

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, raising numbers to powers, finding additive inverses or opposites, ordering, and evaluating absolute values.

1. Find the absolute value: $|-18|$
a) -18 b) -20 c) 8 d) 18

2. Find $-(-x)$ when $x = -29$
a) 29 b) -29 c) -18 d) 7

3. Subtract: $-11 - (-4)$
a) -15 b) -44 c) 7 d) -7

4. Divide: $-66 \div (-11)$
a) -77 b) 55 c) 6 d) -6

5. Simplify: $(-3)^2$
a) -9 b) 9 c) -6 d) 6

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

6. Translate to an algebraic expression: 7 more than a

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

7. Translate to an algebraic expression: 8 less than y

- a) $y + 8$ b) $8y$ c) $8 - y$ d) $y - 8$

8. Write an algebraic expression for the product of three and a number.

- a) $x - 3$ b) $3 - x$ c) $3x$ d) $x + 3$

Objective 3: Perform operations on rational numbers. These operations include, but are not limited to, addition, subtraction, multiplication, division, simplification, finding reciprocals, evaluating expressions, finding equivalent fractions and converting between improper fractions and mixed numbers. The rational numbers involved may include proper fractions, improper fractions, or mixed numbers.

9. Find the reciprocal of -12

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

10. 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) $\frac{20}{36}$

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

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

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

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

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

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

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

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

Objective 4: Solve one or two-step linear equations involving integers and fractions.

15. Solve: $n - 11 = 23$

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

16. Solve: $-9x = 54$

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

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

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

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

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

Objective 5: Find prime factorizations for whole numbers, determine whether a given number is prime, and draw the prime factorization trees for whole numbers.

19. 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)
- $9 \cdot 6$

20. 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.

21. Find the LCM of 25 and 35

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

22. 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, but are not limited to, addition, subtraction, multiplication, division, and ordering.

23. Write 3.486 in fractional notation.

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

24. Add: $15.903 + 7.21 + 14$

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

25. Subtract: $30 - 2.591$

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

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

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

27. Divide: $8.4 \div 24$

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

Objective 8: Solve two or three-step linear equations involving decimal numbers. These may involve combining like terms.

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

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

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

- a)
- $- .783$
- b)
- $- 1.05$
- c)
- $- 2.35$
- d)
- 13.4

Objective 9: Solve application problems. These may involve arithmetic, finding averages, rounding, or setting up and solving linear equations.

30. A company must ship 405 books to a customer. If each shipping box holds 24 books, how many boxes are required?

- a) 16 b) 17 c) 97 d) 112

31. 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

32. A recipe calls for $\frac{2}{3}$ cup 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 10: Find and simplify ratios corresponding to given situations. Solve proportions arising from applications, including those involving similar figures and unit rates/prices.

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

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

34. 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

35. 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

36. 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 11: Round whole numbers and decimal numbers to a given place value.

37. Round 4.4545 to the nearest hundredth.

- a) 4.4 b) 4.5 c) 4.45 d) 4.46

38. Round 8.5738 to the nearest tenth.

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

Objective 12: Convert among fractional, decimal, and percent notation.

39. Write 53% as a decimal.

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

40. Write 2.56 as a percent.

- a) 2.56% b) 25.6% c) .0256% d) 256%

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

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

42. 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 13: Solve application problems involving percents. These may involve finding a percent increase or decrease. They may also involve setting up and solving linear equations.

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

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

44. The population of Bayside increased from 22,000 to 23,980. What was the percent of increase?

- a) 12% b) 6% c) 9% d) 8%

45. David earns a commission of 6.5%. What is his commission on a sale of \$35,000?

- a) \$2,100 b) \$2,275 c) \$227.50 d) \$5,384.62

Objective 14: Find the perimeter (or circumference) and area of polygons and circles.

46. 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

47. 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 15: Evaluate algebraic expressions given specific values for the variables. Problems may involve using the order of operations.

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

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

49. 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 16: Use the order of operations to simplify arithmetic expressions. The expressions may involve integers, fractions, or decimal numbers.

50. Simplify: $16 \div 8(-2)^3 - 13.04$

- a) 4.96 b) -13.9 c) -12.79 d) -29.04

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

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

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

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

Objective 17: Collect and combine like terms to simplify algebraic expressions. The coefficients in the expressions may be integers, fractions, or decimal numbers.

53. Combine like terms: $x + 4y - 2\frac{1}{8}y + 7x$

- a)
- $1\frac{7}{8}y + 8x$
- b)
- $14\frac{1}{8}xy$
- c)
- $10\frac{1}{8}xy$
- d)
- $6\frac{1}{8}y + 8x$

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

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

Objective 18: Without a calculator, find square roots of perfect squares and approximate square roots of numbers that are not perfect squares.

55. Simplify: $\sqrt{225}$

- a) 18 b) 15 c) 12 d) 45

56. Estimate: $\sqrt{47}$

- a) between 47 and 48 b) between 23 and 24
-
- c) between 7 and 8 d) between 6 and 7

Objective 19: Given the lengths of two sides of a right triangle, use the Pythagorean Theorem to find the length of the unknown side. In cases involving numbers that are not perfect squares, students should be prepared to estimate.

57. Given a right triangle with a hypotenuse of 12 and a leg of 6, find the length of the other leg.

a) $\sqrt{180}$

b) $\sqrt{108}$

c) $\sqrt{6}$

d) $\sqrt{18}$

Answers for Math 085 Final Exam Review Sheet

- | | |
|-------|-------|
| 1. d | 31. b |
| 2. b | 32. c |
| 3. d | 33. c |
| 4. c | 34. a |
| 5. b | 35. b |
| 6. a | 36. d |
| 7. d | 37. c |
| 8. c | 38. a |
| 9. c | 39. b |
| 10. b | 40. d |
| 11. a | 41. a |
| 12. d | 42. c |
| 13. d | 43. c |
| 14. b | 44. c |
| 15. a | 45. b |
| 16. d | 46. b |
| 17. b | 47. c |
| 18. a | 48. b |
| 19. c | 49. b |
| 20. d | 50. d |
| 21. d | 51. c |
| 22. b | 52. b |
| 23. b | 53. a |
| 24. a | 54. c |
| 25. b | 55. b |
| 26. c | 56. d |
| 27. d | 57. b |
| 28. b | |
| 29. c | |
| 30. b | |