Cost Approach
Problem and Answer Packet

2026 Level II Tutorials

Problem #1

- A commercial building contains a total of 5,200 square feet. Of this total, 3,900 square feet of the area has a wall height of 16 feet. The remaining 1,300 square feet of the area has a wall height of 14 feet. What is the average wall height for this structure?

Problem #1 Answer

- 3,900 divided by 5,200 = 75%
- 1,300 divided by 5,200 = 25%

- 16' x .75 = 12'
- 14' x .25 = 3.5'

- 12' + 3.5' = 15.5' rounded to 16 ft.

Problem #2

- A commercial building measures 200 feet by 500 feet. What is the PAR of this structure?

Problem #2 Answer

- 200 + 200 + 500 + 500 = 1,400 (perimeter)
- 200 x 500 = 100,000

- 1,400 divided by 100,000 = .014
- 0.014 x 100 = 1.4 or a PAR of 1

Problem #3

- A structure has 2,500 square feet of area of which 1,500 square feet is general office and 1,000 square feet is utility storage area. The walls of the structure are Type 1. The building measures 100 feet by 25 feet.
- Figure the adjusted base rate for this structure using the GCM schedule.

Problem #3 Answer

- Step 1 – Figure the PAR

  - 100 + 100 + 25 + 25 = 250
  - 100 x 25 = 2,500

  - 250 divided by 2,500 = 0.10 x 100 = 10

Problem #3 Answer

- Step 2 – Percentage of each use

  - 1,500 divided by 2,500 = 60% (General Office)
  - 1,000 divided by 2,500 = 40% (Utility Storage)

Problem #3 Answer

- Step 3 – Go to appropriate Schedule in Appendix G and select the correct base rates.

    - General office - $183.22
    - Utility storage - $108.57

Problem #3 Answer

- Step 4 – Figure adjusted rates for each use.

    - $183.22 x .60 = $109.93
    - $108.57 x .40 = $ 43.43

Problem #3 Answer

- Figure new adjusted base rate by adding the individual rates together.

  - $109.93 + $43.43 = $153.36

Problem #4

- A fire-resistant building with exterior walls of brick measures 100' x 180'. Twenty-five percent of the building is used as industrial office space, and the remainder of the building is used as light warehousing. The office space has a wall height of 12 feet and the warehouse space has a wall height of 18 feet.

- What is the average wall height?
- What is the adjusted base rate?

Problem #4 Answer

- Area: 100 x 180 = 18,000 sq. ft
- Perimeter: 100+100+180+180 = 560 linear feet
- 560/18,000 = .03 x 100 = PAR 3

- 12' x 25% = 3'
- 18' x 75% = 13.50'

Problem #4 Answer

- 3' + 13.50' = 16.5' rounded to 17' so the average wall height is 17 feet.

- Since the office walls are 12 feet, you need to make a positive 5-foot adjustment on it.
- Since the warehouse walls are 18 feet, you need to make a negative 1-foot adjustment on it.

Problem #4 Answer

- Industrial Office: base rate is $110.37, adjustment is 5' x $2.51 for a total of $122.92.

- Light Warehouse: base rate is $83.65, minus adjustment of 1' x $1.83 for a total of $81.82.

Problem #4 Answer

- $122.92 x 25% = $30.73
- $81.82 x 75% = $61.37

- $30.73 + $61.37 = adjusted rate of $92.10 for the building.

Problem #4 Answer

- When you are using an average wall height, you must take into consideration the original wall heights of each part of the building and make wall height adjustments as necessary to the base rate.

Problem #5

- A structure has 3,000 square feet of area, of which 1,800 square feet is fire resistant. The remainder of the building is constructed with fireproof steel. The PAR is 8. The exterior walls are Type 1. The building is used as a bank. What is the amount of adjustment, per square foot, necessary to account for the fireproof steel framing?

Problem #5 Answer

- 1,200 square feet / 3,000 square feet = 40%

- Fireproof steel frame adjustment: $8.87 x 40% = $3.55

Problem #6

- A parking lot of 20,000 square feet is paved with 2 inches of asphalt over an 8-inch base. It is located in Greene County and is in average condition with a quality grade of C-1.
- It has 200 linear feet of metal guardrail on one side, which is also in average condition, with a quality grade of C. Both were installed in 1993.
- What is the total true tax improvement value?

Problem #6 Answer

- Since the square footage of the parking lot is 20,000, the base rate is $2.62, and then you add $0.41 for the 3" of base, so you start with a rate of $3.03. However, the lot is a C-1 grade, so you need to account for that.
- $3.03 x 0.95 = $2.88 for our base rate.
- Now you need to account for the location multiplier, 0.92, so $2.88 x 0.92 = $2.65 (our adjusted rate)

Problem #6 Answer

- You take $2.65 x 20,000 = $53,000 for the replacement cost.
- Next is the depreciation. The lot is 33 years old and in average condition, so the depreciation percentage is 80%.
- $53,000 x .80 = $42,400 and $53,000 – $42,400 = $10,600 remainder value
- **Or** $53,000 x .20 = $10,600 remainder value

Problem #6 Answer

- Taking the remainder value to the nearest $100, our asphalt has a true tax value of $10,600.
- The guardrail has a base rate of $69.35, and since it is a C grade, you do not have to make any grade adjustment.
- You do need to make the adjustment for the location. Taking the 0.92 x $69.35, gives you an adjusted rate of $63.80.
- Then just take the 200 linear feet x $63.80 = $12,760.

Problem #6 Answer

- Looking up the depreciation for the guard rail, it is also 80%, so $12,760 x .80 and subtracting (or .20 and not subtracting, whichever is easier for you) gives us a remainder value for the guard rail of $2,550, rounded to $2,600 for the true tax value.
- Adding our paving to the guardrail amount, you should have a total true tax improvement value of $13,200.

IMPROVEMENT DATA AND COMPUTATIONS

Level II Cost Approach

Class Problem # 6

Greene County   LCM - 92%

Paving 20,000 sq. ft. $2.62 + $.41 for 3 " base = $3.03

$3.03 X 95% for C - 1 Grade = $2.88 base rate.$2.88

$2.88 X 92% L/M = $2.65 adj. rate X 20,000 sq. ft. = $53,000 (RCN)

Guard Rail = $69.35 X 92% = $63.80 X 200 = $12,760, round to nearest

$10 = $12,760 X .20 = $2550 rounded to the nearest $100 = $2,600.

Walls				Roofing	
Brick				Built-up	
Stone				Metal	
Concrete				Slate / Tile	
Frame or Metal				Shingle	
C.B. or Tile					
				Insulation	

Framing	B				
Wood Joist					
Fire Resistant					
Fire Proof Steel					
Reinf. Concrete					
Flooring	B				
Concrete					
Wood					
Tile or Carpet					
Finish Type	B				
Unfinished					
Semifinished					
Finished Open					
Finished Divided					
Use	B				
Store					
Office					
Apartment					
Vacant or Aband.					
Heating & Air Conditioning					
No Heating					
Central Warm Air					
Hot Water or Steam					
Unit Heating					
Central Air					
Package or Unit Air					
Sprinkler					
Plumbing Fixtures	#	TF			
Full Bath					
Half Bath					
Extra Fixtures					
		TOTAL	O		

Actual Age	33
Eff age	32
Life Expectancy	10

	Circle One →	1 or A	2 or B	3 or C	4 or D
Pricing Key					
S. F. Area					
Effective Perimeter					
P. A. R.					
Number of Units					
Average unit size					

Floor	Hgt.	Rate	Hgt.	Rate	Hgt.	Rate	Hgt.	Rate
Basement								
1st								
2nd								
3rd								
4th								
Frame Adj. [+]								
Wall Hght. Adj. [+]								
Base Price								
B. P. A. %								
Sub-total								
Unit Finish								
Interior Finish								
Div./Pin Walls								
Lighting								
Heating/Air Cond.								
Sprinkler								
S. F. Price								
Area								
Sub.-total								
Plumbing								
Special Features								
Exterior Features								
TOTAL BASE								
Location Multiplier								
Grade Factor								
Replacement Cost								

Other Fixtures

	G/F	ES	SS
Wash Fountain			
Circular 36"			
Circular 54"			
Semi-circular 36"			
semi-circular 54"			
Industrial Gang Sinks			
4' long, 4 man			
8' long, 8 man			
Shower-Column			
Circular, 5 per			
semi-circular, 3 per			
Corner, 2 per			
Shower Multi-Stall			
Circular, 5 per			
Semi-circular, 3 per			
Corner, 2 per			
	No. Fixtures		
Gang Shower Heads			
Drinking Fountains			
Integrated Meter Boxes			
....with Hot & Cold Water			
Remore Mixer For Mel			

SPECIAL FEATURES

Description	Value

SUMMARY OF IMPROVEMENTS

ID	Use	Story Height	Const. Type	Grade	Year Const.	Eff Age	Cond.	Base Rate	Features	L/M	Adj. Rate	Size or Area	Replacement Cost	Norm. Depr.	Remainder Value	Obsol Depr.	True Tax Value
01	Paving	2"/8"	Asph	C-1	1993		Av	$2.88		92%	$2.65	20,000	$53,000	80%	$10,600		$10,600
02	Guard Rail		Mtl	C	1993		Av	$69.35		92%	$63.80	200	$12,760	80%	$2,550		$2,600
03																	
04																	
05																	
06																	
07																	
08																	
09																	
10																	
11																	
12																	
13																	
14																	
15																	
16																	
17																	
18																	

Data Collector / Date   Appraiser / Date

Total True Tax Improvement Value	$13,200

Class Problem #7

- This is a fast-food restaurant built on a slab in Carroll County in 2005. It contains 1,902 square feet and has a perimeter of 202 linear feet. It also has a commercial heating/air conditioning package that heats and cools the entire 1,902 square feet. It is a quality grade of C and is in average condition. The exterior walls are brick.

- There is 18,000 square feet of asphalt paving on a 2" over 8" base. It was put down at the same time as the construction date of the building. It is a quality grade of C +1 and is in average condition.

- What is the total improvement value of this property?

IMPROVEMENT DATA AND COMPUTATIONS

Level II Cost Approach
Class Problem # 7 Answer (Back of PRC)

Walls		Roofing			
Brick		Built - up			
Stone		Metal			
Concrete		Slate / Tile			
Frame or Metal		Shingle			
C.B. or Tile					
		Insulation			

Carroll County 92%

Paving = under 20,000 sq. ft. $2.87 + $.41 for

3 " base = $3.28

$3.28 X 105% for C + 1 Grade = $3.44 base rate.

$3.44 X 92% L/M = $3.17 adj. rate X 18,000 sq. ft.   =

$57,060

Framing	B
Wood Joist	
Fire Resistant	
Fire Proof Steel	
Reinf. Concrete	
Flooring	B
Concrete	
Wood	
Tile or Carpet	
Finish Type	B
Unfinished	
Semifinished	
Finished Open	
Finished Divided	
Use	B
Store	
Office	
Apartment	
Vacant or Aband.	
Heating & Air Conditioning	
No Heating	
Central Warm Air	
Hot Water or Steam	
Unit Heating	

Central Air		
Package or Unit Air		
Sprinkler		
Plumbing Fixtures	#	TF
Full Bath		
Half Bath		
Extra Fixtures		
TOTAL	0	

Actual Age	21
Effective Age	20

Circle One →	1 or A	2 or B	3 or C	4 or D
Pricing Key	Fast Food			
S. F. Area	1,902			
Effective Perimeter				
P. A. R.				
Number of Units				
Average unit size				

Floor	Hgt.	Rate	Hgt.	Rate	Hgt.	Rate	Hgt.	Rate
Basement								
1st		$211.56		Pg 42 App G				
2nd								
3rd								
4th								

Frame Adj.	±	
Wall Hght. Adj.	±	
Base Price	$211.56	
B. P. A. %	100%	
Sub-total	$211.56	
Unit Finish		
Interior Finish		
Div./Pin Walls		
Lighting		
Heating/Air Cond.		
Sprinkler		
S. F. Price	$211.56	
Area	1,902	
Sub.-total	$402,390	
Plumbing		
Special Features		
Exterior Features		
TOTAL BASE	$402,390	
Location Multiplier	92%	
Grade Factor	100%	
Replacement Cost	$370,200	

Other Fixtures / SPECIAL FEATURES

Other Fixtures	G/F	ES	SS	Description	Value
Wash Fountain					
Circular 36"					
Circular 54"					
Semi-circular 36"					
semi-circular 54"					
Industrial Gang Sinks					
4' long, 4 man					
8' long, 8 man					
Shower-Column					
Circular, 5 per					
semi-circular, 3 per					
Corner, 2 per					
Shower Multi-Stall					
Circular, 5 per					
Semi-circular, 3 per					
Corner, 2 per					
Gang Shower Heads	No. Fixtures				
Drinking Fountains					
Refrigerated Water Coolers					
.....with Hot & Cold Water					
Emergency Shower/eye Wash					

SUMMARY OF IMPROVEMENTS

ID	Use	Story Height	Const. Type	Grade	Year Const.	Eff Age	Cond.	Base Rate	Features	L/M	Adj. Rate	Size or Area	Replacement Cost	Norm. Depr.	Remainder Value	Obsol Depr.	True Tax Value
01	Fast Food	1	Br	C	2005		Av						$370,200	65%	$129,570		$129,600
02																	
03	Paving	2"/8"	Asph	C+1	2005		Av	$3.44		92%	$3.17	18000	$57,060	80%	$11,410		$11,400
04																	
05																	
06																	
07																	
08																	
09																	
10																	
11																	
12																	
13																	
14																	
15																	
16																	
17																	
18																	

Data Collector / Date

Appraiser / Date

Total True Tax Improvement Value	$141,000

Practice Problem #1

- The Walgreen company owns and operates a drug store which was constructed in LaGrange County. The building has 15,400 square feet with a perimeter of 450 feet. The drug store was built in 2013. The building is fire resistant construction and is wall type #1. The interior finish meets the criteria of the GCM General Retail model. There are a total of five commercial plumbing fixtures in the building. The building is totally sprinkled and has an average quality attached commercial canopy of 900 square feet. It has been determined the building is in average condition and is classified as a C+1 quality grade. The drug store is frame constructed.

- There is a 28,000 square feet asphalt paved parking area surrounding the building. It was constructed when the building was built and the asphalt is 2" on 5" base. The asphalt paving is C quality grade and is in average condition.

- What is the total true tax value of the improvements?

IMPROVEMENT DATA AND COMPUTATIONS

Level II Cost Approach
Practice Problem #1 (Walgreen's Drug Store)

LaGrange County   95%

Walls		Roofing	
Brick		Built - up	
Stone		Metal	
Concrete		Slate / Tile	
Frame or Metal		Shingle	
C.B. or Tile			
		Insulation	

Framing	B	
Wood Joist		
Fire Resistant		
Fire Proof Steel		
Reinf. Concrete		
Flooring	B	
Concrete		
Wood		
Tile or Carpet		
Finish Type	B	
Unfinished		
Semifinished		
Finished Open		
Finished Divided		
Use	B	
Store		
Office		
Apartment		
Vacant or Aband.		

Heating & Air Conditioning
No Heating		
Central Warm Air		
Hot Water or Steam		
Unit Heating		
Central Air		
Package or Unit Air		
Sprinkler		

Plumbing Fixtures	#	TF
Full Bath		
Half Bath		
Extra Fixtures		
	TOTAL	0

Plumbing - $2,180 x 5 = $10,900

Canopy - $36.79 x 900 = $33,110

Actual age   13

Effective age   14

Life Expectancy   45

Circle One →

	1 or A	2 or B	3 or C	4 or D
Pricing Key	GCM Gen Retail			
S. F. Area	15,400			
Effective Perimeter	450			
P. A. R.	3			
Number of Units				
Average unit size				

Floor	Hgt.	Rate	Hgt.	Rate	Hgt.	Rate	Hgt.	Rate
Basement								
1st		$105.08						
2nd								
3rd								
4th								

Frame Adj.	[±]	
Wall Hght. Adj.	[±]	
Base Price	$105.08	
B. P. A. %	100%	
Sub-total	$105.08	
Unit Finish		
Interior Finish		
Div./Ptn Walls		
Lighting		
Heating/Air Cond.		
Sprinkler	$3.53	
S. F. Price	$108.61	
Area	15,400	
Sub.-total	$1,672,590	
Plumbing	$10,900	
Special Features	$33,110	
Exterior Features		
TOTAL BASE	$1,716,600	
Location Multiplier	95%	
Grade Factor	105%	
Replacement Cost	$1,712,310	

Other Fixtures
	G/F	ES	SS
Wash Fountain			
Circular 36"			
Circular 54"			
Semi-circular 36"			
semi-circular 54"			
Industrial Gang Sinks			
4' long, 4 man			
8' long, 8 man			
Shower-Column			
Circular, 5 per			
semi-circular, 3 per			
Corner, 2 per			
Shower Multi-Stall			
Circular, 5 per			
Semi-circular, 3 per			
Corner, 2 per			
Gang Shower Heads	No. Fixtures		
Drinking Fountains			
Refrigerated Water Coolers			
.....with Hot & Cold Water			
Emergency Shower/eye Wash			

SPECIAL FEATURES
Description	Value

SUMMARY OF IMPROVEMENTS

ID	Use	Story Height	Const. Type	Grade	Year Const.	Eff Age	Cond.	Base Rate	Features	L/M	Adj. Rate	Size or Area	Replacement Cost	Norm. Depr.	Remainder Value	Obsol Depr.	True Tax Value
01	GCM Gen Retail	1	Fr	C+1	2013		Av						$1,712,310	19%	$1,386,970		$1,387,000
02																	
03	Paving	2"/5"	Asph	C	2013		Av	$2.62		95%	$2.49	28000	$69,720	80%	$13,940		$13,900
04																	
05																	
06																	
07																	
08																	
09																	
10																	
11																	
12																	
13																	
14																	
15																	
16																	
17																	
18																	

Data Collector / Date   Appraiser / Date

Total True Tax Improvement Value	$1,400,900