PERCENTAGES FROM CSS PAST PAPERS:-

SUBMITTED BY: 31154-Momina Naveed-056

2017 Q#7 (a):-

A man buys 5 kg of meat at Rs.500 per kg. In addition, for every kilogram of meat purchased, he has to pay a consumption tax of 6% on the selling price. Calculate the total amount of money that he has to pay. (5 marks)

GIVEN: 1 kg meat price = Rs. 500

Consumption tax of 1 kg = 6%.

REQUIRED: Total amount of money to be payed = ?

SOLUTION:

FORMULA: Total amount = Total price + Total tax

SOLUTION: → Total price : As 1 kg meat = Rs. 500

So, 5 kg meat = 5 × 500

$$= 2500 \text{ Rs.}$$

→ Total tax: As tax on 1 kg = 6% and price of 1 kg meat is 500 So: 1 kg = 6% × 500

$$= \frac{6}{100} \times 500$$

$$1 \text{ kg} = 30 \text{ Rs.}$$

The customer has bought 5 kg meat, so total tax on 5 kg meat will be:

	R.W
5 kg = 30 × 5	30
= 150 Rs.	× 5
	150
→ Putting values in formula:	2500
Total amount = 2500 + 150	+ 150
Total amount = 2650 Rs.	2650

RESULT:- Total amount to be payed = Rs. 2650.

2018 Q#6 (a):-

It takes 3 litres of paint to cover an area of 24 square meters. What percentage increase in the quantity of paint would be required to cover an area of 50.4 square meters? (5 marks)

GIVEN: 3 litres of paint covers an area of 24 sqm.

REQUIRED: Percentage increase in quantity of paint required to cover an area of 50.4 sq m = ?

FORMULA: Percentage increase = $\frac{\text{New} - \text{old}}{\text{old}} \times 100\%$

Here New means the amount of paint required to cover 50.4 sq m area and old means the amount of paint required to cover an area of 24 sq m.

SOLUTION: To find Percentage increase, we have to find the total amount of paint required to cover an area of 50.4 sq m:

If   3 litres paint = 24 sq meter

Then   x litres paint = 50.4 sq meter

By cross multiplication, we get:

$24 \times x = 3 \times 50.4$

$24x = 151.2$, Solving for x

$x = 151.2/24$

$x = 6.3$

So, amount of paint required to cover an area of 50.4 sq meter = 6.3 litre

→ Putting values in formula:

Percentage increase = $\dfrac{6.3 - 3}{3} \times 100\%$

$= \dfrac{3.3}{3} \times 100\%$

$= 1.1 \times 100\%$

Percentage increase = 110%

RESULT: The percentage increase in quantity of paint required to cover an area of 50.4 sq m = 110%.

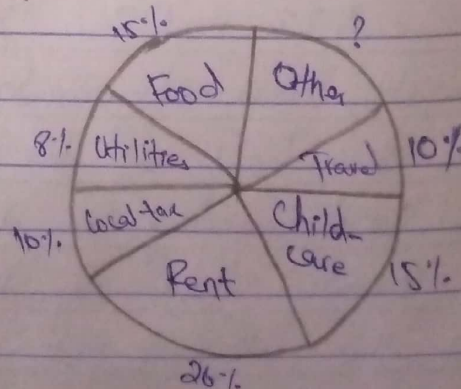Error Check: 110% of $3 = 3.3$ So $3 + 3.3 = 6.3$

R.W
50.4
x 3
151.2

63
24) 1512
144
72
72

Error Check

100	72
x 11	
100	x
100x	
1100 =) 110.0

2018 Q#7:-

The breakdown of average monthly expenditure for a family is given in the following figure:

GIVEN: Figure as Given data.

REQUIRED: (A) Calculate from the figure what percentage of the family's expenditure is on 'other'

(B) Approximately what fraction of the family's monthly expenditure do 'utilities', 'rent' and 'food' represent?

(C) If the family spends Rs. 1600 on utilities, how much is the family's total expenditure?

(D) 'Other' expenditure comprises savings, entertainment and luxury items, which are spent in the ratio 3:4:1. Calculate how much the family saves each month if monthly income is 24000.

SOLUTION :

a) Percentage of family's expenditure on 'others'.

As, the expenditure of family are divided in 100 parts, so by substracting the percentages of all expenditures from 100%, we will get the total percentage of 'others':

$$= 100\% - (10\% + 15\% + 26\% + 10\% + 8\% + 15\%)$$

$$= 100\% - 84\%$$

$$= 16\%.$$

So, the percentage of family's expenditure on 'others' = 16%.

b) Fraction of family's monthly expenditure on 'utilities', 'rent' and 'food':

As from figure, the percentage of expenditure on 'utilities' = 8%, 'rent' = 26% and 'food' = 15%. So:

$$= 8\% + 26\% + 15\%$$

$$= 49\% . \quad OR \quad ^{49}/_{100} \text{ (fraction form)}$$

So, it should be concluded that these three portions represents the half of the total expenditure.

c) Total spending on utilities = 11600

Family's total expedition = ?

As, the utilities portion covers 8% of total expenditure

(according to figure), So:

$$= \frac{11600 \times 100}{8} = \frac{1160,000}{8}$$

$$= 145,000 \, Rs.$$

So, the total expedition of family = 145,000 Rs.

d) Family income = 24000 Rs.

Ratio of 'other' expenditure = 3:4:1

Savings of family = ?

As, the 'other' portion covers 16% of family expedition / income

So, 16% of 24000 = $\frac{16}{100} \times 24000$

$$= 3840$$

→ To find savings: Savings: Entertainment ; luxury items = 3:4:1

⇒ 3 + 4 + 1 = 8   How to find Savings:

$$= \frac{3}{8} \times 3840 = 1440.$$

So, the family saves Rs. 1440 each month if their monthly income is Rs. 24000.

→ Error Check: Spending on entertainment = $\frac{4}{8} \times 3840 = 1920$

Spending on luxury items = $\frac{1}{8} \times 3840 = 480$ ⇒ By adding them,

Sper Savings + Entertainment + luxury items = 1440 + 1920 + 480

$$= 3840$$

2019 Q#6 (b):-

The cost of hiring a car for 2 days in 2018 was Rs. 264 which was 20% more than in 2013. What was the cost of hiring a car in 2013?

GIVEN: Cost of hiring a car in 2018 = Rs. 264

Cost of hiring a car in 2018 = 20% more than in 2013

REQUIRED: Cost of hiring a car in 2013 = ?

R.w
11600
× 100
00000
0 00000×
11600××
1160000

FORMULA: Cost in 2013 = Cost in 2018 − % Increase in cost of 2018 from 2013.

SOLUTION: As from the given statement, it is clear that there was an increase in the cost of hiring a car from 2013 to 2018 & this increase was given in the percentage (i.e., 20%). So this means that means that the hiring cost of 2018 must be greater than that of 2013, so to find out the cost in 2013, one should subtract the total increase from cost of 2018.

→ Total increase from 2013 to 2018:

Total increase = 20% increase. So it becomes

$$= 20\% \text{ of } 264$$

$$= \frac{20}{100} \times 264$$

Total increase = 52.8

→ Putting in formula:

Cost in 2013 = 264 − 52.8

= 211.2 Rs.

RESULT:- So, the cost of hiring car in 2013 was Rs. 211.2.

R.W
52.8
5 ⟌ 264
25
14
10
264   40
− 52   40
212   ×
212 − 0.8 = 211.2

2021 Q6 (c):- Mr. Faheem has dinner with his family at a restaurant which offers a 10% discount on food. The marked price of the food that they order was 15000/-. Given that there was a service charges of 10% and GST is 17%, calculate the total amount of money he has to pay. (5 marks).

GIVEN: Discount on food = 10%.

Total price of ordered food = 15000

Service charges = 10%. & GST = 17%.

REQUIRED: Total amount of money = ?

FORMULA: Total amount = Price of food after discount + calculated price of service charges & GST on discounted price

SOLUTION:

→ Finding price of food after discount: As, the discount was given on the ~~amount~~ price of food for ordered, so it should be subtracted first from total price of food:

Price of food after discount = Total price − Discount

$$= 15000 - 10\% \text{ of } 15000$$

$$= 15000 - \frac{10}{100} \times 15000$$

$$= 15000 - 1500$$

$$= 13500 \text{ Rs.}$$

R.W

```
    150   15000
  x  10  -1500
    000    13500
   150x
   1500
```

So, the price of food after 10% discount = Rs. 13500

→ Finding amount of service charges & GST: As, the service charges and GST both were to be added to the price, So first we have to find that amount from their percentages.

Percentage of service charges (10%) + Percentage of GST (17%) = 27%, So 27% of the price of food after discount

$$= 27\% \times 13500 \qquad = \frac{27}{100} \times 13500$$

$$= 3645 \text{ Rs.}$$

So, the extra amount to be added = Rs. 3645

```
    135   13500
   x27  x27
    945  17145
  270x
  3645
```

→ Putting values in formula:

Total amount = 13500 + 3645

$$= 17145 \text{ Rs.}$$

RESULT: So, the total amount to be paid = Rs. 17145.

2022 Q#6 (b):-

The income of a compananyt **decreased** by 10% and 15% in two successive years. What is the percentage of decrease in income after two years?

GIVEN: Decrease in company's income in 1st year = 10%.

Decrease in company's income in consecutive 2nd year = 15%.

REQUIRED: Percentage decrease in income after two yrs = ?

SOLUTION: Let the income of company before these years be 100, and the two consecutive years be 2021 and 2022.

So the income of country in 2020 = 100.

→ Decrease in income by 10% in 2021:

As given in the statement that the decrease in income in first year was 10%, so the total income of a company in 2021 will be:

Income in 2021 = Income in 2020 - 10% decrease of income in 2020

$$= 100 - 10\% \text{ of } 100$$

$$= 100 - \frac{\overset{10}{10}}{\underset{100}{100}} \times 100$$

$$= 100 - 10$$

Income in 2021 $= 90$

So, the income generated in 2021 was 90.

→ Decrease in income by 15% in 2022:

As given in statement that decrease in income was 15% in next year, So:

Income in 2022 = Income in 2021 - 15% decrease of income in 2021 income

$$= 90 - 15\% \text{ of } 90$$

$$= 90 - \frac{\overset{3}{15}}{\underset{2}{100}} \times 90$$

R.W

$3 \times 9 = 27$

$2 \overline{)27}$

$\frac{24}{10}$

$$= 90 - 13.5$$

Income in 2022 $= 76.5$

So, the income generated was 76.5

→ Finding decrease in income after two consecutive years.

As the income in 2020 was 100 and after decrease in two year, it was 76.5 in 2022. So,

$$100 - 76.5 = 23.5$$

For percentage decrease $= \dfrac{New - Old}{Old} \times 100\%$

New = income generated in 2022 = 76.5

Old = income in 2020 = 100.

$$= \dfrac{76.5 - 100}{100} \times 100\% \qquad = -23.5\%$$

This $-$ sign indicates decrease.

RESULT:

So, the percentage decrease in company's income after two years $= 23.5\%$.

Right margin calculations:
```
  9'0
- 13
 ----
  77

77 - 0.5 = 76.5

  1'1'
  100
   76
 ----
   24

24 - 0.5 = 23.5
```

2022 Q#8(c):-

During a sale a clerk was putting new price tags on each item. On one sweater, he accidentally raised the price by 20% instead of lowering the price by 20%. As a result the price on the tag was Rs.80 too high. What was the original price of the sweater?

GIVEN: Price of sweater after 20% increase = Rs. 80

REQUIRED: Original price of sweater = ?

FORMULA: Original price $= \dfrac{Increase\ price \times 100}{Percentage}$

SOLUTION: As the price increased by 20%, So Rs. 80 of a sweater highlights the 120% of price of sweater ~~original~~

Original price = $\dfrac{80}{120} \times 100$

= 66.666 OR

Original price = 66.67

RESULT: The original price of sweater = 66.67 Rs.

R.W
$3\overline{)200}$ = 66.6
18
20
18
20
18
20

2023 Q#8 (a):

Ali buys an oven for Rs. 36800 and sells it at a gain of 8.5%. For how much does he sell it?

GIVEN: Buying price = Rs. 36800
Percentage of Profit = 8.5%

REQUIRED: Selling price = ?

FORMULA: Selling price = Buying price + Profit ~~or~~

SOLUTION: As, he earned a profit of 8.5% so, to find out the amount of profit, we can do:

Amount of Profit = 8.5% of 36800

= 8.5% × 36800

= $\dfrac{8.5}{100} \times 36800$

Amount of Profit = 3128

→ Putting values in formula:

Selling price = 36800 + 3128

= 39928

→ Error Check: $\dfrac{36800}{39928}$ ~~New~~ New-Old × 100%

⇒ $\dfrac{39928 - 36800}{36800} \times 100\% = 8.5\%$

RESULT: Selling price of oven = Rs. 39928.

R.W
368
× 85
9840
2944×
3128.0

36800
+ 3128
39928