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Prime CAT 02 2022 DILR

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Section-1

Sec 1

Directions for questions 1 to 6: Answer the questions on the basis of the information given below.

The minimum Air Quality Index (AQI) pollution data of six cities in India were recorded during the period 2017 to 2021. Some data was initially missed due to some technical issue. The AQI values for some cities for one year and some other cities for two years were initially missing. The AQI value of each city was initially missing for a year or two.
Later it was found that if the AQI value of a city was initially missing for a year, that year's value was the average of the larger three of the city's four values available. And if a city's AQI value was initially missing for two years, then the values for these years were equal to the average of the larger two of the city's three values available.
The table given below shows the minimum AQI pollution data for six cities in the country during the period 2017 to 2021 after calculating the missing values.

City\Year	2017	2018	2019	2020	2021
Agra	100	95	90	95	80
Bhopal	120	110	75	115	115
Chandigarh	72	82	94	106	94
Durgapur	80	92	98	92	86
Ernakulam	72	76	80	60	56
Faridabad	98	68	84	112	98

The following facts are also known.
(i) In 2019, the AQI value was initially missing for one city only.
(ii) Out of these cities, the AQI values of four cities for 2017, 2018, 2020 and 2021 each were not initially missing.
(iii) One city's AQI value was initially missing only in 2018. Another city's AQI value was initially missing in both 2018 and 2020.

Q.1 [11831809]
Which of the following statement(s) is/are true?
I. Agra's AQI value was not initially missing in 2018.
II. Durgapur's AQI value was initially missing in 2020 only.

1 ◯ I only

2 ◯ II only

3 ◯ Both I & II

4 ◯ Neither I nor II

Solution:

Correct Answer : 4

Answer key/Solution

Step 1:

The largest AQI value and smallest AQI value were not initially missing. One or two of the other three was/were initially missing. So the AQI values of Agra for 2017 and 2021 were definitely not initially missing. Therefore, Agra's AQI value for 2019 only was not initially missing or Agra's AQI values for 2019 and one of 2018 or 2020 were not initially missing.
From condition (i), now let us find the AQI values for 2019 for each city.
For Ernakulam, there are 5 different AQI values. So its 4 values were not initially missing.
80 = (95 + 85 + 60)/3.

Step 2:

From condition (i), in 2019, the AQI value was initially missing for Chandigarh only.
From condition (ii), the AQI value of Agra, Bhopal or Durgapur was not initially missing in 2020.
From condition (iii), two cases are possible.

Case I:

City\Year	2017	2018	2019	2020	2021
Agra (3)	100	95	90	95	80
Bhopal (3/4)	120	110	75	115	115
Chandigarh (4/3)	72	82	94	106	94
Durgapur (4)	80	92	98	92	86
Ernakulam (4)	72	76	80	60	56
Faridabad (3/4)	98	68	84	112	98

Case II:

City\Year	2017	2018	2019	2020	2021
Agra (4)	100	95	90	95	80
Bhopal (3/4)	120	110	75	115	115
Chandigarh (4/3)	72	82	94	106	94
Durgapur (3)	80	92	98	92	86
Ernakulam (4)	72	76	80	60	56
Faridabad (3/4)	98	68	84	112	98

In 2021 the AQI values for any two cities out of Bhopal, Chandigarh and Faridabad could have been initially missing. However the cases formed will not have any impact on any of the questions.

Neither statement I nor II is true.

Bookmark FeedBack

Directions for questions 1 to 6: Answer the questions on the basis of the information given below.

The minimum Air Quality Index (AQI) pollution data of six cities in India were recorded during the period 2017 to 2021. Some data was initially missed due to some technical issue. The AQI values for some cities for one year and some other cities for two years were initially missing. The AQI value of each city was initially missing for a year or two.
Later it was found that if the AQI value of a city was initially missing for a year, that year's value was the average of the larger three of the city's four values available. And if a city's AQI value was initially missing for two years, then the values for these years were equal to the average of the larger two of the city's three values available.
The table given below shows the minimum AQI pollution data for six cities in the country during the period 2017 to 2021 after calculating the missing values.

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Durgapur	80	92	98	92	86
Ernakulam	72	76	80	60	56
Faridabad	98	68	84	112	98

The following facts are also known.
(i) In 2019, the AQI value was initially missing for one city only.
(ii) Out of these cities, the AQI values of four cities for 2017, 2018, 2020 and 2021 each were not initially missing.
(iii) One city's AQI value was initially missing only in 2018. Another city's AQI value was initially missing in both 2018 and 2020.

Q.2 [11831809]
In 2019, the AQI value of which city was initially missing?

1 ◯ Agra

2 ◯ Ernakulam

3 ◯ Chandigarh

4 ◯ Faridabad

Solution:
Correct Answer : 3

Answer key/Solution

Step 1:
The largest AQI value and smallest AQI value were not initially missing. One or two of the other three was/were initially missing. So the AQI values of Agra for 2017 and 2021 were definitely not initially missing. Therefore, Agra's AQI value for 2019 only was not initially missing or Agra's AQI values for 2019 and one of 2018 or 2020 were not initially missing.
From condition (i), now let us find the AQI values for 2019 for each city.
For Ernakulam, there are 5 different AQI values. So its 4 values were not initially missing.
80 = (95 + 85 + 60)/3.

Step 2:
From condition (i), in 2019, the AQI value was initially missing for Chandigarh only.
From condition (ii), the AQI value of Agra, Bhopal or Durgapur was not initially missing in 2020.
From condition (iii), two cases are possible.

Case I:

City\Year	2017	2018	2019	2020	2021
Agra (3)	100	95	90	95	80
Bhopal (3/4)	120	110	75	115	115
Chandigarh (4/3)	72	82	94	106	94
Durgapur (4)	80	92	98	92	86
Ernakulam (4)	72	76	80	60	56
Faridabad (3/4)	98	68	84	112	98

Case II:

City\Year	2017	2018	2019	2020	2021
Agra (4)	100	95	90	95	80
Bhopal (3/4)	120	110	75	115	115
Chandigarh (4/3)	72	82	94	106	94
Durgapur (3)	80	92	98	92	86
Ernakulam (4)	72	76	80	60	56
Faridabad (3/4)	98	68	84	112	98

In 2021 the AQI values for any two cities out of Bhopal, Chandigarh and Faridabad could have been initially missing. However the cases formed will not have any impact on any of the questions.

In 2019, the AQI value of Chandigarh was initially missing.

Bookmark FeedBack

Directions for questions 1 to 6: Answer the questions on the basis of the information given below.

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The table given below shows the minimum AQI pollution data for six cities in the country during the period 2017 to 2021 after calculating the missing values.

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Durgapur	80	92	98	92	86
Ernakulam	72	76	80	60	56
Faridabad	98	68	84	112	98

The following facts are also known.
(i) In 2019, the AQI value was initially missing for one city only.
(ii) Out of these cities, the AQI values of four cities for 2017, 2018, 2020 and 2021 each were not initially missing.
(iii) One city's AQI value was initially missing only in 2018. Another city's AQI value was initially missing in both 2018 and 2020.

Q.3 [11831809]
The AQI values were initially missing for _____ cities in 2017.

1 ◯ Ernakulam and Faridabad

2 ◯ Durgapur and Faridabad

3 ◯ Durgapur and Ernakulam

4 ◯ Cannot be determined

Solution:
Correct Answer : 1

Answer key/Solution

Step 1:
The largest AQI value and smallest AQI value were not initially missing. One or two of the other three was/were initially missing. So the AQI values of Agra for 2017 and 2021 were definitely not initially missing. Therefore, Agra's AQI value for 2019 only was not initially missing or Agra's AQI values for 2019 and one of 2018 or 2020 were not initially missing.
From condition (i), now let us find the AQI values for 2019 for each city.
For Ernakulam, there are 5 different AQI values. So its 4 values were not initially missing.
80 = (95 + 85 + 60)/3.

Step 2:
From condition (i), in 2019, the AQI value was initially missing for Chandigarh only.
From condition (ii), the AQI value of Agra, Bhopal or Durgapur was not initially missing in 2020.
From condition (iii), two cases are possible.

Case I:

City\Year	2017	2018	2019	2020	2021
Agra (3)	100	95	90	95	80
Bhopal (3/4)	120	110	75	115	115
Chandigarh (4/3)	72	82	94	106	94
Durgapur (4)	80	92	98	92	86
Ernakulam (4)	72	76	80	60	56
Faridabad (3/4)	98	68	84	112	98

Case II:

City\Year	2017	2018	2019	2020	2021
Agra (4)	100	95	90	95	80
Bhopal (3/4)	120	110	75	115	115
Chandigarh (4/3)	72	82	94	106	94
Durgapur (3)	80	92	98	92	86
Ernakulam (4)	72	76	80	60	56
Faridabad (3/4)	98	68	84	112	98

In 2021 the AQI values for any two cities out of Bhopal, Chandigarh and Faridabad could have been initially missing. However the cases formed will not have any impact on any of the questions.

The AQI values were initially missing for Ernakulam and Faridabad in 2017.

Bookmark FeedBack

Directions for questions 1 to 6: Answer the questions on the basis of the information given below.

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Ernakulam	72	76	80	60	56
Faridabad	98	68	84	112	98

The following facts are also known.
(i) In 2019, the AQI value was initially missing for one city only.
(ii) Out of these cities, the AQI values of four cities for 2017, 2018, 2020 and 2021 each were not initially missing.
(iii) One city's AQI value was initially missing only in 2018. Another city's AQI value was initially missing in both 2018 and 2020.

Q.4 [11831809]
The number of cities whose AQI values was initially missing in exactly two years was _____.

Solution:
Correct Answer : 3

Answer key/Solution

Step 1:
The largest AQI value and smallest AQI value were not initially missing. One or two of the other three was/were initially missing. So the AQI values of Agra for 2017 and 2021 were definitely not initially missing. Therefore, Agra's AQI value for 2019 only was not initially missing or Agra's AQI values for 2019 and one of 2018 or 2020 were not initially missing.
From condition (i), now let us find the AQI values for 2019 for each city.
For Ernakulam, there are 5 different AQI values. So its 4 values were not initially missing.
80 = (95 + 85 + 60)/3.

Step 2:
From condition (i), in 2019, the AQI value was initially missing for Chandigarh only.
From condition (ii), the AQI value of Agra, Bhopal or Durgapur was not initially missing in 2020.
From condition (iii), two cases are possible.

Case I:

City\Year	2017	2018	2019	2020	2021
Agra (3)	100	95	90	95	80
Bhopal (3/4)	120	110	75	115	115
Chandigarh (4/3)	72	82	94	106	94
Durgapur (4)	80	92	98	92	86
Ernakulam (4)	72	76	80	60	56
Faridabad (3/4)	98	68	84	112	98

Case II:

City\Year	2017	2018	2019	2020	2021
Agra (4)	100	95	90	95	80
Bhopal (3/4)	120	110	75	115	115
Chandigarh (4/3)	72	82	94	106	94
Durgapur (3)	80	92	98	92	86
Ernakulam (4)	72	76	80	60	56
Faridabad (3/4)	98	68	84	112	98

In 2021 the AQI values for any two cities out of Bhopal, Chandigarh and Faridabad could have been initially missing. However the cases formed will not have any impact on any of the questions.

The number of cities whose AQI values was initially missing in exactly two years was 3.

Bookmark FeedBack

Directions for questions 1 to 6: Answer the questions on the basis of the information given below.

The minimum Air Quality Index (AQI) pollution data of six cities in India were recorded during the period 2017 to 2021. Some data was initially missed due to some technical issue. The AQI values for some cities for one year and some other cities for two years were initially missing. The AQI value of each city was initially missing for a year or two.
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The following facts are also known.
(i) In 2019, the AQI value was initially missing for one city only.
(ii) Out of these cities, the AQI values of four cities for 2017, 2018, 2020 and 2021 each were not initially missing.
(iii) One city's AQI value was initially missing only in 2018. Another city's AQI value was initially missing in both 2018 and 2020.

Q.5 [11831809]
What can be the average of the initial missing values?

1 ◯ 86.78

2 ◯ 91.11

3 ◯ 96.78

4 ◯ 97.33

Solution:
Correct Answer : 3

Answer key/Solution

Step 1:
The largest AQI value and smallest AQI value were not initially missing. One or two of the other three was/were initially missing. So the AQI values of Agra for 2017 and 2021 were definitely not initially missing. Therefore, Agra's AQI value for 2019 only was not initially missing or Agra's AQI values for 2019 and one of 2018 or 2020 were not initially missing.
From condition (i), now let us find the AQI values for 2019 for each city.
For Ernakulam, there are 5 different AQI values. So its 4 values were not initially missing.
80 = (95 + 85 + 60)/3.

Step 2:
From condition (i), in 2019, the AQI value was initially missing for Chandigarh only.
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Case I:

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Agra (3)	100	95	90	95	80
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Chandigarh (4/3)	72	82	94	106	94
Durgapur (4)	80	92	98	92	86
Ernakulam (4)	72	76	80	60	56
Faridabad (3/4)	98	68	84	112	98

Case II:

City\Year	2017	2018	2019	2020	2021
Agra (4)	100	95	90	95	80
Bhopal (3/4)	120	110	75	115	115
Chandigarh (4/3)	72	82	94	106	94
Durgapur (3)	80	92	98	92	86
Ernakulam (4)	72	76	80	60	56
Faridabad (3/4)	98	68	84	112	98

In 2021 the AQI values for any two cities out of Bhopal, Chandigarh and Faridabad could have been initially missing. However the cases formed will not have any impact on any of the questions.

Case I: The average of the initial missing values
= (95 + 95 + 115 + 115 + 94 + 92 + 72 + 98 + 98)/9 = 874/9 = 97.11.
Other values are 94.78 and 96.67.
Case II: The average of the initial missing values
= (95 + 115 + 115 + 94 + 92 + 92 + 72 + 98 + 98)/9 = 871/9 = 96.78.
Other values are 94.44 and 96.33.
Hence, the answer is option (3).

Bookmark FeedBack

Directions for questions 1 to 6: Answer the questions on the basis of the information given below.

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The following facts are also known.
(i) In 2019, the AQI value was initially missing for one city only.
(ii) Out of these cities, the AQI values of four cities for 2017, 2018, 2020 and 2021 each were not initially missing.
(iii) One city's AQI value was initially missing only in 2018. Another city's AQI value was initially missing in both 2018 and 2020.

Q.6 [11831809]
Which of the following statements is correct?

1 ◯ Bhopal's AQI values were initially missing in both 2018 and 2020.

2 ◯ The AQI values were initially missing for Bhopal and Agra or Durgapur in 2020.

3 ◯ The AQI values for Durgapur and Faridabad were initially missing in 2021.

4 ◯ An equal number of AQI values were initially missing in Agra and Bhopal.

Solution:
Correct Answer : 2

Answer key/Solution

Step 1:
The largest AQI value and smallest AQI value were not initially missing. One or two of the other three was/were initially missing. So the AQI values of Agra for 2017 and 2021 were definitely not initially missing. Therefore, Agra's AQI value for 2019 only was not initially missing or Agra's AQI values for 2019 and one of 2018 or 2020 were not initially missing.
From condition (i), now let us find the AQI values for 2019 for each city.
For Ernakulam, there are 5 different AQI values. So its 4 values were not initially missing.
80 = (95 + 85 + 60)/3.

Step 2:
From condition (i), in 2019, the AQI value was initially missing for Chandigarh only.
From condition (ii), the AQI value of Agra, Bhopal or Durgapur was not initially missing in 2020.
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Durgapur (4)	80	92	98	92	86
Ernakulam (4)	72	76	80	60	56
Faridabad (3/4)	98	68	84	112	98

Case II:

City\Year	2017	2018	2019	2020	2021
Agra (4)	100	95	90	95	80
Bhopal (3/4)	120	110	75	115	115
Chandigarh (4/3)	72	82	94	106	94
Durgapur (3)	80	92	98	92	86
Ernakulam (4)	72	76	80	60	56
Faridabad (3/4)	98	68	84	112	98

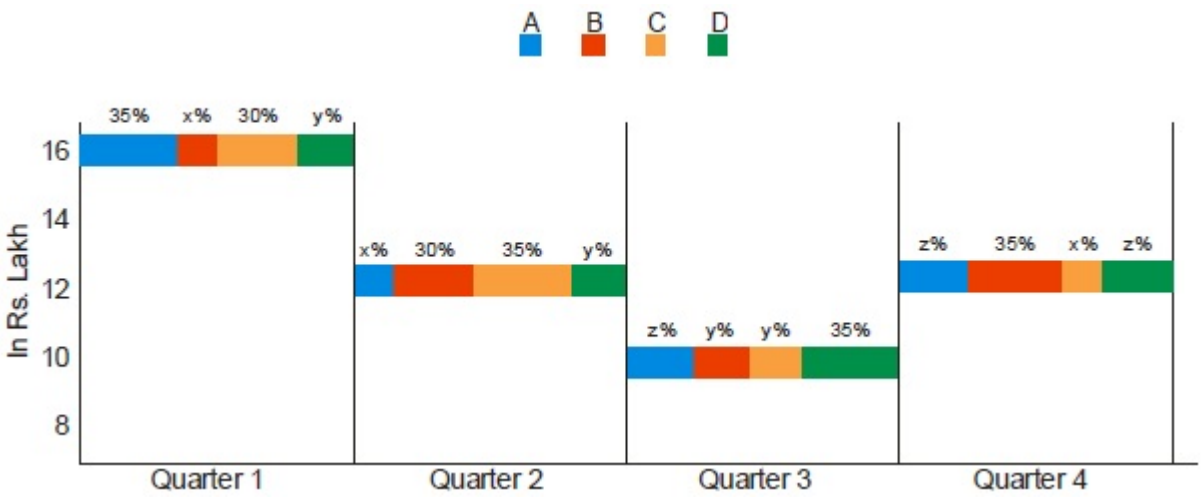
In 2021 the AQI values for any two cities out of Bhopal, Chandigarh and Faridabad could have been initially missing. However the cases formed will not have any impact on any of the questions.

The statement given in option (2) is correct.

Bookmark FeedBack

Directions for questions 7 to 10: Answer the questions on the basis of the information given below.

Four friends - A, B, C and D - invest in a new business venture in the beginning of the financial year 2021 - 22. They do not invest all their capital in the beginning of the year but invest in parts at the beginning of every quarter. The following graph shows the total investment for each quarter and the percentage investments made by each of the four friends. Some values may be missing and these are required to be calculated in the course of solving the problems.



Further, it is also known that:
(i) The value of x is 60% of z.
(ii) The profit percentage made at the end of each quarter follows an AP which is reinvested.
(iii) In the first quarter there was a profit of 10% and in the fourth quarter the profit was 25%.

Q.7 [11831809]
What was the total profit (in Rs. lakh) made at the end of the year?

1 ◯ 21.73

2 ◯ 19.82

3 ◯ 31.06

4 ◯ 29.11

Solution:
Correct Answer : 3

Answer key/Solution

In the fourth quarter (2z + x + 35) = 100 and it is given that x is 60% of z.
So we get the values of x and z as 15% and 25%.
In the second quarter (x + y + 30 + 35) = 100. So we get y = 20%
Now we can calculate the investments made by each of the investors during the 4 quarters of the financial year 2021 - 22.
This can be represented in a table as follows:

	Investment in Quarter 1 (in Rs. lakh)	Investment in Quarter 2 (in Rs. lakh)	Investment in Quarter 3 (in Rs. lakh)	Investment in Quarter 4 (in Rs. lakh)	Total (in Rs. lakh)
A	5.6	1.8	2.5	3	12.9
B	2.4	3.6	2	4.2	12.2
C	4.8	4.2	2	1.8	12.8
D	3.2	2.4	3.5	3	12.1
Total	16	12	10	12	50

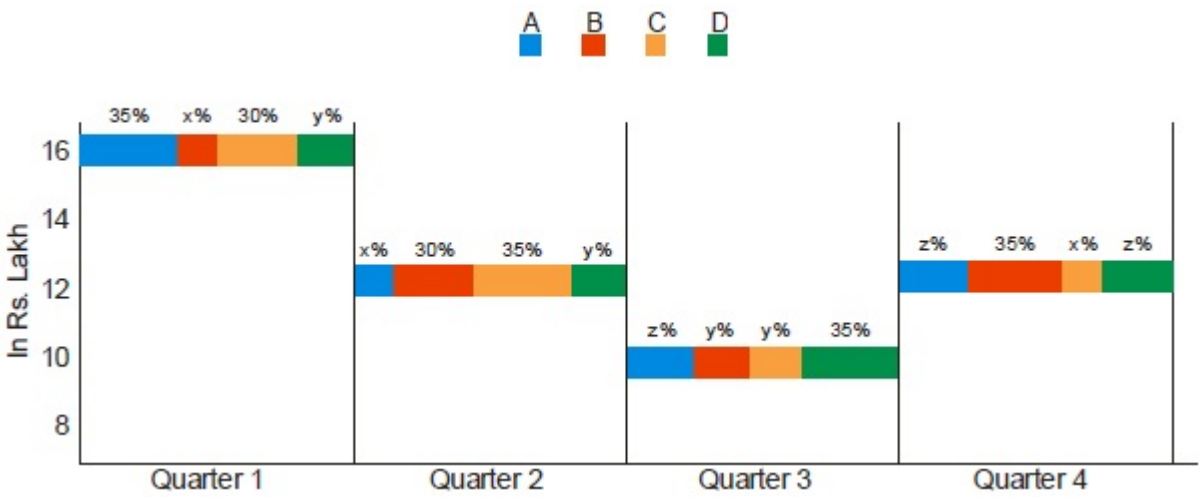
It is given that the profits at the end of each quarter are in AP with the first quarter having 10% and the fourth quarter with 25% profits.
Also the profits are not withdrawn but reinvested.
Valuation of the business at the end of the 1st quarter = 16 × 1.1 = Rs.17.6 lakh
Hence, at the beginning of the 2nd quarter the carry over + new investment
= 17.6 + 12.0 = Rs. 29.6 lakh
Valuation of the business at the end of the 2nd quarter = 29.6 × 1.15 = Rs.34.04 lakh
Similarly, at the end of 3rd quarter the valuation will be = (34.04 + 10) × 1.2 = Rs.52.848 lakh
At the end of the 4th quarter the valuation = (52.848 + 12) × 1.25 = Rs.81.06 lakh.

Total profit made at the end of the year = 81.06 – 50 = Rs.31.06 lakh.

Bookmark FeedBack

Directions for questions 7 to 10: Answer the questions on the basis of the information given below.

Four friends - A, B, C and D - invest in a new business venture in the beginning of the financial year 2021 - 22. They do not invest all their capital in the beginning of the year but invest in parts at the beginning of every quarter. The following graph shows the total investment for each quarter and the percentage investments made by each of the four friends. Some values may be missing and these are required to be calculated in the course of solving the problems.



Further, it is also known that:
(i) The value of x is 60% of z.
(ii) The profit percentage made at the end of each quarter follows an AP which is reinvested.
(iii) In the first quarter there was a profit of 10% and in the fourth quarter the profit was 25%.

Q.8 [11831809]
Which of the four friends make the maximum investment in the business during the whole financial year?

1 ○ A

2 ○ B

3 ○ C

4 ○ D

Solution:
Correct Answer : 1

Answer key/Solution

In the fourth quarter (2z + x + 35) = 100 and it is given that x is 60% of z.
So we get the values of x and z as 15% and 25%.
In the second quarter (x + y + 30 + 35) = 100. So we get y = 20%
Now we can calculate the investments made by each of the investors during the 4 quarters of the financial year 2021 - 22.
This can be represented in a table as follows:

	Investment in Quarter 1 (in Rs. lakh)	Investment in Quarter 2 (in Rs. lakh)	Investment in Quarter 3 (in Rs. lakh)	Investment in Quarter 4 (in Rs. lakh)	Total (in Rs. lakh)
A	5.6	1.8	2.5	3	12.9
B	2.4	3.6	2	4.2	12.2
C	4.8	4.2	2	1.8	12.8
D	3.2	2.4	3.5	3	12.1
Total	16	12	10	12	50

It is given that the profits at the end of each quarter are in AP with the first quarter having 10% and the fourth quarter with 25% profits.
Also the profits are not withdrawn but reinvested.
Valuation of the business at the end of the 1st quarter = 16 × 1.1 = Rs.17.6 lakh
Hence, at the beginning of the 2nd quarter the carry over + new investment
= 17.6 + 12.0 = Rs. 29.6 lakh
Valuation of the business at the end of the 2nd quarter = 29.6 × 1.15 = Rs.34.04 lakh
Similarly, at the end of 3rd quarter the valuation will be = (34.04 + 10) × 1.2 = Rs.52.848 lakh
At the end of the 4th quarter the valuation = (52.848 + 12) × 1.25 = Rs.81.06 lakh.

It is clear from the table that A made the maximum investment (Rs.12.9 lakh) in the business during the year.

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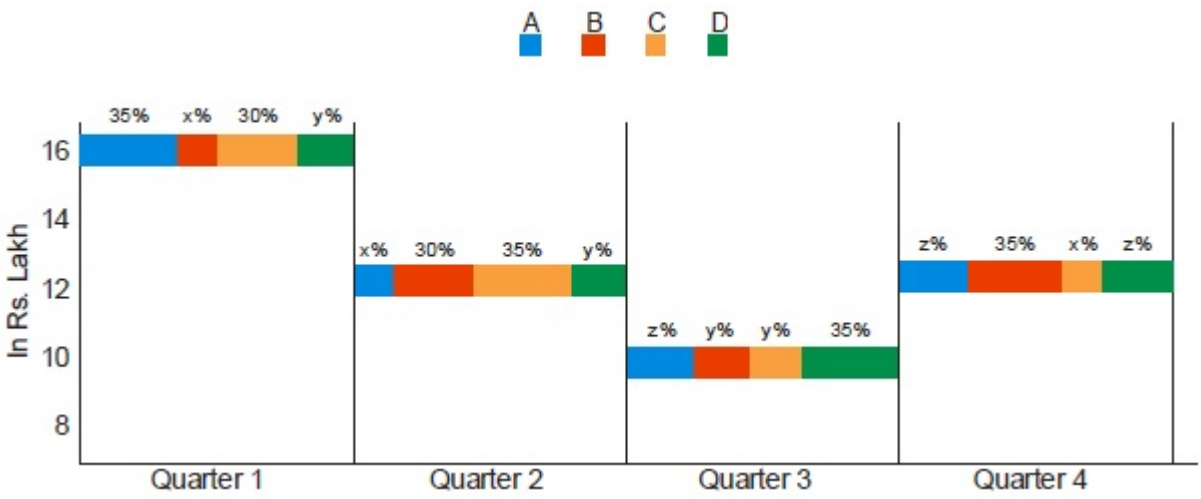
Directions for questions 7 to 10: Answer the questions on the basis of the information given below.

Four friends - A, B, C and D - invest in a new business venture in the beginning of the financial year 2021 - 22. They do not invest all their capital in the beginning of the year but invest in parts at the beginning of every quarter. The following graph shows the total investment for each quarter and the percentage investments made by each of the four friends. Some values may be missing and these are required to be calculated in the course of solving the problems.



Further, it is also known that:
(i) The value of x is 60% of z.
(ii) The profit percentage made at the end of each quarter follows an AP which is reinvested.
(iii) In the first quarter there was a profit of 10% and in the fourth quarter the profit was 25%.

Q.9 [11831809]
If the business goes public at the end of the year and each investor gets shares of the company in proportion of their investments, then out of a total of 9900 units among them what is the total number of shares with B and C?

1 ◯ 4950

2 ◯ 4380

3 ◯ 5375

4 ◯ 4965

Solution:
Correct Answer : 4

Answer key/Solution

In the fourth quarter (2z + x + 35) = 100 and it is given that x is 60% of z.
So we get the values of x and z as 15% and 25%.
In the second quarter (x + y + 30 + 35) = 100. So we get y = 20%
Now we can calculate the investments made by each of the investors during the 4 quarters of the financial year 2021 - 22.
This can be represented in a table as follows:

	Investment in Quarter 1 (in Rs. lakh)	Investment in Quarter 2 (in Rs. lakh)	Investment in Quarter 3 (in Rs. lakh)	Investment in Quarter 4 (in Rs. lakh)	Total (in Rs. lakh)
A	5.6	1.8	2.5	3	12.9
B	2.4	3.6	2	4.2	12.2
C	4.8	4.2	2	1.8	12.8
D	3.2	2.4	3.5	3	12.1
Total	16	12	10	12	50

It is given that the profits at the end of each quarter are in AP with the first quarter having 10% and the fourth quarter with 25% profits.
Also the profits are not withdrawn but reinvested.
Valuation of the business at the end of the 1st quarter = 16 × 1.1 = Rs.17.6 lakh
Hence, at the beginning of the 2nd quarter the carry over + new investment
= 17.6 + 12.0 = Rs. 29.6 lakh
Valuation of the business at the end of the 2nd quarter = 29.6 × 1.15 = Rs.34.04 lakh
Similarly, at the end of 3rd quarter the valuation will be = (34.04 + 10) × 1.2 = Rs.52.848 lakh
At the end of the 4th quarter the valuation = (52.848 + 12) × 1.25 = Rs.81.06 lakh.

From the above table we can calculate the shares of A, B, C and D in the business:
A's share = 5.6 × 12 + 1.8 × 9 + 2.5 × 6 + 3 × 3 = 107.4
B's share = 2.4 × 12 + 3.6 × 9 + 2 × 6 + 4.2 × 3 = 85.8
C's share = 4.8 × 12 + 4.2 × 9 + 2 × 6 + 1.8 × 3 = 112.8
D's share = 3.2 × 12 + 2.4 × 9 + 3.5 × 6 + 3 × 3 = 90.0
Ratio of the shares of A, B, C and D = 537 : 429 : 564 : 450

Hence, the total number of shares with B and C = $\frac{429 + 564}{1980}$ × 9900 = 4965.

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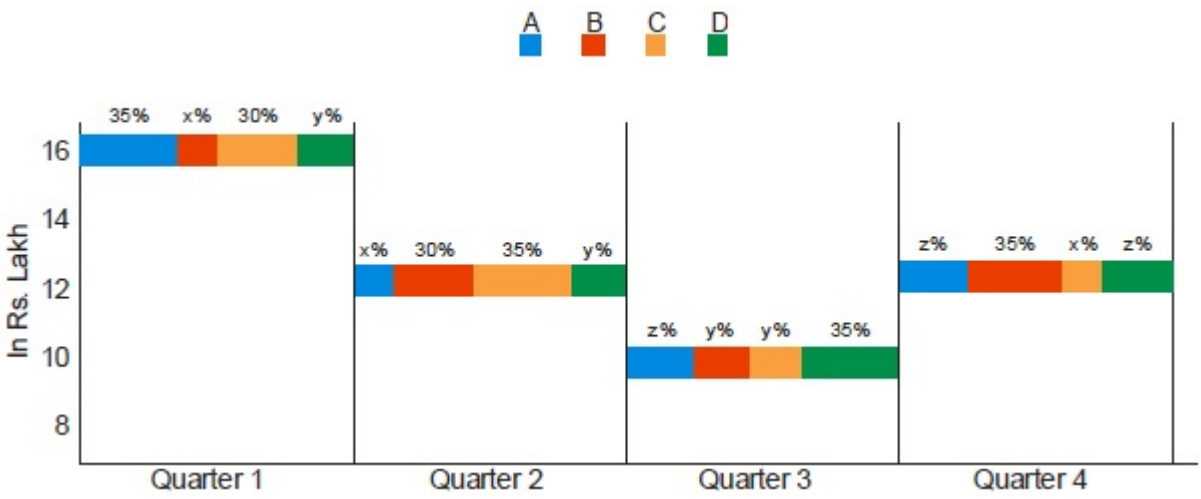
Directions for questions 7 to 10: Answer the questions on the basis of the information given below.

Four friends - A, B, C and D - invest in a new business venture in the beginning of the financial year 2021 - 22. They do not invest all their capital in the beginning of the year but invest in parts at the beginning of every quarter. The following graph shows the total investment for each quarter and the percentage investments made by each of the four friends. Some values may be missing and these are required to be calculated in the course of solving the problems.



Further, it is also known that:
(i) The value of x is 60% of z.
(ii) The profit percentage made at the end of each quarter follows an AP which is reinvested.
(iii) In the first quarter there was a profit of 10% and in the fourth quarter the profit was 25%.

Q.10 [11831809]
What was the approximate percentage returns on the investment for the person who gets the highest share in the profit at the end of the year?

1 ◯ 58%

2 ◯ 69%

3 ◯ 45%

4 ◯ 61%

Solution:
Correct Answer : 2

Answer key/Solution

In the fourth quarter (2z + x + 35) = 100 and it is given that x is 60% of z.
So we get the values of x and z as 15% and 25%.
In the second quarter (x + y + 30 + 35) = 100. So we get y = 20%
Now we can calculate the investments made by each of the investors during the 4 quarters of the financial year 2021 - 22.
This can be represented in a table as follows:

	Investment in Quarter 1 (in Rs. lakh)	Investment in Quarter 2 (in Rs. lakh)	Investment in Quarter 3 (in Rs. lakh)	Investment in Quarter 4 (in Rs. lakh)	Total (in Rs. lakh)
A	5.6	1.8	2.5	3	12.9
B	2.4	3.6	2	4.2	12.2
C	4.8	4.2	2	1.8	12.8
D	3.2	2.4	3.5	3	12.1
Total	16	12	10	12	50

It is given that the profits at the end of each quarter are in AP with the first quarter having 10% and the fourth quarter with 25% profits.
Also the profits are not withdrawn but reinvested.
Valuation of the business at the end of the 1st quarter = 16 × 1.1 = Rs.17.6 lakh
Hence, at the beginning of the 2nd quarter the carry over + new investment
= 17.6 + 12.0 = Rs. 29.6 lakh
Valuation of the business at the end of the 2nd quarter = 29.6 × 1.15 = Rs.34.04 lakh
Similarly, at the end of 3rd quarter the valuation will be = (34.04 + 10) × 1.2 = Rs.52.848 lakh
At the end of the 4th quarter the valuation = (52.848 + 12) × 1.25 = Rs.81.06 lakh.

C's share in the investment is the highest = $\frac{564}{1980}$

The total profit from the business = 81.06 – 50 = Rs.31.06 lakh

C's share in the profit = $\frac{564}{1980} \times 31.06$

C's investment = Rs.12.8 lakh

Hence, percentage returns on his investment = $\frac{\frac{564}{1980} \times 31.06}{12.8} \times 100 \approx 69\%$.

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Directions for questions 11 to 16: Answer the questions on the basis of the information given below.

There are 15 wooden blocks of different weights – 1, 2, 3, 4, 5, 7, 9, 10, 11, 13, 14, 15, 17, 19 and 20 (in kg). These are divided into 3 piles –P1, P2 and P3. The number of wooden blocks in the three piles are 3, 5 and 7, not necessarily in the given order and the sum of the weights of the wooden blocks in the three piles are 30 kg, 50 kg and 70 kg, again, not necessarily in the given order. In each pile, the wooden blocks are kept one above the other.
Following is the additional information given about the distribution and the arrangement of the wooden blocks in the 3 piles:
(i) The pile with the maximum number of wooden blocks is not the same as the pile with the maximum sum of the weights of the wooden blocks.
(ii) One of the wooden blocks in the pile, with the minimum number of wooden blocks, weighs 17 kg.
(iii) In one of the piles, a wooden block weighing 15 kg is just above the wooden block weighing 20 kg, which is the bottom block in the pile.
(iv) The weight of the 3rd block from the bottom in pile P1 is equal to the sum of the weight of the 3rd block from the bottom in each of the other two piles – P2 and P3.
(v) Wooden blocks weighing 11 kg and 2 kg are in piles P2 and P3 respectively.
(vi) The sum of weights of all the wooden blocks above the wooden block of weight 2 kg is equal to the sum of weight of all the wooden blocks below it. Further, the wooden block of weights 2 kg is the only wooden block with weight as an even number (in kg) in its pile.
(vii) In pile P3, the weight of the 4th block from the bottom is equal to the sum of the weights of the next two blocks above it.
(viii) In each of the piles P1 and P3, the lightest wooden block is at the bottom most position; while in pile P2, the heaviest wooden block is at the bottom most position and the lightest wooden block is at the top most position.

Q.11 [11831809]
In which of the following piles is there maximum difference in the weights of any two wooden blocks?

1 ◯ Pile P1

2 ◯ Pile P2

3 ◯ Pile P3

4 ◯ Either pile P2 or pile P3

Solution:
Correct Answer : 3

Answer key/Solution

Step 1:
From condition (i), the sum of the weights of all the wooden blocks in a pile is 70 kg, it contains either 5 or 3 wooden blocks. Since the maximum weight of 3 blocks = 20 + 19 + 17 = 36 kg, so there are 5 wooden blocks in it. Now, the sum of the weights of all the wooden blocks in a pile is 30 kg, it consists of either 7 or 3 wooden blocks. Since the sum of the weights (in kg) of 7 wooden blocks having least weight = 1 + 2 + 3 + 4 + 5 + 7 + 9 = 31 kg, so there are 3 wooden blocks in it. Therefore, the pile with the sum of the weights of the wooden blocks is 50 kg, there are 7 wooden blocks in it.
From the conditions (ii), (v) and (vii), the weights of pile P1, pile P2 and pile P3 are 30 kg, 70 kg and 50 kg respectively.

No. of blocks	3	5	7
	Pile P1	Pile P2	Pile P3
Total weight (in kg)	30	70	50

Step 2:
From condition (ii), Block of 17 kg is in pile P1.
From condition (iii), Blocks of 15 kg and 20 kg are in pile P2.
From condition (v), Blocks of 11 kg and 2 kg are in pile P2 and pile P3 respectively.
From condition (vi), Blocks 1 kg, 3 kg, 5 kg, 7 kg, 13 kg, 19 kg are in pile P3.
So blocks 10 kg and 14 kg are in pile P2. Also, blocks 4 kg and 9 kg are in pile P1.
From condition (iv), the weights of the 3rd block from the bottom in piles P1, P2 and P3 are 17 kg, 14 kg and 3 kg respectively.
Step 3:
From conditions (vii) and (viii), the final arrangement of the blocks can be shown as:

No. of blocks	3	5	7
	Pile P1	Pile P2	Pile P3
			19
			5
		10	2
		11	7
	17	14	3
	9	15	13
	4	20	1
Total weight (in kg)	30	70	50

Pile P3 has the maximum difference in the weights of any two wooden blocks.
So maximum difference = 19 – 1 = 18 kg.

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Directions for questions 11 to 16: Answer the questions on the basis of the information given below.

There are 15 wooden blocks of different weights – 1, 2, 3, 4, 5, 7, 9, 10, 11, 13, 14, 15, 17, 19 and 20 (in kg). These are divided into 3 piles –P1, P2 and P3. The number of wooden blocks in the three piles are 3, 5 and 7, not necessarily in the given order and the sum of the weights of the wooden blocks in the three piles are 30 kg, 50 kg and 70 kg, again, not necessarily in the given order. In each pile, the wooden blocks are kept one above the other.
Following is the additional information given about the distribution and the arrangement of the wooden blocks in the 3 piles:
(i) The pile with the maximum number of wooden blocks is not the same as the pile with the maximum sum of the weights of the wooden blocks.
(ii) One of the wooden blocks in the pile, with the minimum number of wooden blocks, weighs 17 kg.
(iii) In one of the piles, a wooden block weighing 15 kg is just above the wooden block weighing 20 kg, which is the bottom block in the pile.
(iv) The weight of the 3rd block from the bottom in pile P1 is equal to the sum of the weight of the 3rd block from the bottom in each of the other two piles – P2 and P3.
(v) Wooden blocks weighing 11 kg and 2 kg are in piles P2 and P3 respectively.
(vi) The sum of weights of all the wooden blocks above the wooden block of weight 2 kg is equal to the sum of weight of all the wooden blocks below it. Further, the wooden block of weights 2 kg is the only wooden block with weight as an even number (in kg) in its pile.
(vii) In pile P3, the weight of the 4th block from the bottom is equal to the sum of the weights of the next two blocks above it.
(viii) In each of the piles P1 and P3, the lightest wooden block is at the bottom most position; while in pile P2, the heaviest wooden block is at the bottom most position and the lightest wooden block is at the top most position.

Q.12 [11831809]
What is the sum of the weights (in kg) of the 3 wooden blocks at the top most position in the three piles?

Solution:
Correct Answer : 46

Answer key/Solution

Step 1:
From condition (i), the sum of the weights of all the wooden blocks in a pile is 70 kg, it contains either 5 or 3 wooden blocks. Since the maximum weight of 3 blocks = 20 + 19 + 17 = 36 kg, so there are 5 wooden blocks in it. Now, the sum of the weights of all the wooden blocks in a pile is 30 kg, it consists of either 7 or 3 wooden blocks. Since the sum of the weights (in kg) of 7 wooden blocks having least weight = 1 + 2 + 3 + 4 + 5 + 7 + 9 = 31 kg, so there are 3 wooden blocks in it. Therefore, the pile with the sum of the weights of the wooden blocks is 50 kg, there are 7 wooden blocks in it.
From the conditions (ii), (v) and (vii), the weights of pile P1, pile P2 and pile P3 are 30 kg, 70 kg and 50 kg respectively.

No. of blocks	3	5	7
	Pile P1	Pile P2	Pile P3
Total weight (in kg)	30	70	50

Step 2:
From condition (ii), Block of 17 kg is in pile P1.
From condition (iii), Blocks of 15 kg and 20 kg are in pile P2.
From condition (v), Blocks of 11 kg and 2 kg are in pile P2 and pile P3 respectively.
From condition (vi), Blocks 1 kg, 3 kg, 5 kg, 7 kg, 13 kg, 19 kg are in pile P3.
So blocks 10 kg and 14 kg are in pile P2. Also, blocks 4 kg and 9 kg are in pile P1.
From condition (iv), the weights of the 3rd block from the bottom in piles P1, P2 and P3 are 17 kg, 14 kg and 3 kg respectively.
Step 3:
From conditions (vii) and (viii), the final arrangement of the blocks can be shown as:

No. of blocks	3	5	7
	Pile P1	Pile P2	Pile P3
			19
			5
		10	2
		11	7
	17	14	3
	9	15	13
	4	20	1
Total weight (in kg)	30	70	50

Required sum = 17 + 10 + 19 = 46 kg.

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Directions for questions 11 to 16: Answer the questions on the basis of the information given below.

There are 15 wooden blocks of different weights – 1, 2, 3, 4, 5, 7, 9, 10, 11, 13, 14, 15, 17, 19 and 20 (in kg). These are divided into 3 piles –P1, P2 and P3. The number of wooden blocks in the three piles are 3, 5 and 7, not necessarily in the given order and the sum of the weights of the wooden blocks in the three piles are 30 kg, 50 kg and 70 kg, again, not necessarily in the given order. In each pile, the wooden blocks are kept one above the other.
Following is the additional information given about the distribution and the arrangement of the wooden blocks in the 3 piles:
(i) The pile with the maximum number of wooden blocks is not the same as the pile with the maximum sum of the weights of the wooden blocks.
(ii) One of the wooden blocks in the pile, with the minimum number of wooden blocks, weighs 17 kg.
(iii) In one of the piles, a wooden block weighing 15 kg is just above the wooden block weighing 20 kg, which is the bottom block in the pile.
(iv) The weight of the 3rd block from the bottom in pile P1 is equal to the sum of the weight of the 3rd block from the bottom in each of the other two piles – P2 and P3.
(v) Wooden blocks weighing 11 kg and 2 kg are in piles P2 and P3 respectively.
(vi) The sum of weights of all the wooden blocks above the wooden block of weight 2 kg is equal to the sum of weight of all the wooden blocks below it. Further, the wooden block of weights 2 kg is the only wooden block with weight as an even number (in kg) in its pile.
(vii) In pile P3, the weight of the 4th block from the bottom is equal to the sum of the weights of the next two blocks above it.
(viii) In each of the piles P1 and P3, the lightest wooden block is at the bottom most position; while in pile P2, the heaviest wooden block is at the bottom most position and the lightest wooden block is at the top most position.

Q.13 [11831809]
Which pile has the wooden block of weights 10 kg?

1 ◯ Pile P1

2 ◯ Pile P2

3 ◯ Pile P3

4 ◯ Cannot be determined

Solution:
Correct Answer : 2

Answer key/Solution

Step 1:
From condition (i), the sum of the weights of all the wooden blocks in a pile is 70 kg, it contains either 5 or 3 wooden blocks. Since the maximum weight of 3 blocks = 20 + 19 + 17 = 36 kg, so there are 5 wooden blocks in it. Now, the sum of the weights of all the wooden blocks in a pile is 30 kg, it consists of either 7 or 3 wooden blocks. Since the sum of the weights (in kg) of 7 wooden blocks having least weight = 1 + 2 + 3 + 4 + 5 + 7 + 9 = 31 kg, so there are 3 wooden blocks in it. Therefore, the pile with the sum of the weights of the wooden blocks is 50 kg, there are 7 wooden blocks in it.
From the conditions (ii), (v) and (vii), the weights of pile P1, pile P2 and pile P3 are 30 kg, 70 kg and 50 kg respectively.

No. of blocks	3	5	7
	Pile P1	Pile P2	Pile P3
Total weight (in kg)	30	70	50

Step 2:
From condition (ii), Block of 17 kg is in pile P1.
From condition (iii), Blocks of 15 kg and 20 kg are in pile P2.
From condition (v), Blocks of 11 kg and 2 kg are in pile P2 and pile P3 respectively.
From condition (vi), Blocks 1 kg, 3 kg, 5 kg, 7 kg, 13 kg, 19 kg are in pile P3.
So blocks 10 kg and 14 kg are in pile P2. Also, blocks 4 kg and 9 kg are in pile P1.
From condition (iv), the weights of the 3rd block from the bottom in piles P1, P2 and P3 are 17 kg, 14 kg and 3 kg respectively.
Step 3:
From conditions (vii) and (viii), the final arrangement of the blocks can be shown as:

No. of blocks	3	5	7
	Pile P1	Pile P2	Pile P3
			19
			5
		10	2
		11	7
	17	14	3
	9	15	13
	4	20	1
Total weight (in kg)	30	70	50

Pile 2 has the wooden block of weights 10 kg.

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Directions for questions 11 to 16: Answer the questions on the basis of the information given below.

There are 15 wooden blocks of different weights – 1, 2, 3, 4, 5, 7, 9, 10, 11, 13, 14, 15, 17, 19 and 20 (in kg). These are divided into 3 piles –P1, P2 and P3. The number of wooden blocks in the three piles are 3, 5 and 7, not necessarily in the given order and the sum of the weights of the wooden blocks in the three piles are 30 kg, 50 kg and 70 kg, again, not necessarily in the given order. In each pile, the wooden blocks are kept one above the other.
Following is the additional information given about the distribution and the arrangement of the wooden blocks in the 3 piles:
(i) The pile with the maximum number of wooden blocks is not the same as the pile with the maximum sum of the weights of the wooden blocks.
(ii) One of the wooden blocks in the pile, with the minimum number of wooden blocks, weighs 17 kg.
(iii) In one of the piles, a wooden block weighing 15 kg is just above the wooden block weighing 20 kg, which is the bottom block in the pile.
(iv) The weight of the 3rd block from the bottom in pile P1 is equal to the sum of the weight of the 3rd block from the bottom in each of the other two piles – P2 and P3.
(v) Wooden blocks weighing 11 kg and 2 kg are in piles P2 and P3 respectively.
(vi) The sum of weights of all the wooden blocks above the wooden block of weight 2 kg is equal to the sum of weight of all the wooden blocks below it. Further, the wooden block of weights 2 kg is the only wooden block with weight as an even number (in kg) in its pile.
(vii) In pile P3, the weight of the 4th block from the bottom is equal to the sum of the weights of the next two blocks above it.
(viii) In each of the piles P1 and P3, the lightest wooden block is at the bottom most position; while in pile P2, the heaviest wooden block is at the bottom most position and the lightest wooden block is at the top most position.

Q.14 [11831809]
Which of the following is the weight (in kg) of one of the wooden blocks in pile P3?

1 ◯ 4

2 ◯ 14

3 ◯ 15

4 ◯ 7

Solution:
Correct Answer : 4

Answer key/Solution

Step 1:
From condition (i), the sum of the weights of all the wooden blocks in a pile is 70 kg, it contains either 5 or 3 wooden blocks. Since the maximum weight of 3 blocks = 20 + 19 + 17 = 36 kg, so there are 5 wooden blocks in it. Now, the sum of the weights of all the wooden blocks in a pile is 30 kg, it consists of either 7 or 3 wooden blocks. Since the sum of the weights (in kg) of 7 wooden blocks having least weight = 1 + 2 + 3 + 4 + 5 + 7 + 9 = 31 kg, so there are 3 wooden blocks in it. Therefore, the pile with the sum of the weights of the wooden blocks is 50 kg, there are 7 wooden blocks in it.
From the conditions (ii), (v) and (vii), the weights of pile P1, pile P2 and pile P3 are 30 kg, 70 kg and 50 kg respectively.

No. of blocks	3	5	7
	Pile P1	Pile P2	Pile P3
Total weight (in kg)	30	70	50

Step 2:
From condition (ii), Block of 17 kg is in pile P1.
From condition (iii), Blocks of 15 kg and 20 kg are in pile P2.
From condition (v), Blocks of 11 kg and 2 kg are in pile P2 and pile P3 respectively.
From condition (vi), Blocks 1 kg, 3 kg, 5 kg, 7 kg, 13 kg, 19 kg are in pile P3.
So blocks 10 kg and 14 kg are in pile P2. Also, blocks 4 kg and 9 kg are in pile P1.
From condition (iv), the weights of the 3rd block from the bottom in piles P1, P2 and P3 are 17 kg, 14 kg and 3 kg respectively.
Step 3:
From conditions (vii) and (viii), the final arrangement of the blocks can be shown as:

No. of blocks	3	5	7
	Pile P1	Pile P2	Pile P3
			19
			5
		10	2
		11	7
	17	14	3
	9	15	13
	4	20	1
Total weight (in kg)	30	70	50

7 kg wooden block is in pile P3.

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Directions for questions 11 to 16: Answer the questions on the basis of the information given below.

There are 15 wooden blocks of different weights – 1, 2, 3, 4, 5, 7, 9, 10, 11, 13, 14, 15, 17, 19 and 20 (in kg). These are divided into 3 piles –P1, P2 and P3. The number of wooden blocks in the three piles are 3, 5 and 7, not necessarily in the given order and the sum of the weights of the wooden blocks in the three piles are 30 kg, 50 kg and 70 kg, again, not necessarily in the given order. In each pile, the wooden blocks are kept one above the other.
Following is the additional information given about the distribution and the arrangement of the wooden blocks in the 3 piles:
(i) The pile with the maximum number of wooden blocks is not the same as the pile with the maximum sum of the weights of the wooden blocks.
(ii) One of the wooden blocks in the pile, with the minimum number of wooden blocks, weighs 17 kg.
(iii) In one of the piles, a wooden block weighing 15 kg is just above the wooden block weighing 20 kg, which is the bottom block in the pile.
(iv) The weight of the 3rd block from the bottom in pile P1 is equal to the sum of the weight of the 3rd block from the bottom in each of the other two piles – P2 and P3.
(v) Wooden blocks weighing 11 kg and 2 kg are in piles P2 and P3 respectively.
(vi) The sum of weights of all the wooden blocks above the wooden block of weight 2 kg is equal to the sum of weight of all the wooden blocks below it. Further, the wooden block of weights 2 kg is the only wooden block with weight as an even number (in kg) in its pile.
(vii) In pile P3, the weight of the 4th block from the bottom is equal to the sum of the weights of the next two blocks above it.
(viii) In each of the piles P1 and P3, the lightest wooden block is at the bottom most position; while in pile P2, the heaviest wooden block is at the bottom most position and the lightest wooden block is at the top most position.

Q.15 [11831809]
What is the sum of the weights (in kg) of the wooden blocks at the top most position in pile P2 and at the bottom most position in pile P3?

1 ◯ 11

2 ◯ 13

3 ◯ 30

4 ◯ 21

Solution:
Correct Answer : 1

Answer key/Solution

Step 1:
From condition (i), the sum of the weights of all the wooden blocks in a pile is 70 kg, it contains either 5 or 3 wooden blocks. Since the maximum weight of 3 blocks = 20 + 19 + 17 = 36 kg, so there are 5 wooden blocks in it. Now, the sum of the weights of all the wooden blocks in a pile is 30 kg, it consists of either 7 or 3 wooden blocks. Since the sum of the weights (in kg) of 7 wooden blocks having least weight = 1 + 2 + 3 + 4 + 5 + 7 + 9 = 31 kg, so there are 3 wooden blocks in it. Therefore, the pile with the sum of the weights of the wooden blocks is 50 kg, there are 7 wooden blocks in it.
From the conditions (ii), (v) and (vii), the weights of pile P1, pile P2 and pile P3 are 30 kg, 70 kg and 50 kg respectively.

No. of blocks	3	5	7
	Pile P1	Pile P2	Pile P3
Total weight (in kg)	30	70	50

Step 2:
From condition (ii), Block of 17 kg is in pile P1.
From condition (iii), Blocks of 15 kg and 20 kg are in pile P2.
From condition (v), Blocks of 11 kg and 2 kg are in pile P2 and pile P3 respectively.
From condition (vi), Blocks 1 kg, 3 kg, 5 kg, 7 kg, 13 kg, 19 kg are in pile P3.
So blocks 10 kg and 14 kg are in pile P2. Also, blocks 4 kg and 9 kg are in pile P1.
From condition (iv), the weights of the 3rd block from the bottom in piles P1, P2 and P3 are 17 kg, 14 kg and 3 kg respectively.
Step 3:
From conditions (vii) and (viii), the final arrangement of the blocks can be shown as:

No. of blocks	3	5	7
	Pile P1	Pile P2	Pile P3
			19
			5
		10	2
		11	7
	17	14	3
	9	15	13
	4	20	1
Total weight (in kg)	30	70	50

Required sum of weights = 10 + 1 = 11 kg.

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Directions for questions 11 to 16: Answer the questions on the basis of the information given below.

There are 15 wooden blocks of different weights – 1, 2, 3, 4, 5, 7, 9, 10, 11, 13, 14, 15, 17, 19 and 20 (in kg). These are divided into 3 piles –P1, P2 and P3. The number of wooden blocks in the three piles are 3, 5 and 7, not necessarily in the given order and the sum of the weights of the wooden blocks in the three piles are 30 kg, 50 kg and 70 kg, again, not necessarily in the given order. In each pile, the wooden blocks are kept one above the other.
Following is the additional information given about the distribution and the arrangement of the wooden blocks in the 3 piles:
(i) The pile with the maximum number of wooden blocks is not the same as the pile with the maximum sum of the weights of the wooden blocks.
(ii) One of the wooden blocks in the pile, with the minimum number of wooden blocks, weighs 17 kg.
(iii) In one of the piles, a wooden block weighing 15 kg is just above the wooden block weighing 20 kg, which is the bottom block in the pile.
(iv) The weight of the 3rd block from the bottom in pile P1 is equal to the sum of the weight of the 3rd block from the bottom in each of the other two piles – P2 and P3.
(v) Wooden blocks weighing 11 kg and 2 kg are in piles P2 and P3 respectively.
(vi) The sum of weights of all the wooden blocks above the wooden block of weight 2 kg is equal to the sum of weight of all the wooden blocks below it. Further, the wooden block of weights 2 kg is the only wooden block with weight as an even number (in kg) in its pile.
(vii) In pile P3, the weight of the 4th block from the bottom is equal to the sum of the weights of the next two blocks above it.
(viii) In each of the piles P1 and P3, the lightest wooden block is at the bottom most position; while in pile P2, the heaviest wooden block is at the bottom most position and the lightest wooden block is at the top most position.

Q.16 [11831809]
What is the sum of the weights (in kg) of the three heaviest wooden blocks in pile P3?

1 ◯ 46

2 ◯ 39

3 ◯ 30

4 ◯ 54

Solution:
Correct Answer : 2

Answer key/Solution

Step 1:
From condition (i), the sum of the weights of all the wooden blocks in a pile is 70 kg, it contains either 5 or 3 wooden blocks. Since the maximum weight of 3 blocks = 20 + 19 + 17 = 36 kg, so there are 5 wooden blocks in it. Now, the sum of the weights of all the wooden blocks in a pile is 30 kg, it consists of either 7 or 3 wooden blocks. Since the sum of the weights (in kg) of 7 wooden blocks having least weight = 1 + 2 + 3 + 4 + 5 + 7 + 9 = 31 kg, so there are 3 wooden blocks in it. Therefore, the pile with the sum of the weights of the wooden blocks is 50 kg, there are 7 wooden blocks in it.
From the conditions (ii), (v) and (vii), the weights of pile P1, pile P2 and pile P3 are 30 kg, 70 kg and 50 kg respectively.

No. of blocks	3	5	7
	Pile P1	Pile P2	Pile P3
Total weight (in kg)	30	70	50

Step 2:
From condition (ii), Block of 17 kg is in pile P1.
From condition (iii), Blocks of 15 kg and 20 kg are in pile P2.
From condition (v), Blocks of 11 kg and 2 kg are in pile P2 and pile P3 respectively.
From condition (vi), Blocks 1 kg, 3 kg, 5 kg, 7 kg, 13 kg, 19 kg are in pile P3.
So blocks 10 kg and 14 kg are in pile P2. Also, blocks 4 kg and 9 kg are in pile P1.
From condition (iv), the weights of the 3rd block from the bottom in piles P1, P2 and P3 are 17 kg, 14 kg and 3 kg respectively.
Step 3:
From conditions (vii) and (viii), the final arrangement of the blocks can be shown as:

No. of blocks	3	5	7
	Pile P1	Pile P2	Pile P3
			19
			5
		10	2
		11	7
	17	14	3
	9	15	13
	4	20	1
Total weight (in kg)	30	70	50

The sum of the weights of the three heaviest wooden blocks in pile P3 = 19 + 13 +7 = 39 kg.

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Directions for questions 17 to 20: Answer the questions on basis of the information given below.

In a village survey it was found that out of 750 farmer families, 40% owned land of 2 or less than 2 acres. These families were benefitted from four Government Schemes –FBY, KSY, KSN and KCC.
The following information is available about the farmer families benefiting from the above four schemes.
(i) 60% of the families benefitted from scheme FBY and 56% of the families benefitted from scheme KSN.
(ii) 5% of the families benefitted from scheme FBY only. 4% of the families benefitted from scheme KSN only. 12% of the families benefited from scheme KCC only.
(iii) 7% of the families benefitted from scheme FBY and scheme KCC only. 6% of the families benefitted from scheme FBY and scheme KSY only. 3% of the families benefited from scheme FBY and scheme KSN only. 5% of the families benefitted from scheme KSN and scheme KCC only.
(iv) 8% of the families benefitted from schemes FBY, KSY and KSN, but not from scheme KCC. 4% of the families benefited from schemes FBY, KSN and KCC but not from scheme KSY.
(v) 20% of the families benefitted from exactly three schemes. 25% of the families benefitted from all the four schemes. 25% of the families benefitted from exactly one scheme.

Q.17 [11831809]
What was the ratio of the number of families benefited from KSY scheme only and, KSY and KCC schemes only?

1 ◯ 2 : 3

2 ◯ 3 : 4

3 ◯ 4 : 5

4 ◯ 1 : 2

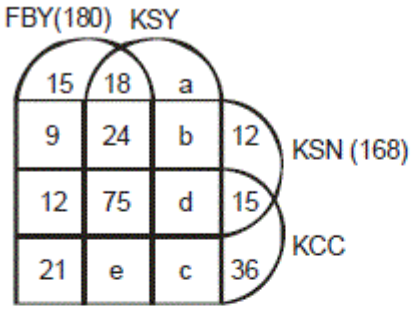
Solution:

Correct Answer : 4

Answer key/Solution

Step 1:

From conditions (i) to (v):



Step 2:

From condition (v), $15 + a + 12 + 36 = 0.25 \times 300 = 75 \Rightarrow a = 12$

$12 + 24 + d + e = 0.2 \times 300 = 60 \Rightarrow d + e = 24$ ... (1)

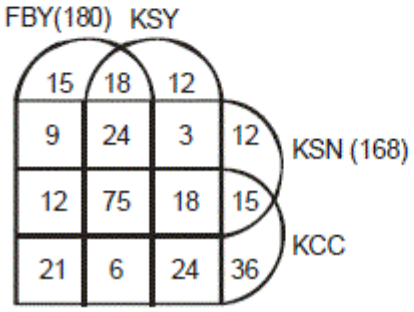
From condition (i), $15 + 18 + 9 + 24 + 12 + 75 + 21 + e = 180$

$\Rightarrow e = 6$ and from (1), $d = 24 - 6 = 18$

Also, $9 + 12 + 24 + 75 + b + d + 12 + 15 = 168$

$\Rightarrow b = 3$

So, $c = 300 - (15 + 18 + a + 9 + 24 + b + 12 + 12 + 75 + d + 15 + 21 + e + 36) = 24$.



Required ratio = 12 : 24 = 1 : 2.

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Directions for questions 17 to 20: Answer the questions on basis of the information given below.

In a village survey it was found that out of 750 farmer families, 40% owned land of 2 or less than 2 acres. These families were benefitted from four Government Schemes –FBY, KSY, KSN and KCC.

The following information is available about the farmer families benefiting from the above four schemes.

(i) 60% of the families benefitted from scheme FBY and 56% of the families benefitted from scheme KSN.

(ii) 5% of the families benefitted from scheme FBY only. 4% of the families benefitted from scheme KSN only. 12% of the families benefited from scheme KCC only.

(iii) 7% of the families benefitted from scheme FBY and scheme KCC only. 6% of the families benefitted from scheme FBY and scheme KSY only. 3% of the families benefited from scheme FBY and scheme KSN only. 5% of the families benefitted from scheme KSN and scheme KCC only.

(iv) 8% of the families benefitted from schemes FBY, KSY and KSN, but not from scheme KCC. 4% of the families benefited from schemes FBY, KSN and KCC but not from scheme KSY.

(v) 20% of the families benefitted from exactly three schemes. 25% of the families benefitted from all the four schemes. 25% of the families benefitted from exactly one scheme.

Q.18 [11831809]

What percentage of families got benefited from KSY scheme?

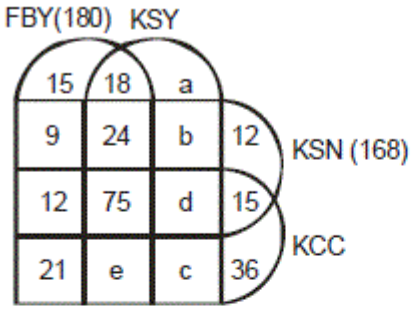
Solution:

Correct Answer : 60

Answer key/Solution

Step 1:

From conditions (i) to (v):



Step 2:

From condition (v), 15 + a + 12 + 36 = 0.25 × 300 = 75 ⇒ a = 12

12 + 24 + d + e = 0.2 × 300 = 60 ⇒ d + e = 24 ... (1)

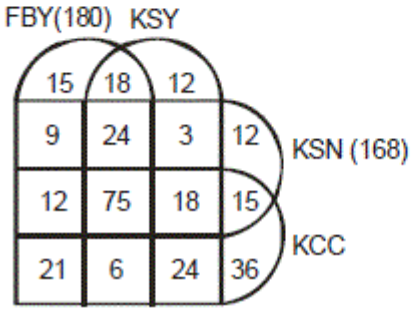
From condition (i), 15 + 18 + 9 + 24 + 12 + 75 + 21 + e = 180

⇒ e = 6 and from (1), d = 24 – 6 = 18

Also, 9 + 12 + 24 + 75 + b + d + 12 + 15 = 168

⇒ b = 3

So, c = 300 – (15 + 18 + a + 9 + 24 + b + 12 + 12 + 75 + d + 15 + 21 + e + 36) = 24.



Required percentage = 180/300 × 100 = 60%.

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Directions for questions 17 to 20: Answer the questions on basis of the information given below.

In a village survey it was found that out of 750 farmer families, 40% owned land of 2 or less than 2 acres. These families were benefitted from four Government Schemes –FBY, KSY, KSN and KCC.
The following information is available about the farmer families benefiting from the above four schemes.
(i) 60% of the families benefitted from scheme FBY and 56% of the families benefitted from scheme KSN.
(ii) 5% of the families benefitted from scheme FBY only. 4% of the families benefitted from scheme KSN only. 12% of the families benefited from scheme KCC only.
(iii) 7% of the families benefitted from scheme FBY and scheme KCC only. 6% of the families benefitted from scheme FBY and scheme KSY only. 3% of the families benefited from scheme FBY and scheme KSN only. 5% of the families benefitted from scheme KSN and scheme KCC only.
(iv) 8% of the families benefitted from schemes FBY, KSY and KSN, but not from scheme KCC. 4% of the families benefited from schemes FBY, KSN and KCC but not from scheme KSY.
(v) 20% of the families benefitted from exactly three schemes. 25% of the families benefitted from all the four schemes. 25% of the families benefitted from exactly one scheme.

Q.19 [11831809]
The difference between the number of families benefited from KCC scheme and KSN scheme was _____.

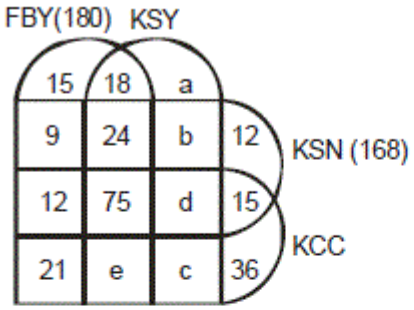
Solution:

Correct Answer : 39

Answer key/Solution

Step 1:

From conditions (i) to (v):



Step 2:

From condition (v), $15 + a + 12 + 36 = 0.25 \times 300 = 75 \Rightarrow a = 12$

$12 + 24 + d + e = 0.2 \times 300 = 60 \Rightarrow d + e = 24$ ... (1)

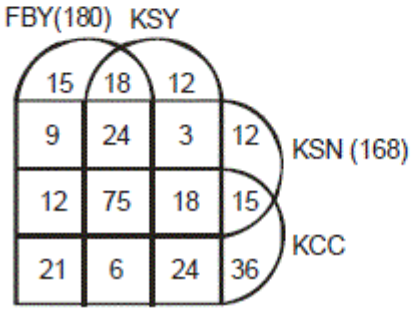
From condition (i), $15 + 18 + 9 + 24 + 12 + 75 + 21 + e = 180$

$\Rightarrow e = 6$ and from (1), $d = 24 - 6 = 18$

Also, $9 + 12 + 24 + 75 + b + d + 12 + 15 = 168$

$\Rightarrow b = 3$

So, $c = 300 - (15 + 18 + a + 9 + 24 + b + 12 + 12 + 75 + d + 15 + 21 + e + 36) = 24$.



Required difference = 207 – 168 = 39.

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Directions for questions 17 to 20: Answer the questions on basis of the information given below.

In a village survey it was found that out of 750 farmer families, 40% owned land of 2 or less than 2 acres. These families were benefitted from four Government Schemes –FBY, KSY, KSN and KCC.

The following information is available about the farmer families benefiting from the above four schemes.

(i) 60% of the families benefitted from scheme FBY and 56% of the families benefitted from scheme KSN.

(ii) 5% of the families benefitted from scheme FBY only. 4% of the families benefitted from scheme KSN only. 12% of the families benefited from scheme KCC only.

(iii) 7% of the families benefitted from scheme FBY and scheme KCC only. 6% of the families benefitted from scheme FBY and scheme KSY only. 3% of the families benefited from scheme FBY and scheme KSN only. 5% of the families benefitted from scheme KSN and scheme KCC only.

(iv) 8% of the families benefitted from schemes FBY, KSY and KSN, but not from scheme KCC. 4% of the families benefited from schemes FBY, KSN and KCC but not from scheme KSY.

(v) 20% of the families benefitted from exactly three schemes. 25% of the families benefitted from all the four schemes. 25% of the families benefitted from exactly one scheme.

Q.20 [11831809]

The number of families benefitted from KSY, KSN and KCC schemes, but not from FBY scheme was _____.

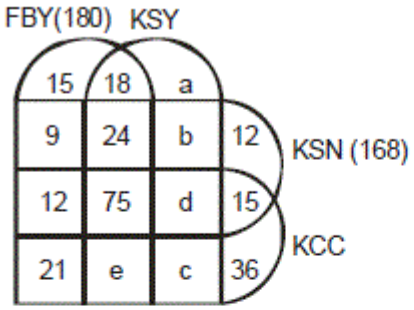
Answer key/Solution

Solution:

Correct Answer : 18

Step 1:

From conditions (i) to (v):



Step 2:

From condition (v), $15 + a + 12 + 36 = 0.25 \times 300 = 75 \Rightarrow a = 12$

$12 + 24 + d + e = 0.2 \times 300 = 60 \Rightarrow d + e = 24$ ... (1)

From condition (i), $15 + 18 + 9 + 24 + 12 + 75 + 21 + e = 180$

$\Rightarrow e = 6$ and from (1), $d = 24 - 6 = 18$

Also, $9 + 12 + 24 + 75 + b + d + 12 + 15 = 168$

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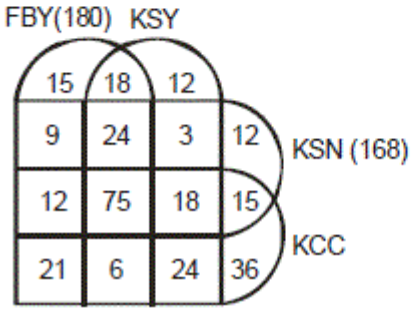
So, $c = 300 - (15 + 18 + a + 9 + 24 + b + 12 + 12 + 75 + d + 15 + 21 + e + 36) = 24$.



Required number of families was 18.

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