**3.2 CASELETS**

**Solution Exercise – Easy**

**Solutions for 1 – 3:**

By reading the data we can get the following table:

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Males** | **Females** | **Total** |
| In Favor | 825 | 600 | 1425 |
| Not in favor | 796 | 430 | 1226 |
| Undecided | 31 | 196 | 227 |
| Total | 1652 | 1226 | 2878 |

1. (b) ; 2. (a) ; 3. (a)

**Solutions for 4 – 10:**

Let us assume total Sugarcane Production = 100*x*

Sugarcane used = 80*x*

Imported from Pakistan = 16*x*

|  |  |  |  |
| --- | --- | --- | --- |
|  | Homegrown | Imported from Pakistan | Total |
| Jaggery | 16*x* | 4*x* | 20*x* |
| Sugar | 24*x* | 5*x* | 29*x* |
| Dry Juice | 40*x* | 7*x* | 47*x* |

Total sugarcane for Sugar production = 1885 tons

⇒ 29*x* = 1885 tons

⇒ *x* = 65

Total sugarcane production = 6500 tons

Sugarcane used = 5200 tons

Imported from Pakistan = 1040 tons

|  |  |  |  |
| --- | --- | --- | --- |
|  | Homegrown | Imported from Pakistan | Total |
| Jaggery | 1040 | 260 | 1300 |
| Sugar | 1560 | 325 | 1885 |
| Dry Juice | 2600 | 455 | 3055 |

4. (b)

5. (b)

 = 16%

6. (b)

7. (c)

 = 20%

8. (a)

Sugarcane used for Jaggery = 1300

Sugarcane used for Sugar = 0.9 × 1885 = 1696.5

Sugarcane used for Dry Juice = 0.92 × 3055 = 2810.6

Total sugarcane used = 5807.1 tons

9. (c)

Sugarcane used in total = 0.9 × 6240 = 5616

Sugarcane homegrown = 5200

Sugarcane from Pakistan = 5616 – 5200 = 416 tons

Percentage reduction =  = 60%

10. (b)

Homegrown sugarcane used = 5200 × 1.15 = 5980 tons

Imported sugarcane from Pakistan used = 1040 × 1.1 = 1144 tons

Imported sugarcane from Sri Lanka = 250 tons

Imported sugarcane from Sri Lanka as part of total =  = 3.39%

**Solutions for 11 – 15:**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Paperback** | **Hardbound** | **Total** |
| Quantitative | 324 | 243 | 567 |
| LRDI | 81 | 171 | 252 |
| Verbal | 405 | 276 | 681 |
| Total | 810 | 690 | 1500 |

11. (d)

12. (b)

 = 32.14%

13. (c)

14. (b)

 = 27%

15. (d)

 = 85.18%

**Solutions for 16 – 20:**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Industrial Waste** | **Domestic Waste** | **Total** |
| R1 | 420 | 540 | 960 |
| R2 | 630 | 692 | 1322 |
| R3 | 350 | 500 | 850 |
| R4 | 1400 | 168 | 1568 |
| R5 | 700 | 600 | 1300 |
| Total | 3500 | 2500 | 6000 |

16. (a)

 = 10%

17. (c)

18. (c)

 = 21.67%

19. (b)

 = 6.72%

20. (b)

**Solution Exercise – Medium**

**Solutions for 1 – 5:**

1. (b)

It is said that Gopal and Ram invested equal amounts initially. Let the amount paid by both of them to Krishna be 2*x* and 3*x* respectively. Gopal further invested Rs. 2 lakh. Hence, we can say (2*x* + 2) = 3*x* or *x* = 2 lakh. Hence, the initial amount paid by Gopal and Ram to Krishna is 4 lakh and 6 lakh. So Gopal and Ram together put in (6 + 6) = 12 lakh initially (note that this includes Rs. 2 lakh put in by Gopal later). The total revenue generated is 25% of 12 lakh = 3 lakh. The revenue from coconut and lemon trees are in the ratio 3 : 2. Hence, 3 lakh when divided in the ratio 3 : 2 gives Rs. 1,80,000 from coconut and Rs. 1,20,000 from lemons. And since each coconut costs Rs.5, the total output of coconut would be: (180000/5) = 36000

2. (a)

Lemon and coconut trees were planted on equal areas of land, viz. 5 acres each. The value of lemon output per acre of land = (120000/5) = 0.24 lakh per acre.

3. (a)

The total revenue of Rs.3,00,000 was divided equally by Gopal and Ram. Hence, the amount received by Gopal in 1997 = (300000/2) = Rs. 1.5 lakh

4. (b)

The ratio of the number of trees of coconut and lemon was 5 : 1. Since the number of lemon trees is 100, the number of coconut trees is 500. So they totally obtained a revenue of Rs.1,80,000 from 500 coconut trees. Hence, the value per tree = (180000/500) = Rs. 360.

5. (d)

We have not been given the cost of one lemon. In the light of this fact, we cannot find the number of lemons produced and hence the required ratio cannot be determined.

**Solutions for 6 – 11:**

6. (b)

Let us assume the number of Children born = 100

Die because of infancy = 10

Die till age of 5 = 10

Remaining children = 80

Child laborers = 

Remaining will be = 

Enrolled in the schools = 

Total students attending the school = 

Students able to reach class 5th =  = 11% approx.

7. (d)

Number of child laborers in Africa = 6 Million

8. (a)

Child laborers in the 2 countries taken together = 

9. (d)

Since we do not know how many girls reach std X, the answer cannot be found.

10. (c)

Number of female literates

= 

Number of male literates

= 

∴ Total literates = (16.2 + 27) million = 43.2 million.

11. (c)

Total illiterates in Africa = 90 – 43.2 = 46.8 Million

∴ Number of illiterates in South Sudan and Zambia



**Solutions for 12 – 15:**

**O = Over ; M = Maidens ; R = Runs ; W = Wickets ;**

**SR = Strike Rate ; A = Average ; ER = Economy Rate**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Bowler** | **O** | **M** | **R** | **W** | **SR** | **A** | **ER** |
| Umar Gul | 8 | 0 | 69 | 0 | - | - | 8.62 |
| Razzak | 2 | 0 | 14 | 0 | - | - | 7 |
| Riaz | 10 | 0 | 46 | 5 | 12 | 9.2 | 4.6 |
| Ajmal | 10 | 0 | 44 | 2 | 30 | 22 | 4.4 |
| Afridi | 10 | 0 | 45 | 0 | - | - | 4.5 |
| Hafeez | 10 | 0 | 34 | 1 | 60 | 34 | 3.4 |
| Zaheer | 9.5 | 0 | 58 | 2 | 29.5 | 29 | 5.91 |
| Yuvraj | 10 | 1 | 57 | 2 | 30 | 28.5 | 5.7 |
| Harbhajan | 10 | 0 | 43 | 2 | 30 | 21.5 | 4.3 |
| Patel | 10 | 1 | 40 | 2 | 30 | 20 | 4.0 |
| Nehra | 10 | 0 | 33 | 2 | 30 | 16.5 | 3.3 |

12. (b) ; 13. (b) ; 14. (a) ; 15. (d)

**Solutions for 16 – 20:**

Capital = 20 lakhs + 80 lakhs = 1 crore

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **1st Year** | | **2nd Year** | |
|  | **CP per pipe** | **SP per pipe** | **CP per pipe** | **SP per pipe** |
| Plastic Pipe | 360 | 600 | 360 | 700 |
| Steel Pipe | 900 | 1300 | 900 | 1300 |

In the 2nd year equal time was divided for Plastic and Steel pipes, hence 5000 plastic and 2500 steel pipes were manufactured.

Total CP in 2nd year = (360 × 5000) + (900 × 2500) = Rs. 4050000

Total SP in 2nd year = (5000 × 700) + (2500 × 1300) = Rs. 6750000

Profit in 2nd year = 2700000

Profit in 1 year =  = Rs. 2250000

Each plastic pipe will require .02 days and each steel pipe will require .04 days. As capacity utilization was 100% in first year we get the following equations (p = plastic pipes, s = steel pipes):

0.02 *p* + 0.04 *s* = 200 ..... (1)

240 *p* + 400 *s* = 2250000

Solving (1) and (2) we get:

*p* = 6250 pipes

*s* = 1875 pipes

16. (b)

17. (a)

Difference in sales = (6250 × 600) – (1875 × 1300) = 1312500

18. (c)

Profit in first year = 2250000

As a percentage of investments =  = 22.5%

19. (d)

Each plastic pipe takes 0.02 days and each steel pipe takes 0.04 days. So the ratio will be 0.02:0.04 = 1:2

20. (a)

Plastic pipes = 5000, Steel pipes = 2500.

**Solution Exercise – Difficult**

**Solutions for 1 – 4:**

1. (a)

The minimum return will be gained if the extraordinary performing stocks (double & 1.5 growth) are the ones whose expected returns are lowest (*i.e*. 10% & 20%). Taking the minimum value of the expected returns as 10. We have to see which of the two values of 10 and 20 multiplied by 2 and 1.5 and vice versa yields the minimum value. Hence comparing the minimum value between 20 × 2 + 10 × 1.5 and 20 × 1.5 + 10 × 2, the 2nd one is minimum. Hence the minimum average return is:

= 

2. (b)

If the average return is 35%, then the total return is 35 × 4 = 140. The only possible arrangement of 140 being 40 × 1.5 + 30 + 20 × 2 + 10.

A = 20 × 2 (Cement or IT)

B = 10

C = 30

D = 40 (1.5) (Steel or Auto)

From the data given in the question we see that A has to be Cement or IT. D is Steel or Auto. Hence statements (II) and (III) are correct.

3. (c)

Total return is 38.75 × 4 = 155

The possible arrangement is 20 + 10 + 30 × 1.5 + 40 × 2.

Hence,

A = 20, B = 10, C = 30 (Steel or Auto)

D = 40 (Cement or IT)

Hence, statements (I) and (IV) are correct.

4. (b)

Given C = Cement or IT industry

C’s Return is 30 × 2 = 60%

Among the other values we see that the possible arrangements can be

10 × 1.5 + 20 + 40 or

10 + 20 × 1.5 + 40 or

40 + 20 + 40 × 1.5

The average returns will be in each case

= 

= 

= 

Considering 33.75% as the valid value, then B belongs to the Auto industry. Hence (II) and (IV) are correct.

**Solutions for 5 – 9:**

Let the cost of the acquired companies Arcelor, JLRA and PT Arutmin be A, J and P respectively and the net worth of Bhambani, Hittal and Sirla be B, H and S respectively.

Then, 

Also B, H and S = 1170, 1200 and 1560 (Not in any order)

Now 



And 

For A to be positive, Sirla’s net worth will be 1560.

Bhambani’s net worth = 1170 or 1300

Hittal’s net worth = 1300 or 1170

Calculating the value of the firms on basis of these two cases we get:



= 1664 or 2392

Similarly, 

= 936 or 1248

And P = 1430 or 390.

|  |  |  |
| --- | --- | --- |
|  | **Case 1** | **Case 2** |
| Bhambani | 1300 | 1170 |
| Hittal | 1170 | 1300 |
| Sirla | 1560 | 1560 |
| Arcelor | 1664 | 2392 |
| JLRA | 936 | 1248 |
| PT Arutmin | 1430 | 390 |

5. (d) ; 6. (c) ; 7. (d) ; 8. (d) ; 9. (a)

**Solutions for 10 – 15:**

|  |  |  |
| --- | --- | --- |
| **Depot** | **Message dropped at** | **Travel time of Aakash** |
| M1 | 9:00 am | – |
| M2 | 9:30 am | 30 minutes |
| M3 | 10:00 am | 30 minutes |
| M4 | 10:30 am | 30 minutes |
| M5 | 11:27 am | 15 minutes (10 kms with speed of 40) + 30 minutes (break time) + 12 minutes (10kms with speed of 50) |
| M6 | 11:51 am | 24 minutes |
| M7 | 12:15 am | 24 minutes |
| M8 | 12:39 am | 24 minutes |

10. (b)

Commandant from M1 leaves at 9:30 am with speed of 50 kmph. To reach M3 he will take =  = 48 minutes. So, he reaches M3 at 10:18 am. So, they will never meet as M1 crosses M3 before 10:30 am the time at which M3 leaves.

11. (d)

Break time of Aakash will be 10kms away from M4. So his break will start at 10:30 am +  = 10:45 am. The break will continue till 11:15am. So, M1, M2, M3 and M4 who so ever reached the point of Aakash’s rest from 10:45 am to 11:15 am will meet Aakash.

M1 = 9:30 +  = 10:54 am

M2 = 10:00 +  = 11:04 am

M3 = 10:30 +  = 11: 10 am

M4 = 11:00 +  = 11:15 am

So, all the 4 meet Aakash at the resting point.

12. (c)

Time taken by M1 = 9:30 +  = 12:18 pm

Time taken by M3 = 10:30 +  = 12:44 pm

Waiting time = 12:44 pm – 12:18 = 26 minutes

13. (b)

Aakash reaches M8 = 12:39 pm

Commandant from M1 reached M8 = 12:18pm

Difference = 12:39 – 12:18 = 21 minutes

14. (a)

There will be a difference of 48 minutes between M5 and M7.

15. (b)

Commandant from M1 reached M3 at 10:18 am.

If the commandant from M3 takes only 10 minutes, then he will leave his depot at 10:10 am.

So, M3 leaves 8 minutes before M1 reaches. So, M3 must have covered a distance of  = 6kms.

So, time taken by M1 to catch M3 =  = 1 hours 12 minutes after 10:18am i.e. they will meet at 11:30 am.

**Solutions for 16 – 20:**

16. (c)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Day 1** | **Day 2** | **Day 3** | **Day 4** | **Day 5** |
| Start Price | 100 | 90 | 100 | 110 | 120 |
| End Price | 90 | 100 | 110 | 120 | 110 |

17. (d)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Day 1** | **Day 2** | **Day 3** | **Day 4** | **Day 5** |
| Start Price | 100 | 90 | 100 | 110 | 120 |
| End Price | 90 | 100 | 110 | 120 | 110 |

Let initial amount with Chetan and Michael is *y*.

Total money with Chetan = *y* – 900 + 1000 + 1100 + 1200 – 1100 = *y* + 1300

Total money with Michael = *y*

Therefore Chetan ended up with Rs.1300 more cash than Michael.

OR

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Day 1** | **Day 2** | **Day 3** | **Day 4** | **Day 5** |
| Start Price | 100 | 90 | 100 | 110 | 100 |
| End Price | 90 | 100 | 110 | 100 | 110 |

Let initial amount with Chetan and Michael is *y*.

Total money with Chetan = *y* – 900 + 1000 + 1100 –1000 + 1100 = *y* + 1300

Total money with Michael = *y*

Therefore Chetan ended up with Rs.1300 more cash than Michael.

Therefore at the end of day 4 the price of share cannot be uniquely determined.

18. (a)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Day 1** | **Day 2** | **Day 3** | **Day 4** | **Day 5** |
| Start Price | 100 | 90 | 80 | 90 | 100 |
| End Price | 90 | 80 | 90 | 100 | 110 |

Assume initial number of share with Chetan and Michael is *x*. In the above table Chetan buy 10 shares each on day 1, day 2 and sold 10 shares on day 3, day 4 and day 5.

∴ Total shares with Chetan is *x* – 10.

In the above table Michael buy shares only on day 2.

∴ Total shares with Michael is *x* + 10.

∴ Michael had 20 shares more than Chetan.

Therefore at the end of day 3 the price of share is Rs. 90.

19. (d)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Day 1** | **Day 2** | **Day 3** | **Day 4** | **Day 5** |
| Start Price | 100 | 90 | 100 | 110 | 120 |
| End Price | 90 | 100 | 110 | 120 | 110 |

Let initial amount with Chetan and Michael is *Y*.

Total money with Chetan = *Y* − 900 + 1000 + 1100 + 1200 − 1100 = *Y* + 1300

Total money with Michael = *Y* + 1200

Therefore difference between Chetan and Michael is Rs. 100 and Number of shares with Michael and Chetan is same.

20. (d)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Day 1** | **Day 2** | **Day 3** | **Day 4** | **Day 5** |
| Start Price | 100 | 110 | 120 | 130 | 120 |
| End Price | 110 | 120 | 130 | 120 | 110 |

Let initial amount with Chetan and Michael is *Y*.

Chetan sold shares on Day 1, Day 2, and Day 3 whereas buys shares on Day 4 and Day 5.

Total Money with Chetan is = *Y* + 110 × 10 + 120 × 10 + 130 × 10 − 120 × 10 − 110 × 10 = *Y* + 1300

Total money with Michael = *Y* + 120 × 10 + 130 × 10 + 120 × 10 = *Y* + 3700

Total money with Michael & Chetan = 2*Y* + 5000.

Therefore maximum possible increase is 5000.