

Calculating CPM and Profit for Digital Advertising

GrC 404

CPC – Cost per click – Price paid by the advertiser when a user clicks on an ad

CTR – Click through rate – Percentage of users who click on an ad

- Note – A/B testing can help marketers determine which ads are more impactful, subsequently improving CTR

Conv% – Conversion rate – Percentage of users who complete a purchase as a result of clicking on an ad.

Profit per unit sold – Gross profit per unit order, not including advertising costs.

CPM – Cost per M impressions – Ad costs per thousand times an ad is served.

Units sold per M – Units sold per M impressions – Number of sales per thousand times an ad is served.

CPA – Cost per acquisition (or cost per sale) – Search cost for a single unit sale.

Profit per M impressions – Profit per M impressions – Profit per thousand times ad is served after subtracting out ad costs.

Calculations:

$$\text{CPM} = \text{CPC} * \text{CTR} * 1000$$

$$\text{Units sold per M} = \text{CTR} * \text{Conv\%} * 1000$$

$$\text{CPA} = \text{CPM} / \text{Units sold per M}$$

$$\text{Profit per M impressions} = \text{Profit per unit sold} * \text{Units sold per M} - \text{CPM}$$

Key to comparing different ad metrics like CPC, CTR, Conv%... **convert to per M impressions.**

For the following problems, calculate your ad costs and your profit after ad costs:

1	Cost per click (CPC)	\$2.50
	Click through Rate (CTR)	1.5%
	Conversion rate	10%
	Profit per sale (before search cost)	\$30.00

2	Cost per click (CPC)	\$2.00
	Click through Rate (CTR)	1.0%
	Conversion rate	12%
	Profit per sale (before search cost)	\$18.00

3	Cost per click (CPC)	\$1.65
	Click through Rate (CTR)	2.4%
	Conversion rate	12%
	Profit per sale (before search cost)	\$15.00

4	Cost per click (CPC)	\$1.55
	Click through Rate (CTR)	1.5%
	Conversion rate	10%
	Profit per sale (before search cost)	\$16.00

5	Cost per click (CPC)	\$0.75
	Click through Rate (CTR)	2.3%
	Conversion rate	10%
	Profit per sale (before search cost)	\$8.00

6	Cost per click (CPC)	\$3.50
	Click through Rate (CTR)	1.0%
	Conversion rate	8%
	Profit per sale (before search cost)	\$42.00