

MSU Mathematics Placement Test

Computational Skills Topics And Sample Questions

I. Estimation of sums, differences, products, quotients, squares, and square roots of whole numbers and decimals; also estimation in problems involving percents

1. Write a product that approximates 298×51 .
2. A car averages 21 miles on each gallon of gas. Approximate the number of miles the car can travel on 14 gallons of gas.
3. The square root of 402 is approximately what number?
4. $(20.4)^2$ is approximately what number?
5. $\frac{4.01}{0.02}$ is approximately what number?
6. What is the approximate value of 2.93×17.014 ?
7. 23 percent of 80 is approximately what number?
8. What is the approximate value of 9.2% of 58?

II. Computation of an average

9. Lynn received grades of 78, 84, 91, and 75. What was her average grade?
10. The weights of six children are 56, 45, 32, 66, 50, and 48 pounds, respectively. What is the average weight in pounds of these children?

III. Addition, subtraction, multiplication, and division of fractions and mixed numbers

Perform the indicated operations

11. $\frac{3}{5} + \frac{1}{3}$
12. $\frac{4}{9} - \frac{1}{12}$
13. $\frac{7}{11} \div \frac{2}{5}$
14. $\frac{6}{\frac{1}{2}}$
15. $5 \div \frac{3}{10}$
16. $3\frac{1}{2} - 1\frac{2}{3}$
17. $15 \times 2\frac{3}{5}$
18. $7 \times \frac{2}{5}$
19. $5\frac{1}{6} - 2\frac{1}{4}$
20. $1\frac{1}{6} \times 1\frac{5}{7}$
21. $\frac{7}{15} \times \frac{3}{4} \times \frac{2}{7}$

IV. Mixed operations with fractions and mixed numbers

Perform the indicated operations

22. $\frac{2}{5} + \frac{3}{4} - \frac{1}{2}$
23. $\left(\frac{5}{9} \div \frac{5}{6}\right) - \left(\frac{2}{15} \times \frac{2}{3}\right)$
24. $2\frac{3}{4} + 5\frac{1}{2} - 3\frac{2}{3}$
25. $\frac{\frac{1}{2} + \frac{1}{5}}{5}$
26. $3\left(\frac{1}{5} + \frac{1}{3}\right)$
27. $\frac{4}{5} + \frac{1}{5}\left(4 - \frac{1}{2}\right)$
28. $15 \div 2 + \frac{3}{8} \times \frac{4}{3}$

V. Recognition of equivalent fractions

29. Which of the following fraction is NOT equal to $\frac{3}{4}$?

$$\frac{6}{8}, \frac{9}{12}, \frac{12}{15}, \frac{15}{20}$$

30. If $\frac{45}{x} = \frac{5}{8}$, what is the value of x ?

VI. Addition, subtraction, multiplication, and division of decimals

Perform the indicated operations

31. $27.3 - 6.05$ 32. $17 + 1.7 + 0.17$ 33. $3.5 - 1.06 + 2$ 34. $(305)(0.12)$

35. $\frac{81.054}{27}$ 36. 7.86×4.6

37. What is 3.187 rounded to the nearest tenth?

38. $\frac{490}{0.7}$ 39. $(0.12)^2$ 40. What is 4.278 rounded to the nearest tenth?

41. $\frac{0.01}{5}$

VII. Multiplication and division of a decimal by powers of tenth.

Perform the indicated operations

42. $40.05 \div 100$ 43. $\frac{9.4}{10}$ 44. 2.7×10^4

VIII. Recognition of fraction, decimal, and percent equivalents, and operations with fractions and decimals

45. What is the decimal equivalent of $\frac{3}{20}$?

46. What is the decimal equivalent of $\frac{7}{16}$?

47. Add: $1 + \frac{7}{10} + \frac{3}{100}$. Represent the answer as (a) a fraction (b) a decimal.

48. Add: $0.23 + \frac{2}{5}$. Represent the answer as a decimal.

49. Multiply: $\frac{3}{5} \times 8.65$. Represent the answer as a decimal.

50. Express 45% as a decimal. 51. Express 127% as a fraction.

52. Express $\frac{5}{8}$ as a percent. 53. Express 0.012 as a percent.

54. Express $8\frac{1}{2}\%$ as a decimal.

IX. Ordering decimals, fractions, and percents

55. Order from smallest to largest: 0.105, 0.501, 0.015, 0.15

56. Order from smallest to largest: $\frac{2}{5}$, $\frac{1}{3}$, $\frac{3}{8}$

57. Order from smallest to largest: $\frac{5}{8}$, 62%, 0.6205

X. Solution of basic percent problems

58. 22 is 5 percent of what number? 59. What is 120 percent of 50?

60. What is 5.5 percent of 20? 61. 15 is what percent of 20?

62. To the nearest whole percent, 7 is what percent of 21?

63. 16 is 80 percent of what number?

XI. Computation of square roots

Compute the square root

64. $\sqrt{0.04}$ 65. $\sqrt{40,000}$ 66. $\sqrt{0.0049}$

XII. Applications involving whole numbers, fractions, decimals, and percents

67. If 5 pounds of hamburger cost \$6.05, how much will 3 pounds cost?

68. The Red Sox team played 160 games and won 65 percent of them. How many games did they win?

69. If the price of an item originally costing \$4.40 is reduced by 10 percent, what is the new price?

70. If 6 students in a class of 20 students are seniors, what percent of the class are seniors?

71. A certain recipe calls for 2 cups of milk for every 3 cups of flour. If 2 cups of flour are used, how many cups of milk should be used?

72. What is $\frac{2}{3}$ of 54?

73. A student worked $2\frac{1}{2}$ hours on Friday and $3\frac{1}{4}$ hours on Saturday. If he was paid \$2.60 per hour, how much did he earn for the two days?

74. A basketball player took 400 shots during a season and scored on 40 percent of them. How many baskets did she score?

75. The price of gasoline increased 70 percent during one year. If gasoline cost \$0.50 at the beginning of the year, what was the price per gallon as the end of the year?

76. If one dozen cookies cost \$1.80, how much will 20 cookies cost at the same rate?

77. Three people own a business together. If the first person owns $\frac{1}{4}$ of the business and the second person owns $\frac{1}{3}$ of the business, what fraction of the business does the third person own?

78. An ear of corn cost 20 cents last year and 30 cents this year. By what percent has the price increased?
79. A silver necklace originally priced at \$45.50 is on sale for $\frac{1}{5}$ off. What is the sale price?
80. A refrigerator is on sale for 25 percent off. If the sale price is \$492, what was the original price before the sale?
81. In a certain grocery store, the store brand of laundry soap, priced at \$3.00, represents a $\frac{1}{3}$ savings over the leading national brand. What is the price of the national brand?

Answers

1. 15,000 2. 300 3. 20 4. 400 5. 200 6. 51 7. 20 8. 6 9. 82 10. 49.5
11. $\frac{14}{15}$ 12. $\frac{13}{36}$ 13. $1\frac{13}{22}$ 14. 12 15. $16\frac{2}{3}$ 16. $1\frac{5}{6}$ 17. 39 18. $2\frac{4}{5}$ 19. $2\frac{11}{12}$
20. 2 21. $\frac{1}{10}$ 22. $\frac{13}{20}$ 23. $\frac{26}{45}$ 24. $4\frac{7}{12}$ 25. $\frac{7}{50}$ 26. $1\frac{3}{5}$ 27. $1\frac{1}{2}$ 28. 8
29. $\frac{12}{15}$ 30. 72 31. 21.25 32. 18.87 33. 4.44 34. 36.60 35. 3.002 36. 36.156
37. 3.2 38. 700 39. 0.0144 40. 4.3 41. 0.002 42. 0.4005 43. 0.94 44. 27,000
45. 0.15 46. 0.4375 47. (a) $\frac{173}{100}$ (b) 1.73 48. 0.63 49. 5.19 50. 0.45 51. $\frac{127}{100}$
52. 62.5% 53. 1.2% 54. 0.085 55. 0.015, 0.105, 0.15, 0.501 56. $\frac{1}{3}, \frac{3}{8}, \frac{2}{5}$
57. 62%, 0.6205, $\frac{5}{8}$ 58. 440 59. 60 60. 1.1 61. 75% 62. 33% 63. 20
64. 0.2 65. 200 66. 0.07 67. \$3.63 68. 104 69. \$3.96 70. 30% 71. $1\frac{1}{3}$
72. 36 73. \$14.95 74. 160 75. 0.85 76. \$3 77. $\frac{5}{12}$ 78. 50% 79. \$36.40
80. \$656 81. \$4.50