PROFIT& LOSS

Drill 1: Solutions

Exercise 1

a. *Answer:* 300%
   Explanation:
   Given Tag price   = Rs.5400
   Discount   = 20%
   Cost Price of the dress = Rs.1080
   From the shop owners point of view
   Cost price of the dress is   Rs.1080
   Marked price of the dress is Rs.5400
   Discount = 20% of 5400
   = Rs.1080
   Profit/loss incurred by the shopkeeper
   To find the profit/loss, we have to know the selling price.
   Discount   = Rs.1080
   Selling price = Marked price - Discount
   = 5400 - 1080
   = Rs.4320
   Profit   = SP - CP
   = 4320 - 1080
   = Rs.3240
   Profit % or loss %
   Profit %   = (Difference between SP and CP) / CP *100
   = (4320 - 1080) / 1080 *100
   Profit %   = 300%

c. *Answer:* 1%
   Explanation:

First Transaction	Second transaction
SP = Rs.198 lakhs	SP = Rs.198 lakhs
Loss = 10%	Gain = 10%

   Net profit or loss percentage
   In order to find profit/loss %, we have to find the CP.
   For 1st transaction, SP   = 0.9 CP
   198 = 0.9 CP

$$\therefore \qquad CP = 198 / 0.9$$
$$= Rs.220$$

For 2nd transaction, SP = 1.1CP

$$198 = 1.1CP$$
$$\therefore \quad CP = 198/1.1$$
$$= Rs.180$$

On both the transactions,

Total CP = 220 + 180
= Rs.400

∴ Total SP = 198 + 198
= Rs.396

∴ Loss = Rs.400 - 396
= Rs.4

∴ Loss % = 4/400 * 100
= 1 %

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d. _Answer:_ 25%

Explanation:

Assume He gets a total of 8000g and let the cost price of 1000g be Rs.1000.

Total amount of goods = 8000g

CP of 1000g = Rs.1000 (or) CP of 1 packet = Rs.1000

∴ Total CP = Rs.8000

He sells 800 g instead of 1000 g,

∴ Number of 800g packets in 8000g = 8000g/800g
= 10packets

∴ SP of 10 packets = 10 * 1000
= Rs.10000

∴ Profit = SP - CP
= 10000 – 8000
= Rs.2000

Profit% = (profit/CP) *100
= (2000/8000) *100
= 25%

Drill 2

a. _Answer:_

Explanation:

Share is taken after giving the 2% of profit to charity.

A	:	B
4	:	3
854	:	-

B's share = (3/4) * 854 = 640.5

b. _Answer:_ 14,000

Explanation:

This problem comes under variable investment Dhivya and Ramya invested 1 lakh each
So,

	D	:	R
	1 lakh	:	1 lakh

At the end of 6 months Ramya predicts the loss and withdrew 60,000. So Ramya invested 1lakh for First 6 months and for the next 6 months she is investing only 40,000.

	D	:	**R**
For the first 6 months	1L*6	:	6*1L
	6L	:	6L
For the next 6 months	6*1L	:	6*40,000
	6L	:	2.4L
Total investment	12L	:	8.4L

Investment Ratio is

$$12L : 8.4L$$
$$\mathbf{10} : \mathbf{7}$$

They got 34,000 as profit   17x = 34000
                                           X = 2000
So,

	D	:	R
	20,000	:	14,000

Dhivya's share is 20,000 and Ramya's share is **14,000**.

DRILL 3:

a. _Answer:_ 29,348.

Explanation:

31,348; 26,348; 23,348; 27,348; 32,348; 35,348

Average = $(total\ value)/(number\ of\ items)$

= (31,348+26,348+23,348+27,348+ 32,348+35,348)/6

= **29,348**

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b. _Answer:_ 23,456.6

Explanation:

As the last person has lost his money, sum up the money of the first five people and divide it by 6, since it is to be shared among 6 people.

Average = $(total\ value)/(number\ of\ items)$

$$= (31{,}348+26{,}348+23{,}348+27{,}348+ 32{,}348)/6$$
$$= \mathbf{23{,}456.6}$$

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c. *Answer:* 28,148

Explanation:

If the last person is not coming then the amount with each of them would be the average of the other five.

Average = $(total\ value)/(number\ of\ items)$

$$= (31{,}348+26{,}348+23{,}348+27{,}348+ 32{,}348)/5$$
$$= \mathbf{28{,}148}$$

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d. *Answer:* not possible

Explanation:

They wouldn't have given any money to the orphanage, since their expense is greater than average.

Drill 4:

a. *Answer:* 88 kg

Explanation:

Total weight = 68X4

$\qquad$ = 272

Including John, total weight = 72X5

$\qquad\qquad\qquad\qquad$ = 360

John's weight = 360 - 272

$\qquad\qquad$ = **88kg**

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b. *Answer:* cannot be determined

Explanation:

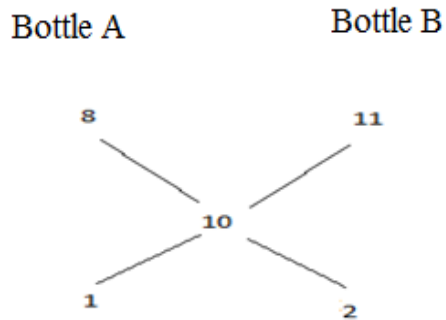Since strength is not given, we cannot find the average height of the students.

Drill 5:

a. *Answer:* 2 litres

Explanation:

An 8% solution and an 11%solution are mixed and the resultant mixture is 10%by using rule of allegation.

Bottle A   Bottle B

2 Litres of sugar solution from bottle B is mixed with 1 litre of Bottle A.
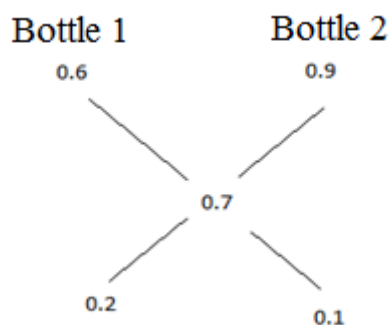
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b. *Answer:* 2:1
   Explanation:
   First Bottle   : Concentration of Milk is 0.6
   Second Bottle: Concentration of Milk is 0.9
   Resultant mixture is 0.7

   By rule of allegation,

   Resultant Ratio = **2:1**
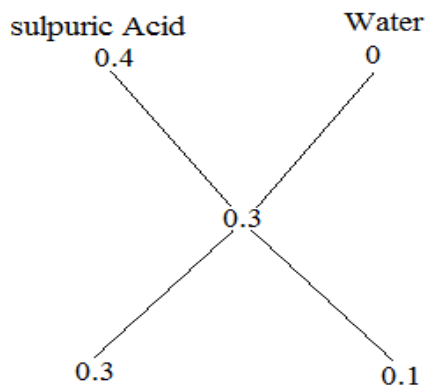
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c. *Answer:* 6.66
   Explanation:
   20ml of Sulphuric acid of concentration 0.4 is diluted by adding water and it becomes 0.3.
   In water there is no H_2SO_4. Hence the concentration of water is 0.
   By rule of allegation,

Ratio of Sulphuric acid to Water = 3:1

3 parts of Sulphuric acid is mixed with 1 part of water.

Total 20ml and 1/3rd of it is 20/3 = 6.66

If 6.66ml of water is added to 20ml of Sulphuric acid, the resulting concentration will be **6.66.**

Googly Questions

1. _Answer:_ **Wrong**

   Explanation:

   The second discount of 30% should have been taken from the value obtained after [(Original price) – (20% of the Original price)].

   Adding the discounts will not give us a proper answer.

   For example, consider Rs.100 to be the original price.

   20% of 100 is 20.

   So the price will now be Rs. 80 on which 30% discount is given.

   The final price will be Rs. 56, which is **44%** of the original price.

   So the method given in the handout is **wrong**.

2. _Answer:_ **Wrong**

   Explanation:

   A discount of 25% on 125 does not nullify the 25% mark up given initially because the marked price will be Rs. 125 and a discount of 25% is given on Rs. 125.

   The selling price will be Rs.93.75.

   The method given in the handout is **wrong**.

3. _Answer:_ **Wrong**

   Explanation:

   He makes a profit of 2 litres for every 8 litres and not 10. The profit made is 2/8 *100 = 25%.The method given in the handout is **wrong**.

4. _Answer:_ **Wrong**

   Explanation:

We must consider the weighted average and not the normal average.

Based on the solution given in the handout it looks like they have taken into consideration marks only for two semesters.

It should have been 70% for 6 semesters and 80% for one semester and calculated it using the weighted average.

(70*6+80)/7 = 71.4.

The method given in the handout is **wrong.**

5. _Answer:_ **Wrong.**

   Explanation:

   'A' should be making a profit of Rs.25 as 'B' is absent, but based on the solution A makes only Rs.24.

   The solution is **wrong**.

   The correct answer is Rs.0.46 per chocolate as A has to sell 60 chocolates for Rs.25.

Concept Review Question

1. _Answer:_ option b

   Explanation:

   SP of 10 articles = CP of 11 articles

   10SP = 11CP

   SP   = 11/10CP

   SP   = 1.1CP

   Therefore **10%** profit

2. _Answer:_ Option a

   Explanation:

   Expenditure = Price*Consumption

   To keep expenditure as a constant, if price is increased, Consumption should be decreased.

   Percentage increase is 10%

   (1/10) increase means (1/11) decrease which is **9.09%**

3. _Answer:_ option b

   Explanation:

   Cost price   = Rs.120

   Selling price = Rs.145

   Profit%   = (Difference/base) *100

                  = [(145-120)/120]*100

                  = (25/120)*100

   Profit%   = **20.83**

4. *Answer:* option b

   Explanation:

   Cost price of scooter = Rs.20, 000

   Insured amount   = 80% of 20,000

                       = Rs.16, 000

   Amount compensated by insurance company = 80% of 16,000

                                           = Rs.10, 800

   Therefore, 20,000-10800 = Rs. 7200

           ∴ Loss %   = (7,200/20,000) *100

                            = **36%**

5. *Answer:* option a

   Explanation:

   Let us assume that the cost price of the article is Rs. Y and selling price is Rs. X

   When CP is Y, you will incur a profit of 10%

   When CP is Y-88, you will incur a loss of 10%

   Therefore, 20 %(Y-Y-88) of CP = 88

           100% of CP   = **Rs.440**

6. *Answer:* option a

   Explanation:

First Transaction	Second transaction
SP = Rs.199	SP = Rs.199
Loss = 10%	Gain = 10%

   Net profit or loss percentage

   In order to find profit/loss %, we have to find the CP.

   For 1st transaction, SP = 0.9 CP

                   199 = 0.9 CP

      ∴   CP = 199 / 0.9

                    = Rs.221.111

   For 2nd transaction, SP = 1.1CP

                 199 = 1.1CP

        ∴ CP = 199/1.1

                 = Rs.180.909

   On both the transactions,

      Total CP = 221.111 + 180.909

             = Rs.402.02

   ∴ Total SP = 199 + 199

            = Rs.398

   ∴ Loss   = Rs.402.02 - 398

            = Rs.4.02

   ∴ **Loss %   = 4.02/402.02 * 100**

          = 1 %

7. *Answer:* option a

   Explanation:

   Their investment ratio is given as 4:5
   Profit earned is Rs.2700 has to be divided with respect to the investment ratio 4:5

   9x = 2700
   X   = 300
   A   :   B
   4x   :   5x
   1200 : 1500

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8. *Answer:* option b

   Explanation:

   Monish investment is Rs. 80,000.Six months later Mani joined with Rs.1,40,000
   Monish invested 1, 40,000 only for ½ year or 6 months
   Monish : Mani
   80,000 : 1, 40,000*1/2
   80,000 : 70,000
         8 : 7
   Profit is 37500
   Monish   : Mani
       8x   :   7x
   Share of Mani is (7/15)*37500 = **Rs.17500**

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9. *Answer:* option a

   Explanation:

   A puts 10 oxen for 7 months so 10*7 = 70 units
   B puts 12 oxen for 5 months so 12*5 = 60 units
   C puts 15 oxen for 3 months so 15*3 = 45 units.
   Totally A, B & C put 175 units and they paid Rs.175 for 175 units.
   So 1 unit = Re.1.
   We know that C uses 45 units so C's share of the rent is **Rs.45.**

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10. *Answer:* option c

    Explanation:

    In 5 overs, the run rate➔ 4.6
    Therefore runs scored for 5 overs = 4.6*5
                                        = 23 runs
    Our target   = 183 runs
    Runs to be scored = 183-23 = 160 runs in 15 overs
    Therefore required run rate = run rate/overs
                      = 160/15 = **10.67**

11. *Answer:* option c
Explanation:

$$\text{Average} = \frac{(\text{Average} \ast \text{stength}) \text{of A} + (\text{Average} \ast \text{stength}) \text{of B}}{\text{Strength of (A+B)}}$$

= [(78*32)+(38*96)]/(32+96)
= 6144/128
= **48**

12. *Answer:* option a
Explanation:

$$\text{Average} = \frac{(\text{Average} \ast \text{stength}) \text{of A} + (\text{Average} \ast \text{stength}) \text{of B}}{\text{Strength of (A+B)}}$$

35 = [(28*53)+(42*B)]/(70)
= [1484+(42*B)]/70
B = 966/42
= **23.**

13. *Answer:* option a
Explanation:
The mark was wrongly entered as 83 instead of 63. So the excess mark is 20.
It is said that this 20 marks has resulted in increase of ½ marks for each student.
Therefore, 2 students together make 1 mark.

Let x be the number of students. ½*x = 20
∴x = **40**

14. *Answer:* option c
Explanation:
1st variety is Rs. 15
2nd variety is Rs.20
Mixture price is Rs.16.50

Rs.15   Rs.20

Rs.16.50

Rs.3.50   Rs.1.50
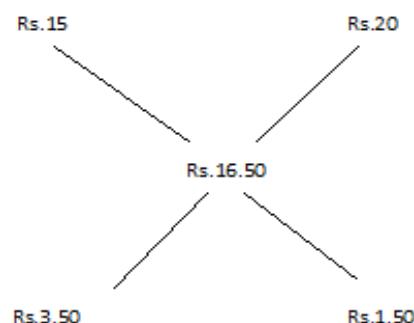
The ratio is 7:3

15. *Answer:* option b

Explanation:

Let X be initial quantity of milk in mixture

Cost of x+ (10l of water)   = Rs.80

Now, if 10 litre of water is replaced with milk, the price is going to be Rs.100.

Therefore from this, 10 litres of milk costs of Rs.20

Therefore cost of mixture = Rs.80

Cost of 10 litres   = Rs.20

For Rs.80, the mixture would contain **40 litres** of milk since water is free of cost.