

*MAT 007*  
*Foundations of Algebra*  
Final Exam Review

*BASIC MATH*

- 1) Estimate the sum by rounding to the nearest ten. 
$$\begin{array}{r} 20 \\ 17 \\ 99 \\ + 41 \\ \hline \end{array}$$
- 2) Estimate the product by rounding to the nearest hundred. 
$$\begin{array}{r} 551 \\ \times 835 \\ \hline \end{array}$$
- 3) Divide.  $90 \overline{)4840}$
- 4) Solve for  $z$ .  $54 = 19 + z$
- 5) Solve for  $w$ .  $204 = w \cdot 6$
- 6) Two of the world's longest rivers are the Nile, which is 4100 miles long, and the Rio Grande, which is 1900 miles long. Find how much longer the Nile is than the Rio Grande.
- 7) There are 325 members in a band and they are marching with 25 members in each row. How many rows are there?
- 8) A restaurant chain with 22 restaurants buys a new refrigerator for each store. Each refrigerator costs \$599. Find the total cost of the purchase.
- 9) Solve. A company has to ship 1770 kg of sand. If one bag can hold 19 kg of sand, how many bags can the company fill in with sand? How many kilograms of sand will be left over?

- 10) A loan of \$8,784 will be paid off in 48 monthly payments. How much is each payment?
- 11) Solve.  
A student bought 4 coats at \$69 each and paid for them with only \$20 bills. How many bills did it take?
- 12) Simplify.  $87 - 4 \cdot 11$
- 13) Simplify.  $9^3 \div 81 - 2$
- 14) A certain recipe asks for  $\frac{3}{5}$  cup of granola. How much is needed to make  $\frac{3}{4}$  of a recipe?
- 15) Simplify.  $\frac{9}{15}$
- 16) Multiply and simplify.  $\frac{2}{5} \cdot 35$
- 17) Multiply and simplify.  $\frac{3}{10} \cdot \frac{43}{100}$
- 18) Solve.  
Ariel receives \$45 for working a full day doing inventory at a hardware store. How much can she get for working  $\frac{4}{9}$  of a day?
- 19) Divide and simplify.  $\frac{7}{2} \div \frac{49}{4}$
- 20) Divide and simplify.  $\frac{7}{4} \div 7$
- 21) Solve for p.  $\frac{3}{7} \cdot p = 48$

22) A sporting goods manufacturer requires  $\frac{5}{6}$  yd of fabric to make a pair of soccer shorts.

How many shorts can be made from 10 yd of fabric?

23) Add and simplify.  $\frac{7}{8} + \frac{7}{8}$

24) Add and simplify.  $\frac{7}{9} + \frac{5}{6}$

25) Ruwanda walked  $\frac{3}{10}$  mi to Juan's dormitory, and then  $\frac{3}{5}$  mi to class.

How far did Ruwanda walk?

26) Subtract and simplify.  $\frac{7}{10} - \frac{13}{25}$

27) Solve.  $\frac{1}{2} + t = \frac{3}{5}$

28) Monica spent  $\frac{3}{4}$  hours listening to tapes of Beethoven and Brahms. She spent  $\frac{1}{5}$  hours listening Beethoven. How many hours were spent listening to Brahms?

29) Divide. Write a mixed numeral for the answer.  $7 \overline{)499}$

30) Add. Write the answer as a mixed numeral.

$$\begin{array}{r} 6\frac{5}{6} \\ + 2\frac{5}{6} \\ \hline \end{array}$$

31) Add.  $8\frac{1}{9} + 7\frac{2}{5}$

32) Subtract.  $9\frac{2}{5} - 5\frac{1}{3}$

33) Subtract. Write a mixed numeral for the answer. 
$$\begin{array}{r} 27 \\ - 22\frac{1}{2} \\ \hline \end{array}$$

34) Subtract. Write a mixed numeral for the answer 
$$\begin{array}{r} 22\frac{2}{15} \\ - 17\frac{8}{9} \\ \hline \end{array}$$

35) Multiply.  $17\frac{4}{7} \cdot \frac{1}{4}$

36) Multiply.  $20\frac{2}{5} \cdot 12\frac{1}{6}$

37) Divide. Write a mixed numeral for the answer.  $12 \div 1\frac{1}{13}$

38) Divide.  $7\frac{1}{6} \div 1\frac{6}{7}$

39) Janet wants to make a new outfit. Using 45 inch fabric, she needs  $1\frac{3}{8}$  yd for the dress,  $\frac{5}{8}$  yd of contrasting fabric for the trim, and  $3\frac{3}{8}$  yd for the jacket. Determine how many yards of 45 inch fabric she needs to make the outfit.

40) Round to the nearest tenth. 7.8493

41) Round 0.1331 to the nearest hundredth.

- 42) Round 62.43487 to the nearest one.
- 43) Add.  $0.79 + 1.5 + 0.871 + 628$
- 44) Solve.  $t + 23.7 = 80.66$
- 45) Divide.  $8 \overline{)5}$
- 46) Solve.  $4.1 \cdot q = 34.85$
- 47) Find decimal notation.  $\frac{19}{40}$
- 48) Find decimal notation.  $\frac{4}{15}$
- 49) Round  $0.\overline{29}$  to the nearest tenth, hundredth, and thousandth.
- 50) Calculate.  $\frac{1}{4} \times 12.24$
- 51) A consumer bought a CD for \$18.25 and paid with a \$20 bill. How much change was there?
- 52) Solve.  
A realtor paid \$18,589.22 for 45.8 acres of land. What was the cost per acre? Round to the nearest cent.
- 53) A business woman has \$1820.47 in her checking account. She writes checks of \$32.37, \$542.17, and \$89.56 to pay some bills. She then deposits a bonus check of \$591.85. How much is in her account after these changes?

- 54) Solve.  
A student worked 47 hr. during a week one summer. The student earned \$5.20 per hour for the first 40 hr. and \$7.80 per hour for overtime. How much did the student earn during the week?
- 55) Simplify the ratio. 14 to 22
- 56) Find the rate as a ratio of distance to time. 535 yd, 5 day
- 57) A passenger car will go 407 miles on 18.5 gallons of gasoline in city driving. What is the rate in miles per gallon?
- 58) Which has the lower unit price? Grapefruit Juice:  
Brand A: \$4.27 for 64 oz  
Brand B: \$2.45 for 48 oz
- 59) Solve for m.  $\frac{12}{6} = \frac{m}{21}$
- 60) Solve for x.  $\frac{x}{16} = \frac{144}{12}$
- 61) A car travels 691 km in 11 days. At this rate, how far would it travel in 33 days?
- 62) Suppose coffee beans from 14 trees are required to produce 17 lb of coffee, the amount each person in the United States drinks each year. How many trees are required to produce 371 lb of coffee? (Round to the nearest whole number.)
- 63) In a metal alloy, the ratio of zinc to copper is 3 to 19. If there are 741 lb of copper, how much zinc is there?
- 64) Find decimal notation. 42.9%
- 65) Find decimal notation. 0.3%

- 66) Find percent notation for 0.372.
- 67) Find percent notation.  $\frac{3}{4}$
- 68) Find percent notation.  $\frac{5}{8}$
- 69) 3.4% of 50 is what?
- 70) A family has a monthly income of \$3300 and plans to spend 10% of this amount on entertainment. How much will be spent on entertainment?
- 71) Of the 8760 hours in a year, one television was on for 2628 hours. What percent is this?
- 72) The amount in a savings account increased from \$200 to \$210. What was the percent of increase?
- 73) During a sale, a dress decreased in price from \$60 to \$45. What was the percent of decrease?
- 74) A person earns \$22,000 one year and gets a 5% raise in salary. What is the new salary?
- 75) Diners frequently add a 15% tip when charging a meal to a credit card. What is the total amount charged if the cost of the meal, without tip, is \$45?
- 76) The sales tax rate in a city is 8.8%. Find the tax charged on a purchase of \$204. Round to the nearest cent.
- 77) The sales tax is \$42 on the purchase of a dining room set for \$1050. Find the sales tax rate.
- 78) The sales tax on a purchase is \$16.00, and the sales tax rate is 4.9%. Find the purchase price. Round to the nearest dollar.

79) A salesperson's commission rate is 6%. What is the commission from the sale of \$36,000 worth of furnaces?

80) A salesperson earns \$110 commission selling \$2,200 worth of television sets. What is the commission rate?

81) Find the missing values.

Marked Price	Rate of Discount	Discount	Sale Price
\$20.60	25%		

82) Find the missing values.

Marked Price	Rate of Discount	Discount	Sale Price
	20%	\$21.40	

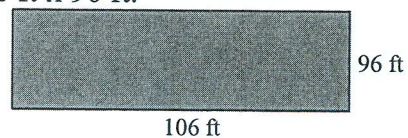
83) Find the simple interest.

Principal	Rate	Time
\$100	11%	1 year

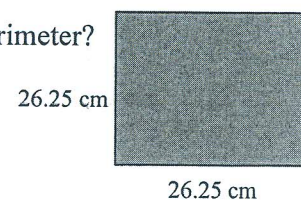
84) Find the simple interest.

Principal	Rate	Time
\$400	6.7%	$\frac{1}{2}$ year

85) Find the perimeter of the rectangle which is 106 ft x 96 ft.

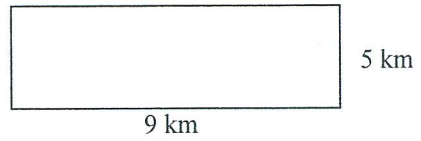


86) A piece of flooring tile is a square 26.25 cm on a side. What is the perimeter?

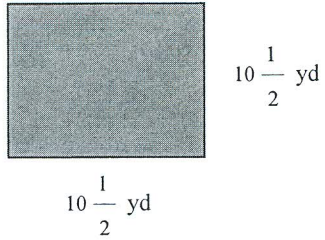




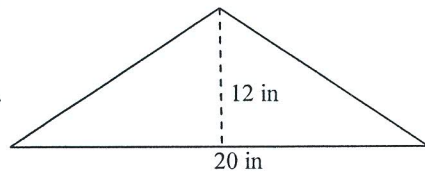
- 87) Find the area of a rectangle that is 9 km by 5 km.



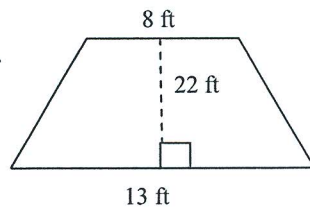
- 88) Find the area of a  $10\frac{1}{2}$  yd square.



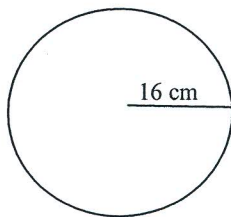
- 89) Find the area.



- 90) Find the area.

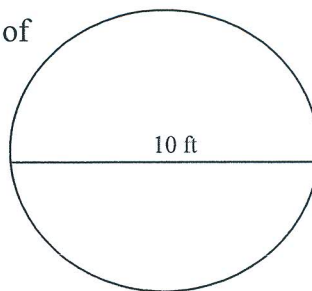


- 91) Find the length of the diameter, the circumference, and the area of the circle.

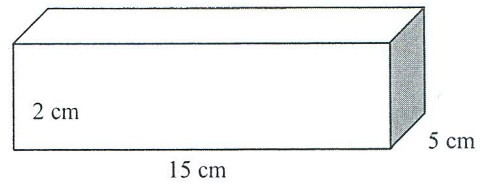


Use  $\pi = \frac{22}{7}$

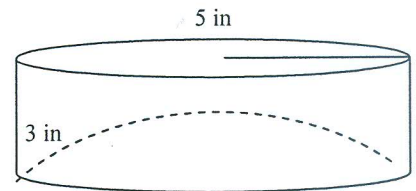
- 92) A trampoline has a diameter of 10 ft.  
What is the area?  
Use 3.14 for  $\pi$



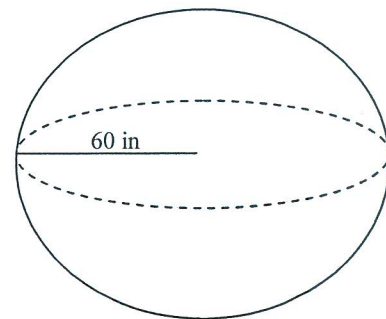
93) Find the volume of the figure on the right.



94) Find the volume of the circular cylinder on the right.  
Use 3.14 for  $\pi$ .



95) Find the volume of the sphere on the right.  
Use 3.14 for  $\pi$ .



## *Basic Math*

### Final Exam Review Answers

1) 180

2) 480,000

3) 53 R 70

4) 35

5) 34

6) 2200

7) 13

8) 13,178

9) 93  
3

10) 183

11) 14

12) 43

13) 7

14)  $\frac{9}{20}$

15)  $\frac{3}{5}$

16) 14

17)  $\frac{129}{1000}$

18) 20

19)  $\frac{2}{7}$

20)  $\frac{1}{4}$

21) 112

22) 12

23)  $\frac{7}{4}$

24)  $\frac{29}{18}$

25)  $\frac{9}{10}$

26)  $\frac{9}{50}$

27)  $\frac{1}{10}$

28)  $\frac{11}{20}$

29)  $71\frac{2}{7}$

30)  $9\frac{2}{3}$

31)  $15\frac{23}{45}$

32)  $4\frac{1}{15}$

- 33)  $4\frac{1}{2}$
- 34)  $4\frac{11}{45}$
- 35)  $4\frac{11}{28}$
- 36)  $248\frac{1}{5}$
- 37)  $11\frac{1}{7}$
- 38)  $3\frac{67}{78}$
- 39)  $5\frac{3}{8}$
- 40) 7.8
- 41) 0.13
- 42) 62
- 43) 631.161
- 44) 56.96
- 45) 0.625
- 46) 8.5
- 47) 0.475
- 48)  $0.\overline{26}$
- 49) 0.3  
0.29  
0.293
- 50) 3.06

- 51) 1.75
- 52) 405.88
- 53) 1748.22
- 54) 262.60
- 55)  $\frac{7}{11}$  yd/day
- 56) 107
- 57) 22 mi/gal
- 58) Brand B
- 59) 42
- 60) 192
- 61) 2073
- 62) 306
- 63) 117
- 64) 0.429
- 65) 0.003
- 66) 37.2%
- 67) 75.00%
- 68) 62.5%
- 69) 1.7
- 70) 330
- 71) 30%
- 72) 5%
- 73) 25%
- 74) 23,100

75) 51.75

76) 17.95

77) 4%

78) 327

79) 2160

80) 5%

81) 5.15  
15.45

82) 107.00  
85.60

83) 11

84) 13.40

85) 404

86) 105

87) 45

88)  $110\frac{1}{4}$

89) 120

90) 231

91) diameter 32      circumference  $\frac{704}{7}$       area  $\frac{5632}{7}$

92) 78.5

93) 150

94) 235.5

95) 904320

## BASIC ALGEBRA

1. Remove parentheses and simplify.  $5c + 5d - 6(6c - 6d) =$
2. Simplify.  $-6^2 + 7 =$
3. Simplify.  $5 - (-2 - 27) =$
4. Simplify.  $-90 - (-29) - 38 - (-52)$
5. Evaluate and simplify.  $\frac{z + y}{6}$  for  $z = 28$  and  $y = 2$
6. Evaluate the polynomial for  $x = 6$ .  $2x^2 - 3x + 6$
7. Solve.  $-9 + x = -17$
8. Solve.  $-x = -48$
9. Solve.  $\frac{x}{7} = -10$
10. Solve.  $-\frac{3}{5}x = \frac{6}{35}$
11. Solve.  $6x + 10 = 22$
12. Solve.  $6x - 4 = 4x$
13. Solve.  $4y - 2 = 33 - 3y$



14. Solve.  $4(3x - 2) = 52$
15. Solve.  $3(3 + 3x) - 5 = 49$
16. Solve.  $8x - (3x + 7) = 23$
17. Solve.  $4(x - 6) + 8 = 6(x + 2) - 8$
18. Solve.  $3.4x - 3.44 = 2.72 - 4.3x$
19. Solve.  $\frac{5}{8}x + \frac{1}{16}x = \frac{5}{16} + x$
20. Solve for  $j$ .  $D = jm$
21. Solve for  $g$ .  $e = \frac{g + p}{2}$
22. Solve, then graph.  $x + 7 > 2$   
Which of the answers is the graph of the solution set?
23. Solve, then graph.  $a + 7 \leq -11$   
Which of the answers is the graph of the solution set?

24. Solve.  $2x + 8 \leq x + 7$

25. Solve.  $-7x \leq 21$

26. Solve.  $11x - 13 < -46$

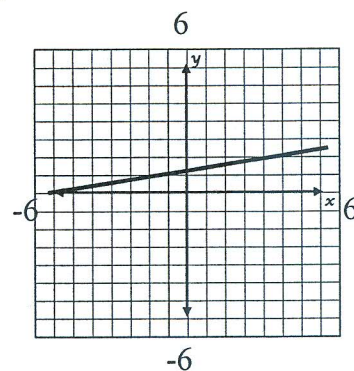
27. Solve.  $38 > 6 - 8x$

28. Solve.  $6(2x - 3) < 18$

29. Solve.  $y + \frac{2}{7} \leq \frac{7}{14}$

30. Graph the equation and identify the  $y$  intercept.  $y = \frac{1}{2}x + 5$

31. Determine the slope of the line shown at the right.



32. Graph the line containing the given pair of points and find the slope.  
 $(-2, 5), (3, -3)$

33. Find the slope and the  $y$  intercept of the line.  $y = -5x - 7$

34. Graph the equation using the slope and  $y$  intercept.  $6y + 5x = 6$

35. Simplify.  $(2p^8)^2$
36. Simplify.  $\left(\frac{n^8x}{y}\right)^3$
37. Add.  $(9x^2 - 7x + 19) + (2x^2 + 9x - 52)$
38. Add.  $(4x^2 - xy + y^2) + (-x^2 - 7xy + 8y^2)$
39. Subtract.  $(9x^4 + 4x^3 - 2) - (6x^2 - 9x + 3)$
40. Multiply.  $(4x^9)(-3x^2)(9x^8)$
41. Multiply.  $9x(6x^2 - 9x + 8)$
42. Multiply.  $(x - 7)(x - 3)$
43. Multiply.  $(8x - 2)(x + 5)$
44. Multiply.  $(2t - 9)(2t + 9)$
45. Multiply.  $(x + 12)^2$
46. Multiply.  $(y^2 - 5)(8y^2 - 4y + 4)$
47. Divide.  $\frac{16x^3y^2}{8x^6y^2}$

48. Divide.  $\frac{18x^9 - 81x^7 + 45x}{9x}$
49. Divide.  $\frac{32b^8g^9 - 8b^6g^7 + 32b^3g^4}{4b^3g}$
50. Factor.  $6x^6y^4 + 42x^4y^3 + 54xy$
51. Factor.  $x^5(x + 3) + 2(x + 3)$
52. Factor by grouping.  $x^3 + 7x^2 + 7x + 49$
53. Factor by grouping.  $3x^3 - 3x^2 - x + 1$
54. Factor the trinomial.  $t^2 + 10t + 16$
55. Factor the trinomial.  $r^2 - 9r + 20$
56. Factor.  $a^2 - 6a - 27$
57. Factor the trinomial.  $s^3 - 2s^2 - 63s$
58. Factor.  $5w^2 - 19w - 4$
59. Factor.  $2r^2 + 11r + 5$
60. Factor.  $3v^2 - 5v - 2$

61. Factor.  $9b^2 - 10b + 1$

62. Factor.  $3a^2 + 2a - 1$

63. Factor the trinomial.  $6y^2 + 20y - 16$

64. Factor.  $20u^3 + 72u^2 - 140u$

65. Factor completely.  $49s^2 - 14sg + g^2$

66. Factor completely.  $25w^2 - p^2$

67. Factor completely.  $27c^2 - 3$

68. Solve.  $b^2 + 9b + 18 = 0$

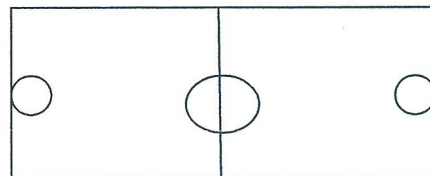
69. Solve.  $v^2 - 7v = 0$

70. Solve.  $81w^2 - 25 = 0$

71. Solve.  $2w^2 - 5 = 9w$

72. The sum of the page numbers on the facing pages of a book is 85. What are the page numbers?

73. The perimeter of a basketball court is 84 meters and the length is 6 meters longer than twice the width. What are the length and width?



74. A 220-inch pipe is cut into two pieces. One piece is three times the length of the other. Find the lengths of the two pieces.
75. The perimeter of a rectangle is 496 ft. The length is 20 ft longer than the width. Find the area of the rectangle.
76. Solve by any method. 
$$\begin{aligned} 3x + 2y &= 11 \\ -x + y &= 3 \end{aligned}$$
77. Solve by any method. 
$$\begin{aligned} 3x + 4y &= 4 \\ x - y &= 13 \end{aligned}$$
78. Solve by any method. 
$$\begin{aligned} 3x - 4y &= 1 \\ 2x + 3y &= 12 \end{aligned}$$
79. Solve by any method. 
$$\begin{aligned} 2x + 3y &= -1 \\ 3x - 2y &= 18 \end{aligned}$$

*Basic Algebra*  
*Final Exam Review Answers*

1.  $-31c + 41d$

2.  $-29$

3.  $34$

4.  $-47$

5.  $5$

6.  $60$

7.  $-8$

8.  $48$

9.  $-70$

10.  $-\frac{2}{7}$

11.  $2$

12.  $2$

13.  $5$

14.  $5$

15.  $5$

16.  $6$

17.  $-10$

18.  $0.8$

19.  $-1$

20.  $\frac{D}{m}$

21.  $2e - p$
22.  $x > -5$   
D
23.  $a \leq -18$   
C
24.  $x \leq -1$
25.  $x \geq -3$
26.  $x < -3$
27.  $x > -4$
28.  $x < 3$
29.  $y \leq \frac{3}{14}$
30. (0,5)
31.  $\frac{1}{5}$
32.  $-\frac{8}{5}$
33. slope  $-5$   
y-intercept (0,  $-7$ )
34.  $-5/6$
35.  $4p^{16}$



36.  $\frac{n^{24}x^3}{y^3}$
37.  $11x^2 + 2x - 33$
38.  $3x^2 - 8xy + 9y^2$
39.  $9x^4 + 4x^3 - 6x^2 + 9x - 5$
40.  $-108x^{19}$
41.  $54x^3 - 81x^2 + 72x$
42.  $x^2 - 10x + 21$
43.  $8x^2 + 38x - 10$
44.  $4t^2 - 81$
45.  $x^2 + 24x + 144$
46.  $8y^4 - 4y^3 - 36y^2 + 20y - 20$
47.  $\frac{2}{x^3}$
48.  $2x^8 - 9x^6 + 5$
49.  $8b^5g^8 - 2b^3g^6 + 8g^3$
50.  $6xy(x^5y^3 + 7x^3y^2 + 9)$
51.  $(x^5 + 2)(x + 3)$
52.  $(x^2 + 7)(x + 7)$
53.  $(3x^2 - 1)(x - 1)$

54.  $(t + 8)(t + 2)$

55.  $(r - 4)(r - 5)$

56.  $(a + 3)(a - 9)$

57.  $s(s + 7)(s - 9)$

58.  $(5w + 1)(w - 4)$

59.  $(2r + 1)(r + 5)$

60.  $(3v + 1)(v - 2)$

61.  $(9b - 1)(b - 1)$

62.  $(3a - 1)(a + 1)$

63.  $2(3y - 2)(y + 4)$

64.  $4u(5u - 7)(u + 5)$

65.  $(7s - g)^2$

66.  $(5w + p)(5w - p)$

67.  $3(3c + 1)(3c - 1)$

68.  $-6, -3$

69.  $0, 7$

70.  $-\frac{5}{9}, \frac{5}{9}$

71.  $5, -\frac{1}{2}$

72. 42  
43

73. 12  
30

74. 55  
165

75. 15,276

76. (1, 4)

77. (8, -5)

78. (3, 2)

79. (4, -3)