**MGT 6203 - SUMMER 2021 : Homework 3**

**Part 1 40 points**

**Q.1** From 2012 to 2018, which pricing model (Performance, CPM, Hybrid) has brought in the most revenue?

* 1. Performance pricing model
  2. CPM pricing model
  3. Hybrid pricing model
  4. All models have performed the same

**Explanation: Module 7, Video 3, Slide 13**

**Q.2** What does CPM stand for?

* 1. Cost Per Million
  2. **Cost Per Mille (Cost Per Thousand)**
  3. Counts Per Hundred
  4. None of the Above

**Explanation: CPM = Cost Per Mille = Cost Per Thousand**

**Q.3** Which of the following statements is correct with respect to Bounce Rate?

1. **Bounce Rate gives an indication of the proportion of visitors who did not interact with the website.**

1. Bounce Rate tells us how long, on average, visitors are staying on our website.

1. Bounce Rate increases when someone loads a page and decreases after 30 minutes of inactivity.

1. A high Bounce Rate generally indicates that the website entrance pages are very relevant to the website’s visitors.

Answer: A

Explanation: Statement A is correct.

B) Average Session Duration defines how long, on average, visitors are staying on the website.

C) A session starts right away when someone loads a page and ends after 30 minutes of inactivity.

D) A high Bounce Rate generally indicates that the website entrance pages are not relevant to the website’s visitors.

**Q.4** A company is doing an ad campaign where the details of the ad are presented below.

(Assume that a customer would purchase **twice** in his/her life-time upon being converted and makes his/her first purchase)

|  |  |
| --- | --- |
| Metric | Value |
| Avg CPC (Cost per click) | $1.05 |
| Conversion Rate | 7% |
| Avg Sale Value | $80 |
| Profit Margin | 20% |

What is the break-even price of average CPC per customer over lifetime?

1. $1.12
2. **$2.24**
3. $1.19
4. $2.48

**Solution: 32\*0.07 = 2.24**

PPC Conversion cost = $1.05/0.07 = 15

Profit Margin per sale = $80\*0.2 = 16

Profit Margin per customer over lifetime (excluding advertisement costs) = 32

Total profit per customer = 32 – 15 = 17

**For break even the cost = 32\*0.07 = 2.24**

**\*Q.5 Which of the following method of Improving Customer Conversion Rates involves splitting the traffic amongst two or more different versions of a webpage ?**

1. **Usability testing**
2. **Competitor Benchmarking**
3. **A/B Testing**
4. **Unit testing**

**Usability testing: it is the practise of evaluating the functionality of your webpage by testing it with actions and behaviours of users as they use the website.**

**Competitor Benchmarking: It is comparing your website against your competitors and evaluating your website’s functionality.**

**Segmentation : it is the division of the traffic based on some similar characteristic that can help to identify the targeted customers.**

**Q.6** A website that uses Google Analytics wants to know the percentage of visitors that do not interact with the website. Which metric should be used?

1. Page per sessions

1. Pageviews

1. Users

1. **Bounce Rate**

Answer: D

Explanation: The following is how every choice may be defined –

A: Page Per Session-dividing the total number of pageviews by the total number of sessions. It is good indicator of overall user engagement.

B: Pageviews -any view of a page that is being tracked by Google Analytics.

C: Users -Total number of unique visitors to the website

D: Bounce Rate -It is the number of single-page sessions (bounces) divided by the total number of sessions. It shows the proportion of visitors who did not interact with the website.

Questions 7-8 can be answered using case study: **Chase**

**Q.7** In the Chase case, Chase segmented customers based on the types of rewards they preferred. Which segmentation strategy does Chase use?

1. **Behavioural method**

1. Demographic method

1. Psychographic method

Answer: A

Explanation: The following line from the case study may be used to answer the above question–

“*Behavioral/attitudinal segmentation provided insight into how consumers used their cards andhow much they valued rewards and/or what types of rewards they preferred (cashback, miles, points) as well as their channel preferences.”*

Q.8 A complete economics of credit card transaction includes:

1. Card Issuer; Merchant Acquirer; Merchant

1. Card Issuer; Cardholder; Merchant Issuer; Merchant

1. **Card Issuer; Cardholder; Merchant; Merchant Acquirer; Credit Card Network**

1. Card Issuer; Cardholder; Merchant; Merchant Issuer; Credit Card Network

Answer: C

Explanation:

**Q9**

The following questions are based on the **Advertising** dataset ([Advertising\_Updated.csv](https://gatech.instructure.com/courses/94184/files/9878243/download?download_frd=1)). The sales and the advertising budgets (TV, Radio, Newspaper) are in thousands of dollars.

Load the data:

ad = read.csv('P:\\6203 TA\\Advertising.csv')

Run the following linear regression model:

lm <- lm(Sales~., data=ad)

Now that we have our linear regression model, let’s try to make a prediction for the sales given a new set of advertising budgets as follows:

new.dat <- data.frame(TV=200, Radio=10, Newspaper=20)

You are required to report the predicted sales as well as the lower and upper bound for the 95% prediction interval. What will you report?

1. The predicted sales value is $13,543.06, with a 95% prediction interval of $10,210.25 and $16,875.87.
2. The predicted sales value is $13,956.37, with a 95% prediction interval of $10,613.31 and $17,299.43.
3. The predicted sales value is $15,852.04, with a 95% prediction interval of $12,508.44 and $19,195.64.
4. The predicted sales value is $9,379.90 with a 95% prediction interval of $6,038.61 and $12,721.20.

Answer: B

Explanation: Use the predict function in R and change the interval to “prediction” and level to “0.95”.

Q.10 If a company is planning on investing an amount X in advertising. Which of the following is the safest investment option? (Assuming they all cost the same per unit)

1. CPM
2. CPV
3. CPC
4. **CPS**

**Answer:**Chart, line chart

Description automatically generated

**Instructions for Question 11 and 12:**

A popular vegan restaurant is known to have long waiting lines from 12-2 pm in the afternoon. Recently, due to an increase in the demand, the amount of time that customers wait in the queue has increased. The manager does not want to lose customers due to this and hence decides to set up another counter to increase the overall service rate. The arrival rate has increased to 58 customers/hour. The current service rate with 4 counters in the restaurant is 60 customers/hour. Assume M/M/1 model applies.

**Q.11** What is the average amount of time customers will wait in line under the current scenario? (in minutes)

1. 19 minutes
2. 25 minutes
3. **29 minutes**
4. 33 minutes

**Solution:**

**Q.12** On average, how many customers will be waiting in the queue after the manager introduces another counter? Total service rate with 5 counters is 65 customers/hour. (Round to the nearest integer)

A. 5

**B.** **7**

C. 9

D. 11

**Solution:**