

Final Exam Review • 2e

Final Exam Study Suggestions

The MATH 101 final exam consists of 35 multiple-choice questions. You will be allowed to use a calculator for any question on the final exam. To help you thoroughly study for the final exam, the mathematics department has prepared this review packet. The review contains 35 open-response questions (A) and 35 multiple-choice questions (B). After working all the open-response questions, use the multiple-choice questions as a practice final. Set aside a 1.25 hour (75 minutes) block of time and complete the multiple-choice question without using your notes, text, or a tutor. Use the answer key to check your work and pay close attention to the questions you get wrong. Additional practice on the concepts giving you difficulty is suggested. Refer to your notes or text for additional practice problems. Seek help from your instructor or a tutor.

Additional study tips:

- Complete the MATH 101 review in time to get help from the LAC and/or your instructor. Do not wait until the day before the final exam. Know when your final is scheduled:

Day and Date: _____

Time: _____

Room: _____

- Bring sharpened #2 pencils with erasers, a Scantron F-17121-PAR-L, a calculator, and your Schoolcraft ID number.

1A. Robert Browner can assemble $2\frac{1}{4}$ circuit boards in one hour. Bill Rich can assemble $3\frac{1}{5}$ circuit boards in one hour. In an 8-hour shift, how many more circuit boards can Bill assemble than Robert?

1B. Subtract and reduce to lowest terms: $\frac{14}{15} - \frac{4}{9}$

a. $\frac{2}{9}$

b. $\frac{10}{16}$

c. $\frac{22}{45}$

d. $\frac{66}{135}$

2A. A foundation requires $2\frac{1}{2}$ truckloads of concrete. If the concrete truck holds $3\frac{1}{5}$ cubic yards, how many total cubic yards of concrete are used for the foundation?

2B. A novelty shop buys marbles in bulk from the manufacturer and packages them into $1\frac{4}{5}$ pound boxes. How many boxes can be filled from 828 pounds of marbles?

- a. 460 boxes
- b. $826\frac{1}{5}$ boxes
- c. $828\frac{4}{5}$ boxes
- d. $1490\frac{2}{5}$ boxes

3A. Convert 2.4375 to a mixed number, with the fraction reduced to lowest terms.

3B. Convert to the decimal equivalent, and round to the nearest hundredth: $\frac{115}{114}$

- a. 0.99
- b. 1.00
- c. 1.01
- d. 1.09

4A. Lamont Jimmie has a truck with a gas tank that holds 18.42 gallons of gasoline. If the truck averages 21.18 miles per gallon, how many miles can Lamont drive on one full tank? Round to the nearest tenth of a mile.

4B. On a recent trip, Glenn Salley filled his gasoline tank four times with the following quantities of gasoline: 20.062 gallons, 19.98 gallons, 21.515 gallons, and 18.9 gallons. If Glenn traveled 1520 miles on his trip, how many miles per gallon did he average? Round your answer to the nearest hundredth.

- a. 18.89 mpg
- b. 24.69 mpg
- c. 25.17 mpg
- d. 80.46 mpg

5A. Tony received his bank statement on January 7, showing a balance of \$1669.93. The balance shown in his checkbook was \$1451.06. Deposits in transit amounted to \$514.37 and there was a service charge of \$10.00. Outstanding checks were \$249.10, \$78.13, and \$352.63, and the interest earned was \$63.38. Fill in the worksheet below to find the reconciled balance.

CHECKBOOK BALANCE		STATEMENT BALANCE	
Add Interest & Other Credits		Add Deposits in Transit	
Subtotal		Subtotal	
Subtract Service Charges & Other Debits		Subtract Outstanding Checks	
Adjusted Checkbook Balance		Adjusted Statement Balance	

5B. Find the checkbook balance that would result following these transactions:

Starting balance:	\$2959.55
03/09; check #701; Liu Printing	\$ 188.30
03/19; deposit	\$ 850.51
<u>03/20; check #702; Dreamscape Gardens</u>	<u>\$ 315.89</u>

- a. \$1604.85
- b. \$3305.87
- c. \$3613.43
- d. \$4314.25

6A. At the DaVinci Institute, the ratio of girls to boys is 6 to 4. If 420 boys attend the school, how many girls attend?

6B. Boyd's car can go 1891.5 miles on 48.5 gallons of fuel. How many miles can it travel on 64 gallons?

- a. 1433 miles
- b. 1907 miles
- c. 2240 miles
- d. 2496 miles

7A. Dr. Dave treated 610 patients last month. This month is flu season and he has already seen 793 patients. What is the rate of increase in patients for Dr. Dave?

7B. A recent poll showed that a politician's popularity rate dropped from 32% to 29%. What percent decrease does this represent? Round to the nearest tenth of a percent.

- a. 3.0%
- b. 9.4%
- c. 10.3%
- d. 61.0%

8A. Rainfall for this year was recorded at 41.86 inches. This is a $5\frac{1}{2}\%$ decrease from last year.

What was the amount of rainfall for last year? Round to the nearest hundredth of an inch.

8B. Robert calculated that the sporting goods store he manages had an increase of 32.5% in sales this week compared to last week. If sales last week were \$55,300, what were sales this week?

- a. \$17,972.50
- b. \$37,327.50
- c. \$73,272.50
- d. \$81,925.93

9A. Lee Stacy sells cosmetics for Peach Cosmetic Company and earns a $9\frac{1}{4}\%$ commission on each sales dollar. Last week she earned \$203.50 in commission. What was the total amount of her sales?

9B. 82.25% of the employees at Industrial Mechanics are college graduates. If 254 employees are college graduates, what is the total number of people employed at Industrial Mechanics? Round to the nearest whole number.

- a. 209 employees
- b. 254 employees
- c. 309 employees
- d. 336 employees

10A. Find the total for the invoice below:

Stock #	Quantity	Unit	Description	Unit Price	Total
2839	28	ea	staplers	\$9.20	
1612	15	ea	2-tier trays	\$3.19	
3218	2	gro	#2 pencils	\$21.60	
3318	8	bx	3 x 5 index cards	\$5.26	
				Invoice Subtotal	
				Shipping Charges	\$51.98
				Invoice Total	

10B. Find the total for the invoice:

Stock #	Quantity	Unit	Description	Unit Price	Total
424	26	ea.	Large Shirts	\$21.50	
501	23	ea.	Medium Shirts	\$20.00	
127	19	Ea.	Child's Shirts	\$11.50	
				Invoice Subtotal	
				Shipping Charges	\$54.00
				Invoice Total	

- a. \$1070.00
- b. \$1222.50
- c. \$1237.50
- d. \$1291.50

11A. A paper supplier sold items listing for \$24,250 to Big Box Inc. The net price of the order was \$18,915. What was the trade discount percent? Round to the nearest tenth of a percent.

11B. Bob's Party Place buys some party hats and masks with a list price of \$5020. The supplier extends a 32% trade discount. What is the net price?

a. \$1606.40

b. \$1900.10

c. \$3200.60

d. \$3413.60

12A. The Rapid Printing Company can purchase paper from Roberts Supply and receive a series discount of 20/15/10, or they can do business with National Paper Company and receive a series discount of 25/10/8. If Rapid ordered paper with a list price of \$36,000, how much would they save by choosing the lower-priced supplier?

12B. Juan's Engineering buys circuit boards with a list price of \$32,000. If the supplier extends trade discounts of 42/32/12, what is the trade discount amount?

- a. \$15,170
- b. \$16,835.25
- c. \$18,415
- d. \$20,893.70

13A. The Best Floor Company purchases carpeting for \$5.12 per square yard and marks it up 55% based on the selling price. What is the selling price per square yard? Round to the nearest cent.

13B. To manufacture a certain desk, it costs \$202.48. If the desired percent markup based on cost is 15%, how much should each desk sell for?

- a. \$168.75
- b. \$217.48
- c. \$232.85
- d. \$333.75

14A. JK Plumbing Supply sells a set of faucets for \$79.75. If a 45% markup based on cost was used, what was the cost of the faucets to JK Plumbing? Round to the nearest cent.

14B. A fishing boat sells for \$9000. What percent of the sale price is the markup, if the cost of the fishing boat was \$6600? Round to the nearest whole percent.

a. 18%

b. 27%

c. 33%

d. 60%

15A. At the end of the summer season, gas grills that originally sold for \$129.98 were marked down 60% to make room for the new merchandise. What was the sale price of the gas grills? Round to the nearest cent.

15B. A dishwasher that previously sold for \$609.99 has been reduced to \$573.39. What is the markdown percent? Round to the nearest tenth of a percent.

a. 6.0%

b. 6.4%

c. 16.7%

d. 36.6%

16A. Melissa Grossman is the manager of a video store and earns \$9.50 per hour with time-and-a-half for overtime and double-time on Sundays. What is Melissa's total gross pay for last week if she worked 43 hours Monday through Saturday, plus a 5-hour shift on Sunday?

16B. Kate's base pay rate is \$12.50 per hour, with overtime paid at time-and-a-half. Find her gross pay if she worked 45.5 hours Monday through Saturday. Round your answer to the nearest cent.

a. \$568.75

b. \$603.13

c. \$671.88

d. \$853.13

17A. In 2013, social security tax for employed individuals with employer match was 6.2% of gross wages up to \$113,700; while Medicare tax was 1.45% of all gross wages (no limit). Cindy Watson, a writer for Cosmopolitan Magazine, had total gross earnings of \$61,800 in 2013. What was the total amount of social security and Medicare taxes that were withheld from Cindy's earnings in 2013?

17B. Carolyn is paid \$1000 biweekly. This year, to date, she has earned \$25,000. Assume that Social Security tax for an employee is 6.2% of gross wages up to \$113,700; while Medicare tax is 1.45% of all gross wages (no limit). What will be the total deduction to Social Security and Medicare taxes on her next paycheck?

a. \$76.50

b. \$94.60

c. \$155.80

d. \$213.05

18A. In 2010, Joe Brown earned \$3850 per month. He claimed three withholding allowances at \$304.17 each. Because he was married and paid on a monthly basis, his federal income tax was determined by adding \$89.60 to 15% of the taxable income over \$2042. How much federal income tax was withheld from his monthly paycheck?

18B. Find the amount of 2010 federal income tax withheld from Karen's semimonthly gross paycheck of \$1937.50. Because Karen claimed four withholding allowances, her taxable income was \$1329.18. She was married, so the amount of 2010 federal income tax to withhold was \$44.80 plus 15% of the excess over \$1021. How much income tax was withheld?

- a. \$91.03
- b. \$136.05
- c. \$182.28
- d. \$197.95

19A. On January 21, Janet Rogan borrowed \$940 at $9\frac{1}{4}\%$ simple interest for 9 months. What is the maturity value? Round to the nearest cent.

19B. Devon takes out a loan of \$1500 at $6\frac{1}{2}\%$ simple interest, for 56 months. What is the maturity value of the loan? Round to the nearest cent.

a. \$1550.75

b. \$1955.00

c. \$2100.25

d. \$2500.50

20A. Use ordinary interest to calculate the bank discount and proceeds for the following simple discount note.

Face value: \$180

Discount rate: 10.2%

Bank term: 62 days

20B. What are the proceeds of a simple discount note for \$10,500 at a discount rate of 5%, for 30 months?

a. \$8550.25

b. \$9187.50

c. \$10,500.00

d. \$11,812.50

21A. Use the ordinary interest method to compute the time for a loan of \$24,600 at 12% that has simple interest of \$3198. Round your answer to the next higher day, when necessary.

21B. What is the rate of interest on a loan of \$2000, for 284 days, if the amount of interest is \$93.37, using the exact interest method? Round your answer to the nearest tenth of a percent.

- a. 4.7%
- b. 5.9%
- c. 6.0%
- d. 14.5%

22A. Jake Harris can invest \$6000 for 6 years at National Savings Bank and receive 6% interest compound annually in a passbook savings account. Moravian Bank offers him 6% interest compounded semiannually. How much more interest will Jake earn if he invests at Moravian?

22B. Calculate the compound amount on an investment of \$9500 at 12% interest, compounded quarterly, for 6 years.

- a. \$9500.00
- b. \$16,340.00
- c. \$18,751.32
- d. \$19,311.54

- 23A. Jason Printing will need \$85,000 in 6 years to replace one of their presses. They can invest in Adams County Bank at 10% interest compounded semiannually, or at City Bank at 8% interest compounded quarterly. At which bank will they earn the greatest amount of compound interest? How much less must they invest today at this bank to reach their goal of \$85,000 in 6 years?
- 23B. Roberta and John Sells would like to be able to buy a home in four years. They want to have \$20,000 as a down payment. What amount must they invest today at 6% interest compounded monthly, in order to have \$20,000 four years from now?
- a. \$15,741.97
 - b. \$15,841.87
 - c. \$20,000.00
 - d. \$25,409.78
- 24A. Barbara Stokes invested \$12,300 at the Midtown Credit Union at 6% interest compounded monthly. Determine the effective rate of this investment to the nearest hundredth of a percent. What will Barbara's investment be worth after two years?

24B. Calculate the APY (annual percentage yield) on an investment of \$7000 at 8% interest, compounded quarterly, for one year. Round the APY to the nearest hundredth of a percent.

- a. 7.75%
- b. 8.00%
- c. 8.16%
- d. 8.24%

25A. Jenny Poole bought a bedroom suite for \$4600 at Richard's Furniture. She made a \$1200 down payment and financed the balance at the store over a two year period at 12% interest. What equal monthly payment will be required by Jenny to amortize the loan? If Jenny's credit union will finance the furniture for 6% interest compounded monthly, how much can she save per month on the payments?

25B. Best Ribs wishes to pay off a debt of \$40,000 in 7 years. What amortization payment would they need to make each six months, at 6% interest compounded semiannually?

- a. \$2727.79
- b. \$2955.32
- c. \$3541.05
- d. \$3910.63

- 26A. Sound Manufacturing Company established a sinking fund to pay off a \$1,000,000 bond fund issue that comes due in 9 years. What equal payments must be deposited into the fund every 3 months at 8% interest compounded quarterly in order for them to meet this financial obligation? How much total interest will they have earned?
- 26B. Gabby wishes to accumulate \$5000 in 5 years. Determine the sinking fund payment she would need to make at the end of each year, at 5% interest, compounded annually.
- a. \$904.87
 - b. \$917.47
 - c. \$949.87
 - d. \$989.94
- 27A. Jim Macon wants to purchase a car in 5 years. He can afford to deposit \$300 at the *beginning* of each 3-month period. How much will he have available if he invests at 6% interest compounded quarterly? How much more will he have available if he can receive 8% interest compounded quarterly?

27B. John deposited \$2000 at the *end* of each month for 2 years in a savings account. If the account paid 6% interest, compounded monthly, find the future value of his account.

- a. \$48,000.00
- b. \$50,863.91
- c. \$51,118.23
- d. \$52,000.00

28A. Joe Suskind's previous month's balance on his revolving credit account was \$1216.88. The account had the following activity for May: May 10, purchases, \$270; May 15, a credit of \$86.50; May 19, payment of \$300; and May 25, purchase \$122.25. The finance charge is calculated on the average daily balance at a 15% annual percentage rate. How much is the finance charge for May? What is Joe's new balance?

28B. LeAnna has a revolving credit account at an annual percentage rate of 15%. Her previous monthly balance is \$928.26. Find the balance on April 1 if LeAnna's account showed the following activity. Use the average daily balance method.

STATEMENT OF ACCOUNT		Billing cycle: March 1-31
March 5	Javier's Wines	\$84.24
March 12	Payment	110.12
March 17	Mc Mullen's Pub	125.98
March 22	Mountain View Art (credit)	228.21
March 26	Cash Advances	100.00

- a. \$212.76
- b. \$547.98
- c. \$900.15
- d. \$911.87

- 29A. At a home show, Purcell's Kitchens was offering home improvement loans for 4 years with a 14.5% add-on interest rate. On complete kitchens, a 20% down payment was required. Susan Kaufman wants to finance a \$14,000 kitchen for 4 years. What would be the amount of the monthly payment? Calculate the finance charge on the loan, rounded off to the nearest dollar.
- 29B. Alex wishes to take out an installment loan to finance the purchase of a lawn mower costing \$715. His loan requires a 2.75% down payment and equal monthly payments of \$125.78 for 9 months. What is the amount of the finance charge on this loan?
- a. \$417.02
 - b. \$425.47
 - c. \$430.64
 - d. \$436.68
- 30A. The Andersons are purchasing a home with a mortgage of \$120,000 at $7\frac{3}{4}\%$. They can finance for 25 years or 30 years. How much more will their monthly payment be if they choose the 25-year mortgage? How much less total interest will they pay if they choose the 25-year mortgage?

30B. Roberto has a mortgage of \$89,500 at $8\frac{1}{2}\%$ for 20 years. Find the total interest.

- a. \$96,908.00
- b. \$97,855.68
- c. \$99,502.31
- d. \$103,201.28

31A. Eric took out a 30-year mortgage for \$225,000 with an APR of 4.5%. If his current outstanding balance is \$172,560, how much of the next payment will go toward interest? How much of the next payment will go toward principal reduction?

31B. Amelia has a 30-year mortgage with an APR of $4\frac{1}{4}\%$ and monthly payments of \$885.49. Her current balance is \$107,600. Calculate the amount of her next payment that will go toward principal reduction.

- a. \$313.61
- b. \$378.98
- c. \$504.41
- d. \$571.88

32A. Wilma is a 37 year old female and wants to purchase \$159,000 in straight life insurance. If the rate per thousand from the chart shows rate per thousand of \$10.71, how much would the life insurance cost her?

32B. Devin is a 29 year old male and wishes to purchase \$190,000 in twenty payment life insurance to cover his mortgage in the event of his death. If the rate per thousand the charts shows at his age is \$11.58, how much would the life insurance cost him?

- a. \$2,280.00
- b. \$335.82
- c. \$2,200.20
- d. \$5,510.00

33A. Jeffrey Sagen purchased property insurance to cover a large shipment of seasonal merchandise. The annual premium of the policy was \$3570. Two months later, the goods were sold and Sagen canceled the policy. What is the short-rate refund of premium?

Time policy is in force (months)	2	3	4	5	6	7	8	9
Percent of annual premium	30	40	50	60	70	75	80	85

33B. Rudy needs temporary property insurance to cover his home for a period of 6 months. The annual premium is \$1266. Use the table in problem 33A to determine the amount of refund he will receive after 6 months.

- a. \$379.80
- b. \$519.80
- c. \$746.20
- d. \$886.20

34A. Max's Grocery purchased a new cooler for the produce department for \$30,080. The cooler is expected to last for 6 years and have a trade-in value of \$2000. Max will use the straight-line method of depreciation. What is the amount of accumulated depreciation after the second year? What is the book value of the cooler after the fifth year?

34B. The price of a large piece of construction equipment purchased by Hass Construction Company was \$57,525. The salvage value at the end of a 4-year life is \$7500. Using the straight-line depreciation method, calculate the annual depreciation for year 3.

- a. \$12,506.25
- b. \$13,501.87
- c. \$15,925.26
- d. \$22,301.33

35A. Janus Industries purchased a new truck for \$128,000. The company expected the truck to last 5 years or 50,000 miles, with an estimated salvage value of \$16,000 at the end of that time. In the first year, the truck was driven 17,600 miles. As the accountant for Janus, you can depreciate this truck using the double declining balance method or the units of production method. Which method of depreciation will allow the largest write-off in the first year? How much greater would the depreciation expense be using this method?

35B. A cargo van purchased by Airport Carriers should last 3 years. The purchase price was \$72,357. The trade-in value is \$5412. Using the double declining balance method, calculate the accumulated depreciation at the end of year 2. Round the declining balance rate to 4 decimal places, and all dollar amounts to the nearest cent.

a. \$47,223.60

b. \$48,240.41

c. \$62,949.05

d. \$64,318.94

FORMULAS (a.k.a. formulae)	
Compound Amount (Future Value)	$A = P(1 + i)^n$
Present Value – Investments at Compound Interest	$PV = \frac{A}{(1 + i)^n}$
Annual Percentage Yield (APY)	$APY = (1 + i)^n - 1$
Future value—Ordinary annuity	$FV = Pmt \times \frac{(1 + i)^n - 1}{i}$
Future value—Annuity due	$FV = Pmt \times \frac{(1 + i)^n - 1}{i} \times (1 + i)$
Present value—Ordinary annuity	$PV = Pmt \times \frac{1 - (1 + i)^{-n}}{i}$
Present value—Annuity due	$PV = Pmt \times \frac{1 - (1 + i)^{-n}}{i} \times (1 + i)$
Sinking fund payment	$FV \times \frac{i}{(1 + i)^n - 1}$
Amortization payment	$PV \times \frac{i}{1 - (1 + i)^{-n}}$

MATH 101 • Final Exam Review • ANSWERS

1A. $7\frac{3}{5}$ circuit boards

1B. c

2A. 8 cubic yards

2B. a

3A. $2\frac{7}{16}$

3B. c

4A. 390.1 miles

4B. a

5A. \$1504.44

5B. b

6A. 630 girls

6B. d

7A. 30%

7B. b

8A. 44.30 inches

8B. c

9A. \$2200

9B. c

10A. \$442.71

10B. d

11A. 22.0%

11B. d

12A. \$324

12B. d

- 13A. \$11.38
13B. c
14A. \$55.00
14B. b
15A. \$51.99
15B. a
16A. \$517.75
16B. b
17A. \$4727.70
17B. a
18A. \$223.92
18B. a
19A. \$1005.21
19B. b
20A. \$3.16; \$176.84
20B. b
21A. 1 year and 30 days *or* 390 days
21B. c
22A. \$43.46
22B. d
23A. Adams; \$5515.15
23B. a
24A. 6.17%; \$13,864.07
24B. d
25A. \$160.05; \$9.36
25B. c
26A. \$19,232.85; \$307,617.40
26B. a
27A. \$7041.16; \$393.84
27B. b
28A. \$15.79; \$1238.42
28B. d
29A. \$368.67; \$6496.00
29B. d
30A. \$46.70; \$37,571.40
30B. a
31A. \$647.10; \$492.94
31B. c
32A. \$1702.89
32B. c
33A. \$2499
33B. a
34A. \$9360; \$6680
34B. a
35A. Double-declining-balance method; \$11,776
35B. d