

Math 085 Final Exam Review

Objective 1: Use the rules of signed number arithmetic to perform operations on integers. These operations include, but are not limited to, addition, subtraction, multiplication, division, exponentiation, square roots of perfect squares, negation (finding additive inverses or opposites), ordering, and evaluating absolute values.

- Find the absolute value: $|-18|$
 - 18
 - 20
 - 8
 - 18
- Find $-(-x)$ when $x = -29$
 - 29
 - 29
 - 18
 - 7
- Subtract: $-11 - (-4)$
 - 15
 - 44
 - 7
 - 7
- Divide: $-66 \div (-11)$
 - 77
 - 55
 - 6
 - 6
- Simplify: $(-3)^2$
 - 9
 - 9
 - 6
 - 6
- Simplify: $\sqrt{225}$
 - 18
 - 15
 - 12
 - 45

Objective 2: Translate words or problem situations to algebraic expressions.

- Translate to an algebraic expression: 7 more than a
 - $a + 7$
 - $a - 7$
 - $7a$
 - $\frac{a}{7}$
- Translate to an algebraic expression: 8 less than y
 - $y + 8$
 - $8y$
 - $8 - y$
 - $y - 8$
- Write an algebraic expression for the product of three and a number.
 - $x - 3$
 - $3 - x$
 - $3x$
 - $x + 3$

Objective 3: Perform operations on rational numbers. These operations include addition, subtraction, multiplication, division, simplification, finding multiplicative inverses, evaluating expressions, finding equivalent fractions, and converting between improper fractions and mixed numbers.

10. Find the reciprocal of -12

- a) 12 b) $\frac{1}{12}$ c) $\frac{-1}{12}$ d) $\frac{-12}{1}$

11. Find a fraction equivalent to $\frac{5}{6}$ with 36 as the denominator.

- a) $\frac{5}{36}$ b) $\frac{30}{36}$ c) $\frac{6}{36}$ d) $\frac{20}{36}$

12. Multiply and simplify: $\frac{3}{7} \cdot \frac{28}{9}$

- a) $\frac{4}{3}$ b) $\frac{3}{4}$ c) $\frac{31}{16}$ d) $\frac{84}{63}$

13. Divide: $\frac{7}{8} \div \frac{4}{3}$

- a) $\frac{3}{5}$ b) $\frac{7}{6}$ c) $\frac{32}{21}$ d) $\frac{21}{32}$

14. Add and simplify: $\frac{3}{4} + \frac{5}{8}$

- a) $\frac{45}{56}$ b) $\frac{5}{4}$ c) $\frac{4}{3}$ d) $\frac{11}{8}$

15. Subtract and simplify: $\frac{3}{4} - \frac{1}{3}$

- a) $\frac{1}{6}$ b) $\frac{5}{12}$ c) 2 d) $\frac{1}{3}$

Objective 3a: Perform rational number operations on the calculator. The rational numbers involved may include proper fractions, improper fractions or mixed numbers.

16. Add: $\frac{4}{15} + \frac{19}{20}$

- a) $\frac{23}{20}$ b) $\frac{23}{35}$ c) $\frac{73}{60}$ d) $\frac{23}{60}$

17. Divide: $-\frac{34}{35} \div \frac{23}{24}$

- a) $-\frac{816}{805}$ b) $-\frac{391}{420}$ c) $-\frac{805}{816}$ d) $-\frac{420}{391}$

18. Multiply: $6\frac{2}{5} \cdot 3\frac{4}{7}$

- a) $22\frac{6}{7}$ b) $18\frac{6}{12}$ c) $18\frac{8}{35}$ d) $22\frac{8}{35}$

19. Subtract: $-5\frac{3}{8} - 7\frac{1}{3}$

- a) $-1\frac{23}{24}$ b) $-12\frac{2}{5}$ c) $-1\frac{2}{11}$ d) $-12\frac{17}{24}$

Objective 4: Solve linear equations involving integers, fractions, and decimals. These may involve combining like terms.

20. Solve: $n - 11 = 23$

- a) 34 b) 12 c) -12 d) -34

21. Solve: $-9x = 54$

- a) 45 b) 6 c) -63 d) -6

22. Solve: $14 = 2 - \frac{3}{4}x$

- a) $-21\frac{1}{3}$ b) -16 c) -12 d) -9

23. Solve: $9 - 4x = 10$

- a) $-\frac{1}{4}$ b) $-\frac{19}{4}$ c) $\frac{1}{4}$ d) $\frac{19}{4}$

24. Solve: $0.5y + 12 = 0.2y - 9$

- a) 7 b) -70 c) 3 d) 30

25. Solve: $4x - 6.8 = 8x + 2.6$

- a) -0.783 b) -1.05 c) -2.35 d) 13.4

Objective 4a: Use the calculator to solve the linear equations from the above linear equation types.

26. Solve: $-5x - 7x + 14 = (-31)(10)$

- a) $x = -27$ b) $x = 27$ c) $x = -162$ d) $x = 162$

27. Solve: $\frac{35}{34}y = -\frac{25}{17}$

- a) $y = -\frac{875}{578}$ b) $y = -\frac{578}{875}$ c) $y = -\frac{10}{7}$ d) $y = -\frac{7}{10}$

28. Solve: $\frac{2}{9}x + \frac{49}{8} = 4$

- a) $x = -\frac{5}{4}$ b) $x = -\frac{4}{5}$ c) $x = \frac{477}{16}$ d) $x = -\frac{153}{16}$

Objective 5: Find prime factorizations for whole numbers, determine whether a given number is prime, composite or neither, and sketch a factor tree for whole numbers.

29. Find the prime factorization of 54

- a) $3 \cdot 3 \cdot 2 \cdot 2$ b) $3 \cdot 9 \cdot 2$ c) $3 \cdot 3 \cdot 3 \cdot 2$ d) $9 \cdot 6$

30. Find the prime factorization of 80

- a) $2 \cdot 2 \cdot 2 \cdot 2 \cdot 3 \cdot 5$ b) $2 \cdot 2 \cdot 5 \cdot 5$ c) $2 \cdot 2 \cdot 2 \cdot 3 \cdot 5$ d) $2 \cdot 2 \cdot 2 \cdot 2 \cdot 5$

Objective 6: Find multiples and factors of numbers. Find the least common multiple (LCM) and the greatest common factor (GCF) of two or three numbers.

31. Find the LCM of 25 and 30

- a) 5 b) 15 c) 150 d) 750

32. Find the GCF of 25 and 35

- a) 875 b) 5 c) 150 d) 175

Objective 7: Perform operations on decimal numbers. These operations include addition, subtraction, multiplication, division, and ordering.

33. Write 3.486 in fractional notation

- a) $\frac{3486}{10,000}$ b) $\frac{3486}{1,000}$ c) $\frac{3486}{100}$ d) $\frac{3486}{10}$

34. Add: $15.903 + 7.21 + 14$

- a) 37.113 b) 19.419 c) 59.613 d) 166.38

35. Subtract: $30 - 2.591$

- a) 28.409 b) 27.409 c) 28.591 d) 32.591

36. Multiply: $(0.25) \cdot (0.15)$

- a) 0.375 b) 3.75 c) 0.0375 d) 0.00375

37. Divide: $8.4 \div 24$

- a) 6.4 b) 3.5 c) 0.64 d) 0.35

Objective 7a: Use the calculator to perform the above operations.

38. Multiply: $(84.17)(3.5)$

- a) 294,595 b) 294.595 c) 24.0486 d) 0.04158

39. Divide: $-25.221 \div 42$

- a) 1059.282 b) -1.6653 c) -0.6005 d) 0.6005

40. Add: $-7.521 + (-9.89) + 13 + 0.79$

- a) -3.621 b) 11.421 c) 31.201 d) -31.201

Objective 8: Solve application problems. These may involve arithmetic, finding averages, rounding, or setting up and solving linear equations.

41. A company must ship 360 books to a customer. If each shipping box holds 15 books, how many boxes are needed?

- a) 5400 b) 15 c) 345 d) 24

42. A recipe requires $\frac{3}{8}$ cup of sugar. How much sugar would be needed in order to triple the recipe?

- a) $2\frac{1}{4}$ cups b) $1\frac{1}{8}$ cups c) $\frac{1}{8}$ cup d) 8 cups

43. A recipe calls for $\frac{2}{3}$ cup of flour. How much would be required for half the recipe?

- a) $1\frac{1}{3}$ cups b) $\frac{1}{6}$ cup c) $\frac{1}{3}$ cup d) $\frac{1}{2}$ cup

Objective 8a: Use the calculator to solve some of the above application problems.

44. Find the average of 13, 26, 54, 9, 23, 37

- a) 162 b) 27 c) 25.2 d) 54

45. In a Chemistry lab, a substance has an initial temperature of 25°C . During an experiment, the temperature drops to -8°C . Find the difference between the 2 temperatures.

- a) 33°C b) 17°C c) 8°C d) 25°C

46. A box of mailing labels contains 750 labels. If there are 25 sheets, how many labels are on each sheet?

- a) 18,750 b) 30 c) 25 d) 725

Objective 9: Find and simplify ratios corresponding to given situations. Solve proportions arising from applications, including those involving similar figures.

47. Solve: $\frac{5}{8} = \frac{45}{x}$

- a) 120 b) 125 c) 72 d) 56

48. A car was driven 696 miles in 12 hours. What is the average number of miles per hour?

- a) 58 b) 36 c) 64 d) 47

49. If 3 cans of peaches cost \$2.49, how much will 8 cans cost?

- a) \$5.98 b) \$6.64 c) \$19.92 d) \$7.89

50. How high is a tree that casts a 42 foot shadow at the same time a 6 foot tall man casts a 10 foot shadow?

- a) 70 ft b) 67.2 ft c) 26.25 ft d) 25.2 ft

Objective 9a: Use the calculator to find and compare unit rates, solve proportions, and simplify ratios.

51. Which one of the following is the best buy?

- a) 24 oz for \$2.49 b) 36 oz for \$3.29 c) 46 oz for \$3.69 d) 50 oz for \$4.19

52. Solve: $\frac{0.16}{m} = \frac{0.4}{0.15}$

- a) $m = 0.0096$ b) $m = 0.06$ c) $m = 0.024$ d) $m = 60$

Objective 10: Round numbers, including decimals, to a given place value.

53. Round 445 to the nearest hundred.

- a) 400 b) 450 c) 500 d) 300

54. Round 8.5738 to the nearest tenth.

- a) 8.6 b) 8.57 c) 8.574 d) 9.0

Objective 11: Convert among fractional, decimal, and percent notation.

55. Write 53% as a decimal.

- a) 53 b) 0.53 c) 0.0053 d) 5.3

56. Write 2.56 as a percent.

- a) 2.56% b) 25.6% c) 0.0256% d) 256%

57. Write $\frac{7}{20}$ as a percent.

- a) 35% b) 286% c) 40% d) 0.35%

58. Write 58% as a fraction. Reduce your answer.

- a) $\frac{14}{25}$ b) $\frac{29}{5}$ c) $\frac{29}{50}$ d) $\frac{12}{20}$

Objective 12: Solve application problems involving percents.

59. On a test of 30 items, Mark had 24 correct. What percent were incorrect?

- a) 75% b) 80% c) 20% d) 72%

60. What is 50% of 62?

- a) 12.4 b) 3100 c) 124 d) 31

61. How much is a 20% tip on a \$70 dinner?

- a) \$7 b) \$2 c) \$14 d) \$20

Objective 12a: Use the calculator to solve application problems involving percents. These may involve finding percent increase or decrease, tax, commission, and discounts. This includes setting up and solving linear equations and/or proportions.

62. 220 is what percent of 1375?

- a) 6.25% b) 22% c) 16% d) 1155%

63. Amanda makes \$2650 per month and her monthly mortgage payment is \$927.50. What percent of her monthly income is her mortgage payment?

- a) 2.86% b) 17.22% c) 24.58% d) 35%

64. The price of a phone is marked down from \$305 to \$262.30. What is the percent of decrease?

- a) 42.7% b) 14% c) 86% d) 15%

Objective 13: Find the perimeter and area of polygons.

65. Find the area of a triangle whose base is 13 m and whose height is 6 m.

- a) 78 m^2 b) 39 m^2 c) 19 m^2 d) 38 m^2

66. Find the perimeter of a rectangle that is 70 yd by 50 yd.

- a) 120 yd b) 20 yd c) 240 yd d) 3500 yd

Objective 13a: Use the calculator to find the perimeter/circumference and area of polygons and circles.

67. Find the area of a rectangle that measures 8.2 ft by 6.1 ft

- a) 50.02 ft^2 b) 28.6 ft^2 c) 14.3 ft^2 d) 2502.0004 ft^2

68. Find the circumference of a circle with a radius of 9

- a) 81π b) 9π c) 18π d) 2π

Objective 14: Evaluate algebraic expressions given specific values for the variables. Problems may involve using the order of operations.

69. Evaluate $\frac{2x}{7y}$ for $x = 21$ and $y = -6$

- a) 23 b) -1 c) 1 d) 0

70. Evaluate $2 + pq$ for $p = 4$ and $q = \frac{3}{8}$

- a) $2\frac{3}{8}$ b) $3\frac{1}{2}$ c) 6 d) $3\frac{5}{8}$

Objective 14a: Use the calculator to evaluate algebraic expressions given specific values for the variables. Problems may involve using the order of operations.

71. Evaluate $\frac{4m-3}{5-2m}$ for $m = -2$

- a) $-\frac{5}{9}$ b) $\frac{5}{9}$ c) $-\frac{11}{9}$ d) $\frac{11}{9}$

72. Evaluate $x^2 + 2xy + y^2$ for $x = 4$ and $y = -3$

- a) 49 b) 1 c) -17 d) -1

73. Evaluate $\frac{5p}{2q-1}$ for $p = 2$ and $q = -3$

- a) $-\frac{10}{7}$ b) $\frac{10}{7}$ c) -1 d) 1

Objective 15: Use the order of operations to simplify arithmetic expressions. The expressions may involve integers, fractions, or decimal numbers.

74. Simplify: $16 \div 8(-2)^2 - 10$

- a) 6 b) -6 c) 2 d) -2

75. Simplify: $(-3)^3 - 5 \cdot 6 - 4^2$

- a) -13 b) -208 c) -73 d) 41

76. Simplify: $24 \div 4 \cdot 2 - 1$

- a) -11 b) 11 c) -6 d) 15

Objective 15a: Use the calculator to simplify arithmetic expressions. The expressions may involve integers, fractions, or decimal numbers.

77. Simplify: $4(6 + 4 \div 2) + 2 \cdot 3 - 5$

- a) 21 b) 31 c) 33 d) 43

78. Simplify: $\frac{5(2-7)-2^3}{(3+1)^2-16}$

- a) 0 b) undefined c) -33 d) 33

79. Simplify: $\frac{7}{9} \cdot \frac{3}{14} \div \left(\frac{5}{3} - \frac{1}{2}\right)$

- a) $\frac{1}{7}$ b) 7 c) $\frac{1}{6}$ d) 6

Objective 16: Combine like terms to simplify algebraic expressions. The coefficients in the expressions may be integers, fractions, or decimal numbers.

80. Combine like terms: $x + 4y - 2y - (-7x)$

- a) $8x + 6y$ b) $8x + 2y$ c) $-6x + 2y$ d) $-6x - 2y$

81. Combine like terms: $3x + 14 - 11x - 9$

- a) $-8x + 23$ b) $14x + 5$ c) $-8x + 5$ d) $8x + 5$

Objective 16a: Use the calculator to combine like terms to simplify algebraic expressions. The coefficients in the expressions may be integers, fractions, or decimal numbers.

82. Combine like terms: $-46.9a + 3.8 - 7.21b + 9a - 14$

- a) $55.9a - 7.21b - 10.2$ b) $55.9a - 7.21b + 17.8$
c) $-37.9a - 7.21b - 10.2$ d) $-37.9a - 7.21b - 17.8$

83. Combine like terms: $\frac{3}{8}x + \frac{2}{5}y - \frac{7}{8}y + x$

- a) $\frac{11}{8}x + \frac{51}{40}y$ b) $\frac{11}{8}x - \frac{19}{40}y$ c) $\frac{1}{2}x - \frac{5}{3}y$ d) $-\frac{1}{6}xy$

Objective 17: Compare and order numbers including on the number line; plot points on the coordinate plane.

84. The point $(-2, 5)$ lies in which quadrant?

- a) I b) II c) III d) IV

85. Which one of the following has the greatest value?

- a) -3.92 b) -3.29 c) -3.09 d) -3.9

86. If you begin at the origin and move 6 units to the left and then 1 unit down, you will end up at which point?

- a) $(6, 1)$ b) $(-6, 1)$ c) $(6, -1)$ d) $(-6, -1)$

Answers for Math 085 Final Exam Review

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|-------|-------|-------|
| 1. D | | 59. C |
| 2. B | 31. C | 60. D |
| 3. D | 32. B | |
| 4. C | 33. B | 61. C |
| 5. B | 34. A | 62. C |
| | 35. B | 63. D |
| 6. B | | 64. B |
| 7. A | 36. C | 65. B |
| 8. D | 37. D | |
| 9. C | 38. B | 66. C |
| 10. C | 39. C | 67. A |
| | 40. A | 68. C |
| 11. B | | 69. B |
| 12. A | 41. D | 70. B |
| 13. D | 42. B | |
| 14. D | 43. C | 71. C |
| 15. B | 44. B | 72. B |
| | 45. A | 73. A |
| 16. C | | 74. D |
| 17. A | 46. B | 75. C |
| 18. A | 47. C | |
| 19. D | 48. A | 76. B |
| 20. A | 49. B | 77. C |
| | 50. D | 78. B |
| 21. D | | 79. A |
| 22. B | 51. C | 80. B |
| 23. A | 52. B | |
| 24. B | 53. A | 81. C |
| 25. C | 54. A | 82. C |
| | 55. B | 83. B |
| 26. B | | 84. B |
| 27. C | 56. D | 85. C |
| 28. D | 57. A | |
| 29. C | 58. C | 86. D |
| 30. D | | |