Integrated reasoning

Multi -source reasoning

Prompt 1

A certain start-up company that makes specialized computer games with historical themes is to hold a meeting of the five partners. Prior to the meeting, three of the partners have circulated memos about Xanthia.

From the finance expert

The amount of money we have spent on developing Xanthia has been much more than we have spent on any other of our games. The returns, as yet, have not been sufficient even to cover our costs. I propose a limit of $150,000 for next year's marketing budget for Xanthia. If sales do not rise by the end of the year to a level that would, if continued, lead to at least a modest profit on our investment by the end of two or three years, I suggest that we cut our losses and divert our attention to other games.

From the marketing expert

As yet our exciting new game, Xanthia has not gained attention in the media. I would like to see a sizable budget increase this coming year to something in the order of $300,000 for advertising. I feel that once we reach a certain level of media exposure, further expense will be minimal as knowledge of the product will spread by word of mouth and the social media. Without this initial push, the game might languish and our company might never recover the development costs, which have been much higher than the average for our other games.

From the company founder

Xanthia adds a new dimension to our offerings. It is true that development costs have been high, but we should add the costs to the low costs of our other games and not, at least for the next two years, look at any game as a free-standing product. It is more important for us to grow our position in the market. To do this we have to launch more games this year. We should market Xanthia along with all the games we offer and as such we have to participate in specialist fairs and competitions, rather than advertising any one product in the press or on TV.

1. It can be inferred that

Yes	No	
O	O	Only the company founder would be interested in launching new games in the next year
O	O	All three partners believe that the development costs for Xanthia have been above the average for the company's games
O	O	Less than $150,000 has been spent on marketing Xanthia in the current year

2. It can be inferred that

Yes	No	
O	O	The attitudes of the finance and marketing experts to development costs are more similar to each other than to the views of the company founder
O	O	It is probable that one of the main points on the agenda for the meeting is marketing strategies

Prompt 2

A certain organization has explicit rules for promotions and appointments. There are five salary grades: A, B, C, D and E with A being the highest. Three extracts from the rules are given.

Promotion from Grade D to Grade C

- Promotion is automatic if the employee has spent five years at Grade D and there are no adverse reports about him or her and his or her age is above 35
- Promotion cannot be allowed if less than two years have been spent at Grade D
- The age restriction can be relaxed if two or three members of the promotion committee recommend the person strongly
- New entrants to the organization cannot be taken in at Grade C

Promotion from Grade C to Grade B

- Promotion from C to B can only be considered if more than three years have been spent at Grade C
- The employee must have two or three strong recommendations from senior persons at salary level A
- Age must be above 35
- New entrants are not normally taken at this level, but exceptions can be made if there is no internal candidate for promotion

Promotion from Grade B to Grade A

- The candidate must be above 38
- Must have three strong recommendations from persons who have been at grade A for more than two years
- The candidate will normally have been at Grade B for at least two years
- New entrants at this level can be considered depending on the requirements of the organization

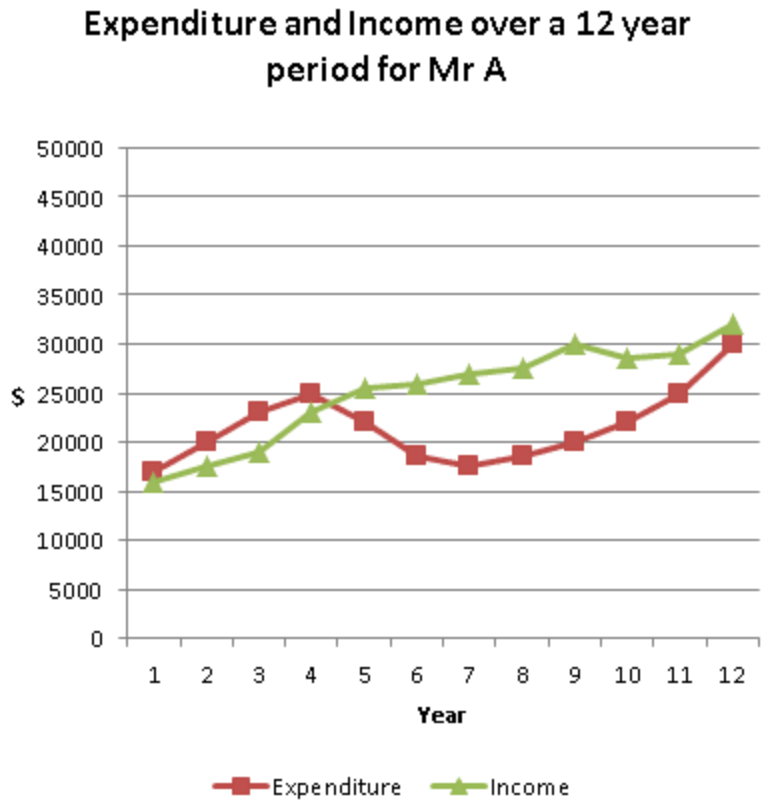
3. Using all the information provided, answer the two questions with either yes or no.

Yes	No	
O	O	Sally joined the company at Grade D when she was 28. Three years later she has applied for promotion to Grade C. Is it possible that she will be promoted?
O	O	Norman has never worked with the company. He is 35 years old. Can we conclude that the only possible level at which he can enter the organization is at Grade B?

4. For any employee joining the organization at age 24 at Grade D, what is the minimum number of years before he or she can reach Grade A. (Assume that the employee is in continuous employment, i.e. does not leave and rejoin at a later date)

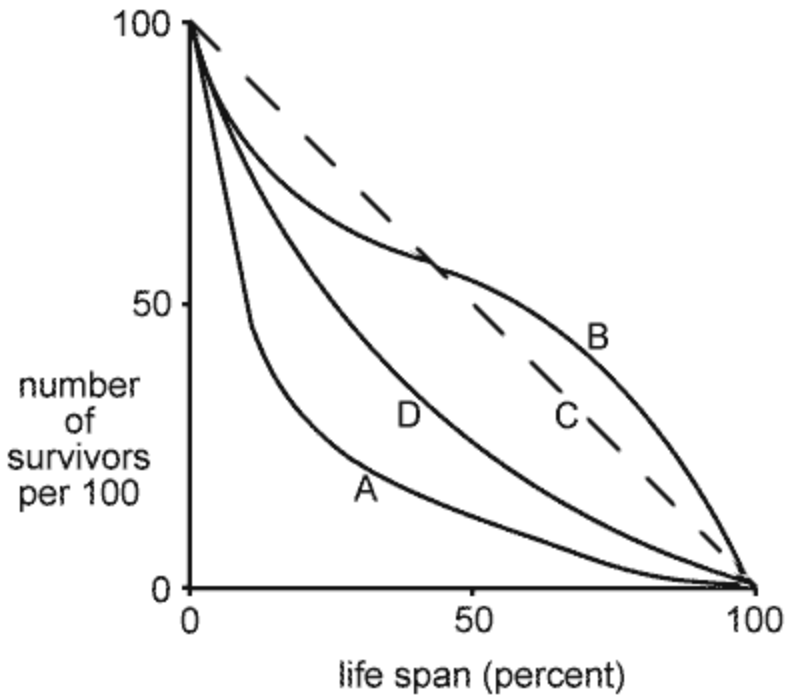
A. 14
B. 9
C. 8
D. 7
E. 5

Graphical interpretation



1. Mr As average (arithmetic mean) annual expenditure for the four-year period from year 8 through year 11 was close to(Select... 25,000 ; 22,000 ; 18,000) dollars.
If net income is defined as income minus expenditure, the difference between Mr A's net income in years four and nine is close to(Select... 12,500 ; 10,000 ; 7,500 ;2,500) dollars.

The difference between Mr As income and expenditure was less than five thousand dollars in (Select... more than half ; less than half ;exactly half) the years shown

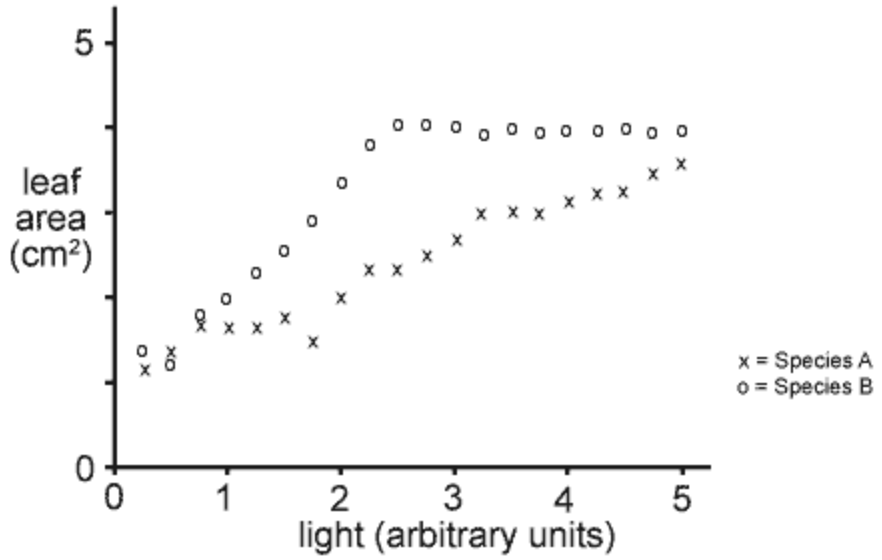


2. Survivorship curves show percent survival in a species or population as a function of age. In these curves the x-axis represents a fraction of the maximum life-span for the species. Curve C represents a situation where individuals born in that population have an equal likelihood of dying at any age

.

If the lifespan for species A is ten years, the probability that an individual will survive for more than 3 years after birth is (**Select...** less than 25 ;more than 25 ;exactly 25)percent.

Curve (**Select...** A ; B ; C ; D) best represents a population of rabbits in which 50percent die in the first quarter of the lifespan, but after the first quarter have an approximately equal chance of dying at any age.



3. The graph shows the results of an investigation to determine the relationship (if any) between leaf area and exposure to light for two species of plant. The plants were grown under identical conditions apart from the light intensity to which they were exposed. The points on the graph represent the average leaf areas for twenty full-grown leaves at each level of light exposure.
A scientist could best conclude that for Species A there is (**Select...** positive ; a negative ; no) correlation between leaf area and light intensity.

The light intensity that apparently results in the greatest difference in leaf areas between the two species is (**Select...** 2.5 ; 5 ;6) units.

Table analysis

The table shows statistics relating to visitors to a certain website from nine geographical regions. (Click the column headers to sort if required)
1.

True	False	
O	O	The region with the median rank for number of visits also has the median rank for in the percent new visits category

O	O	The five regions that account for the greatest number of pages per visit also are the same five regions that account for the top five greatest average visit durations
O	O	The average (arithmetic mean) number of pages viewed per visit is less than 7

2.

True	False	
O	O	A plot of pages/visit against average visit duration would show no evidence of correlation between these parameters
O	O	Visitors from Northern America and Northern Europe spend on average less than one minute per page viewed

Number of new titles published by XYZ Publishers in five consecutive 5-year periods' by gender of author

		Period				
Category	Gender	1	2	3	4	5
Fiction - romantic	M	2	-	4	1	2
	F	25	20	16	18	18
Fiction - historical	M	5	4	3	-	1
	F	10	6	7	5	2
Fiction - sci-fi	M	4	5	4	6	7
	F	1	1	1	1	-
Fiction - crime	M	15	15	18	15	20
	F	12	10	8	8	9
Fiction - other	M	10	15	18	30	35
	F	6	4	9	10	12
Autobiography & biography	M	40	45	50	25	24
	F	20	15	12	25	28
Non-fiction - general	M	25	21	20	16	15
	F	3	2	1	-	2

3. Refer to the table above

True	False	
O	O	In the Fiction ◆ sci-fi category over the 25-years depicted in the table the ratio of new titles by female authors to those by male authors is 1:6
O	O	The average (arithmetic mean) number of titles published each five-year period in the category Fiction - Historical is 8.6
O	O	The total number of new titles published in period 5 is greater than the total number of new titles published in period 1

Two -part analysis

1.

Set 1: Red, Blue, Yellow
Set 2: Pink, Turquoise, Orang
Set 3: Purple, Green, Brown
Set 4: Black, White, Silver

A certain company is launching three new products. Color schemes for the packaging are to be selected from colors in the four sets above. Four different colors are needed for each product. For each color scheme, not more than two colors can be selected from one set and colors from not more than three sets can be used.

The first three colors selected for each of the products are

Product 1	Product 2	Product 3
Yellow	Blue	Green
Pink	White	Silver
Silver	Red	Turquoise

Select a color that could be used for the fourth color for all three products. Select a color that could not be used as the fourth color for any of the products.

Could not be used	Could be used	
O	O	Orange
O	O	White
O	O	Yellow
O	O	Purple
O	O	Green
O	O	Brown

2.

A taxi service charges a base fare of $5, and a rate of $M per mile for the first 10 miles. Thereafter the rate is $0.5M per mile. There is also a charge of $3 per suitcase. Students traveling from and to the local college get a twenty percent discount on the mileage rates. A is a teacher traveling a distance of 8 miles with one suitcase. B is a student traveling 30 miles with two suitcases from the college to the station.

Select the expression for the difference between the amounts paid by A and B in dollars, and for the amount paid by A in dollars.

Difference	Amount paid by A	
O	O	8(1 + M)
O	O	3 + 8M
O	O	3 + 16M
O	O	11 + 16M
O	O	3(1 + 8M)
O	O	8M