Math 95 Exam 1 Study Guide

Exam will consist of a sampling of questions similar to the ones below

**Integer Operations:**

1. Evaluate: $3^3$
2. Evaluate: $10^8$
3. Rewrite 10,000 as a power of ten.
4. Evaluate: $-41 + (-34)$
5. Evaluate: $-26 + 42$
6. Evaluate: $29 - 34$
7. Evaluate: $-11 - (-3)$
8. Evaluate: $-3 + 9 - 4$
9. Evaluate: $4 + 3 - 9 - 2 + 11$
10. Evaluate: $-18 ÷ 2$
11. Evaluate: $-5 \cdot (-3)$
12. Evaluate: $-4(-3)(5)$
13. Evaluate, or state undefined: $5 ÷ 0$
14. Evaluate, or state undefined: $\frac{0}{9}$
15. Evaluate: $(-6)^3$
16. Evaluate: $-3^4$

**Factors and Multiples:**

17. Write all the factors of 21
18. Which of the following numbers are prime? 7, 8, 9, 13, 18, 23
19. Write 80 as the product of prime numbers
20. Write 128 as the product of prime numbers
21. Find the least common multiple of 6 and 15
22. Find the least common multiple of 6, 20, and 3

**Applications of integers:**
23. The temperature in Juneau, Alaska was \(-26^\circ F\) at 8 a.m. By noon, the temperature had risen by \(14^\circ F\). What was the temperature there at noon?

24. The elevation of a mountain is measured to be at an altitude of 1075 feet. The bottom of a nearby valley is at an altitude of -123 feet. How much higher is the top of the mountain than the bottom of the valley?

25. In the first quarter of this year, a company’s profits were $82,000. The profits in the second quarter were $44,000 less than those of the first quarter. What were the profits in the second quarter?

**Absolute Value:**

26. Evaluate: \(|-13|\)

27. Evaluate: \(|9| - |6 - 11|\)

28. Evaluate: \(|10 - 13| - | - 8|\)

29. Solve for \(x\), or determine there is no solution.
\[|x| = -2\]

30. Solve for \(x\), or determine there is no solution.
\[|x| = 11\]

**Mean of a data set:**

31. What is the average of 50 and 68?

32. Seven students took a 16 question quiz. The resulting scores were: 10, 13, 7, 16, 8, 16, 7. What was the mean score on the quiz?

33. Six students took a 20 question quiz. The resulting scores were: 12, 13, 15, 18, 15, and 5. What was the mean score on the quiz?

34. 21 families were asked how much milk they consume in a month. Ten families said they drink 2 gallons per month. Two families said they drink 3 gallons per month. Nine families said they drink 7 gallons per month. What is the mean number of gallons of milk consumed by these families? Round to the nearest tenth if necessary.

**Rational Numbers:**

35. Write the fraction \(\frac{25}{40}\) in simplest form.

36. Write the fraction \(\frac{35}{56}\) in simplest form.

37. Find the least common denominator of \(\frac{4}{9}\) and \(\frac{5}{12}\)
38. What is the reciprocal of \( \frac{8}{11} \)?

39. What is the reciprocal of 14

40. Write \( \frac{10}{7} \) as a mixed number.

41. Write \( \frac{29}{8} \) as a mixed number.

42. Write \( 1\frac{1}{4} \) as an improper fraction.

43. Write \( 3\frac{5}{7} \) as an improper fraction.

44. Plot the numbers \( -1\frac{5}{6} \) and \( \frac{8}{3} \) on a number line.

45. Which fraction is larger: \( \frac{8}{11} \) or \( \frac{5}{7} \)?

46. Which fraction is larger: \( \frac{11}{35} \) or \( \frac{3}{10} \)?

47. There are 6 new books and 7 used books on a shelf. What is the ratio of used books to all books?

**Fraction Arithmetic:**

48. Perform the operation and write your answer as a fraction in simplest form:
\[
\frac{5}{8} - \frac{3}{8}
\]

49. Perform the operation and write your answer as a fraction in simplest form:
\[
\frac{3}{10} + \frac{2}{5}
\]

50. Perform the operation and write your answer as a fraction in simplest form:
\[
\frac{5}{6} - \frac{4}{5}
\]

51. Perform the operation and write your answer as a fraction in simplest form:
\[
-\frac{1}{4} - \frac{2}{7}
\]

52. Perform the operation and write your answer as a fraction in simplest form:
\[
\frac{3}{8} + \frac{1}{2}
\]

53. Perform the operation and write your answer as a fraction in simplest form:
\[
-\frac{2}{15} - \left( \frac{1}{9} \right)
\]
54. Perform the operations and write your answer as a fraction in simplest form:
\[
\frac{5}{6} - \frac{3}{5} + \frac{1}{2}
\]

55. Perform the operations and write your answer as a fraction in simplest form:
\[
\frac{1}{6} + \frac{3}{8} + \frac{5}{12}
\]

56. What is \(\frac{1}{8}\) of 72?

57. Perform the operation and write your answer as a fraction in simplest form:
\[
\frac{3}{8} \cdot 64
\]

58. Perform the operation and write your answer as a fraction in simplest form:
\[
15 \cdot \frac{3}{7}
\]

59. Perform the operation and write your answer as a fraction in simplest form:
\[
\frac{3}{7} \cdot \frac{4}{5}
\]

60. Perform the operation and write your answer as a fraction in simplest form:
\[
\frac{5}{7} \cdot \frac{2}{15}
\]

61. Perform the operation and write your answer as a fraction in simplest form:
\[
-\frac{5}{9} \cdot \frac{1}{4}
\]

62. Perform the operations and write your answer as a fraction in simplest form:
\[
\frac{3}{11} \cdot \frac{3}{4} \cdot 4
\]

63. Perform the operations and write your answer as a fraction in simplest form:
\[
\frac{2}{17} \cdot 10 \cdot \frac{2}{5}
\]

64. A bookstore had 25 copies of a magazine. Yesterday it sold \(\frac{3}{5}\) of them. How many copies were sold yesterday?

65. Sam had \(\frac{7}{8}\) acres of land. He planted \(\frac{3}{4}\) of it with corn. How many acres did he plant with corn?

66. David had 60 fliers to post around town. Last week, he posted \(\frac{1}{4}\) of them. This week, he posted \(\frac{2}{3}\) of the remaining fliers. How many fliers has he still not posted?
67. Perform the operation and write your answer as a fraction in simplest form:
\[
3 \div \frac{5}{9}
\]

68. Perform the operation and write your answer as a fraction in simplest form:
\[
\frac{4}{7} \div 8
\]

69. Perform the operation and write your answer as a fraction in simplest form:
\[
\frac{5}{8} \div \frac{11}{12}
\]

70. Perform the operation and write your answer as a fraction in simplest form:
\[
\frac{9}{8} + 2\frac{7}{8}
\]

71. Perform the operation and write your answer as a fraction in simplest form:
\[
\frac{5}{9} - \frac{1}{9}
\]

**Simplifying Expressions:**

72. Simplify: \(-8x - 7x\)

73. Use the distributive property to remove the parenthesis:
\[-4(-2 + 5w + 4x)\]

74. Use the distributive property to remove the parenthesis:
\[-(-w - 4v + 1)\]

75. Simplify: \(-(y + 1) - 6\)

76. Simplify: \(-12u + 5(2u - 2)\)

77. Simplify: \(-8x^2 + 7 + 10x - 9 - 12x^2\)

78. Simplify: \((-6t^2 + 4t - 7) + (5t^2 + 2t + 3)\)

79. Simplify: \((5x^2 + 6) - (7x^2 - 4x + 1)\)
Evaluating Expressions:

80. Evaluate the expression when $g = 4$ and $h = 44$:
   \[ h - 3g \]

81. Evaluate the expression when $x = 45$ and $y = 7$:
   \[ x - \frac{56}{y} \]

82. Evaluate the expression when $b = -5$ and $x = 2$:
   \[ -x + 6b \]

83. Evaluate the expression when $a = 4$ and $b = 8$:
   \[ \frac{b^2 - 2a}{b} \]

84. Evaluate the expression when $a = 38$ and $b = 8$:
   \[ \frac{a}{2} + 3b^2 \]

85. Evaluate the expression when $x = 2$:
   \[ x^2 + 7x + 7 \]

86. Evaluate the expression when $c = -5$:
   \[ c^2 - 7c - 8 \]
Multiple Choice Think About Questions for Exam 1
You should be able to determine the answer to these multiple choice questions by thinking about the question and possible answers using little arithmetic computation.
Exam 1 will consist of at most 6 multiple choice questions similar to the ones below.

1. Think about the result of using the distributive property to remove the parenthesis and select the correct answer. (Hint: the solution can be found by analyzing the choices without carrying out the multiplication)

\[-309(-506,712 + 671x - \frac{8,031}{79}y - 99.02z)\]

(a) \(-156,576,082 - 270,336x + \frac{2,176,890}{79}y - 30,597.18z\)

(b) \(186,579,800 + 207,339x + \frac{1,481,679}{35}y - 23,918.09z\)

(c) \(172,574,070 + 199,339x - \frac{521,570}{77}y - 41,978.18z\)

(d) \(156,574,008 - 207,339x + \frac{2,481,579}{79}y + 30,597.18z\)

2. Which product results in the smallest number?

(a) \(15 \cdot 85\)

(b) \(-22 \cdot 192\)

(c) \(-137 \cdot 0\)

(d) \(-177 \cdot (-92)\)
3. Which fraction, listed below, is the largest?

(a) \( \frac{2}{19} \)
(b) \( \frac{1}{10} \)
(c) \( \frac{2}{15} \)
(d) \( \frac{2}{27} \)

4. What is the average of all the integers between -8 and 10, including -8 and 10?

(a) 19
(b) 2
(c) 0.5
(d) 1

5. Which of the following choices represents the number that is just as far from 80 as it is from 50?

(a) The average of 50 and 80
(b) The sum of 50 and 80
(c) The difference between 50 and 80
(d) The product of 50 and 80
6. If $a$ is a positive number and $b$ is a negative number, then $a - b$ will

(a) be a positive number

(b) be a negative number

(c) be zero

(d) sometimes be negative and sometimes positive

7. If $a$ is a negative number and $b$ is a positive number, the sign of $\frac{|a| + |b|}{a \cdot b}$ is:

(a) positive

(b) negative

(c) not possible to determine with the information given

8. Which choice below is the product of $\frac{17}{23}$ with it’s reciprocal?

(a) $\frac{289}{529}$

(b) $-1$

(c) $1$

(d) $-\frac{289}{529}$