Name _____ Date _____ Period _____

Rational Numbers Test

*Part 1: Choose **three** questions from each section and solve according to the directions. Each question is worth 2 points. Show your work and simplify your final answers.*

Section 1: Multiply. Convert decimals to fractions before multiplying.

1. $\frac{2}{11} \times 0.75$ _____

2. $\frac{10}{21} \times -\frac{7}{8}$ _____

3. $-1.8 \times -\frac{5}{6}$ _____

4. $4\frac{1}{2} \times -1\frac{1}{3}$ _____

Section 2: Divide. Convert decimals to fractions before multiplying.

5. $\frac{2}{3} \div 0.75$ _____

6. $\frac{5}{6} \div 1\frac{1}{9}$ _____

7. $8 \div \left(-\frac{1}{8}\right)$ _____

8. $\frac{7}{12} \div \frac{3}{8}$ _____

Section 3: Add or subtract.

9. $\frac{5}{11} + \frac{6}{11}$ _____

10. $\frac{5}{18} - \frac{13}{18}$ _____

11. $2\frac{3}{5} + 7\frac{3}{5}$ _____

12. $-\frac{4}{35} - \left(-\frac{17}{35}\right)$ _____

Section 4: Add or subtract.

13. $-\frac{3}{4} + \frac{7}{8}$ _____

14. $-\frac{2}{3} + 4\frac{3}{4}$ _____

15. $-\frac{2}{9} - \left(-\frac{2}{3}\right)$ _____

16. $1\frac{1}{3} - 2\frac{5}{6}$ _____

Section 5: Convert fractions to decimals, and order from least to greatest.

17. $\frac{4}{9}, 0.4, 0.44, \frac{3}{5}$ _____

18. $0.25, 0.2, 0.02, 0.251, \frac{253}{1000}$ _____

19. $0.\overline{3}, 0.3, 0.3\overline{4}, 0.33$ _____

20. $7.75, 7\frac{2}{3}, 6\frac{5}{6}, 6.8$ _____

*Part 2: Choose **four** questions from each section and solve according to the directions. Each question is worth 2 points. Show your work and simplify your final answers.*

Section 6: Solve each equation.

21. $6x = -4.2$ _____

22. $r + 0.4 = 1.4$ _____

23. $z - 4\frac{5}{8} = 15\frac{3}{8}$ _____

24. $-10 = \frac{b}{-7}$ _____

25. $\frac{1}{2}h = -14$ _____

Section 7: Evaluate each expression.

26. 6^2 _____

27. 5^{-2} _____

28. $6^2 \cdot 5^2$ _____

29. $2 \cdot 3^2 \cdot 4^2$ _____

30. $\left(\frac{2}{5}\right)^3$ _____

Section 8: Write each number in standard form.

31. 2×10^4 _____

32. 2.51×10^{-2} _____

33. 6×10^{-1} _____

34. 6.79×10^5 _____

35. 9.61×10^2 _____

Section 9: Write each number in scientific notation.

36. 7,650 _____

37. 51,000 _____

38. 0.0002 _____

39. 0.231 _____

40. 892 _____

Section 10: Write each expression using exponents.

41. $4 \cdot 4 \cdot 4 \cdot 4$ _____

42. $3 \cdot 2 \cdot 5 \cdot 5 \cdot 5 \cdot 2 \cdot 2 \cdot 2 \cdot 3 \cdot 5$ _____

43. $\frac{3}{4} \cdot \frac{3}{4}$ _____

44. $b \cdot b \cdot b \cdot b \cdot c \cdot c \cdot c \cdot c \cdot c \cdot c$ _____

45. $3 \cdot 2 \cdot \frac{5}{6} \cdot \frac{5}{6} \cdot \frac{5}{6} \cdot 2 \cdot 2 \cdot 2 \cdot 3 \cdot \frac{5}{6}$ _____

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Rational Numbers Test – Partner Work

Part 3: Solve **four** *of the word problems below. Each is worth 3 points. Write your final answer in a complete sentence.*

46. Crystal is making $1\frac{1}{2}$ times a recipe. The original recipe calls for $3\frac{1}{2}$ cups of milk. How many cups of milk does she need?

    _____

    _____

47. Marcus wishes to space letters equally across the top of a page. If each letter is 1.7 inches wide, and the paper is $8\frac{1}{2}$ inches wide, what is the maximum number of letters that he can fit across the top of the page?

    _____

    _____

48. Jeremy worked $5\frac{3}{20}$ hours on Monday. On Tuesday, he worked $2\frac{13}{20}$ hours. How much longer did Jeremy work on Monday than he worked on Tuesday?

    _____

    _____

49. A pizza has 3 toppings with no toppings overlapping. Pepperoni tops $\frac{1}{3}$ of the pizza and mushrooms top $\frac{2}{5}$. The rest is topped with sausage. What fraction is topped with sausage?

    _____

    _____

50. Trevor is $\frac{3}{8}$ of Maria's age. Trevor is 15. Write and solve a multiplication equation to find Maria's age.

    _____

    _____

*Part 4: Answer **three** of the essay questions below in complete sentences. Each is worth 6 points.*

51.   Give 6 examples of rational numbers in the real world.

_____

_____

_____

_____

52.   Explain the difference between like and unlike fractions. How do you change them? Why do you need to turn unlike fractions to like fractions?

_____

_____

_____

_____

53.   What is another name for a multiplicative inverse? How do you find a number's multiplicative inverse? When do you need to find a multiplicative inverse?

_____

_____

_____

_____

54.   Why are some numbers expressed using scientific notation? Name 2 things typically expressed in scientific notation.

_____

_____

_____

_____