Question 1 - CMA 692 4-4 - Risk, Uncertainty and Expected Value

The expected monetary value of an event

A. Is the profit forgone by not choosing the best alternative.
B. Cannot be computed when there is uncertainty associated with the event.
C. Is the absolute profit from a particular event.
D. Is equal to the payoff of the event times the probability the event will occur.

A. This is the definition of opportunity costs.

B. The expected monetary value of an event can be computed when there is uncertainty associated with the event.

C. Expected value is the weighted average of the probable outcomes.

D. Expected value is calculated by multiplying each projected outcome by its corresponding probability and adding the products together. In other words, expected value is the weighted average of probable outcomes.

Question 2 - CMA 690 5-17 - Risk, Uncertainty and Expected Value

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.

		Payoffs at each supply level:			
Demand (bags)	Probability of Demand	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
Expected value of action:		$20	$27.60	$30.40	$29.60

The optimum number of bags of peanuts to stock is

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

A.

Expected value is the criterion for selecting the best course of action. The highest possible expected value is $30.40, and it is related to stocking 40 bags of peanuts.

B. The expected value of 20 bags of peanuts is $20.00, which is not the optimal expected value.

C. The expected value of 30 bags of peanuts is $27.60, which is not the optimal expected value.

D. The expected value of 50 bags of peanuts is $29.60, which is not the optimal expected value.

Question 3 - CMA 683 5-17 - Risk, Uncertainty and Expected Value

CLT Company has three sales departments. Department A processes about 50% of CLT's sales, Department B about 30%, and Department C about 20%. In the past, Departments A, B, and C had error rates of about 2%, 5%, and 2.5%, respectively. A random audit of the sales records yields a recording error of sufficient magnitude to distort the company's results. The probability that Department A is responsible for this error is

A. .50
B. .17
C. .33
D. .02

A. The probability that Department B is responsible for the error is 50%.

B. The probability that Department C is responsible for the error is 17%.

C. The total error rate for CLT Company is equal to the sum of the error rates for each department: Department A (50% × 2% = 1%); Department B (30% × 5% = 1.5%); Department C (20% × 2 .5% = 0.5%), which is 3% in total. The probability that the error occurred in Department A is Department A's error rate divided by the whole company's error rate, or 1% ÷ 3%, which is 33 1/3% or .33.

D. This is the rate of error for the Department A.

Question 4 - CMA 690 5-25 - Risk, Uncertainty and Expected Value

In decision making under conditions of uncertainty, expected value refers to the

A. Present value of alternative actions.
B. Weighted average of probable outcomes of an action.
C. Likely outcome of a proposed action.
D. Probability of a given outcome from a proposed action.

A. Expected value is not the present value of the alternative actions.

B. Expected value is calculated by multiplying each possible outcome by its corresponding probability and adding them together. In other words, expected value is the weighted average of the probable outcomes, with each outcome's probability serving as that outcome's weight.

C. It is almost impossible for the expected value to actually predict the likely outcome of a proposed action.

D. Expected value is calculated by multiplying each possible outcome by its corresponding probability and adding the products together. Thus, the probability of a given outcome is only one component of expected value.

Question 5 - CMA 691 4-2 - Risk, Uncertainty and Expected Value

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.

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.

A. The expected demand is not a criterion to select the demand level.

B. The greatest probability is not a criterion to select the demand level.

C. The expected monetary value is the criterion used to select the best alternative. The Booster Club should stock the quantity that corresponds to the demand level that has the highest expected value.

D. The greatest expected opportunity cost is not a criterion to select the demand level.

Question 6 - CMA 689 5-28 - Risk, Uncertainty and Expected Value

Refer to the profit payoff table below.

	Demand in Units			
	0	2	4	6
	Probability of Demand			
Supply in Units	0.1	0.3	0.4	0.2
0	$0	$0	$0	$0
2	(80)	40	40	40
4	(160)	(40)	80	80
6	(240)	(120)	0	120

The expected profit when supply equals 4 units, is

A. $20
B. $(10)
C. $80
D. $(40)

A. To calculate the expected profit when supply is equal to 4, we need to multiply each of the possible profits at each level of demand by the probability that that demand level will occur and add the results together. This gives us an expected profit of $20 [(−$160 × .1) + (−$40 × .3) + ($80 × .4) + ($80 × .2)].

B. This is not the expected profit when supply equals 4 units. This is the unweighted average of the possible profits when the supply equals 4 units. The expected value is a weighted average, weighted according to the probability of each possible profit occurring.

C. This is not the expected profit when supply equals 4 units. This is the profit when the supply equals 4 units and demand equals 4 or 6 units.

D. This is not the expected profit when supply equals 4 units. This is the total of the possible profits when the supply equals 4 units. The expected value is a weighted average, weighted according to the probability of each possible profit occurring.

Question 7 - CMA 689 5-26 - Risk, Uncertainty and Expected Value

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
Semi-automatic 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	.4
300,000	.3
400,000	.2
500,000	.1

Ignoring the time value of money, the expected cost of using the semi-automatic machine is

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

A. $130,000 is the expected cost of using the semi-automatic machine if demand at the highest level of probability (demand of 200,000 units; probability 0.4) is used.

B. Before we can determine the expected cost of using one of the machines, we first need to calculate the expected demand. This is done by multiplying each of the possible demands by the probability of that demand occurring and then adding the numbers together to calculate a weighted average, or expected value. The expected demand is 300,000 units, calculated as [(200,000 × .4) + (300,000 × .3) + (400,000 × .2) + (500,000 × .1)]. Now, putting the expected value of the demand of 300,000 into the formula for the semi-automatic machine, we get an expected cost of $170,000 [(300,000 × $.40) + $50,000].

C. $210,000 is the expected cost of using the semi-automatic machine if demand at the probability level of 0.2 (400,000 units) is used.

D. 250,000 is the expected cost of using the semi-automatic machine if demand at the probability level of 0.1 (500,000 units) is used.

Question 8 - CMA 689 5-17 - Risk, Uncertainty and Expected Value

A quantitative technique useful in projecting a firm's sales and profits is

A. Gantt charting.
B. Probability distribution theory.
C. Learning curves.
D. Queuing theory.

A. Gantt charting is a project scheduling technique and it is not used in projecting firm's sales and profits.

B. Probability distribution theory is a mathematical technique that gives a numerical measure to how likely it is that each event in the distribution will occur. This technique can be used in different areas of business including projection of sales and profits. Observing historical data of sales and profits, a probability distribution can be developed.

C. Learning curve analysis states that the more experience people have with doing a task, the more efficient they become in doing that task. It is not used in projecting firm's sales and profits.

D. Queuing theory is the process of determining the most efficient and effective way to move people or goods through a line, keeping waiting times to a minimum in the most economical manner. It is not used in projecting firm's sales and profits.

Question 9 - CMA 1293 4-23 - Risk, Uncertainty and Expected Value

The Madison Company has decided to introduce a new product. The company estimates that there is a 30 percent

probability that the product will contribute $700,000 to profits, a 30 percent probability that it will contribute $200,000, and a 40 percent probability that the contribution will be a negative $400,000. The expected contribution of the new product is

A. $500,000.
B. $110,000.
C. $380,000.
D. $166,667.

A. $500,000 is the simple average giving each outcome equal probability.

B. The expected value is calculated by multiplying each expected outcome by the probability that it will occur and then adding these products together. It is done as follows: ($700,000 × .30) + ($200,000 × .40) + ($400,000 × .40) = $210,000 + $60,000 - $160,000 = $110,000.

C. This answer is incorrect. See the correct answer for a complete explanation.

D. This answer is incorrect. See the correct answer for a complete explanation.

Question 10 - CMA 697 4-22 - Risk, Uncertainty and Expected Value

Philip Enterprises, distributor of compact disks (CDs), is developing its budgeted cost of goods sold for 2011. Philip has developed the following range of sales estimates and associated probabilities for the year:

Sales Estimate	Probability
$60,000	25%
85,000	40
100,000	35

Philip's cost of goods sold averages 80% of sales. What is the expected value of Philip's 2011 budgeted cost of goods sold?

A. $84,000
B. $67,200
C. $85,000
D. $68,000

A. $84,000 is the expected value for sales in 2011. The problem asks for the expected value of Philip's budgeted cost of goods sold.

B. Cost of goods sold averages 80% of sales. In order to determine the expected value of cost of goods sold, we first need to calculate the expected value for sales. Cost of goods sold will be equal to 80% of the sales value. The expected sales can be calculated by multiplying each of the possible outcomes by the probability that it will occur and adding the products together. When we do this, we get $84,000 as the expected sales [($60,000 × .25) + ($85,000 × .4) + ($100,000 × .35)]. The expected value of cost of goods sold is 80% of this, or $67,200.

C. $85,000 is the sales estimate with the highest probability level. The problem asks for the expected value of Philip's budgeted cost of goods sold.

D. $68,000 is the cost of goods sold calculated using the sales estimate with the highest probability level.

Question 11 - CMA 1286 5-3 - Risk, Uncertainty and Expected Value

Expected value in decision analysis is

A. An arithmetic mean using the probabilities as weights.
B. The square root of the squared deviations.
C. A measure of the difference between the best possible outcome and the outcome of the original decision.
D. A standard deviation using the probabilities as weights.

A. The expected value is the weighted average of all the possible outcomes, with the probability of each possible outcome serving as its weight.

B. This answer is incorrect. See the correct answer for a complete explanation.

C. This answer is incorrect. See the correct answer for a complete explanation.

D. Standard deviation is a measure of how closely together all of the items in the population are to each other. It is also a square root of the variance.

Question 12 - CMA 1289 5-20 - Risk, Uncertainty and Expected Value

The College Honor Society sells hot pretzels at the home football games.

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

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

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 estimated demand for pretzels at the next home football game using an expected value approach is

A. 4,000 pretzels.
B. 5,000 pretzels.
C. 4,400 pretzels.
D. Some amount other than those given.

A. 4,000 pretzels is an average with equal weight given to each outcome and therefore is not calculated using the expected value approach.

B. 5,000 pretzels is calculated using the deterministic approach, using the most likely outcome or the sales volume corresponding with the highest probability level of 35%. This is not the expected value approach.

C. To solve the problem we should multiply each possible sales volume by its corresponding probability to find the weighted average, which is the expected value. It is calculated as follows: (2,000 × 0.10) + (3,000 × 0.15) + (4,000 × 0.20) + (5,000 × 0.35) + (6,000 × 0.20) = 4,400.

D. The correct answer is given. See the correct answer for a complete explanation.

Question 13 - CMA 691 4-1 - Risk, Uncertainty and Expected Value

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.

The expected monetary value of an act is the

A. Sum of the products of the conditional profit (loss) for each event multiplied by the probability of each event's occurrence.
B. Sum of the conditional opportunity loss of each event times the probability of each event occurring.
C. Conditional profit (loss) for the best event times the probability of each event's occurrence.
D. Sum of the conditional profit (loss) for each event.

A. The expected value is the weighted average of the probable outcomes.

B. The expected value is the weighted average of the probable outcomes.

C. The expected value is the weighted average of the probable outcomes.

D. The expected value is the weighted average of the probable outcomes.

Question 14 - CMA 689 5-27 - Risk, Uncertainty and Expected Value

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
Semi-automatic 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	.4
300,000	.3
400,000	.2
500,000	.1

Using the expected value criterion,

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

A. The expected demand is 300,000 units [(200,000 × .4) + (300,000 × .3) + (400,000 × .2) + (500,000 × .1)]. The automatic machine has an expected cost of $180,000 [(300,000 × $.20) + $120,000], which is not the lowest expected cost.

B. The expected demand is 300,000 units [(200,000 × .4) + (300,000 × .3) + (400,000 × .2) + (500,000 × .1)]. The single purpose machine has an expected cost of $200,000 [(300,000 × $.60) + $20,000], which is not the lowest expected cost.

C. The expected demand is 300,000 units [(200,000 × .4) + (300,000 × .3) + (400,000 × .2) + (500,000 × .1)]. This question requires us to determine the cost of all of the machines at a level of 300,000 units. For the semi-automatic machine, we get an expected cost of $170,000 [(300,000 × $.40) + $50,000]. The single purpose machine has an expected cost of $200,000 [(300,000 × $.60) + $20,000] and the automatic machine has an expected cost of $180,000 [(300,000 × $.20) + $120,000]. The semi-automatic machine has the lowest expected cost and therefore should be used.

D. The expected demand is 300,000 units [(200,000 × .4) + (300,000 × .3) + (400,000 × .2) + (500,000 × .1)]. The automatic machine has an expected cost of $180,000 [(300,000 × $.20) + $120,000], which is not the lowest expected cost.
