

CBA1 Mathematical Investigation: Bedroom Makeover

CBA 1

Classroom Based Assessment

CBA1 Mathematical Investigation: Bedroom Makeover

CBA - Introduction + Contents

Title : Makeover of a lifetime

Problem: How much money and time will it cost to do a full bedroom makeover?

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Why I chose this problem : I recently switched bedrooms in my house. My new bedroom hasn't been done up or painted since 1994, so I thought it was time for a makeover. Although this CBA was hypothetical, I plan to use some information from it and try to get my room done up.

Poses a problem statement.

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CBA - Steps

I have broken down my problem into manageable steps.

1. Measure out the space of my bedroom, door, window.
2. Make a list of the items I want in my room.
3. Scower the internet and shops for such items, with a budget of €1000.
4. Gather measurements of the items and draw different layouts of my room with these items.
5. Find the price of additional items that I will need.
6. Find a suitable colour of paint for my walls.
7. Find out how long it would take to buy these items.

Breaks down
problem into
manageable steps.

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CBA - Assumptions

I have made some justified assumptions to help with the task.

1. I'm assuming I can afford everything within €1000 and my family will help me out if I go over.
 - * Justifications - I am buying as cheap as I can and my family are always willing to help.
2. I'm assuming I'm doing this over a school break and I'm working on it five hours a day.
 - * A school break gives me the maximum amount of time and five hours will just help with the maths.
3. I'm assuming my walls will take the same amount of time to paint as my brothers.
 - * My brother recently painted his walls and since me and him have the same size walls, I assume the times will be the same.
4. I'm assuming that I will make it to each shop on time and not waste time going out.
 - * I will be able to check closing times online so I should be able to make it there before the shop closes.
5. I'm assuming that each piece of furniture that has to be assembled will take 30 minutes.
 - * On an Ikea instruction manual for a bed it is estimated to take around 30 minutes.
6. I'm assuming I will be doing all the work by myself (painting/ assembling).
 - * I am going to try ~~not~~ cut back on costs by not hiring anyone to do the work.

Makes some simplifying assumptions

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CBA - Predictions

I have made some predictions that I will look back on at the end.

1. I predict I will stay in-budget by at least €50 or less (total cost being €950 or lower)

* Justification - as I am buying the products as cheap as I can, I should stay within budget.

2. I predict that all peices of furniture will fit in my mother's KIA Venga.

* The KIA Venga, with the back seats put down, has a lot of room for items.

3. I predict all items are in stock at the shops.

* I will be able to check online if all items are in stock via the store's website.

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CBA - Step 1 and 2

These next few pages will be all steps being carried out.

step 1. Wall 1 (contains door):
 Wall space = 234cm high 207cm wide + space above door 40cm high
 Door space = 194cm high 86cm wide 86cm wide

Wall 2 (contains window):
 Wall space = 234cm high 290cm wide ($6.8m^2$) = $5.2m^2$ wall space
 Window space = 117cm high 140cm wide ($1.6m^2$)

Wall 3: (plain wall)
 Wall space = 234cm high 293cm wide

Wall 4 (contains wardrobe):
 Wall space = 234cm high 28cm wide

step 2. I would like to include a single bed, a bedside locker, a desk, a tall boy and a poster in my bedroom.

I have already assumed that my walls will take the same amount of time to paint as my brother's. These are the times:

Wall 1: 40mins

Wall 2: 1 hour

Wall 3: 30mins

Wall 4: 12mins

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CBA - Step 3 and 4

I have found all the items I would like in my room along with their prices and measurements.

3. Single bed - IKEA €99
- Tallboy - IKEA €99
- Poster - The Range €25
- Desk - Harvey Norman €79 (currently on sale)
- Bedside locker - Michael Murphy €79 (currently on sale)

- A cost graph can be found on page 'X'

4. Single bed - 196cm long (6'4) 94cm wide (3')
- Tallboy - 48.5cm long 20cm wide
- Poster - 80cm long 60cm wide
- Desk - 121cm long 55cm wide
- Bedside locker - 30cm long 40cm wide

- I included the bed's measurements in feet as well, to show that I would be able to fit on it.
- I was able to find all these measurements online.

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CBA - step 5 and 6

I have decided to find the prices of additional items that I will need.

5. Paint brushes + rollers = $€4.99 + €16.99 = €21.98$ (Woodies)
Mattress + duvet + pillows = $€99 + €17 + 2(€13) = €142$ (IKEA)
Bedsheets + pillowcases = $€17 + €3.50$ (set) = $€20.50$ (IKEA)
Mattress/pillow protecters = $2(€3.50) + 4(€3) = €19$ (IKEA)

- Cost graph can be found on page 'x'

6. Dulux Easycare Matt 'calm cloud' 2.5L = $€41.99$ (Woodies)

+ I shall also be giving my mother $€30$ for petrol, as I am a good son.

Records data systematically, suitable mathematical procedures are followed

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CBA - Step 7

I have decided to buy all the items in 4 separate shopping trips.

7. Starting Calculations:

My house to Airside retail park = 7mins

My house to IKEA = 15mins

Trip 1: Woodies + Michael Murphy

$$\text{time} = 7 + 10 + 10 + 7 + 10 = 44 \text{ mins}$$

- I'm adding 7 minutes to account for the drive over. I'm adding 10 minutes twice, as I estimate to spend 10 minutes in each store. I added an additional 10 minutes to account for parking, traffic lights, traffic etc.

Trip 2: Harvey Norman

$$7 + 10 + 7 + 2 + 8 = 34 \text{ mins}$$

- I'm adding 7 minutes for the drive, 10 minutes in store and I've also added 2 minutes for carrying and 8 minutes for parking, traffic lights, traffic etc.

Trip 3: IKEA (ballboy + bed)

$$15 + 1 \text{h } 20 \text{min} + 15 = 1 \text{h } 50 \text{mins} + 10 = 2 \text{h}$$

- I'm adding 15 minutes for the drive. I've added 1h 20min as it is the amount of time people usually spend in IKEA (according to Google). I've also added 10 mins for traffic, parking etc.

Trip 4: IKEA (mattress + duvet + sheets)

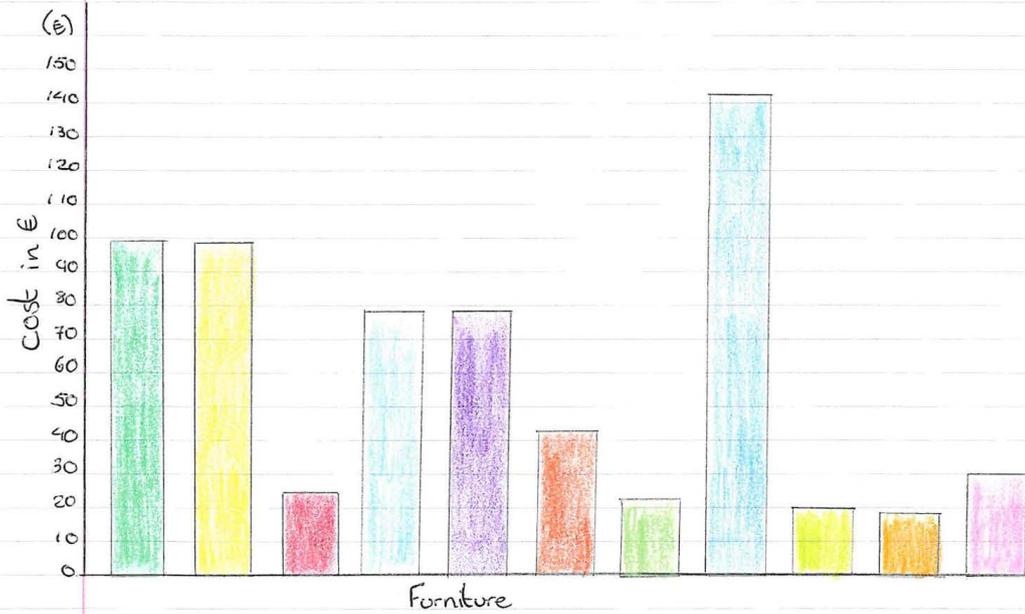
$$15 + 1 \text{h} + 15 = 1 \text{hour } 30 \text{mins} + 10 = 1 \text{h } 40 \text{mins}$$

- I'm adding 15 minutes for the drive to and from. I took 20mins away from this trip as I assumed that there would be less carrying in this trip.

- Distance and time graphs can be found on page 'xi' and 'xii'

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CBA - Cost bar chart



- single bed €99
- tall boy €99
- poster €25
- desk €79
- bedside locker €79
- paint €42
- brushes/rollers €22
- mattress/duvet/pillows €142
- sheets/pillowcases €20
- mattress/pillow protectors €19
- petrol €30

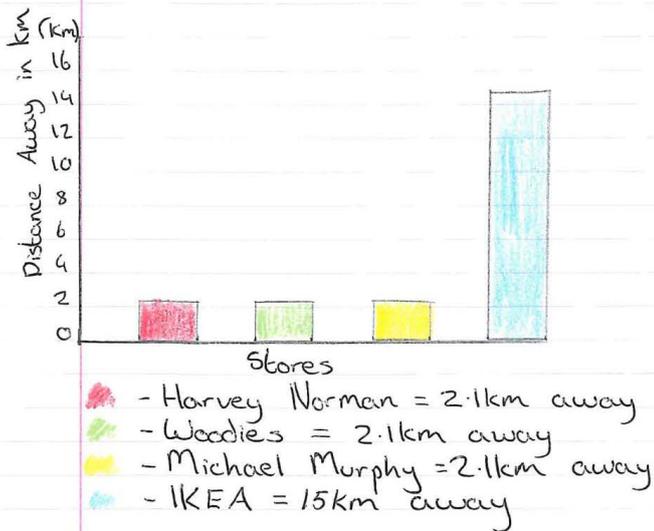
(Numbers have been rounded for convenience)

total cost = €626.47

Visual representations are used

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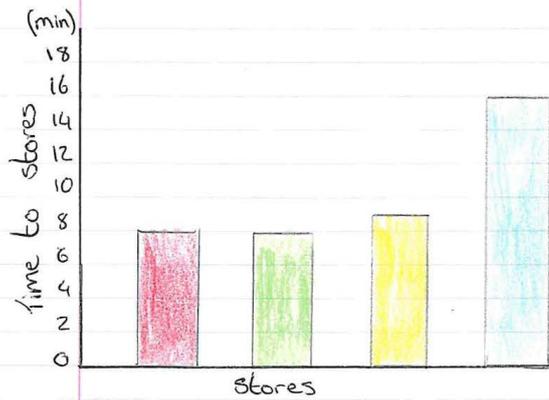
CBA - Distance to Shops bar chart



Visual representations are used

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CBA - Time to Shops bar chart

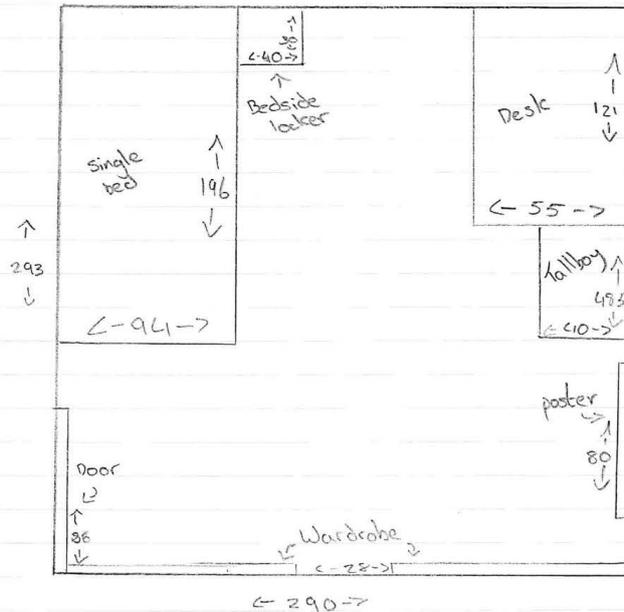


- Stores
- Harvey Norman = 8 mins away
 - Libodies = 8 mins away
 - Michael Murphy = 9 mins away
 - IKEA = 16 mins away

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CBA - Possible layout for bedroom

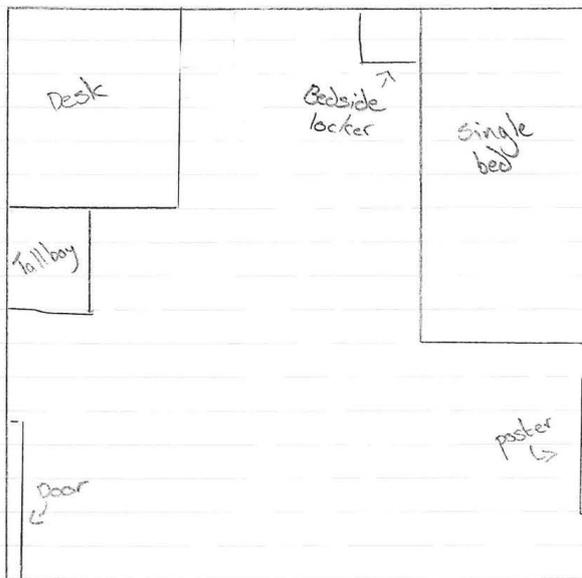
option 1



I was unable to add in the unit of measurement after the numbers as there was not enough space. Cm is the measurement that is used in this drawing.

Diagrams and words are used to provide insights into the problem.

option 2



Measurements were not included in this layout as they given in the layout above

I think I would prefer to use option 1 layout in my bedroom as I believe it would be more efficient, mainly because the bed is closer to the door.

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CBA - Conclusion

The results from this problem were very unexpected to me.

The total cost from this makeover is €626.47. I was very surprised when I got this number and had to triple check it. It does make sense however as I was buying cheap products. I am quite happy with the final cost and think that it is reasonable for a bedroom makeover.

The total time from the makeover is 7 hours and 24 mins. This again was very unexpected as I thought it would take a lot longer. I checked this answer multiple times to make sure it was correct, which it was. I am also quite happy with this result as it gives me more time for other activities over my break.

I apologize if I have left any key parts of this assessment out. I have tried my best, if I have left anything out please let me know.

Comments on the solution and makes a concrete connection to the original question.

Uses everyday familiar language.

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CBA - Prediction Review

1. It turned out I stayed well within my budget by €373.53. I am happy with this result and understand that it is from buying cheap products.
2. After my brother had got his room done up, I was able to see what was able to fit in the Kia Venga. I have no doubt that it will be able to carry all the furniture and items.
3. As of the moment I'm writing this, all peices are in stock and all items that are on sale are still on sale.

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CBA - Self Reflection

I believe I learned a lot from doing this CBA. It has taught me many new skills and helped improve existing ones.

Time management, comparing this CBA to other school works I have done, I would say this one was best managed in time. I found it very helpful working on this little by little, day by day in maths class.

Problem solving, after doing this CBA I think I have a new perspective when it comes to problem solving. I find it a lot easier now when I break it up into steps.

Effort, this CBA has really taught me that the more effort you put in, then the more you get out of the experience. This is one of my proudest school works and I believe that it was the most influential one ~~as well~~.

Gratitude, I am very grateful for this experience as it has taught me so much, so much I didn't know I needed to know. I am over the moon with how this turned out and I am very pleased with myself as I did it to the best of my ability.

I have put my best effort into this CBA. I am hoping to receive 'in line with expectations' for this project, however I am going to be happy with whatever grade I get because I am very proud of this project.

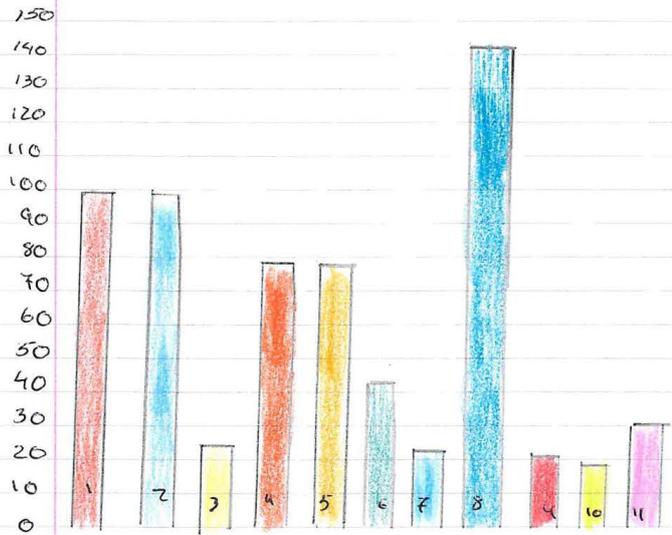
Identifies what worked well.

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Rough
Work

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Cost graph

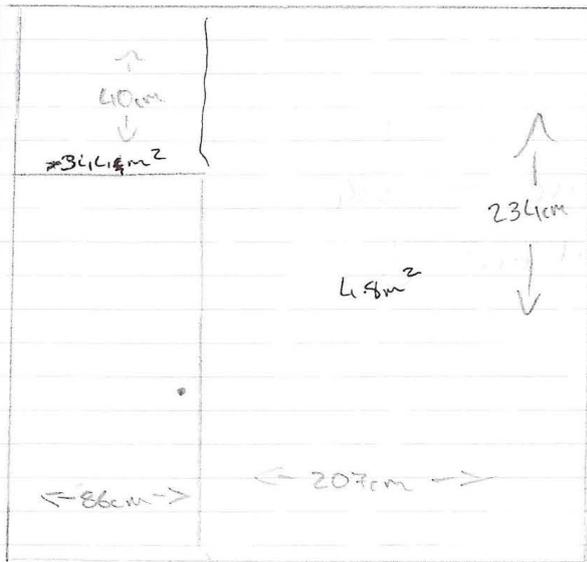


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- Paint €42
- brushes/rollers €22
- matress/duvet €142
- sheets €20
- sheet protectors €19
- petrol €30

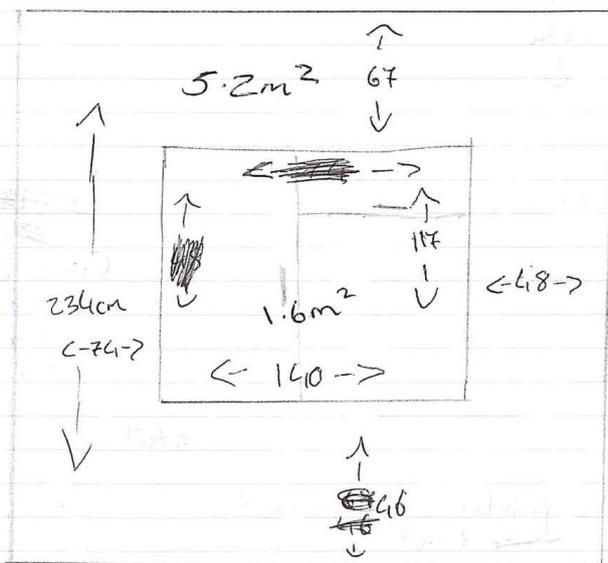
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1/1/19

Wall 1,



Wall 2,



CBA1 Mathematical Investigation: Bedroom Makeover

Title/Problem - How much money and time will it cost to do a full makeover of my bedroom?

Steps -

1. Measure out the space of my room, windows, doors.
2. Make a list of what I want in my room.
3. Scour the internet and shops for such furniture and decorations, with a budget.
4. Gather measurements of furniture and decorations and draw a map to scale of different designs/arrangements
5. Find a colour of paint suitable for walls.
6. Buy everything
7. Paint my room
8. Put furniture together (if in pieces) and move everything into place.
9. Have a peaceful nights sleep.

Assumptions -

- I'm assuming I can afford everything within €1000 and my family will help me out if I go over.
- I'm assuming I will be doing all the work myself, not hiring someone or receiving help. (to save money)
- I'm assuming I have five hours a day to work (over course of break and not school days), to make things easier

+ I'm assuming it will take the same amount of time to paint my walls as my brother

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6. Rollers/paint brushes = €4.99 + €16.99 = €21.98 (Woodies)
 Mattress / ^{pillows} Duvet = €99 + €17 + 2 (13) = €142 (IKEA)
 Bed sheets / ^{pillowcases} = 3.50 + 17 (set) = ~~€20.50~~ €20.50 (IKEA) - 16 grip
 Mattress/pillow protectors = 2 (3.50) ^{sale} + 4 (3) = €19 (IKEA)

total cost = 626.47

Extra step:

6.5 How long will it take from my house to these shops -
 IKEA, Woodies, Micheal Murphy, Harvey Norman

Workings out:

my house - airside retail park (Michael Murphy, Woodies) = 7 min
 my house - IKEA = 15 mins

Trip 1: Woodies + Michael Murphy,

$7 + 10 + 10 + 7 = 34 \text{ mins} + 10 = 44 \text{ mins}$

(I'm adding 7 mins as that is the distance from my house airside and I'm adding 10 mins for time spent in the store. I'm also adding on an extra 10 mins to the total to consider traffic, parking, walking)

Trip 2: Harvey Norman

$7 + 10 + 7 + 2 + 8 = 34 \text{ mins}$

(I'm adding two minutes for carrying the desk and putting it in the car and I'm adding 8 minutes for traffic, parking, walking)

Trip 3: IKEA (from my house it takes 15 mins) ^{Callboy + bed} ~~table~~

$15 + 1 \text{h } 20 \text{ mins} + 15 = 1 \text{h } 50 \text{ mins} + 10 \text{ mins} = 2 \text{h}$

(I got the 1h 20 mins from Google. It stated

Overall judgement: In line with expectations