SEM Slides Exercise Solution

Slide #28

Broad match: formal shoes	1-9
Broad match modifier: formal +shoes	4-9
Broad match modifier: formal +shoes	6-9
Broad match modifier: -formal +shoes	4-5
Phrase match: "formal shoes"	7-9
Exact match: [formal shoes]	9

Slide #52

Advertiser	Bid	Quality Score (QS)	AdRank (=Bid x QS)	Position	Price Per Click (=AdRank$_{i+1}$/QS$_i$)
A	$.50	8	4.0	1	3.0/8 + 0.01 = $.39
B	$.50	6	3.0	2	1.5/6 + 0.01 = $.26
C	$.50	3	1.5	3	min price = $.01

Advertiser	Bid	Quality Score (QS)	AdRank (=Bid x QS)	Position	Price Per Click (=AdRank$_{i+1}$/QS$_i$)
A	$.50	8	4.0	1	3.5/8 + 0.01 = $.45
B	$.50	7	3.5	2	1.5/7 + 0.01 = $.22
C	$.50	3	1.5	3	min price = $.01

Advertiser	Bid	Quality Score (QS)	AdRank (=Bid x QS)	Position	Price Per Click (=AdRank$_{i+1}$/QS$_i$)
A	$.50	8	4.0	2	1.5/8 + 0.01 = $.20
B	$.60	7	4.2	1	4.0/7 + 0.01 = $.58
C	$.50	3	1.5	3	min price = $.01

Advertiser	Bid	Quality Score (QS)	AdRank (=Bid x QS)	Position	Price Per Click (=AdRank$_{i+1}$/QS$_i$)
A	$.50	8	4.0	1	2.4/8 + 0.01 = $.31
B	$.60	4	2.4	2	1.5/4 + 0.01 = $.39
C	$.50	3	1.5	3	min price = $.01

Slide #63

1. $1000/$2.50 = 400 clicks

2. 20,000 * 1.5% * $2 = $600

3. 1/($10/$2) = 20%

4. CPA = $0.5 * 1/5% = $10;

   $3000/$10 = 300 conversions.

5. $50 - $10 - $5 - $20 = $15

6. $15/$3 = 5 clicks

   Target CPA = 1/5 = 20%.

Slide #82

Advertise 1: $3 per 1000 impression

Advertise 2: $1.5 per 1000 impression

So Advertiser 1 wins

Slide #83

	Advertiser 1	Advertiser 2	Advertiser 3
CTR	0.8%	0.7%	0.6%
Conversion rate	2.3%	3.1%	1.9%
Profit per conversion	$15	$20	$30
CPM	$20	$20	$20
CPC	$2.50	$2.86	$3.33
CPA	$108.70	$92.17	$175.44
Break-even CPM	$2.76	$4.34	$3.42

CPC = CPM / (1000 * CTR);

CPA = CPM / (1000 * CTR * Conversion Rate);

Break-even CPA = Profit per conversion, and Break-even CPM = Break-even CPA*(1000*CTR*CR)