Final Exam Review • *3e*

Final Exam Study Suggestions

The MATH 101 final exam consists of 30 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 30 open-response questions (A) and 30 multiple-choice questions (B). After working all the open-response questions, use the multiple-choice questions as a practice final. Set aside an 80-minute block of time and complete the multiple-choice questions without external assistance: no notes, no tutors, no AI. 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. The **formulas on the last page** of this review will also be provided for you on the final exam. No additional formula sheets will be allowed.

Additional study tips:

- Complete the MATH 101 review in time to get help from the Learning Center 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 calculator, and your Schoolcraft student ID number.

1A. Robert can assemble $5\frac{1}{5}$ circuit boards in one hour. James can assemble $3\frac{1}{4}$ circuit boards in one hour. How many more circuit boards can Robert assemble than James in one hour? Express your answer as a mixed number.

1B. Farah worked $8\frac{5}{6}$ hours on Monday, $9\frac{2}{3}$ hours on Tuesday, and $12\frac{5}{12}$ hours on Wednesday. If she is required to work 40 hours this week, how many more hours does Farah need to work to reach her goal?

a. $9\frac{1}{12}$
b. $9\frac{1}{3}$
c. $10\frac{11}{36}$
d. $10\frac{3}{7}$

2A. The foundation of a new building requires $2\frac{1}{3}$ truckloads of concrete. If a concrete truck holds 9 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 full boxes can be filled from 828 pounds of marbles?

a. 460 boxes
b. 826 boxes
c. 828 boxes
d. 1490 boxes

3A. Theo's truck has a gas tank that holds 18.42 gallons of gasoline. If the truck averages 21.18 miles per gallon, how many miles can Theo drive on one full tank? Round to the nearest tenth of a mile.

3B. On a recent trip, Jeanette filled her gas tank four times with the following quantities of gasoline: 20.062 gallons, 19.98 gallons, 21.515 gallons, and 18.9 gallons. If Jeanette traveled 1520 miles on her trip, how many miles per gallon did she average? Round your answer to the nearest hundredth.

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

4A. Tony received his bank statement on January 7th, showing a balance of $1669.93. The balance shown in his checkbook is $1451.06. Deposits in transit amounted to $514.37 and there was a service charge of $10. The interest earned was $63.38 and outstanding checks were for $249.10, $78.13, and $352.63. Fill in the table 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**	

4B. Find the checkbook balance that would result following these transactions:

Starting Balance:	$2959.55
03/09; check #701; Liu Printing	$188.30
03/19; check #702; Dreamscape Gardens	$315.89
03/20; deposit	$850.51

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

5A. At the DaVinci Institute, the ratio of girls to boys is 6 to 4. If 420 boys attended the school, how many girls attended?

5B. To create a special shade of green paint, you mix 7 parts blue paint to 4 parts yellow paint. If you have 56 cups of blue paint, how many cups of yellow paint will you need to maintain the same ratio?

a. 12 cups
b. 32 cups
c. 53 cups
d. 98 cups

6A. Sales at local coffee shop decreased 20.5% this month compared to last month. If sales this month were $25,355, what were the sales last month?

6B. Dr. House treated 610 patients last month. This month is flu season and Dr. House has seen a 30% increase in patients. How many patients has Dr. House seen this month?

a. 183 patients
b. 261 patients
c. 793 patients
d. 871 patients

7A. 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	3x5 index cards	$5.26	
				Invoice Subtotal	
				Shipping Charges	$51.98
				Invoice Total	

7B. Find the total for the invoice below:

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

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

8A. A home accessories store buys lamps with a net price of $5000. The terms of sale are 10/15, 5/30, n/45. If the invoice date is April 21, determine the net amount due if the payment is made on May 6.

8B. An electrical supply store bought copper wire with a list price of $26,200. The wholesaler extended a trade discount which made the net price $15,206. What is the trade discount rate to the nearest whole percent?

a. 32%
b. 49%
c. 42%
d. 72%

9A. The Rapid Print 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?

9B. Juan's Engineering buys computers with a list price of $32,000. If the supplier extends trade discounts of 42/32/12, what is the net price?

a. $516.10
b. $11,106.30
c. $18,415.00
d. $20,893.70

10A. It costs $202.48 to manufacture a certain desk. If the desired percent markup based on cost is 15%, how much should the desk sell for?

10B. The Best Floor Company purchases carpeting for $5.12 per square yard and marks it up 55% based on selling price. What is the selling price per square yard?

a. $7.42
b. $7.94
c. $9.31
d. $11.38

11A. A fishing boat sells for $9000. What percentage of the sale price is the markup, if the cost of the fishing boat was $6600? Round to the nearest whole percent.

11B. JK Plumbing Supply buys a set of faucets at a wholesale price of $55 and charges a customer $79.75 for the same parts. What is the percent markup based on cost?

a. 24.75%
b. 37.3%
c. 45%
d. 55%

12A. At the end of the summer season, gas grills that originally sold for $249.00 were marked down 60% to make room for new merchandise. What was the sale price of the gas grills? Round to the nearest cent.

12B. A dishwasher that previously sold for $680 has been reduced to $449.99. What is the markdown percent? Round to the nearest tenth of a percent.

a. 33.8%
b. 49.9%
c. 51.5%
d. 66.2%

13A. Mira is the manager of a cellphone store and earns $29.50 per hour with time-and-a-half for overtime and double-time on Sundays. Compute Mira's gross pay for a week where she worked the following hours:

Day	Hours
Sunday	5
Monday	8
Tuesday	--
Wednesday	6.5
Thursday	9
Friday	10.5
Saturday	9

13B. Keisha's base pay rate is $23.50 per hour with overtime paid at time-and-a-half. Holiday pay is twice the base pay rate. Compute Keisha's gross pay for the following week:

Day	Hours
Sunday	11
Monday	--
Tuesday	--
Wednesday	9.5
Thursday (Thanksgiving)	8
Friday	10.5
Saturday	11.5

a. $1186.75
b. $1310.13
c. $1404.13
d. $1686.13

14A. Assume that social security tax for an employee is 6.2% of gross wages up to $176,100; while Medicare tax is 1.45% of all gross wages (no limit). Cassia Johnson is an elementary school teacher who earns an annual salary of $61,800. What is the total amount of social security and Medicare taxes that will be withheld from Cassia's annual earnings?

14B. Carter is paid $1500 biweekly. This year, to date, he has earned $25,000. Assume that Social Security tax for an employee is 6.2% of gross wages up to $176,100; while Medicare tax is 1.45% of all gross wages (no limit). What will be the total deduction for Social Security and Medicare taxes on Carter's next paycheck?

a. $21.75
b. $93.00
c. $114.75
d. $1912.50

15A. On June 21, Mateo borrowed \$9000 at $9\frac{1}{4}$ % exact interest for 120 days. State the maturity date and maturity value of this loan.

15B. Amelia takes out an emergency loan of \$4500 at 12.5% ordinary interest for 240 days. What is the maturity value of the loan?

a. \$369.86
b. \$375.00
c. \$4869.86
d. \$4875.00

16A. Calculate the bank discount and proceeds for the following simple discount note.

Face value: \$18,000
Discount rate: 10.2%
Bank term: 62 days

16B. What are the proceeds of a simple discount note for \$10,500 at a discount rate of 9% for 15 months?

a. \$945.00
b. \$1181.25
c. \$9318.75
d. \$11,681.25

17A. Use the ordinary interest method to compute the time (in days) for a loan of $24,600 at 12% that has simple interest of $1599.

17B. Compute the rate of interest on a loan of $2000 for 284 days if the amount of interest is $93.37. Use the exact interest method and round your answer to the nearest tenth of a percent.

a. 4.7%
b. 5.9%
c. 6.0%
d. 14.2%

18A. Jake plans to invest $5000 for 2 years in a money market account. Jenius Bank pays 4.2% interest compounded monthly. Quontic Bank pays 4.25% compounded quarterly. Which bank should Jake choose? How much more interest will he earn in his money market account at that bank?

18B. Calculate the compound amount on an investment of $9500 at 4% interest, compounded semiannually, for 3 years.

a. $10,640.00
b. $10,698.54
c. $10,704.84
d. $10,709.08

19A. Jenius Bank pays 4.2% interest compounded monthly on a money market account. Quontic Bank pays 4.25% compounded quarterly on a money market account. Jackie wants to have $25,000 in a money market account 2 years from now when she gets married. Calculate the amount of the initial deposit needed at the bank with the higher APY to grow to $25,000 in 2 years.

19B. The Bashar family would like to buy a house in three years. They want to have $50,000 as a down payment. What amount must they invest today at 5% interest compounded monthly to reach this goal?

a. $43,048.81
b. $43.075.43
c. $43,478.26
d. $58,073.61

20A. Grandma Kathy is setting up a college account for her grandson Fritz. She wants Fritz to be able to withdraw $1000 at the beginning of every month for 4 years while he is in college. If the college account earns 8% interest compounded monthly, how much should be in the account when Fritz starts college? Round your answer to the nearest dollar.

20B. To supplement his retirement income, Bao plans to withdraw $10,000 at the end of every 3 months from his Roth IRA for 25 years after he retires. If the investments in his Roth account average 7.5% interest compounded quarterly, how much should be in Bao's IRA when he retires?

a. $250,000.00
b. $450,111.64
c. $458,551.23
d. $1,000,000.00

21A. 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?

21B. Gabriela wishes to accumulate $7000 in 5 years. Determine the sinking fund payment she would need to make at the end of each year at $5\frac{1}{2}$ % interest compounded annually.

a. $101.62
b. $1254.24
c. $1387.23
d. $1481.48

22A. Jim Marcon 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?

22B. Joaquin 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

23A. Zhang Wei's previous month's balance on his revolving credit account was $1216.80. The account had the following activity for June:

June 10 – Car Payment of $275.40;
June 15 – Returned a car radio to Elemore's Electronics for $86.60;
June 19 – Card payment of $300;
June 25 – Marv's Meats for $45.70;
June 28 - Bev's Beauty Salon for $72.10

Fill in the rest of the table below and calculate the average daily balance. The finance charge is calculated on the average daily balance at a 15% annual percentage rate. How much is the finance charge for June? What is Zhang's new balance?

Dates	Number of Days	Activity/Amount	Unpaid Balance	Daily Balances
June 1 –				

23B. LeAnna has a revolving credit account at an annual percentage rate of 21%. Her previous monthly balance is $944.50. Find the balance on April 1 if LeAnna's account showed the following activity. Use the unpaid balance method.

Dates	Activity	Amounts	Balance
March 1	Starting Balance		$944.50
March 5	Cash Advance	$200	
March 12	Valley Gym	$149.99	
March 17	Horizon Internet	$89.95	
March 22	Payment	$50	
March 26	Gas and Electric	$234.61	

a. $1569.05
b. $1585.58
c. $1591.59
d. $1596.51

24A. 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 to the nearest dollar.

24B. Alex wishes to take out an installment loan to finance the purchase of a lawnmower 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

25A. The Andersons are purchasing a home with a mortgage of $220,000 at $7\frac{3}{4}\%$. They can finance for 15 years or 30 years. How much will their monthly payment be if they choose the 30-year mortgage? How much will their monthly payment be if they choose the 15-year mortgage?

25B. Roberto has a mortgage of \$300,000 at $8\frac{1}{2}\ \%$ for 20 years. Find the monthly payment.

a. \$1356.25
b. \$2306.74
c. \$2509.32
d. \$2603.47

26A. The Andersons are purchasing a home with a mortgage of \$220,000 at $7\frac{3}{4}\%$. They can finance for 15 years or 30 years. How much interest will they pay if they choose the 30-year mortgage? How much interest will they pay if they choose the 15-year mortgage?

26B. The Wiśniewski family is taking out a fixed rate mortgage of \$450,000 from Moola Credit Union. A 40-year mortgage has a monthly payment of \$2169.88 and a 20- year mortgage has a monthly payment of \$2969.80. Calculate the total savings if the Wiśniewski family chooses the 20-year mortgage.

a. \$191,980.80
b. \$226.294.40
c. \$328,790.40
d. \$467,193.80

27A. 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 a rate per thousand of $10.71, how much would the life insurance cost her?

27B. Devin is a 29-year-old male and wishes to purchase $190,000 in twenty-year-payment life insurance to cover his mortgage in the event of his death. If the rate per thousand the chart shows at his age is $11.58, how much would the life insurance cost him?

a. $335.82
b. $2200.20
c. $2280.00
d. $5510.00

28A. 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

28B. Rudy needs temporary property insurance to cover his home for a period of 6 months. The annual premium is $1266. Use the table below to determine the amount of refund he will receive after 6 months.

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

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

29A. 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. Fill in the depreciation schedule below. What is the amount of accumulated depreciation after the second year? What is the book value of the cooler after the fifth year?

End of Year	Annual Depreciation	Accumulated Depreciation	Book Value
1			
2			
3			
4			
5			
6			

29B. 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

30A. 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?

30B. 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

ANSWER KEY

1A.	$1\frac{19}{20}$ boards	1B.	a
2A.	21 cubic yards	2B.	a
3A.	390.1 miles	3B.	a
4A.	$1504.44	4B.	b
5A.	630 girls	5B.	b
6A.	$31,893.08	6B.	c
7A.	$442.71	7B.	d
8A.	$4500	8B.	c
9A.	$324	9B.	b
10A.	$232.85	10B.	d
11A.	27%	11B.	c
12A.	$99.60	12B.	a
13A.	$1607.75	13B.	c
14A.	$4727.70	14B.	c
15A.	October 19; $9273.70	15B.	d
16A.	$316.20; $17,683.80	16B.	c
17A.	195 days	17B.	c
18A.	Quontic Bank; $3.80	18B.	b
19A.	$22,973.11	19B.	a
20A.	$41,235	20B.	b
21A.	$19,232.85; $307,617.40	21B.	b
22A.	$7041.16; $393.84	22B.	b
23A.	$1259.74 average daily balance; $15.75 finance charge; $1239.15 new balance	23B.	b
24A.	$368.67; $6496	24B.	d
25A.	$1576.11; $2070.81	25B.	d
26A.	$347,399.60; $152,745.80	26B.	c
27A.	$1702.89	27B.	b
28A.	$2499	28B.	a
29A.	$9360; $6680	29B.	a
30A.	Double-declining balance method; $11,776	30B.	d

FORMULAS	
Compound Amount (Future Value)	$\mathrm{A} = \mathrm{P}\,(1+i)^n$
Present Value – Investments at Compound Interest	$\mathrm{PV} = \dfrac{\mathrm{A}}{(1+i)^n}$
Future Value—Ordinary annuity	$\mathrm{FV} = \mathrm{Pmt} \times \dfrac{(1+i)^n - 1}{i}$
Future Value—Annuity due	$\mathrm{FV} = \mathrm{Pmt} \times \dfrac{(1+i)^n - 1}{i} \times (1+i)$
Present Value—Ordinary annuity	$\mathrm{PV} = \mathrm{Pmt} \times \dfrac{1-(1+i)^{-n}}{i}$
Present Value—Annuity due	$\mathrm{PV} = \mathrm{Pmt} \times \dfrac{1-(1+i)^{-n}}{i} \times (1+i)$
Sinking Fund Payment	$\mathrm{Pmt} = \mathrm{FV} \times \dfrac{i}{(1+i)^n - 1}$
Amortization Payment	$\mathrm{Pmt} = \mathrm{PV} \times \dfrac{i}{1-(1+i)^{-n}}$