate as they gain experience with a new process. In this situation, the company is assuming that the total costs required for each doubling of output will be 70% of the costs required for the previous doubling. The effects of Proper Propeller's projected learning curve can be calculated as follows:

Batch	Cumulative Units Produced	Cumulative Average Cost
1	1	$20,000
2	2	$14,000 ($20,000 × 70%)
3	4	$ 9,800 ($14,000 × 70%)
4	8	$ 6,860 ($9,800 × 70%)

[29] Gleim #: 1.1.40 -- Source: CMA 0408 2-023

Which one of the following will allow a better use of standard costs and variance analysis to help improve managerial decision-making?

A. Company B uses the prior year's average actual cost as the current year's standard.
B. Company C investigates only negative variances.
C. Company A does not differentiate between variable and fixed overhead in calculating its overhead variances.
D. Company D constantly revises standards to reflect learning curves.

- Answer (A) is incorrect. simply using figures from a previous period is an unsatisfactory means of establishing a budget.
- Answer (B) is incorrect. positive variances can be a sign of reduced quality or other concerns.
- Answer (C) is incorrect. not distinguishing variable from fixed overhead will lead to poor decision making.
- Answer (D) is **correct**. Learning curves are an established phenomenon. Workers learn a new task at a predictable rate and the resulting improvements in productivity should be factored into standard setting and variance analysis.

[30] Gleim #: 1.3.100 -- Source: CMA 0408 1-151

(Refers to Fact Pattern #1)

After completing production of the first propeller, the estimated cost for Proper Propeller to fill an order for seven additional propellers is

    A. $98,000
    B. $34,880
    C. $92,000
    D. $54,880

- Answer (A) is incorrect. The amount of $98,000 results from ignoring the effect of the learning curve.
- Answer (B) is **correct**. The effects of Proper Propeller's projected learning curve can be calculated as follows:

Batch	Cumulative Units Produced	Cumulative Average Cost	Cumulative Total Cost
1	1	$20,000	$20,000
2	2	$14,000 ($20,000 × 70%)	28,000
3	4	$9,800 ($14,000 × 70%)	39,200
4	8	$6,860 ($9,800 × 70%)	54,880

Since eight propellers require $54,880 and the first one off the assembly line cost $20,000, the cost of units 2 through 8 will be $34,880 ($54,880 – $20,000).

- Answer (C) is incorrect. The amount of $92,000 results from assuming no learning curve after the second unit.
- Answer (D) is incorrect. The amount of $54,880 is the cost of all eight propellers.

[31] Gleim #: 1.1.37 -- Source: CMA 0408 2-020

When compared with ideal standards, practical standards

    A. Result in a less desirable basis for the development of budgets.
    B. Incorporate very generous allowance for spoilage and worker inefficiencies.
    C. Produce lower per-unit product costs.
    D. Serve as a better motivating target for manufacturing personnel.

- Answer (A) is incorrect. practical standards are more appropriate in most cases than ideal standards in the development of budgets.
- Answer (B) is incorrect. an acceptance of high levels of spoilage and worker inefficiencies cannot be overcome through the use of standards.
- Answer (C) is incorrect. the effect of one type of standard over another cannot guarantee lower costs.
- Answer (D) is **correct**. Practical standards, also called attainable standards, are more likely to meet with worker acceptance than standards based on an unachievable ideal.

[32] Gleim #: 1.5.127 -- Source: CMA 1289 5-22

(Refers to Fact Pattern #2)
The conditional profit per game of having 4,000 pretzels available but only selling 3,000 pretzels is

- A. $2,800
- B. $1,800
- C. Some amount other than those given.
- D. $2,100

  - Answer (A) is incorrect. The conditional profit given that 4,800 are sold is $2,800.
  - Answer (B) is **correct**. Each pretzel costs $.30. Thus, the cost of 4,000 pretzels is $1,200 (4,000 × $.30). Selling 3,000 pretzels at $1 each produces revenue of $3,000. Subtracting the $1,200 of costs from the $3,000 of revenue results in a conditional profit of $1,800.
  - Answer (C) is incorrect. The amount of $1,800 is among the responses given.
  - Answer (D) is incorrect. The amount of $2,100 assumes 3,000 are available and 3,000 are sold.

[33] Gleim #: 1.3.88 -- Source: Publisher

(Refers to Fact Pattern #6)
If Donehart manufactures the units in-house, how much additional cost will the company incur after the first batch in order to produce a total of 1,000 units?

- A. $559,104
- B. $503,193.60
- C. $463,104
- D. $416,793.60

- Answer (A) is incorrect. Using the direct labor cost related to outsourcing to Midland results in $559,104.
- Answer (B) is incorrect. The amount of $503,193.60 is found by not subtracting the cost of the initial 80 units.
- Answer (C) is incorrect. Using the direct labor cost related to outsourcing to Midland results in $463,104.
- Answer (D) is **correct**. The best method to determine the total out-of-pocket costs to complete a project is to first multiply the total hours required by the cost per hour. After this, subtract the initial costs of producing the first batch. This will result in the total out-of-pocket costs to complete a project.

Cost for 1,000 units	(27,955.2 hours × $18 per hour)	$503,193.60
Cost for first batch	(80 units × 60 hours × $18 per hour)	(86,400.00)
Cost for 920 units		$416,793.60

[34] Gleim #: 1.1.24 -- Source: CMA 0408 2-005

The following sequence of steps is employed by a company to develop its annual profit plan:

- Planning guidelines are disseminated downward by top management after receiving input from all levels of management.
- A sales budget is prepared by individual sales units reflecting the sales targets of the various segments. This provides the basis for departmental production budgets and other related components by the various operating units. Communication is primarily lateral with some upward communication possible.
- A profit plan is submitted to top management for coordination and review. Top management's recommendations and revisions are acted upon by middle management. A revised profit plan is resubmitted for further review to top management.
- Top management grants final approval and distributes the formal plan downward to the various operating units.

This outline of steps **best** describes which one of the following approaches to budget development?

A. Top-down approach.
B. Total justification of all activities by operating units.
C. Imposed budgeting by top management.
D. Bottom-up approach.

- Answer (A) is incorrect. these steps describe the opposite of a top-down approach.
- Answer (B) is incorrect. top management is not demanding justification of all activities in the steps described; such a demand would be consistent with a system known as zero-based budgeting.
- Answer (C) is incorrect. top management has received extensive input and cooperation from lower levels through performing these steps.
- Answer (D) is **correct**. A bottom-up approach is characterized by general guidance from the highest levels of management, followed by extensive input from middle and lower management. This sequence of steps aptly describes this process.

[35] Gleim #: 1.5.123 -- Source: Publisher

Under favorable weather conditions, the management of Flesher Farms expects its raspberry crop to have a $120,000 market value. An unprotected crop subject to frost has an expected market value of $80,000. If Flesher protects the raspberries against frost, the market value of the crop is still expected to be $120,000 under frost-free conditions and $180,000 if a frost occurs. What must be the probability of a frost for Flesher to be indifferent to spending $20,000 for tents to provide frost protection?

    A. .333
    B. .250
    C. .167
    D. .200

- Answer (A) is incorrect. If the probability of frost is greater than .200, an expected value analysis indicates the company should provide protection.
- Answer (B) is incorrect. If the probability of frost is greater than .200, an expected value analysis indicates the company should provide protection.
- Answer (C) is incorrect. If frost has a probability of .167, the expected value of not providing protection exceeds that of providing protection.
- Answer (D) is **correct**. Without protection, the company will have sales of either $80,000 or $120,000. With protection, the company will have sales of either $120,000 or $180,000. The $20,000 cost of tents must be subtracted from these amounts to compute the net contribution. Thus, the contribution if the berries are protected will be either $100,000 or $160,000. The problem can be solved algebraically with the following formula (X = the probability of frost):

$$
\begin{aligned}
X(\$80,000) + (1 - X)(\$120,000) &= X(\$160,000) + (1 - X)(\$100,000) \\
\$80,000X + \$120,000 - \$120,000X &= \$160,000X + \$100,000 - \$100,000X \\
\$120,000 - \$40,000X &= \$100,000 + \$60,000X \\
\$120,000 &= \$100,000 + \$100,000X \\
\$20,000 &= \$100,000X \\
X &= .200
\end{aligned}
$$

In other words, if the probability of frost is 20%, management will be indifferent between providing and not providing protection. At a frost expectancy of greater than 20%, management should provide protection.

[36] Gleim #: 1.4.109 -- Source: Publisher

Violation of which assumption underlying regression analysis is prevalent in time series analysis?

A. Expected value of error term equals zero.
B. Error terms are independent.
C. Variance of error term is constant.
D. Distribution of error terms is usually normal.

- Answer (A) is incorrect. In time series analysis, the expected value of the error term usually equals zero.
- Answer (B) is **correct**. Time series analysis is a regression model in which the independent variable is time. In time series analysis, the value of the next time period is frequently dependent on the value of the time period before that. Hence, the error terms are usually correlated or dependent on the prior period; i.e., they are characterized by autocorrelation (serial correlation).
- Answer (C) is incorrect. In time series analysis, variance of the error term is usually constant.
- Answer (D) is incorrect. In time series analysis, distribution of the error terms is usually normal.

[37] Gleim #: 1.3.90 -- Source: Publisher

(Refers to Fact Pattern #6)

If Donehart subcontracts the order to Midland, how many hours will it take to complete a unit after the initial 640 units on the learning curve are finished?

  A. 21.50 hours.

  B. 11.81 hours.

  C. 23.625 hours.

  D. 15.75 hours.

- Answer (A) is incorrect. The time needed to finish additional assuming an 80% learning curve is 21.50 hours.

- Answer (B) is incorrect. The time needed to finish additional units after 1,280 units, assuming the learning curve did not end at 640 units, is 11.81 hours.

- Answer (C) is incorrect. The average labor hours per unit to finish 640 units is 23.625 hours.

- Answer (D) is **correct**. The hours per unit required to finish additional units after a point on the learning curve is found by subtracting the total hours required to finish the previous point on the learning curve from the current one. Then, this number is divided by the increase in units produced. In Midland's case, the calculation is

Hours needed to produce 640 units	15,120
Hours needed to produce first half	(10,080)
Hours needed to produce second half	5,040

Thus, each individual unit in the second group of 320 units will take 15.75 hours a piece (5,040 ÷ 320).

[38] Gleim #: 1.1.39 -- Source: CMA 0408 2-022

Jura Corporation is developing standards for the next year. Currently XZ-26, one of the material components, is being purchased for $36.45 per unit. It is expected that the component's cost will increase by approximately 10% next year and the price could range from $38.75 to $44.18 per unit, depending on the quantity purchased. The appropriate standard for XZ-26 for next year should be set at the

  A. Highest price in the anticipated range to ensure that there are only favorable purchase price variances.

  B. Price agreed upon by the purchasing manager and the appropriate level of company management.

  C. Current actual cost plus the forecasted 10% price increase.

  D. Lowest purchase price in the anticipated range to keep pressure on purchasing to always buy in the lowest price range.

- Answer (A) is incorrect. standards should be set tightly enough to provide motivation to purchasing management.
- Answer (B) is **correct**. Standard prices are designed for internal performance measurement. Standards should be attainable, but not so easily as to not provide motivation. Management should decide its objectives and set a standard that will achieve that objective when the standard is met. For example, the lowest price might not be selected if the company is using a JIT system, for which the primary objective is the minimization of inventories.
- Answer (C) is incorrect. the actual cost could be more or less depending in the quantity purchased.
- Answer (D) is incorrect. the lowest price may not always be in the company's best interests if the quantity required to obtain the lowest price would lead to much higher carrying costs.

[39] Gleim #: 1.3.91 -- Source: Publisher

(Refers to Fact Pattern #6)
If Donehart subcontracts the order to Midland, how much additional cost will Donehart incur after the first batch in order to obtain a total of 1,000 units?

- A. $426,535.20
- B. $330,220.80
- C. $390,600
- D. $302,400

- Answer (A) is **correct**. The total out-of-pocket cost for outsourcing is found by adding the total labor hours required to finish the units on the learning curve to the product of additional units and hours per additional unit. This number is then multiplied by the direct labor cost. Since Donehart has already produced a batch of 80 units, only 920 are needed from Midland. The first 640 of this 920 are on the learning curve and will require a total of 15,120 hours to produce. This leaves 280 units at 15.75 hours apiece, for a total hours needed of 19,530 [15,120 + (280 × 15.75)]. The direct labor rate is $21.84 [$20.00 × (1 + .04 labor increase) × (1 + .05 cost margin)]. Donehart's cost for the 920 units outsourced to Midland is therefore $426,535.20 (19,530 × $21.84).
- Answer (B) is incorrect. The amount of $330,220.80 ignores the hours required for the additional units.
- Answer (C) is incorrect. The amount of $390,600 ignores the increases in the direct labor rate.
- Answer (D) is incorrect. The amount of $302,400 ignores the hours required for the additional units and it ignores the increases in the direct labor rate.

[40] Gleim #: 1.5.139 -- Source: CMA 690 5-17

(Refers to Fact Pattern #4)
The optimum number of bags of peanuts for Stan Berry to stock is

A. 20
B. 30
C. 40
D. 50

- Answer (A) is incorrect. The figure of 20 units does not have the greatest expected value.
- Answer (B) is incorrect. The figure of 30 units does not have the greatest expected value.
- Answer (C) is **correct**. Expected value analysis is a means of selecting the best option when decisions involve risk. The expected value equals the sum of the products of the various payoffs and their respective probabilities. Stan Berry can calculate the expected value of each of his four possible actions as follows:

Bags Stocked			Expected Value
20	.2($20) + .4($20) + .3($20) + .1($20)	=	$20.00
30	.2($18) + .4($30) + .3($30) + .1($30)	=	27.60
40	.2($16) + .4($28) + .3($40) + .1($40)	=	30.40
50	.2($14) + .4($26) + .3($38) + .1($50)	=	29.60

The action with the highest expected payoff is to stock 40 bags.
- Answer (D) is incorrect. The figure of 50 units does not have the greatest expected value.

[41] Gleim #: 1.3.89 -- Source: Publisher

(Refers to Fact Pattern #6)
If Donehart subcontracts the order to Midland, what is the total number of labor hours required to produce the 640 units on the learning curve?

A. 19,530 hours.
B. 18,350 hours.
C. 15,120 hours.
D. 35,840 hours.

- Answer (A) is incorrect. The total hours required to complete the project is 19,530 hours.
- Answer (B) is incorrect. The figure of 18,350 hours is found by using an 80% learning curve.
- Answer (C) is **correct**. Learning curves reflect the increased rate at which people perform tasks as they gain experience. For this example, the learning curve has the following effect:

Batch Number	Cumulative Units Produced	Average Labor Hours per Unit		Cumulative Hours
1	80	56		4,480
2	160	42	(56 × 75%)	6,720
3	320	31.5	(42 × 75%)	10,080
4	640	23.625	(31.5 × 75%)	15,120

- Answer (D) is incorrect. The amount of time necessary assuming no learning curve is 35,840 hours.

[42] Gleim #: 1.5.142 -- Source: CMA 688 5-25

(Refers to Fact Pattern #3)
The probability that a customer will select model P104 is

A. Some percentage other than those given.
B. 10%
C. 50%
D. 20%

- Answer (A) is incorrect. The correct percentage is among the responses given.
- Answer (B) is incorrect. This percentage is the probability of selecting S104.
- Answer (C) is incorrect. The probability of selecting X104 is 50%.
- Answer (D) is **correct**. Ten random numbers have been assigned. Of these, two (0 and 1) have been assigned to model P104. Thus, there are two chances out of ten, or 20%, that a customer will select that model.

[43] Gleim #: 1.5.134 -- Source: CMA 691 4-3

The expected value of perfect information is the

A. Difference between the expected profit under certainty and the expected monetary value of the best act under uncertainty.
B. Difference between the expected profit under uncertainty and conditional profit for the best act under certainty.
C. Same as the expected profit under certainty.
D. Sum of the conditional profit (loss) for the best event of each act times the probability of each event's occurring.

- Answer (A) is **correct**. The expected value under uncertainty is found by multiplying the probability of each outcome (event) by its payoff (conditional profit or loss) and summing the products. Perfect information is the knowledge that a future state of nature will occur with certainty. The expected value of perfect information is the difference between the expected value under certainty and the expected value of the optimal decision under uncertainty. The expected value under certainty equals the sum of the products of the profit maximizing payoffs of perfect forecasts and the related probabilities.
- Answer (B) is incorrect. It may not be the best act under certainty that is considered; the value of perfect information is based on the event that is known will happen, whether that event is the best or the worst.
- Answer (C) is incorrect. The value of perfect information is limited to the excess of the profit under certainty over the best return without perfect information.
- Answer (D) is incorrect. The value of perfect information is limited to the excess of the profit under certainty over the best return without perfect information.

[44] Gleim #: 1.4.110 -- Source: CMA 0408 1-152

Sales of big-screen televisions have grown steadily during the past five years. A dealer predicted that the demand for February would be 148 televisions. Actual demand in February was 158 televisions. If the smoothing constant is $\alpha = 0.3$, the demand forecast for March, using the exponential smoothing model, will be

- A. 148 televisions.
- B. 151 televisions.
- C. 155 televisions.
- D. 158 televisions.

- Answer (A) is incorrect. Exponential smoothing involves more than simply using one month's forecast as the forecast for the following month.
- Answer (B) is **correct**. Exponential smoothing is a widespread technique for making projections because it requires less data be kept on hand than the moving average methods. Mathematically, a forecast is arrived at with exponential smoothing according to the following formula:

$$
\begin{aligned}
\text{Forecast} &= (\text{Smoothing factor} \times \text{Previous month result}) + \\
&\quad (\text{Smoothing factor complement} \times \text{Previous month forecast}) \\
&= (0.3 \times 158) + (0.7 \times 148) \\
&= 47.4 + 103.6 \\
&= 151
\end{aligned}
$$

- Answer (C) is incorrect. This number results from reversing the smoothing factor and smoothing factor complement.
- Answer (D) is incorrect. Exponential smoothing involves more than simply using one month's actual demand as the forecast for the following month.

[45] Gleim #: 1.1.17 -- Source: Publisher

An improperly executed budget process might have the effect(s) of

    A. All of the answers are correct.
    B. Inflated budget requests.
    C. Disregard of overall company goals.
    D. Meeting short-term but not long-term goals.

- Answer (A) is **correct**. Lack of goal congruence can result when attaining a subunit's budgetary goal results in disregard of overall company goals. Subunit managers may inflate their budget requests to provide operating leeway and then engage in unnecessary spending to avoid future budget cuts. A budget may encourage exclusive concentration on meeting short-term standards at the expense of long-term considerations. A manager fearful of not meeting the budget targets may improperly manipulate allocation of expenses. The manager seeking to stay within the budget may disregard employee morale and poor working conditions. Interunit resentment may develop as a result of competition for scarce funds.
- Answer (B) is incorrect. All of the listed effects might occur because of an improperly executed budget process.
- Answer (C) is incorrect. All of the listed effects might occur because of an improperly executed budget process.
- Answer (D) is incorrect. All of the listed effects might occur because of an improperly executed budget process.

[46] Gleim #: 1.1.20 -- Source: Publisher

Ineffective budget control systems are characterized by

    A. All of the answers are correct.
    B. Lack of timely feedback in the use of the budget.
    C. Use of budgets as a planning but not a control tool.
    D. Use of budgets for harassment of individuals rather than motivation.

- Answer (A) is **correct**. Ineffective budget control systems are characterized by each of the items noted. The use of budgets for planning only is a problem that must be resolved through the education process. Management must be educated to use the budget documents for control, not just planning. Management must learn that budgets can motivate and help individuals achieve professional growth as well as the goals of the firm. Ignoring budgets obviously contributes to the ineffectiveness of the budget system. Finally, feedback must be timely or lower management and employees will soon recognize that budget feedback is so late it provides no information, making the budget a worthless device.
- Answer (B) is incorrect. This is not the only item listed that characterizes ineffective budget control systems.
- Answer (C) is incorrect. This is not the only item listed that characterizes ineffective budget control systems.
- Answer (D) is incorrect. This is not the only item listed that characterizes ineffective budget control systems.

[47] Gleim #: 1.5.146 -- Source: CMA 0408 1-177

According to recent focus sessions, Norton Corporation has a "can't miss" consumer product on its hands. Sales forecasts indicate either excellent or good results, with Norton's sales manager assigning a probability of .6 to a good results outcome. The company is now studying various sales compensation plans for the product and has determined the following contribution margin data:

	Contribution Margin
If sales are excellent and	
Plan 1 is adopted	$300,000
Plan 2 is adopted	370,000
If sales are good and	
Plan 1 is adopted	240,000
Plan 2 is adopted	180,000

On the basis of this information, which of the following statements is **correct**?

- A. Plan 1 should be adopted because of the sales manager's higher confidence in good results.
- B. Either Plan should be adopted, the decision being dependent on the probability of excellent sales results.
- C. Plan 2 should be adopted because it is $10,000 more attractive than Plan 1.
- D. Plan 1 should be adopted because it is $8,000 more attractive than Plan 2.

- Answer (A) is incorrect. the purpose of expected value computation is to take all possible outcomes into account, not just the most likely.
- Answer (B) is incorrect. the plan must be adopted before the actual outcome is known.
- Answer (C) is incorrect. the expected value of Plan 2 exceeds that of Plan 1 by $10,000 only after merely summing the unweighted contribution margins.
- Answer (D) is **correct**. When monetary outcomes and probabilities can be reasonably estimated, a payoff table can be constructed to determine the best course of action:

Decision Alternative	State of Nature	Contribution Margin		Probability		Expected Value
Plan 1	Excellent	$300,000	×	0.4	=	$120,000
	Good	240,000	×	0.6	=	144,000
						$264,000
Plan 2	Excellent	$370,000	×	0.4	=	$148,000
	Good	180,000	×	0.6	=	108,000
						$256,000

After weighting the possible monetary outcomes by their respective probabilities, the expected value of Plan 1 is $8,000 higher than the expected value of Plan 2.

[48] Gleim #: 1.3.86 -- Source: Publisher

(Refers to Fact Pattern #6)
If Donehart manufactures the units in-house, what is the average labor hours per unit after manufacturing 640 units?

A. 60
B. 23.63
C. 23.04
D. 30.72

- Answer (A) is incorrect. The average labor hours per unit on the first production run is 60.
- Answer (B) is incorrect. The average labor hours per unit for Midland, Inc. is 23.63.
- Answer (C) is incorrect. Incremental hours per unit after 320 units have been produced is 23.04.
- Answer (D) is **correct**. Learning curves reflect the increased rate at which people perform tasks as they gain experience. For this example, the learning curve has the following effect:

Batch Number	Cumulative Units Produced	Average Average Labor per Unit	
1	80	60	
2	160	48	(60 × 80%)
3	320	38.4	(48 × 80%)
4	640	30.72	(38.4 × 80%)

Therefore, the average labor hours per unit is 30.72 hours.

[49] Gleim #: 1.1.36 -- Source: CMA 0408 2-019

One approach for developing standard costs incorporates communication, bargaining, and interaction among product line managers; the immediate supervisors for whom the standards are being developed; and the accountants and engineers before the standards are accepted by top management. This approach would **best** be characterized as a(n)

A. Engineering approach.
B. Centralized top-down approach.
C. Team development approach.
D. Imposed approach.

- Answer (A) is incorrect. an engineering approach involves only engineers.
- Answer (B) is incorrect. a centralized top-down approach involves standards being dictated by upper management.
- Answer (C) is **correct**. A team development approach to standard setting involves interaction among various groups or individuals, including product line managers, the departments for which the standards are being developed, accountants, and industrial engineers.
- Answer (D) is incorrect. the approach described is the opposite of an imposed approach.

[Fact Pattern #7]

A company is considering three alternative machines to produce a new product. The cost structures (unit variable costs plus avoidable fixed costs) for the three machines are shown as follows. The selling price is unaffected by the machine used.

Single purpose machine	$.60x + $20,000
Semiautomatic machine	$.40x + $50,000
Automatic machine	$.20x + $120,000

The demand for units of the new product is described by the following probability distribution.

Demand	Probability
200,000	0.4
300,000	0.3
400,000	0.2
500,000	0.1

[50] Gleim #: 1.5.137 -- Source: CMA 689 5-26

(Refers to Fact Pattern #7)
Ignoring the time value of money, the expected cost of using the semiautomatic machine is

A. $210,000
B. $250,000
C. $130,000
D. $170,000

- Answer (A) is incorrect. The amount of $210,000 is calculated by using demand of 400,000 units.
- Answer (B) is incorrect. The amount of $250,000 is calculated by using demand of 500,000 units.
- Answer (C) is incorrect. The amount of $130,000 is calculated by using demand of 200,000 units.
- Answer (D) is **correct**. The expected demand is 300,000 units [$(.4 \times 200,000) + (.3 \times 300,000) + (.2 \times 400,000) + (.1 \times 500,000)$]. Total expected cost is therefore $170,000 [$50,000 fixed cost + ($.40 \times 300,000$) variable cost].

[51] Gleim #: 1.3.95 -- Source: CMA 0408 1-145

(Refers to Fact Pattern #5)
Upon completion of the eighth unit, Aerosub's cumulative direct labor hours will be

A. 64,000 hours.
B. 80,000 hours.
C. 40,960 hours.
D. 29,520 hours.

- Answer (A) is incorrect. The figure of 64,000 results from improperly multiplying the cumulative number of units produced by the 10,000 hours spent on the first batch, then multiplying by the learning curve percentage.
- Answer (B) is incorrect. The figure of 80,000 results from improperly multiplying the cumulative number of units produced by the 10,000 hours spent on the first batch.
- Answer (C) is **correct**. The underlying assumption of learning curve analysis is that workers gain productivity at a predictable rate as they gain experience with a new process. A common assumption is that the number of hours required for each doubling of output will be 80% of the hours required for the previous doubling. The effects of Aerosub's projected learning curve on this product can be calculated as follows:

Batch	Cumulative Units Produced	Cumulative Average Labor Hours	Cumulative Total Labor Hours
1	1	10,000	10,000
2	2	8,000 (10,000 × 80%)	16,000
3	4	6,400 (8,000 × 80%)	25,600
4	8	5,120 (6,400 × 80%)	40,960

- Answer (D) is incorrect. The figure of 29,520 results from improperly summing the cumulative average labor hour figures.

[52] Gleim #: 1.1.41 -- Source: CMA 0408 2-024

After performing a thorough study of Michigan Company's operations, an independent consultant determined that the firm's labor standards were probably too tight. Which one of the following facts would be **inconsistent** with the consultant's conclusion?

A. Management noted that minimal incentive bonuses have been paid in recent periods.
B. Production supervisors found several significant fluctuations in manufacturing volume, with short-term increases on output being followed by rapid, sustained declines.
C. Michigan's budgeting process was well-defined and based on a bottom-up philosophy.
D. A review of performance reports revealed the presence of many unfavorable efficiency variances.

- Answer (A) is incorrect. the widespread failure for expected bonuses to be earned would be an indicator of too-tight standards.
- Answer (B) is incorrect. the situation described is indicative of rush jobs being too common, which is a result of poor production planning, not tight labor standards.
- Answer (C) is **correct**. It is highly unlikely that workers familiar with their own processes would set too-tight standards.
- Answer (D) is incorrect. many unfavorable efficiency variances would be an indicator of too-tight standards.

[53] Gleim #: 1.1.23 -- Source: CMA 0408 2-003

All of the following are criticisms of the traditional budgeting process **except** that it

A. Incorporates non-financial measures as well as financial measures into its output.
B. Is not used until the end of the budget period to evaluate performance.
C. Makes across-the-board cuts when early budget iterations show that planned expenses are too high.
D. Overemphasizes a fixed time horizon, such as one year.

- Answer (A) is **correct**. Traditional budgeting focuses strictly on financial measures.
- Answer (B) is incorrect. traditional budgeting is difficult to use throughout the budget period for performance measurement.
- Answer (C) is incorrect. across-the-board cuts are an easily available solution when traditional budgeting is used.
- Answer (D) is incorrect. traditional budgeting is heavily focused on a fixed time horizon.

[54] Gleim #: 1.5.135 -- Source: CIA 1188 III-44

In decision theory, those uncontrollable future events that can affect the outcome of a decision are

A. Nodes.
B. Probabilities.
C. States of nature.
D. Payoffs.

- Answer (A) is incorrect. Nodes (junction points) are decision points.
- Answer (B) is incorrect. Probabilities are the likelihood of occurrence of the states of nature.
- Answer (C) is **correct**. Applying decision theory requires the decision maker to develop an exhaustive list of possible future events. All possible future events that might occur must be included, even though the decision maker will likely be very unsure as to which specific events will occur. These future uncontrollable events are referred to as states of nature.
- Answer (D) is incorrect. Payoffs are outcome measures such as profit or loss.

[55] Gleim #: 1.5.148 -- Source: CMA 0408 1-179

Scarf Corporation's controller has decided to use a decision model to cope with uncertainty. With a particular proposal, currently under consideration, Scarf has two possible actions, invest or not invest in a joint venture with an international firm. The controller has determined the following.

Action: Invest in the Joint Venture

Events and Probabilities:

Probability of success	= 60%
Cost of investment	= $9.5 million
Cash flow if investment is successful	= $15.0 million
Cash flow if investment is unsuccessful	= $2.0 million
Additional costs to be paid	= $0
Costs incurred up to this point	= $650,000

Action: Do Not Invest in the Joint Venture

Events:

Costs incurred up to this point	= $650,000
Additional costs to be paid	= $100,000

Which one of the following alternatives correctly reflects the respective expected values of investing versus not investing?

A. $(350,000) and $(100,000).
B. $(350,000) and $(750,000).
C. $300,000 and $(100,000).
D. $300,000 and $(750,000).

- Answer (A) is incorrect. The amount of $(350,000) results from improperly treating sunk costs as relevant when calculating the expected value of investing.
- Answer (B) is incorrect. The amounts of $(350,000) and $(750,000) result from improperly treating sunk costs as relevant.
- Answer (C) is **correct**. When monetary outcomes and probabilities can be reasonably estimated, a payoff table can be constructed to determine the best course of action:

Decision Alternative	State of Nature	Cash Inflow		Probability		Expected Value
Invest	Success	$15,000,000	×	0.6	=	$ 9,000,000
	No success	2,000,000	×	0.4	=	800,000
				Cost of investment		(9,500,000)
				Additional costs		0
				Net expected value		$ 300,000
Do Not	Success	$ 0	×	0.6	=	$ 0
Invest	No success	0	×	0.4	=	0
				Cost of investment		0
				Additional costs		(100,000)
				Net expected value		$ (100,000)

- Answer (D) is incorrect. The amount of $(750,000) results from improperly treating sunk costs as relevant when calculating the expected value of not investing.

[56] Gleim #: 1.1.34 -- Source: CMA 0408 2-017

Suboptimal decision making is **not** likely to occur when

   A. There is little congruence among the overall organization goals, the subunit goals, and the individual goals of decision makers.
   B. The subunits in the organization compete with each other for the same input factors or for the same customers.
   C. Goals and standards of performance are set by the top management.
   D. Guidance is given to subunit managers about how standards and goals affect them.

- Answer (A) is incorrect. low congruence among the overall organization goals, the subunit goals, and the individual goals of decision makers increases the chances of suboptimal decision making.
- Answer (B) is incorrect. , when the subunits in the organization compete with each other for the same input factors or for the same customers, the chances of suboptimal decision making are increased.
- Answer (C) is incorrect. , when goals and standards are dictated by the top management, the chances of suboptimal decision making are increased.
- Answer (D) is **correct**. Suboptimal decision making is not likely to occur when guidance is given to subunit managers about how standards and goals affect them.

[57] Gleim #: 1.1.26 -- Source: CMA 0408 2-007

In developing the budget for the next year, which one of the following approaches would produce the **greatest** amount of positive motivation and goal congruence?

    A. Have the divisional and senior management jointly develop goals and objectives while constructing the corporation's overall plan of operation.
    B. Permit the divisional manager to develop the goal for the division that in the manager's view will generate the greatest amount of profits.
    C. Have the divisional and senior management jointly develop goals and the divisional manager develop the implementation plan.
    D. Have senior management develop the overall goals and permit the divisional manager to determine how these goals will be met.

- Answer (A) is incorrect. senior management may not be in a position to develop an implementation plan.
- Answer (B) is incorrect. using division managers to develop their goals does nothing for goal congruence.
- Answer (C) is **correct**. Joint development of goals is more conducive to motivation, as is allowing divisional managers to develop the implementation plan. Goal congruence is enhanced when senior management is involved in the budgeting process along with division managers.
- Answer (D) is incorrect. having senior management set goals would not be as conducive to motivation as would having input from divisions.

[58] Gleim #: 1.2.68 -- Source: CMA 0408 1-140

The results of regressing Y against X are as follows:

	Coefficient
Intercept	5.23
Slope	1.54

When the value of X is 10, the estimated value of Y is

    A. 53.84
    B. 6.78
    C. 8.05
    D. 20.63

- Answer (A) is incorrect. The figure 53.84 results from transposing the intercept and slope.
- Answer (B) is incorrect. The figure 6.78 results from simply adding the intercept and slope.
- Answer (C) is incorrect. The figure 8.05 results from simply multiplying the intercept and slope.
- Answer (D) is **correct**. A simple regression can be calculated using the formula for a straight line:

$$y = a + bx$$

Where: y = the dependent variable
a = the Y-axis intercept
b = the slope of the regression line
x = the independent variable

Solving with the information given yields the following results:

$$
\begin{aligned}
y &= a + bx \\
&= 5.23 + (1.54 \times 10) \\
&= 5.23 + 15.4 \\
&= 20.63
\end{aligned}
$$

[59] Gleim #: 1.5.138 -- Source: CMA 689 5-27

(Refers to Fact Pattern #7)
Using the expected value criterion,

- A. The automatic machine should be used because of the high expected demand.
- B. The semiautomatic machine should be used because it has the lowest expected cost.
- C. The single purpose machine should be used because of the low expected demand.
- D. The automatic machine has the lowest expected cost.

- Answer (A) is incorrect. The automatic machine is not the best choice based on the expected demand level.
- Answer (B) is **correct**. The semiautomatic machine has an expected cost of $170,000 based on an expected demand of 300,000 units [(.4 × 200,000) + (.3 × 300,000) + (.2 × 400,000) + (.1 × 500,000)]. The single purpose machine has an expected cost of $200,000 [($.60 × 300,000) + $20,000]. The automatic machine has an expected cost of $180,000 [($.20 × 300,000) + $120,000)]. Hence, the semiautomatic machine has the lowest expected cost at the expected level of demand.
- Answer (C) is incorrect. The single purpose machine is not the best choice based on the expected demand level.
- Answer (D) is incorrect. The automatic machine has the second lowest expected cost.

[60] Gleim #: 1.6.160 -- Source: CMA 0408 1-143

A manufacturing firm plans to bid on a special order of 80 units that will be manufactured in lots of 10 units each. The production manager estimates that the direct labor hours per unit will decline by a constant percentage each time the cumulative quantity of units produced doubles. The quantitative technique used to capture this phenomenon and estimate the direct labor hours required for the special order is

- A. Linear programming analysis.
- B. The Markov process.
- C. Cost-profit-volume analysis.
- D. Learning curve analysis.

- Answer (A) is incorrect. linear programming is a mathematical technique used to optimize a linear function subject to certain constraints.
- Answer (B) is incorrect. the Markov process is used in decision problems in which the probability of the occurrence of a future state depends only on the current state.
- Answer (C) is incorrect. cost-volume-profit analysis is a tool for understanding the interaction of revenues with fixed and variable costs.
- Answer (D) is **correct**. Learning curve analysis is used to project productivity gains resulting from the increased rate at which people perform tasks as they gain experience.

[61] Gleim #: 1.1.35 -- Source: CMA 0408 2-018

All of the following statements concerning standard costs are correct **except** that

- A. Time and motion studies are often used to determine standard costs.
- B. Standard costs are usually set for one year.
- C. Standard costs are usually stated in total, while budgeted costs are usually stated on a per-unit basis.
- D. Standard costs can be used in costing inventory accounts.

- Answer (A) is incorrect. time and motion studies are often used to determine standard costs.
- Answer (B) is incorrect. standard costs are usually set for one year.
- Answer (C) is **correct**. Standard costs can be used at the per-unit level and any level of aggregation above.
- Answer (D) is incorrect. standard costs can be used in costing inventory accounts.

[62] Gleim #: 1.1.31 -- Source: CMA 0408 2-013

Budgeting problems where departmental managers are repeatedly achieving easy goals or failing to achieve demanding goals can be **best** minimized by establishing

   A. Preventive controls.
   B. Better communication whereby managers discuss budget matters daily with their superiors.
   C. A policy that allows managers to build slack into the budget.
   D. Participative budgeting where managers pursue objectives consistent with those set by top management.

- Answer (A) is incorrect. preventive controls is much too vague a term in this circumstance.
- Answer (B) is incorrect. simply discussing budget matters more often does not inject discipline into the process.
- Answer (C) is incorrect. a policy allowing budgetary slack would make the problem worse.
- Answer (D) is **correct**. Participative budgeting is a practical means of setting realistic, achievable budget goals.

[63] Gleim #: 1.5.147 -- Source: CMA 0408 1-178

Denton, Inc. manufactures industrial machinery and requires 100,000 switches per year in its assembly process. When switches are received from a vendor they are installed in the specific machine and tested. If the switches fail, they are scrapped and the associated labor cost of $25 is considered lost productivity. Denton purchases "off the shelf" switches as opposed to custom-made switches and experiences quality problems with some vendors' products. A decision must be made as to which vendor to buy from during the next year based on the following information.

Vendor	Price per switch	Percentage expected to pass the test
P	$35	90%
Q	37	94%
R	39	97%
S	40	99%

Which vendor should Denton's controller recommend to management?

   A. Vendor R.
   B. Vendor Q.
   C. Vendor P.
   D. Vendor S.

- Answer (A) is incorrect. the total cost of using Vendor R is greater than that of Vendor P.
- Answer (B) is incorrect. the total cost of using Vendor Q is greater than that of Vendor P.
- Answer (C) is **correct**. The total cost of buying from each vendor can be calculated as follows:

Vendor	Unit Price	Annual Quantity Purchased	Total Purchase Price	% Unusable	Quantity Unusable	Cost of Scrapping	Total Cost
P	$35	100,000	$3,500,000	10%	10,000	$250,000	$3,750,000
Q	37	100,000	3,700,000	6%	6,000	150,000	3,850,000
R	39	100,000	3,900,000	3%	3,000	75,000	3,975,000
S	40	100,000	4,000,000	1%	1,000	25,000	4,025,000

- Answer (D) is incorrect. the total cost of using Vendor S is greater than that of Vendor P.

[64] Gleim #: 1.2.66 -- Source: CMA 0408 1-138

Slawford Manufacturing developed the following multiple regression equation, utilizing many years of data, and uses it to model, or estimate, the cost of its product.

$$\text{Cost} = FC + (a \times L) + (b \times M)$$

Where: FC = fixed costs
L = labor rate per hour
M = material cost per pound

Which one of the following changes would have the **greatest** impact on invalidating the results of this model?

A. Renegotiation of the union contract calling for much higher wage rates.
B. A significant change in labor productivity.
C. A large drop in material costs, as a result of purchasing the material from a foreign source.
D. A significant reduction in factory overheads, which are a component of fixed costs.

- Answer (A) is incorrect. the wage rate is one of the variables, and a difference between expected and actual value for the variables is an integral part of multiple regression.
- Answer (B) is **correct**. In multiple regression, a large difference between the expected value and the actual value of one of the coefficients has the most impact in rendering the model invalid. A change in costs would be incorporated into the equation automatically, but a change in productivity per hour would not.
- Answer (C) is incorrect. materials cost is one of the variables, and a difference between expected and actual value for the variables is an integral part of multiple regression.
- Answer (D) is incorrect. fixed cost is one of the variables, and a difference between expected and actual value for the variables is an integral part of multiple regression.

[65] Gleim #: 1.5.149 -- Source: CMA 0408 1-180

Allbee Company has three possible investment opportunities. The controller calculated the payoffs and probabilities as follows:

	Probabilities		
Payoffs	Investment A	Investment B	Investment C
$(20,000)	.3	.2	.3
(10,000)	.1	.2	.1
30,000	.3	.2	.2
70,000	.2	.2	.3
100,000	.1	.2	.1

The cost of investments A, B, and C are the same. Using the expected-value criterion, which one of the following rankings of these investments, from highest payoff to lowest payoff, is correct?

A. B, A, C.
B. A, B, C.
C. C, A, B.
D. B, C, A.

- Answer (A) is incorrect. Investment C has a higher expected value than Investment A.
- Answer (B) is incorrect. Investment B has a higher expected value than Investment A.
- Answer (C) is incorrect. Investment B has a higher expected value than both Investment C and Investment A.
- Answer (D) is **correct**. When monetary outcomes and probabilities can be reasonably estimated, a payoff table can be constructed to determine the best course of action:

Investment A				Investment B		
Payoffs	Probability	Expected Value		Payoffs	Probability	Expected Value
$(20,000)	0.3	$ (6,000)		$(20,000)	0.2	$ (4,000)
(10,000)	0.1	(1,000)		(10,000)	0.2	(2,000)
30,000	0.3	9,000		30,000	0.2	6,000
70,000	0.2	14,000		70,000	0.2	14,000
100,000	0.1	23,000		100,000	0.2	20,000
Total		$39,000		Total		$34,000

Investment C		
Payoffs	Probability	Expected Value
$(20,000)	0.3	$ (6,000)
(10,000)	0.1	(1,000)
30,000	0.2	6,000
70,000	0.3	21,000
100,000	0.1	27,000
Total		$47,000

[66] Gleim #: 1.5.151 -- Source: CMA 0408 1-182

Stock X has the following probability distribution of expected future returns:

Probability	Expected Return
.1	−20%
.2	5%
.4	15%
.2	20%
.1	30%

The expected rate of return on Stock X is

A. 16%
B. 10%
C. 12%
D. 19%

- Answer (A) is incorrect. This percentage results from failing to treat the −20% return figure as a reduction.
- Answer (B) is incorrect. This percentage results from improperly summing the expected rates of return and dividing by the number of occurrences.
- Answer (C) is **correct**. Expected value computation can be applied to rates of return as well as to dollar amounts.

Probability	Expected Return	Weighted Expected Return
0.1	−20%	−2%
0.2	5%	1%
0.4	15%	6%
0.2	20%	4%
0.1	30%	3%
		12%

- Answer (D) is incorrect. This percentage results from overstating the returns at the higher expected returns.

[67] Gleim #: 1.3.101 -- Source: CMA 0408 1-147

Martin Fabricating uses a cumulative average-time learning curve model to monitor labor costs. Data regarding two recently completed batches of a part that is used in tractor-trailer rigs is as follows:

Batch Number	Number of Units	Cumulative Average Hours Per Unit
1	50	20
2	50	16

If the same rate of learning continues for the next several batches produced, which of the following best describes (1) the type (i.e., degree) of learning curve that the firm is experiencing and (2) the average hours per unit for units included in the 201-400 range of units produced (i.e., the last 200 units)?

	Type (Degree) of Learning Curve	Average Hours Per Unit for Units 201-400
A.	80%	10.24
B.	20%	3.84
C.	20%	10.24
D.	80%	7.68

- Answer (A) is incorrect. The number 10.24 is the cumulative average number of hours after the 4th batch, not the average spent on the units in the batch.
- Answer (B) is incorrect. Twenty percent is the complement of the learning curve, and improperly halving the time spent on the units in the 4th batch.
- Answer (C) is incorrect. Twenty percent is the complement of the learning curve, and 10.24 is the cumulative average number of hours for all units after the 4th batch, not the time spent on the units in the 4th batch.
- Answer (D) is **correct**. The learning curve percentage is determined by noting the hours used in producing the first doubling of output as a percentage of the hours used in the original batch. Since 16 is 80% of 20, Martin is experiencing an 80% learning curve. The average hours used to produce the 4th batch of output (units 201 – 400) can be calculated as follows:

Batch	Units in Batch	Cumulative Units Produced	Cumulative Average Labor Hours	Cumulative Total Time	Time Spent on Batch	Time Spent on Units in Batch
1	50	50	20	1,000	1,000	20
2	50	100	16	1,600	600	12
3	100	200	12.8	2,560	960	9.6
4	200	400	10.24	4,096	1,536	7.68

[68] Gleim #: 1.5.144 -- Source: CMA 683 5-8

A company is simulating the actions of a government agency in which 50% of the time a recall of a product is required, 40% of the time only notification of the buyer about a potential defect is required, and 10% of the time no action on its part is required. Random numbers of 1 to 100 are being used. An appropriate assignment of random numbers for the recall category would be

    A. 11-60
    B. 40-90
    C. 1-40
    D. 61-100

- Answer (A) is **correct**. Given a 50% chance of a recall, 50 different numbers should be assigned to that alternative. The answer (11-60) is the only alternative with 50 numbers.
- Answer (B) is incorrect. The assignment of 40-90 includes 51 numbers.
- Answer (C) is incorrect. The assignment of 1-40 is an appropriate assignment of random numbers for the notification category.
- Answer (D) is incorrect. The assignment of 61-100 is an appropriate assignment of random numbers for the notification category.

[69] Gleim #: 1.1.29 -- Source: CMA 0408 2-011

Rock Industries has four divisions. In the quest to develop a more achievable budget for the coming year, the chief executive officer has elected to develop the company's budget by using a decentralized bottom-up budget approach. Chip Jones is production manager in one of the divisions. Jones' involvement in the budget process this year will probably

    A. Be negligible.
    B. Require development of a production budget after receiving the division's projected sales forecast.
    C. Require development of a production budget based on the prior year's manufacturing activity.
    D. Require development of a production budget that is forwarded to the Budget Department.

- Answer (A) is incorrect. the production manager must be involved in the budget process.
- Answer (B) is **correct**. Management of the division is responsible for setting the sales forecast. As production manager, Jones has the responsibility of ensuring the products are ready on schedule and in the right quantities.
- Answer (C) is incorrect. current year projections are relevant to a budget, not prior year activity.
- Answer (D) is incorrect. a production manager cannot develop a budget for production until (s)he has been told what the sales forecast is.

[70] Gleim #: 1.1.21 -- Source: Publisher
Which of the following statements regarding budgets is false?

A. A budget is a plan that contains a quantitative statement of expected results.
B. Budgets may be developed for cash flows or labor usage.
C. Budgets are used only as a planning function.
D. Budgets present organizational plans in a formal, logical, and integrated manner.

- Answer (A) is incorrect. It is a true statement regarding budgeting.
- Answer (B) is incorrect. It is a true statement regarding budgeting.
- Answer (C) is **correct**. Budget formulation is a planning function; however, budgets are also useful control devices. Budgets provide a basis for control of performance through comparisons of actual with budgeted data. They permit analysis of variations from plans and signal the need for corrective managerial action.
- Answer (D) is incorrect. It is a true statement regarding budgeting.

[Fact Pattern #8]
The Booster Club at Blair College sells hot dogs at home basketball games. The group has a frequency distribution of the demand for hot dogs per game and plans to apply the expected value decision rule to determine the number of hot dogs to stock.

[71] Gleim #: 1.5.136 -- Source: CMA 691 4-2

(Refers to Fact Pattern #8)
The Booster Club should select the demand level that

A. Is closest to the expected demand.
B. Has the greatest probability of occurring.
C. Has the greatest expected monetary value.
D. Has the greatest expected opportunity cost.

- Answer (A) is incorrect. Stocking an amount equal to expected demand (the sum of the products of the possible amounts demanded and their respective probabilities) does not necessarily maximize expected profits.
- Answer (B) is incorrect. The number of bags to stock is not necessarily the same as the amount demanded with the highest probability. The inventory decision should be based on the relation of the probability distribution to the monetary outcomes.
- Answer (C) is **correct**. The Booster Club should select the demand level that maximizes profits, that is, the level with the greatest expected monetary value. This level may not include the event with the highest conditional profit because this profit may be accompanied by a low probability of occurrence. Alternatively, the event with the highest probability of occurrence may not be selected because it does not offer a high conditional profit.
- Answer (D) is incorrect. The greatest opportunity cost is not factored into the expected value analysis.

[72] Gleim #: 1.3.102 -- Source: CMA 0408 1-150

A manufacturing company required 800 direct labor hours to produce the first lot of four units of a new motor. Management believes that a 90% learning curve will be experienced over four lots of production. How many direct labor hours will be required to manufacture the **next** 12 units?

    A. 2,016
    B. 1,792
    C. 1,944
    D. 2,160

- Answer (A) is incorrect. a 90% learning curve produces an incremental production time of 1,792.
- Answer (B) is **correct**. With a 90% learning curve, the cumulative production times would be as follows:

Batch	Average Time	Cumulative Time
1	800	800
2	720 (800 × 90%)	1,440
4	648 (720 × 90%)	2,592

Subtracting the 800 hours spent on the first batch from the cumulative time for four batches leaves 1,792 hours for the last three batches (12 units).

- Answer (C) is incorrect. a 90% learning curve produces an incremental production time of 1,792.
- Answer (D) is incorrect. a 90% learning curve produces an incremental production time of 1,792.

[73] Gleim #: 1.5.141 -- Source: CMA 0205

Carson Products sell sweatshirts and is preparing for a World Cup Soccer match. The cost per sweatshirt varies with the quantity purchased as follows.

Quantity	Unit cost
4,000	$14.00
5,000	13.50
6,000	13.00
7,000	12.50

Carson must purchase the sweatshirts one month before the game and has analyzed the market and estimated sales levels as follows.

Unit sales	4,000	5,000	6,000	7,000
Probability	15%	20%	35%	30%

The estimated selling price is $25 for sales made before and during game day. Any sweatshirts remaining after game day can be sold at wholesale to a local discount store for $10.

The expected profit if Carson purchased 6,000 shirts is

A. $64,500
B. $72,000
C. $66,000
D. $69,000

- Answer (A) is **correct**. An expected value for each level of demand is derived by weighting the profit for that level by the probability of its occurrence. The cost of goods is the same in every case because 6,000 sweatshirts are being purchased without certain knowledge of what demand will be. Also, the gameday revenue for the 7,000 demand level is the same as for 6,000 since Carson only has 6,000 sweatshirts available for sale.

		Demand Level				
		4,000	5,000	6,000	7,000	Total
Gameday revenue @ $25 ea.		$100,000	$125,000	$150,000	$150,000	
Cost of goods (6,000 @ $13 ea.)		(78,000)	(78,000)	(78,000)	(78,000)	
Remainder revenue	(2,000 @ $10 ea.)	20,000				
	(1,000 @ $10 ea.)		10,000			
	(0 @ $10 ea.)			0	0	
Total profit		$42,000	$57,000	$72,000	$72,000	
Probability		× 15%	× 20%	× 35%	× 30%	
Expected value		$6,300	$11,400	$25,200	$21,600	$64,500

- Answer (B) is incorrect. Improperly using 7,000 unit sales at the 7,000 demand level (only 6,000 shirts are available for sale) results in $72,000.
- Answer (C) is incorrect. Improperly using a unit cost of $14.00 for all units and failing to weight the total profits results in $66,000.
- Answer (D) is incorrect. Improperly using a unit cost of $13.50 for all units and failing to weight the total profits results in $69,000.

[74] Gleim #: 1.3.92 -- Source: CIA 1193 III-69

Management of a bookkeeping company observed that the average time spent to perform identical tasks using a new software package decreases as the number of tasks performed increases. The following information on the use of the new software was collected.

Number of Tasks Performed	Total Time to Perform All Tasks	Average Time to Perform Each Task
1	10 minutes	10 minutes
2	18 minutes	9 minutes
4	32.4 minutes	8.1 minutes

If this learning effect continues, what is the average time to perform each of the first eight tasks?

- A. 6.56 minutes.
- B. 5.90 minutes.
- C. 8.1 minutes.
- D. 7.29 minutes.

- Answer (A) is incorrect. The cumulative average time for 16 tasks is 6.56 minutes.
- Answer (B) is incorrect. The cumulative average time for 32 tasks is 5.90 minutes.
- Answer (C) is incorrect. The cumulative time for four tasks is 8.1 minutes.
- Answer (D) is **correct**. Learning curves reflect the increased rate at which people perform tasks as they gain experience. The time required to perform a given task becomes progressively shorter. This technique is applicable only to the early stages of production or to any new task. One common assumption is that the cumulative average time per unit is reduced by a fixed percentage each time cumulative production is doubled. Based on the given data, this company has a 90% learning curve (90% × 10 minutes = 9 minutes, and 90% × 9 minutes = 8.1 minutes). Accordingly, the cumulative average time to perform eight tasks is 7.29 minutes (90% × 8.1 minutes).

[75] Gleim #: 1.3.96 -- Source: CMA 0408 1-149

(Refers to Fact Pattern #5)
After completing the first unit, the estimated total direct labor hours Aerosub will require to produce the seven additional units will be

- A. 30,960 hours.
- B. 40,960 hours.
- C. 70,000 hours.
- D. 56,000 hours.

- Answer (A) is **correct**. The cumulative total hours spent on the units can be calculated as follows:

Batch	Cumulative Units Produced	Cumulative Average Labor Hours	Cumulative Total Labor Hours
1	1	10,000	10,000
2	2	8,000 (10,000 × 80%)	16,000
3	4	6,400 (8,000 × 80%)	25,600
4	8	5,120 (6,400 × 80%)	40,960

Since it took a total of 40,960 hours to complete all eight units and 10,000 to complete the first one, units 2 through 8 took 30,960 hours (40,960 – 10,000).
- Answer (B) is incorrect. The figure 40,960 is the number of hours to complete all eight units.
- Answer (C) is incorrect. The figure 70,000 results from improperly multiplying the seven units by the 10,000 average labor hours consumed in producing the first unit.
- Answer (D) is incorrect. The figure 56,000 results from improperly multiplying the seven units by the 8,000 average labor hours consumed in producing the second batch.