Columbus State Community College
Math 1010: Mathematics For Business And Applications
Departmental Review For Final Exam

Calculators should be used.

1. Solve each of the following equations for the unknown.

   A) $B - 16 = 27$ B) $4N = 72$

   C) $\frac{D}{8} - 22 = 5$ D) $11(Y - 7) = 143$

2. 1/8 of Johnson Co. sales are cash sales. If sales totaled $2,500,000 then what is the dollar amount of the cash sales?

3. Convert the following percents to decimals.
   (Round answers to three places after the decimal point if necessary.)

   A) $29\frac{1}{4}\%$ B) 54% C) 1.3%

4. Convert the following decimals to percents.

   A) 0.124 B) 2.6 C) 0.98

5. Convert the following percents into fractions.
   A) 124% B) $18\frac{2}{3}\%$ C) $52\frac{1}{4}\%$

6. The sales tax in the state of New Jersey is 6% of sales. If the Hacketts Appliance Store collected $1,650 in sales taxes then what were the total sales?

7. Mary, a real estate salesperson, sold four homes during the month for a total of $790,000 in sales. The real estate firm she works for charges a commission of 5% on all sales.

   A) What is the total commission for Mary's sales?

   B) If Mary gets to keep 40% of the total commission then how much did Mary earn during the month?

8. What is 39.8% of 6,810?

9. 41.8 is what percent of 190?

10. 3,840 is what percent of 1,248?

11. Yesterday the local coffee shop sold 1,450 donuts. Today, only 1,125 donuts were sold. What is the percent of decrease? Round to the nearest tenth of a percent.

12. The enrollment at a local college increased 12% over last year. If the enrollment was 12,000 students last year then what is the enrollment this year?

13. A welder earns $9.47 per hour plus time and a half for overtime (more than forty hours per week). During one week he worked 47 hours. What is his gross pay for the week?

14. A door-to-door magazine salesperson earns a commission of 9% of weekly sales over $400.00. What is the commission for a week in which total sales are $1,453.00?

15. Use the percentage method to find the federal withholding tax for a single worker claiming 2 allowances if they are paid a semi-monthly salary of $1,750.00.

16. How much is deducted from a gross pay of $850.00 for the following:

    A) FICA? B) Medicare?

17. A case of oil sells for $12.50 and costs $9.00, find the rate of markup based on the selling price.

18. A furniture store sells a lampshade with a markup of 36% of the selling price. The selling price of the lampshade is $19.00. What is the cost of the lampshade?

19. A freezer that costs $435 sells for $512.30. What is the rate of markup based on cost? Round to the nearest tenth of a percent.

20. An oak bedroom set originally sold for $1,675. The bedroom set is on sale now for 15% off. What is the sale price of the bedroom set?

21. Trapper Auto Parts is entitled to a series trade discount of 15/10/5 on a shipment of windshield wipers with a total list price of $832.00.

A) What is the net price of the shipment?

B) What is the discount received?

22. A bookcase with a list price of $487 is subject to a series trade discount of 30/20/10.

A) What is the net price of the bookcase?

B) What is the single discount equivalent of a 30/20/10 series trade discount?

23. Kennedy Dental Clinic received an invoice for $637.50 dated August 15.
The terms were 3/10, n/30 EOM.

A) What is the last date that Kennedy Dental can receive a discount?

B) If Kennedy Dental pays the invoice on September 7, how much should they pay?

24. The Hercules Health Club received an invoice dated March 5 for $1,287. The terms of the invoice were 5/10, n/30. A partial payment of $750 was made on March 12.

A) What is the amount of the credit received for the partial payment of $750?

B) What is the outstanding balance due by April 11?

25. Convert each of the following metric measurements to the indicated units.
Do not round your answer.

A) Convert 6.53 m to decimeters.

B) Convert 0.43 kg to grams.

C) Convert 924 ml to liters.

D) Convert 765 cm to meters.

E) Convert 235.4 g to kilograms

F) Convert 24,600 m to kilometers.

26. On a typical morning Marc drives 18.4 miles to his job. How far does he drive in kilometers?

27. Convert each of the following measurements from metric measures to US customary units. Round results to 3 decimal places if necessary.

A) Convert 65.4 m to feet.

B) Convert 47.6 kg to pounds.

C) Convert 750 g to ounces.

D) Convert 36 km to miles.

28. Convert each of the following measurements from US customary units to metric units. Round results to 3 decimal places if necessary.

A) Convert 6.25 inches to centimeters.

B) Convert 6.4 yards to meters.

C) Convert 55 gallons to liters.

D) Convert 97 feet to meters.

29. How many quarts of soda are there in five 1-liter bottles?

30. After months of training John ran his first marathon. His finish time was recorded as 3 hours, 12 minutes and 17 seconds. How many seconds did it take him to run the race?

31. Convert each of the following temperatures from Fahrenheit to Celsius.

A) Convert 68.4° F to Celsius.

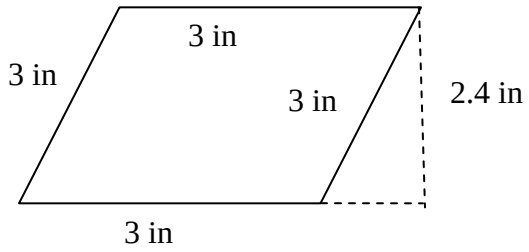
B) Convert -12° F to Celsius.

32. Convert each of the following temperatures from Celsius to Fahrenheit.

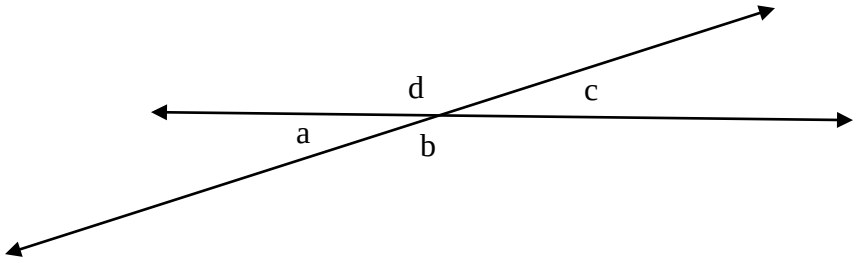
A) Convert 3.6° C to Fahrenheit.

B) Convert 32° C to Fahrenheit.

33. What is the best name for the polygon below? Find the perimeter and area of the polygon.



34. Answer each of the following for the figure below.



A) Name a pair of vertical angles.

B) Name a pair of supplementary angles.

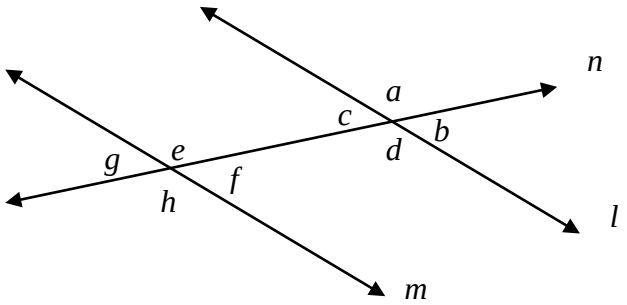
C) Name a pair of adjacent angles.

D) Name an acute angle.

E) What is the sum of the measures of all 4 angles?

F) Name an obtuse angle.

35. In the figure below, lines *l* and *m* are parallel lines cut by the transversal line *n*.

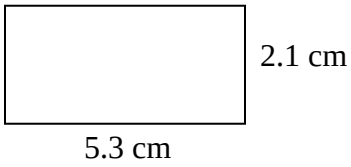


A) Name a pair of alternate interior angles.

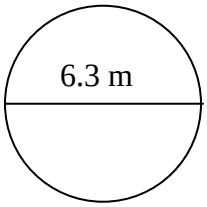
B) Name a pair of corresponding angles.

C) The measure of $\angle a$ is $112°$, find the measure each of the other angles.

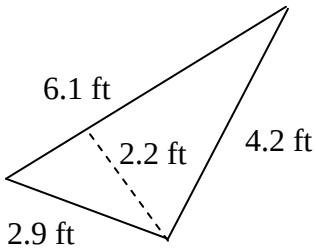
36. Find the area and perimeter of each of the following plane figures and name the figure. Round all answers to 3 decimal places if necessary. Include units.

A) 

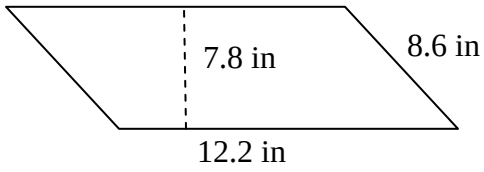
Area Perimeter Name

B) 

Area Circumference Name

C) 

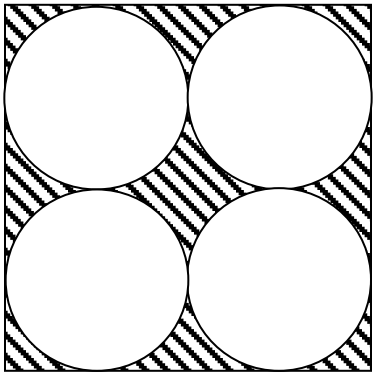
Area Perimeter Name

D) 

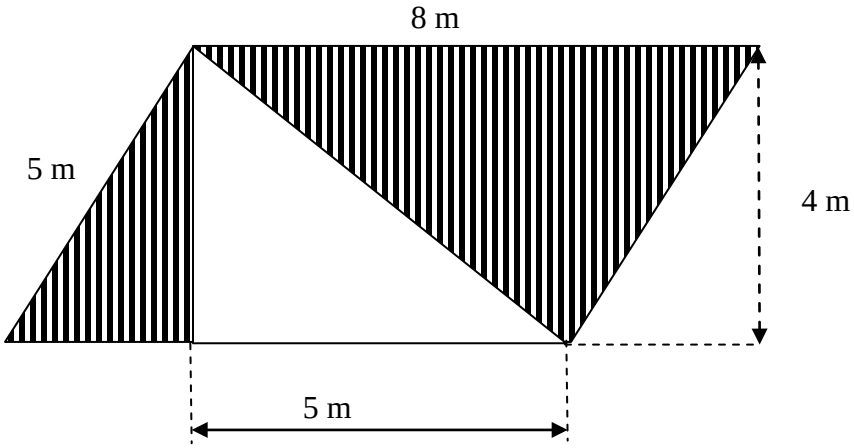
Area Perimeter Name

37. Find the area of the shaded region in each of the following figures. Round all answers to 3 decimal places if necessary. Include units.

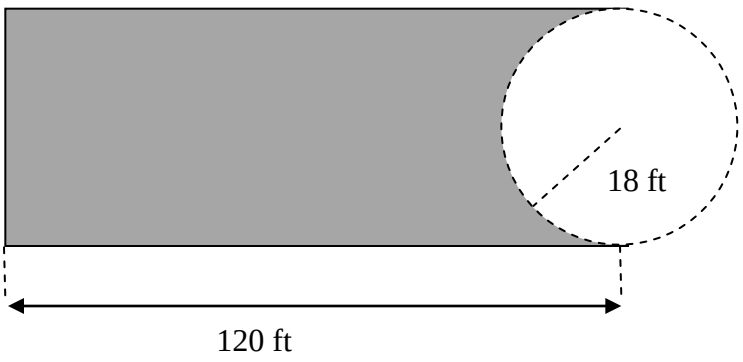
A)



B)



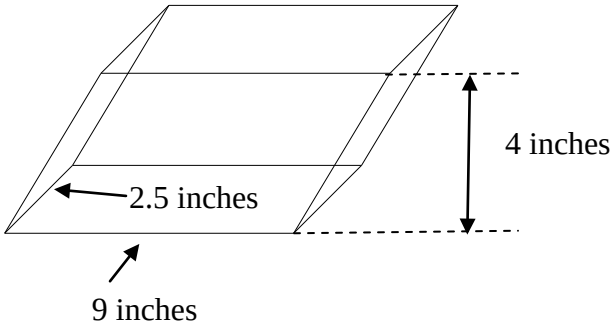
C)



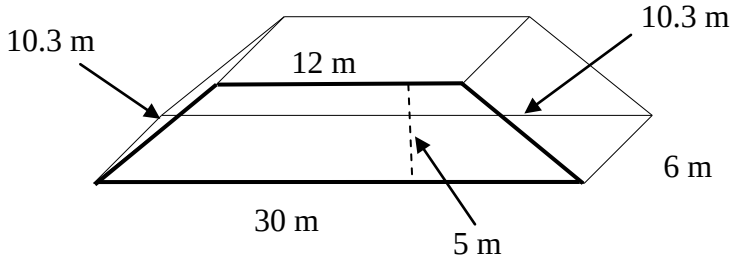
38. A sector of a circle with a radius of 12 m has a central angle of 68°. What is the area of the sector and what is the length of the arc of the sector?

39. Find the volume, lateral surface area, and total surface area of each of the following figures. Round all answers to 3 decimal places if necessary. Include units.

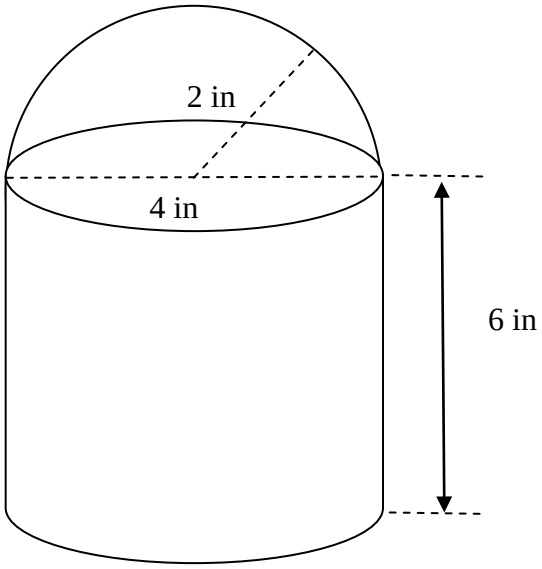
A) Oblique rectangular prism.



B) Right Trapezoidal prism.



C)



40. For an investment of $7630 at 6% simple interest for 10 months.

A) Find the interest earned by the investment.

B) Find the maturity value of the investment.

41. What is the ordinary simple interest on a 115 day loan of $6,500 at the rate of 11.5%

42. Life Foods wants to borrow $120,000 at 13% exact simple interest. What will be the maturity value of the loan if it is due in 120 days?

43. How much money must be invested at 12% simple interest to earn $770 in 5 months?

44. What are the proceeds on a 16% simple discount note for $7,900 if the note is due in 7 months.

45. An investment of $6,000 is made at 10% compounded monthly.

A) What is the value of the investment in 2 years?

B) How much interest did this investment earn?

46. How much must be deposited now at 20% compounded quarterly in order to have $50,000 in 5 years?

47. Find the installment price for a stereo with a cash price of $3,250 and finance terms of 18% of the cash price.

48. What is the installment price of a projection television set offered as $500 down and $229 a month for 18 months?

49. Trevor purchased a new kitchen at an installment price of $6,700. He made a down-payment of $2,000 and agreed to pay the remainder in 24 equal monthly payments. What is Trevor's monthly payment?

50. Find the APR for an installment purchase if the cash price is $555 and the installment price is $593 to be paid in 12 equal monthly installments.

51. Frank and Irma took out a 4.5%, 20-year mortgage of $158,000.

A. What is their monthly mortgage payment?

B. How much interest will Frank and Irma pay over the life of this mortgage?

52. Victoria can afford a monthly mortgage payment of $950.00. How much money can Victoria borrow at an annual rate of 5.25% for a term of 30 years?

53. A truck costing $47,000 has a useful life of 5 years and a salvage value of $8,000. Find (A) the total depreciation and (B) the first year's depreciation by the straight line method of depreciation.

A. Total Depreciation: B. First year's Depreciation:

54. A drilling machine costing $65,000 has a useful life of 6 years and a salvage value of $15,000. Complete the first two years of a depreciation schedule using the sum-of-the-year's-digits method of depreciation.

55. What is the first year's depreciation on an asset with a cost of $50,000 if the asset is considered a 3 year asset for depreciation purposes? Use the MACRS method of depreciation.

56. The cost of a mobile home is $37,800. The useful life of the mobile home is 10 years and the salvage value is $6,000. Determine the book value at the end of the second year using the double-declining-balance method of depreciation.

57. Complete the inventory record and determine the value of the inventory by the methods indicated below. Note: There are 24 units in inventory.

Date	Number of Units Purchased	Price per Unit	Number of units sold	Number of units remaining in inventory
Beginning	16	$7.00	15	
1/22	28	$11.00	15	
2/19	23	$9.00	19	
3/26	13	$10.00	7	

A. Use specific identification. B. Use FIFO C. Use Average Cost

Complete the following purchase record and use it for problems 58 through 61.

Date	Number of Units	Unit Price	Cost	Units Sold
Beginning	10	$2.35		9
May 1	12	$2.40		10
May 20	14	$2.30		7
June 1	6	$2.45		1
	=======		=======	=======
TOTALS:				27

58. Find the Value of the inventory and the Cost of Goods Sold by the Specific Identification method.

59. Find the Value of the inventory and the Cost of Goods Sold by the Weighted Average Cost method.

60. Find the Value of the inventory and the Cost of Goods Sold by the FIFO method.

61. Find the Value of the inventory and the Cost of Goods Sold by the LIFO method.

62. Find the sales tax and total bill, including tax, on each of the following purchases:

A) A purchase of $27.36 if the tax rate is 6 ¼ %.

B) A purchase of $437.95 if the tax rate is 5%.

C) A purchase of $284.30 if the tax rate is 6 ½ %.

63. A home has a market value of $187,000. The assessed value is 25% of the market value in this area and the county property taxes are $4.25 per $100 of assessed value. What is the annual property tax on this home?

SOLUTIONS: Math 1010 Final Review

1. A) B=43 B) N=18 C) D=216 D) Y=20

2. $1 \div 8 \times 2500000 = 312500$ $312,500

3. A) 0.2925 B) 0.54 C) 0.013

4. A) 12.4% B) 260% C) 98%

5. A) $\frac{31}{25}$ B) $\frac{56}{300} = \frac{14}{75}$ C) $\frac{209}{400}$

6. B = sales P = Tax = $1,650 R = 6% = 0.06 $B = P/R = \$1{,}650/0.06 = \$27{,}500$

7. A) $0.05 \times \$790{,}000 = \$39{,}500$ B) $0.40 \times \$39{,}500 = \$15{,}800$

8. 2,710.38 9.) 22% 10.) 307.7%

11 B = original = 1,450 P = amount of decrease = 1,450 – 1,125 = 325
$R = P/B = 325/1450 = 0.22414 = 22.414\%$ Round to be 22.4%

12. B = original = 12,000 P = amount of increase R = 12% = 0.12
$P = R \times B = 0.12 \times 12000 = 144$ New enrollment is 12,000 + 144 = 13,440

13 Regular pay $= 40 \times \$9.47 = \$378.80$
Overtime Pay $= 7 \times \$9.47 \times 1.5 = \$99.435 = \$99.44$
Gross Pay $= \$378.80 + \$99.44 = \$478.24$

14. Commission $= 0.09 \times (\$1{,}453.00 - \$400.00) = 0.09 \times \$1{,}053.00 = \$94.77$

15. Using the Percentage Method of Federal Withholding tables from the book or printed out from the course site.
Withholding Allowance: $2 \times \$152.08 = \$304.16$
Income Subject To Federal Withholding: $\$1{,}750.00 - \$304.16 = \$1{,}445.84$
This is also known as the Adjusted Gross Income = $1,445.85

Since our worker is single and paid semimonthly we look in table 3a and find the adjusted gross pay falls between $434 and $1,502 so reading across we see the federal withholding will be $18.20 plus 15% of the excess over $434 which we can write mathematically as:

$$\begin{aligned}\text{Federal Withholding} &= \$18.20 + 0.15 \times (\$1{,}445.84 - \$434) \\ &= \$18.20 + 0.15 \times (\$1{,}011.84) \\ &= \$18.20 + \$151.78 \\ &= \$169.98\end{aligned}$$

16. A) FICA $= 0.062 \times \$850.00 = \$52.70$ B) Medicare $= 0.0145 \times \$850.00 = \$12.33$

17. C = \$9.00, S = \$12.50, M = \$3.50
Rate of markup based on S $= \$3.50 \div \$12.50 = 0.28 = 28\%$

18. C = ?, S = \$19.00, Rate of Markup based on S = 36% $\quad$ Markup $= 0.36 \times \$19.00 = \$6.84$
Cost $= \$19.00 - \$6.84 = \$12.16$

19. C = \$435, S = \$512.30, M = \$77.30
Rate of Markup based on C $= \$77.30 \div \$435.00 = 0.177701 = 17.7701\% = 17.8\%$

20. \$1,423.75

21. A) Net $= 0.85 \times 0.90 \times 0.95 \times \$832.00 = \$604.66$
B) Discount $= \$487 - \$245.45 = \$227.34$

22. A) Net $= 0.70 \times 0.80 \times 0.90 \times \$487 = \$245.45$
B) Single Discount Equivalent $= 1 - (0.70 \times 0.80 \times 0.90) = 0.496 = 49.6\%$

23. A) Sept. 10 (10 days after the End Of the Month)
B) Payment $= 0.97 \times \$637.50 = \$618.38$

24. A) Credit $= \dfrac{\$750}{0.95} = \$789.47$ $\quad$ B) Balance $= \$1{,}287.00 - \$789.47 = \$497.53$

25.

A)	6.53 m = 65.3 dm	B)	0.43 kg = 430 g
C)	924 ml = 0.924 L	D)	765 cm = 7.65 m
E)	235.4 g = 0.2354 kg	F)	24,600 m = 24.6 km

26. 18.4 miles x 1.6093 = 29.611 km

27.

A)	65.4 m = 214.564 ft	B)	47.6 kg = 104.939 lbs
C)	750 g = 26.475 ounces	D)	36 km = 22.370 mi

28.

A)	6.25 in = 15.875 cm	B)	6.4 yds = 5.852 m
C)	55 gal = 208.186 L	D)	97 ft = 29.566 m

29. 5 liters = 5.284 quarts

30. 3 x 60 x 60 + 12 x 60 + 17 = 11,537 seconds

31. A) 68.4° F = 20.2° C $\quad$ B) -12° F = -24.4° C

32. A) 3.6° C = 38.5° F $\quad$ B) 32° C = 89.6° F

33. Rhombus, $\quad$ Area = 7.2 sq in, $\quad$ Perimeter = 12 in

34. A) Vertical angles are angles a and c, b and d.
B) Supplementary angles are a and b, b and c, c and d, a and d
C) Adjacent angles are a and b, b and c, c and d, a and d
D) Acute angles are a and c.
E) Sum of the measures is $360°$
F) Obtuse angels are b and d

35. A) Alternate interior angles are e and d, f and c.
B) Corresponding angles are a and c, b and f, c and g, d and h
C) $\angle a = 112°$ $\angle b = 68°$ $\angle c = 68°$ $\angle d = 112°$
$\angle e = 112°$ $\angle f = 68°$ $\angle g = 68°$ $\angle h = 112°$

36.

A)	Rectangle	Area = 11.13 sq cm	Perimeter = 14.8 cm
B)	Circle	Area = 31.172 sq m	Circumference = 19.792 m
C)	Triangle	Area = 6.71 sq ft	Perimeter = 13.2 ft
D)	Parallelogram	Area = 47.58 sq in	Perimeter = 41.6 in

37. A) Shaded area = area of the square minus the area of the 4 circles. Each circle has a radius of $r = 10 \div 4 = 2.5\ cm$. Shaded area: $A = 10 \times 10 - 2.5^2 \times \pi \times 4 = 21.460$ sq cm.

B) Shaded area = area of the parallelogram minus the triangle. The parallelogram has a base length of 8 m and a height of 4 m. The triangle has a base of 5 m and the same height of 4 m. Shaded area: $A = 8 \times 4 - \frac{1}{2} \times 5 \times 4 = 22$ sq m.

C) The shaded area = the area of the rectangle with length 120 ft and width 36 ft (from the diameter of the circle) minus the area of half of the circle of radius 18 ft.

Shaded area : $A = 120 \times 36 - \pi \times 18^2 \times \frac{1}{2} = 3{,}811.062$ sq ft.

38. Area of a sector: $A = \frac{68}{360} \times \pi \times 12^2 = 85.451$ sq m

Arc length of a sector: $s = \frac{68}{360} \times 2 \times \pi \times 12 = 14.242$ m

39. A) Oblique Rectangular Prism has a rectangle with a length of 9 inches and width of 2.5 inches for a base with height of 4 inches.
Volume: $V = 2.5 \times 9 \times 4 = 90$ cubic inches.
Total Surface Area: $TSA = (9 + 9 + 2.5 + 2.5) \times 4 + 2 \times (2.5 \times 9) = 137$ sq in

B) Right Trapezoidal Prism has a trapezoid with bases of length 30 m and 12 m and height of 5m. The distance between the bases is 6 m and the length of the non-parallel sides are 10.3 m each.

Volume: $V = \frac{1}{2} \times 5 \times (30 + 12) \times 6 = 630$ cubic meters.

Total Surface Area: $TSA = (30 + 12 + 10.3 + 10.3) \times 6 + 2 \times \left(\frac{1}{2} \times 5 \times (30 + 12) \right) = 585.6$ sq m

39. C) Compound figure with a right circular cylinder and a hemisphere, each of radius 2 in. The height of the cylinder is 6 in. For Total Surface Area we need to add the lateral surface area of the cylinder to half the surface area of the sphere and the area of the circular base of the cylinder.

Volume: $V = \left(\pi \times 2^2 \times 6\right) + \frac{1}{2} \times \left(\frac{4}{3} \times \pi \times 2^3\right) = 92.153$ cubic inches.

Total Surface Area: $TSA = (2 \times \pi \times 2 \times 6) + \frac{1}{2} \times \left(4 \times \pi \times 2^2\right) + \left(\pi \times 2^2\right) = 113.097$ sq in

40 a.) \$381.50 b.) \$8011.50

41. \$238.78 42.) \$125,128.77 43.) \$15,400

44.) \$7162.67

45. a.) Compound Interest Future Value: $6000(1 + 0.10 \div 12)^{2\times12} = \$7{,}322.35$

b.) $\$7{,}322.35 - \$6{,}000 = \$1{,}322.35$

46. Compound Interest Present Value $50{,}000 \div (1 + 0.20 \div 4)^{20} = \$18{,}844.47$

47. \$3,835.00 48.) \$4,622.00 49.) \$195.83

50. Interest per \$100 Financed $\frac{38}{555} \times \$100 = \$6.85$, APR Table row 12 APR = 12.50%

51. a.) Mortgage Payment Table: 6.33×158 = \$1,000.14

B.) 30×12×\$1,000.14 = \$240,033.60 Interest = \$240,033.60 - \$158,000 = \$82,033.60

52. Mortgage Payment Table, Cost is \$5.52 per \$5,000 financed so \$950.00 ÷ \$5.52 = 172.1014 thousand dollars or \$172,101.40 in mortgage.

53. a.) \$39,000 b.) \$7,800

54. Below

Year	Rate	Depreciation	Acc.Dep.	Book Value
1	6/21	\$14,286	\$14,286	\$50,714
2	5/21	\$11,905	\$26,191	\$38,809

55. \$16,665 56. \$24,192

57 a.) \$246.00 b.) \$229.00 c.) \$227.10

Date	Number of Units	Unit Price	Cost	Units Sold
Beginning	10	$2.35	*$23.50*	9
May 1	12	$2.40	*$28.80*	10
May 20	14	$2.30	*$32.20*	7
June 1	6	$2.45	*$14.70*	1
	=======		=======	=======
TOTALS:	*42*		*$99.20*	27

58. $1 \times \$2.35 = \$2.35$
$2 \times \$2.40 = \$4.80$
$7 \times \$2.30 = \$16.10$
$5 \times \$2.45 = \$12.25$
Value of Inventory: $35.50 Cost of Goods Sold: $99.20-$35.50=$63.70

59. Avg. Cost $= \$99.20 \div 42 = \$2.362$
Value of Inventory: $15 \times \$2.362 = \$35.43$ Cost of Goods Sold: $99.20-$35.43=$63.77

60. FIFO: 15 units in inventory
$6 \times \$2.45 = \$14.70$
$9 \times \$2.30 = \$20.70$
Value of Inventory: $35.40 Cost of Goods Sold: $99.20-$35.40=$63.80

61. LIFO: 15 units in inventory
$10 \times \$2.35 = \$23.50$
$5 \times \$2.40 = \$12.00$
Value of Inventory: $35.50 Cost of Goods Sold: $99.20-$35.50=$63.70

62. a.) $1.71, $29.07 b.) $21.90, $459.85 c.) $18.48, $302.78

63. $0.25 \times \$187{,}000 = \$46{,}750$
$\$46{,}750 \div 100 = \$467.50$
$\$467.50 \times \$4.25 = \$1{,}986.88$