



ModelOff 2015 – Round 1

Section 4: Case Study – Options to Call

Question Appeared in: ModelOff 2015

Time Allocated: 30 minutes

30 Marks available in this Section

INTRODUCTION

You have just moved to a new country and need to sort out a mobile phone contract. You have identified six carriers in the local market, each offering a single mobile phone plan. Each plan has an included number of minutes to make phone calls, an included number of text messages and an included allocation of data. Each plan also has rates that apply once the included allocations have been fully used.

You will need to model each of these mobile plans over a 36 month period to help determine which will be the best mobile plan for your needs. The evaluation period will be from 1 January 2016 until 31 December 2018.

MOBILE PLANS

The key details for each plan are summarised in the table below:

Carrier	Run	Swim	Bike	Jump	Kayak	Skip
Cost per month (\$)	60	80	80	75	60	10
Included minutes	400	180	Unlimited	Unlimited	320	150
Included text messages	Unlimited	1,200	750	500	Unlimited	3,000
Do text messages carry forward to the next month?	NA	Yes	No	Yes	NA	No
Included data	1,250 MB	Unlimited	2,000 MB	1,500 MB	3,000 MB	1,250 MB
Additional minutes (\$ per minute)	0.10	0.69	NA	NA	0.99	0.59
Additional text messages (\$ per text message)	NA	0.04	0.10	0.05	NA	0.06
Additional data pack (\$ per pack)	10	NA	35	20	50	45
Additional data (MB per pack)	50	NA	100	200	50	300

All costs and values are monthly unless stated otherwise. All contracts have no minimum length and no break costs for cancellation.

Any unused minutes carry forward and can be used in future months. Carried forward minutes do not expire. Where noted, unused text messages also carry forward to be used in future months. Any carried forward text messages also do not expire. Data allowances do not carry forward. Additional data is charged in packs, with a fixed cost for every additional pack of data required. You cannot purchase a partial data pack.



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JOINING INCENTIVES

Each plan has an incentive on offer to encourage new customers to sign up. The incentives are detailed below.

These incentives are only used to answer questions 49 to 52. Do not include them when completing questions 43 to 48.

Carrier	Incentive
Run	First two months of the plan, the base cost is free of charge.
Swim	First six months have a 50% discount on the base cost of the plan.
Bike	First three months have a 60% discount on the total cost of the plan (base cost and any additional usage charges).
Jump	An extra 1,000MB of data included for each of the first 9 months.
Kayak	Double the allocation of included minutes for the first 4 months.
Skip	Double the allocation of included data for the first 3 months.

YOUR USAGE

You expect:

- your standard monthly usage to be 300 minutes, 1,000 text messages and 2,000MB of data.
- to use 1.5x your standard amount of minutes, text messages and data every June and July and 2x your standard monthly usage of minutes, text messages and data every December.
- your standard monthly usage to increase by 5% per annum (effective from 1 January each year). For the purpose of this analysis, partial minutes, text messages and MB of data are allowed (i.e., do not round this annual increase). Assume that partial additional minutes and partial additional text messages can be purchased at a pro-rata price.



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QUESTIONS

Do not include the incentives when answering questions 1 to 6.

Question 1

For the Kayak plan, what is the total cost for additional calls for the 2018 year? [3 marks]

- a. \$782.50
- b. \$782.60
- c. \$782.70
- d. \$782.80
- e. \$782.90
- f. \$783.00

Question 2

For the Swim plan, what is the total cost for additional text messages in December 2018? [3 marks]

- a. \$24.52
- b. \$24.56
- c. \$24.60
- d. \$24.64
- e. \$24.68
- f. \$24.72

Question 3

For the Skip plan, what is the total cost of additional data over the 36 months? [3 marks]

- a. \$7,110
- b. \$7,155
- c. \$7,200
- d. \$7,245
- e. \$7,290
- f. \$7,335



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Question 4

What is the cumulative total cost up to and including October 2018 for the Bike plan? [3 marks]

- a. \$9,397.55
- b. \$9,397.65
- c. \$9,397.75
- d. \$9,397.85
- e. \$9,397.95
- f. \$9,398.05

Question 5

What is the cheapest plan over 36 months? [3 marks]

- a. Run
- b. Swim
- c. Bike
- d. Jump
- e. Kayak
- f. Skip

Question 6

What length of contract (beginning in January 2016) would give the same total cost over the contract length between the carriers Bike and Jump? [3 marks]

- a. 5 months
- b. 6 months
- c. 7 months
- d. 8 months
- e. 9 months
- f. 10 months



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Include the incentives when answering questions 7 to 10.

Question 7

Which carrier's incentive scheme gives the least dollar cost saving over 36 months compared to the carrier's plan with no incentive? [3 marks]

- a. Run
- b. Swim
- c. Bike
- d. Jump
- e. Kayak
- f. Skip

Question 8

After factoring in the carrier's incentive packages, which is the cheapest plan over 36 months? [3 marks]

- a. Run
- b. Swim
- c. Bike
- d. Jump
- e. Kayak
- f. Skip



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Question 9

What is the total cost of all six carrier's plans (including incentives) over 36 months? [3 marks]

- a. \$54,850.19
- b. \$54,850.23
- c. \$54,850.27
- d. \$54,850.31
- e. \$54,850.35
- f. \$54,850.39

Question 10

You have a friend who is also considering the same plans. They expect to have a standard monthly usage of minutes, text messages and data that is half of your expected usage. They have the same monthly factors and annual growth % estimates as you.

Which carrier would be the cheapest for your friend over 36 months (including the incentive plans)? [3 marks]

- a. Run
- b. Swim
- c. Bike
- d. Jump
- e. Kayak
- f. Skip



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Answers

1	B
2	C
3	D
4	C
5	B
6	F
7	A
8	D
9	F
10	F