Section 2: Case Study – First Time Buyer

Relates to Questions 15-27
25 Marks available in this Section

INTRODUCTION

You are planning to buy a house and reviewing your mortgage options. The building is worth $225,000, which is what you are paying for it. All three banks you have spoken to are willing to lend you up to 80% of the value of the house, and you plan to borrow the maximum amount available to you.

Each mortgage requires monthly payments to cover interest and principal. The monthly payment must be a constant amount for the length of the term such that the debt is repaid in full by the final monthly payment. The purchase will occur on 31 December 2018, and monthly payments will be at the end of each month. The term of all available mortgages is 15 years.

You have been forgoing luxuries such as avocado toast for a number of months now, and as a result by the purchase date you will have $55,000 in cash available to cover your deposit and the costs of the transaction. With the exception of upfront fees which for some of the mortgages may be added to the amount borrowed and paid over the life of the mortgage, all cost must be paid out of this cash. Where fees are added to the amount borrowed these must be included in the balance interest is calculated on, but not included in the amount that the fee is calculated on.

COSTS OF THE TRANSACTION

You are required to pay a property tax of 4.5% on the value of the house that exceeds $150,000. You will also incur $5000 of legal and other costs.

MORTGAGE OPTIONS

Mortgage	Fee (percentage of amount borrowed)	Annual Interest Rate	Conversion to Monthly Rate
Option 1	2% paid upfront	5%	Divide by 12
Option 2	2% added to the debt balance	5%	Divide by 12
Option 3	2% added to the debt balance	Chosen based on the variable rate available on the day the mortgage transaction closes, which is: 25% likely to be 4%, 50% likely to be 5% and 25% likely to be 6%	Divide by 12

A note on terminology: the expected value of a quantity is the weighted average of all possible values of it, where the weighting is the likelihood of each outcome. So if an item is 25% likely to be 1 and 75% likely to be 2 then the expected value would be 25%*1 + 75%*2 = 1.75.

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Round 1 Section 2 - Case Study Information Pack

Prepare your model and then use it to answer questions 15-27 (select your answer from a multiple choice list).
When finished, please upload your workbook (Question 27).

QUESTIONS

Question 15

What is the amount of tax that must be paid on the property? [1 mark]

A. 3,373

B. 3,374

C. 3,375

D. 3,376

E. 3,377

F. 3,378

G. 3,379

H. 3,380

I. 3,381

Question 16

What cash are you required to pay for the property value not covered by the mortgage, the tax due and the legal and other costs? [1 mark]

A. 53,371

B. 53,372

C. 53,373

D. 53,374

E. 53,375

F. 53,376

G. 53,377

H. 53,378

I. 53,379

Question 17

For option 1, what would be the total cash required upfront? [1 mark]

A. 56,970

B. 56,971

C. 56,972

D. 56,973

E. 56,974

F. 56,975

G. 56,976

H. 56,977

I. 56,978

Question 18

For option 1, what is the monthly payment amount? [3 marks]

A. 1,418

B. 1,419

C. 1,420

D. 1,421

E. 1,422

F. 1,423

G. 1,424

H. 1,425

I. 1,426

Question 19

For option 2, what is the total debt that must be drawn (including the fee added to the balance)? [2 marks]

A. 182,599

B. 183,600

C. 183,601

D. 183,602

E. 183,603

F. 183,604

G. 183,605

H. 183,606

I. 183,607

Question 20

For option 2, what is the total cost of buying the property (include deposit, costs of transaction, any upfront fees and the total monthly payments made)? [3 marks]

A. 314,716

B. 314,717

C. 314,718

D. 314,719

E. 314,720

F. 314,721

G. 314,722

H. 314,723

I. 314,724

Question 21

For option 3, if the interest rate were 4%, how much principal and interest would be paid in the first year? [2 marks]

A. 16,294

B. 16,295

C. 16,296

D. 16,297

E. 16,298

F. 16,299

G. 16,300

H. 16,301

I. 16,302

Question 22

For option 3, if the interest rate were 6% what would be the loan balance outstanding at the end of December 2020? [2 marks]

A. 167,544

B. 167,545

C. 167,546

D. 167,547

E. 167,548

F. 167,549

G. 167,550

H. 167,551

I. 167,552

Question 23

For option 3, what is the expected monthly payment amount? [2 marks]

A. 1,447

B. 1,448

C. 1,449

D. 1,450

E. 1,451

F. 1,452

G. 1,453

H. 1,454

I. 1,455

Question 24

For option 3, what is the expected total cost of buying the property (include deposit, costs of transaction, any upfront fees and the total expected monthly payments made)? [3 marks]

A. 314,870

B. 314,871

C. 314,872

D. 314,873

E. 314,874

F. 314,875

G. 314,876

H. 314,877

I. 314,878

Question 25

If you choose a mortgage based on the criteria of giving the lowest expected total cost of buying the property (subject to being able to cover the costs of transaction, upfront fees and deposit from available cash), which mortgage will you choose? [2 marks]

A. Option 1

B. Option 2

C. Option 3

Question 26

If the bank is instead willing to lend you 85% of the property's value, but all other terms remain the same, and you choose a mortgage based on the criteria of giving the lowest expected total cost of buying the property (subject to being able to cover the costs of the transaction, upfront fees and deposit from available cash), what will be the monthly payment amount? [3 marks]

A. 1,509

B. 1,510

C. 1,511

D. 1,512

E. 1,513

F. 1,514

G. 1,515

H. 1,516

I. 1,517

Question 27

Please upload your workbook for this section.

Answers

15	C	3,375
16	E	53,375
17	F	56,975
18	F	1,423
19	B	183,600
20	A	314,716
21	D	16,297
22	A	167,544
23	G	1,453
24	I	314,878
25	B	Option 2
26	D	1,512
27	N/A	N/A