

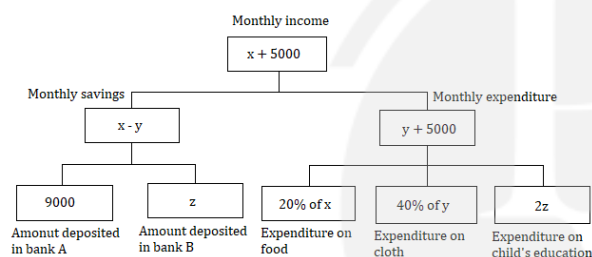
Quantitative Aptitude

Flow chart Based Data Interpretations

Level-2

Q1 Direction: Study the data carefully and answer the following questions.

Data given below is related to the monthly income, monthly savings and monthly expenditure of a person. Out of total monthly savings, he deposited some amount in bank A and remaining amount deposited in bank B. Out of total monthly expenditure, some amount is spent on food, some amount is spent on cloth and remaining amount is spent on child's education.



Note:

- If interest rate in bank B is 5% per annum, then compound interest received from bank B after 2 years will be ₹615.

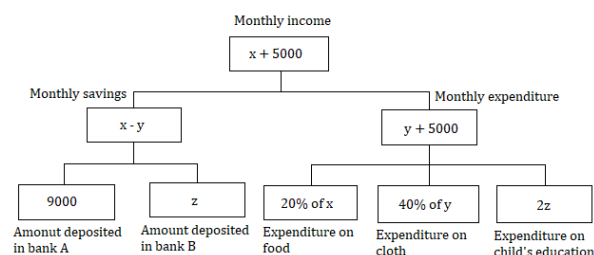
Find the ratio of monthly savings to the monthly expenditure of the person?

- (A) 3: 5 (B) 1: 2
(C) 5: 7 (D) 1: 1
(E) None of these

Q2 Direction: Study the data carefully and answer the following questions.

Data given below is related to the monthly income, monthly savings and monthly expenditure of a person. Out of total monthly savings, he deposited some amount in bank A and remaining amount deposited in bank B. Out of total monthly expenditure, some amount is spent on food, some amount is spent on

clothing and remaining amount is spent on child's education.



Note:

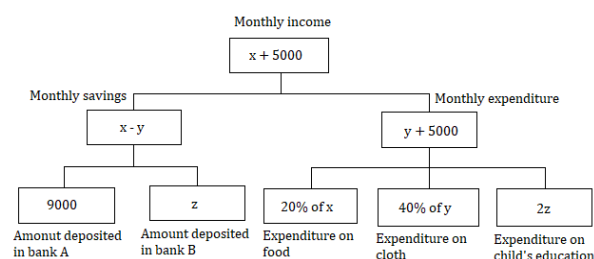
- If interest rate in bank B is 5% per annum, then total compound interest received from bank B after 2 years will be ₹615.

Total expenditure on food and cloth together is what percent of his monthly income?

- (A) 44.44% (B) 30%
(C) 37.5% (D) 33.33%
(E) 40%

Q3 Direction: Study the data carefully and answer the following questions.

Data given below is related to the monthly income, monthly savings and monthly expenditure of a person. Out of total monthly savings, he deposited some amount in bank A and remaining amount deposited in bank B. Out of total monthly expenditure, some amount is spent on food, some amount is spent on clothing and remaining amount is spent on child's education.



Note:



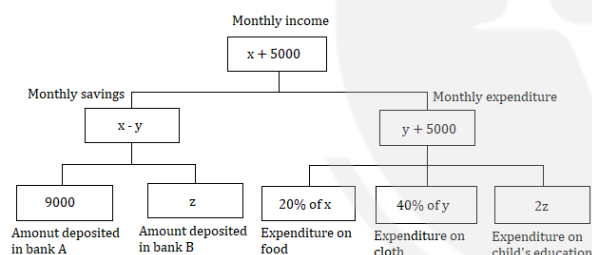
1. If interest rate in bank B is 5% per annum, then total compound interest received from bank B after 2 years will be ₹615.

If bank A and bank B give simple interest at the rate of 8% and 12% respectively, then what will be the total interest received from both the banks together after 2 years?

- (A) ₹2880 (B) ₹2420
(C) ₹3260 (D) ₹3040
(E) None of these

Q4 Direction: Study the data carefully and answer the following questions.

Data given below is related to the monthly income, monthly savings and monthly expenditure of a person. Out of total monthly savings, he deposited some amount in bank A and remaining amount deposited in bank B. Out of total monthly expenditure, some amount is spent on food, some amount is spent on clothing and remaining amount is spent on child's education.



Note:

1. If interest rate in bank B is 5% per annum, then total compound interest received from bank B after 2 years will be ₹615.

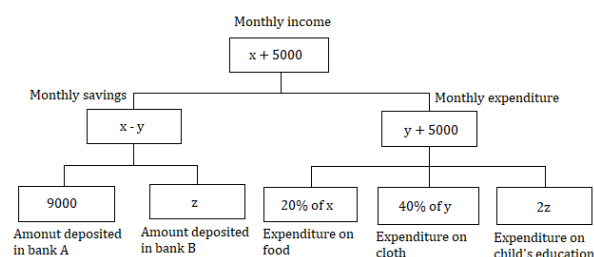
Find the ratio of total expenditure on food and cloth together to the total expenditure on child's education?

- (A) 6: 5 (B) 10: 9
(C) 3: 2 (D) 5: 4
(E) None of these

Q5 Direction: Study the data carefully and answer the following questions.

Data given below is related to the monthly income, monthly savings and monthly

expenditure of a person. Out of total monthly savings, he deposited some amount in bank A and remaining amount deposited in bank B. Out of total monthly expenditure, some amount is spent on food, some amount is spent on clothing and remaining amount is spent on child's education.



Note:

1. If interest rate in bank B is 5% per annum, then total compound interest received from bank B after 2 years will be ₹615.

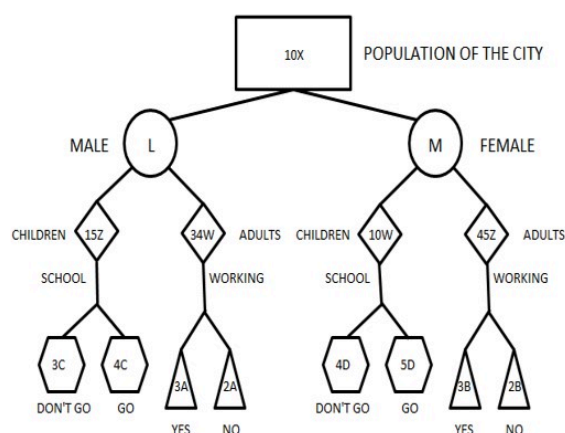
If monthly income of the person is increased by 20% and his monthly expenditure is decreased by 10 %, then his monthly savings will be increased by what percent?

- (A) 62.5% (B) 75%
(C) 80% (D) 50%
(E) None of these

Directions (6-9) Read the following passage and answer the given questions.

Directions: Answer the questions based on the information given below.

The graph given below shows the data regarding the population of a city.



Q6 What is the minimum value of X?



- (A) 320
- (B) 240
- (C) 180
- (D) Cannot be determined
- (E) None of these

Q7 If the value of X is minimum, what is the difference between the number of males and females in the city?

- (A) 870
- (B) 920
- (C) 790
- (D) Cannot be determined
- (E) None of these

Q8

If the value of X is minimum, number of female children that go to school are approximately how much percentage more than the number of male children that live in the city?

- (A) 138.09%
- (B) 135.25%
- (C) 120.5%
- (D) 142.5%
- (E) None of these

Q9 If the value of Z is the lowest possible composite number, what is $L - X$?

- (A) 1210
- (B) 1455
- (C) 1375
- (D) Cannot be determined
- (E) None of these



Answer Key

Q1 (B)

Q2 (E)

Q3 (A)

Q4 (C)

Q5 (C)

Q6 (B)

Q7 (A)

Q8 (A)

Q9 (D)



Hints & Solutions

Q1 Text Solution:

Common Solution:

If interest rate in bank B is 5% per annum, then total compound interest received from bank B after 2 years will be ₹615.

So,

$$z + 615 = z \left(1 + \frac{5}{100}\right)^2$$

$$z + 615 = z \times \left(\frac{21}{20}\right)^2$$

$$z + 615 = z \times \frac{441}{400}$$

$$615 = \left(\frac{441 - 400}{400}\right) \times z$$

$$441z - 400z = 246000$$

$$z = 6000$$

Since, total amount deposited in bank B = ₹6000

And total amount deposited in bank A = ₹9000

So,

$$x - y = 6000 + 9000$$

$$x - y = 15000 \text{ -----(1)}$$

Since, expenditure on child's education = $2 \times 6000 = ₹12000$

So,

$$y + 5000 = 20\% \text{ of } x + 40\% \text{ of } y + 12000$$

$$5y - x - 2y = 35000$$

$$3y - x = 35000 \text{ -----(2)}$$

From equations (1) and (2):

$$15000 + y = 3y - 35000$$

$$y = 25000, x = 40000$$

Monthly income of the person = $40000 + 5000 = ₹45000$

Monthly savings of the person = $40000 - 25000 = ₹15000$

Amount deposited in bank A = ₹9000

Amount deposited in bank B = ₹6000

Monthly expenditure of the person = $25000 + 5000 = ₹30000$

Expenditure on food = $20\% \text{ of } 40000 = ₹8000$

Expenditure on cloth = $40\% \text{ of } 25000 = ₹10000$

Expenditure on child's education = ₹12000

Monthly savings of the person = ₹15000

Monthly expenditure of the person = ₹30000

Required ratio = $15000 : 30000 = 1 : 2$

Q2 Text Solution:

Common Solution:

If interest rate in bank B is 5% per annum, then total compound interest received from bank B after 2 years will be ₹615.

So,

$$z + 615 = z \left(1 + \frac{5}{100}\right)^2$$

$$z + 615 = z \times \left(\frac{21}{20}\right)^2$$

$$z + 615 = z \times \frac{441}{400}$$

$$615 = \left(\frac{441 - 400}{400}\right) \times z$$

$$441z - 400z = 246000$$

$$z = 6000$$

Since, total amount deposited in bank B = ₹6000

And total amount deposited in bank A = ₹9000

So,

$$x - y = 6000 + 9000$$

$$x - y = 15000 \text{ -----(1)}$$

Since, expenditure on child's education = $2 \times 6000 = ₹12000$

$$y + 5000 = 20\% \text{ of } x + 20\% \text{ of } y + 12000$$

$$5y - x - 2y = 35000$$

$$3y - x = 35000 \text{ -----(2)}$$

From equations (1) and (2):

$$15000 + y = 3y - 35000$$

$$y = 25000, x = 40000$$

Monthly income of the person = $40000 + 5000 = ₹45000$

Monthly savings of the person = $40000 - 25000 = ₹15000$

Amount deposited in bank A = ₹9000

Amount deposited in bank B = ₹6000

Monthly expenditure of the person = $25000 + 5000 = ₹30000$

Expenditure on food = $20\% \text{ of } 40000 = ₹8000$

Expenditure on cloth = $40\% \text{ of } 25000 = ₹10000$

Expenditure on child's education = ₹12000

Monthly income of the person = ₹45000



Total expenditure on food and cloth = 8000 + 10000 = ₹18000

Required percentage = $\frac{18000}{45000} \times 100 = 40\%$

Q3 Text Solution:

Common Solution:

If interest rate in bank B is 5% per annum, then total compound interest received from bank B after 2 years will be ₹615.

So,

$$z + 615 = z \left(1 + \frac{5}{100}\right)^2$$

$$z + 615 = z \times \left(\frac{21}{20}\right)^2$$

$$z + 615 = z \times \frac{441}{400}$$

$$615 = \left(\frac{441 - 400}{400}\right) \times z$$

$$441z - 400z = 246000$$

$$z = 6000$$

Since, total amount deposited in bank B = ₹6000

And total amount deposited in bank A = ₹9000

So,

$$x - y = 6000 + 9000$$

$$x - y = 15000 \text{ -----(1)}$$

Since, expenditure on child's education = 2 × 6000 = ₹12000

$$y + 5000 = 20\% \text{ of } x + 20\% \text{ of } y + 12000$$

$$5y - x - 2y = 35000$$

$$3y - x = 35000 \text{ -----(2)}$$

From equations (1) and (2):

$$15000 + y = 3y - 35000$$

$$y = 25000, x = 40000$$

Monthly income of the person = 40000 + 5000 = ₹45000

Monthly savings of the person = 40000 - 25000 = ₹15000

Amount deposited in bank A = ₹9000

Amount deposited in bank B = ₹6000

Monthly expenditure of the person = 25000 + 5000 = ₹30000

Expenditure on food = 20% of 40000 = ₹8000

Expenditure on cloth = 40% of 25000 = ₹10000

Expenditure on child's education = ₹12000

Amount deposited in bank A = ₹9000

Amount deposited in bank B = ₹6000

So, total SI received from both the banks together after 2 years:

$$\frac{9000 \times 8 \times 2}{100} + \frac{6000 \times 12 \times 2}{100} = 1440 + 1440 = ₹2880$$

Q4 Text Solution:

Common Solution:

If interest rate in bank B is 5% per annum, then total compound interest received from bank B after 2 years will be ₹615.

So,

$$z + 615 = z \left(1 + \frac{5}{100}\right)^2$$

$$z + 615 = z \times \left(\frac{21}{20}\right)^2$$

$$z + 615 = z \times \frac{441}{400}$$

$$615 = \left(\frac{441 - 400}{400}\right) \times z$$

$$441z - 400z = 246000$$

$$z = 6000$$

Since, total amount deposited in bank B = ₹6000

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So,

$$x - y = 6000 + 9000$$

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Since, expenditure on child's education = 2 × 6000 = ₹12000

$$y + 5000 = 20\% \text{ of } x + 20\% \text{ of } y + 12000$$

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Monthly income of the person = 40000 + 5000 = ₹45000

Monthly savings of the person = 40000 - 25000 = ₹15000

Amount deposited in bank A = ₹9000

Amount deposited in bank B = ₹6000

Monthly expenditure of the person = 25000 + 5000 = ₹30000

Expenditure on food = 20% of 40000 = ₹8000

Expenditure on cloth = 40% of 25000 = ₹10000

Expenditure on child's education = ₹12000



Total expenditure on food and cloth together =
 $8000 + 10000 = ₹18000$

Total expenditure on child's education = ₹12000

Required ratio = $18000 : 12000 = 3 : 2$

Q5 Text Solution:

Common Solution:

If interest rate in bank B is 5% per annum, then total compound interest received from bank B after 2 years will be ₹615.

So,

$$z + 615 = z \left(1 + \frac{5}{100}\right)^2$$

$$z + 615 = z \times \left(\frac{21}{20}\right)^2$$

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So,

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From equations (1) and (2):

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Monthly income of the person = $40000 + 5000 = ₹45000$

Monthly savings of the person = $40000 - 25000 = ₹15000$

Amount deposited in bank A = ₹9000

Amount deposited in bank B = ₹6000

Monthly expenditure of the person = $25000 + 5000 = ₹30000$

Expenditure on food = $20\% \text{ of } 40000 = ₹8000$

Expenditure on cloth = $40\% \text{ of } 25000 = ₹10000$

Expenditure on child's education = ₹12000

Initial monthly income of the person = ₹45000

So, new monthly income of the person =
 $120\% \text{ of } 45000 = ₹54000$

Initial monthly expenditure of the person = ₹30000

So, new monthly expenditure of the person =
 $90\% \text{ of } 30000 = ₹27000$

And new monthly savings = $54000 - 27000 = ₹27000$

Since, initial monthly savings = ₹15000

So, required percentage = $\frac{27000 - 15000}{15000} \times 100 = 80\%$

Q6. Text Solution:

For the value of X to be minimum, the rest of the values should also be minimum.

$$15Z = 7C, 45Z = 5B$$

$$\text{Minimum value of } Z = \frac{LCM(7, 15)}{15} \times \frac{LCM(45, 5)}{45} = 6$$

$$C = 15, B = 63$$

Minimum number of male children = $7 \times 15 = 105$

Minimum number of male children that don't go to school = $15 \times 3 = 45$

Minimum number of male children that go to school = $15 \times 4 = 60$

Minimum number of female adults = $45 \times 7 = 315$

Minimum number of female adults that are working = $63 \times 3 = 189$

Minimum number of female adults that are not working = $63 \times 2 = 126$

$$34W = 5B, 10W = 9D$$

$$\text{Minimum value of } W = \frac{LCM(34, 5)}{34} \times \frac{LCM(10, 9)}{10} = 45$$

$$B = 306, D = 50$$

Minimum number of female children = $10 \times 45 = 450$

Minimum number of female children that don't go to school = $50 \times 4 = 200$

Minimum number of female children that go to school = $50 \times 5 = 250$

Minimum number of male adults = $34 \times 45 = 1530$

Minimum number of male adults that are working = $306 \times 3 = 918$

Minimum number of male adults that are not working = $306 \times 2 = 612$



Minimum number of males = $L = 15Z + 34W = 1635$

Minimum number of females = $M = 10W + 45Z = 765$

Minimum population of the city = $L + M = 2400 = 10X$

$\Rightarrow X = 240$

Q7. Text Solution:

For the value of X to be minimum, the rest of the values should also be minimum.

$15Z = 7C, 45Z = 5B$

Minimum value of Z = $\frac{LCM(7, 15)}{15} \times \frac{LCM(45, 5)}{45} = 7$

$C = 15, B = 63$

Minimum number of male children = $7 \times 15 = 105$

Minimum number of male children that don't go to school = $15 \times 3 = 45$

Minimum number of male children that go to school = $15 \times 4 = 60$

Minimum number of female adults = $45 \times 7 = 315$

Minimum number of female adults that are working = $63 \times 3 = 189$

Minimum number of female adults that are not working = $63 \times 2 = 126$

$34W = 5A, 10W = 9D$

Minimum value of W = $\frac{LCM(34, 5)}{34} \times \frac{LCM(10, 9)}{10} = 45$

$A = 306, D = 50$

Minimum number of female children = $10 \times 45 = 450$

Minimum number of female children that don't go to school = $50 \times 4 = 200$

Minimum number of female children that go to school = $50 \times 5 = 250$

Minimum number of male adults = $34 \times 45 = 1530$

Minimum number of male adults that are working = $306 \times 3 = 918$

Minimum number of male adults that are not working = $306 \times 2 = 612$

Minimum number of males = $L = 15Z + 34W = 1635$

Minimum number of females = $M = 10W + 45Z = 765$

Minimum population of the city = $L + M = 2400 = 10X$

$\Rightarrow X = 240$

The difference between the number of males and females in the city = $L - M = 870$

Q8. Text Solution:

For the value of X to be minimum, the rest of the values should also be minimum.

$15Z = 7C, 45Z = 5B$

Minimum value of Z = $\frac{LCM(7, 15)}{15} \times \frac{LCM(45, 5)}{45} = 7$

$C = 15, B = 63$

Minimum number of male children = $7 \times 15 = 105$

Minimum number of male children that don't go to school = $15 \times 3 = 45$

Minimum number of male children that go to school = $15 \times 4 = 60$

Minimum number of female adults = $45 \times 7 = 315$

Minimum number of female adults that are working = $63 \times 3 = 189$

Minimum number of female adults that are not working = $63 \times 2 = 126$

$34W = 5A, 10W = 9D$

Minimum value of W = $\frac{LCM(34, 5)}{34} \times \frac{LCM(10, 9)}{10} = 45$

$A = 306, D = 50$

Minimum number of female children = $10 \times 45 = 450$

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Minimum number of male adults = $34 \times 45 = 1530$

Minimum number of male adults that are working = $306 \times 3 = 918$

Minimum number of male adults that are not working = $306 \times 2 = 612$

Minimum number of males = $L = 15Z + 34W = 1635$

Minimum number of females = $M = 10W + 45Z = 765$

Minimum population of the city = $L + M = 2400 = 10X$



$$\Rightarrow X = 240$$

Number of female children that go to school are

$$= \frac{250 - 105}{105} \times 100 = 138.09\%$$

more than the number of male children that live in the city.

Q9. Text Solution:

$$\text{Minimum value of } Z = \frac{LCM(7, 15)}{15} \times \frac{LCM(45, 5)}{45} = 7$$

$$C = 15, B = 63$$

$$15Z = 7C, 45Z = 5B$$

$$\text{Minimum composite value of } Z = 14; C = 30, B = 126$$

$$\text{Minimum number of male children} = 14 \times 15 = 210$$

$$\text{Minimum number of male children that don't go to school} = 30 \times 3 = 90$$

$$\text{Minimum number of male children that go to school} = 30 \times 4 = 120$$

$$\text{Minimum number of female adults} = 45 \times 14 = 630$$

$$\text{Minimum number of female adults that are working} = 126 \times 3 = 378$$

$$\text{Minimum number of female adults that are not working} = 126 \times 2 = 252$$

Number further information can be determined.



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