Math 50 - Final Exam Review Sheet

Please Note: The review sheet is designed for you to have a guide as to what to study. The problems on the exam are not limited to the type of problems on this sheet. Any type of problem from the assigned homework problems are possible exam questions. Please attempt other practice problems other than those presented on this sheet in order to be completely prepared for the exam.

1. A roof is to have a pitch, or slant, of 14 in. vertically to 16 in. horizontally. Write the ratio of vertical distance to horizontal distance in simplest form.

2. What is the probability of rolling a 2, 5 or 6 on a standard six-sided die?

3. What is the probability of pulling a Jack from a standard deck of cards?

4. What is the probability of pulling a diamond from a standard deck of cards?

5. A bag contains 5 green balls, 7 red balls, 2 yellow balls and 8 orange balls. What is the probability of pulling

> *a*. One green ball?
> *b*. One orange ball?

6. Dan drives 224 miles in 3.5 hours. What is his average rate in miles per hour?

7. 60% of 400 is what number?

8. 70% of what number is 45.5?

9. What percent is 114 out of 200?

10. Carolyn earns 25% of total sales in commission. If she sold a total of $1218 in merchandise in one week, what is her commission?

11. A football quarterback in one game completes 34% of his pass attempts. If he completed 14 passes, how many pass attempts did he have in the game?

12. Corrina answered 41 questions correctly out of a total of 45 questions. What percent did she answer correctly? Round to the nearest tenth of a percent.

13. A stereo receiver is priced at $285.75. The sales tax rate is 6%. Calculate the sales tax and the total amount of the purchase.

14. Kat indicates that she received a 3.5% raise that amounted to $1102.50. What was her former salary?

15. Lucia indicates that she received a 5.5% raise. Her new salary is $34,393. What was her former salary?

16. Hannah purchased a curio stand discounted 35%. If the price after the discount was $246.68 what was the initial price?

17. Patricia purchased a table on sale for 30% off. If the discount amount was $44.09, what was the initial price?

18. Find the amount that results from each investment.

   a. $800 invested at 7% simple interest after a period of 6 years.
   b. $500 invested at 6% compounded monthly after a period of 3 years.
   b. $700 invested at 5% compounded daily after a period of 2 years.

19. In a survey of 2000 adults, 540 believed the Sun still revolves around the Earth. What percentage of those surveyed believed the Earth revolves around the Sun?

20. Determine the GPA of a students who received a B in a 5 unit class and an A in a 4 unit class.

21. Find the mean, median, and mode for the test scores of students in a history class.

80	92	64	78	88
80	82	74	72	60
55	96	100	71	82
75	82	90	86	58

22. Determine the *x*- and *y*-intercepts of the following equations. Then find a third solution of the same equation.

   a. $x - 3y = 6$
   b. $y = -4x$

23. Perform the indicated operations.

   a. $\left(-x^5 + 9x^2 y^2 - 2x^2 y + 5xy - 3y^2\right) + \left(4x^5 - 10x^2 y^2 + 6xy - y^2\right)$
   b. $\left(-m^6 - n^4 m^3 + 4m^2 n^3 - 6mn - 10n^2 + 14\right) - \left(m^6 + 3n^4 m^3 + 10m^2 n^3 - 6mn + 8n^2 - 2\right)$
   c. $5xy\left(9x^2 y^3\right)\left(2x^4\right)$
   d. $9ab^2\left(4a^3 - 3ab - 5b^2\right)$
   e. $\left(6a^4 b^2\right)^3$
   f. $(5z + 3)(7z - 9)$

g. $(2x-1)(x^2-4x+2)$

h. $\left(a^4+\dfrac{1}{4}a^2-a-\dfrac{1}{6}\right)+\left(\dfrac{3}{10}a^3+a^2-\dfrac{2}{3}a+4\right)$

i. $\left(2x^4+\dfrac{3}{5}x^2-\dfrac{1}{8}x+1\right)-\left(6x^4+\dfrac{1}{4}x^2-\dfrac{1}{2}x-\dfrac{1}{3}\right)$

j. $\left(-\dfrac{1}{6}m^3n^5\right)\left(\dfrac{3}{5}m^7n^2\right)$

k. $-\dfrac{5}{8}\left(\dfrac{4}{5}t^2-\dfrac{2}{3}t-\dfrac{1}{10}\right)$

l. $\left(\dfrac{1}{4}u-\dfrac{1}{3}\right)\left(\dfrac{1}{2}u+\dfrac{2}{3}\right)$

m. $(5k^3+2.5k^2-6.2k-0.44)-(2.2k^3-6.2k-0.5)$

n. $-6.8(0.02a^3-ab+1.9b)$

o. $(6.1y+2)(0.8y-5)$

p. $48x^3y^8z^5w^2\div(-6x^2y^3z^2)$

q. $38m^7n^3\div 2m^4n$

24. Find the prime factorization of 268.

25. List all possible factors of 80.

26. Find the greatest common factor of the following.

    a. 72 and 120
    b. 240 and 150
    c. $40x^6y^2z^3$ and $32x^3y^3$
    d. $24m^2n^8$, $12m^3n^5p$ and $30m^2n^3$

27. Factor the following.

    a. $8x-4$
    b. $32b^8+24b^4$
    c. $20x^5y^2z^3-24x^2y^7$
    d. $10x^4y^6z-20x^5y^3z^2-40x^3y^5$

28. Solve the following equations.

    a. $y + 19 = -6$
    b. $2x - 15 - x = 9 - 17$
    c. $6b + 7 = 5b + 3$
    d. $8u + 13 - 2u = 2u + 11 + 3u$
    e. $9 - 5(b - 1) = -4(b - 2)$
    f. $-4y + 15 = -9y - 20$
    g. $5 - 8x - 24 = 7x + 11 - 5x$
    h. $13 - 9h - 15 = 7h + 22 - 8h$
    i. $-2(x + 7) - 9 = 5x + 12$

    j. $11x - 4(2x - 3) = 18 + 5(x + 2)$

    k. $8x - (3x + 7) = 14 - 4(x - 6)$

    l. $\dfrac{2}{3}y - 8 = \dfrac{1}{6}$

    m. $\dfrac{1}{8} + n = \dfrac{5}{6}n - \dfrac{2}{3}$

    n. $\dfrac{5}{6}(x - 8) = \dfrac{1}{5}x - \dfrac{1}{3}$

    o. $\dfrac{28}{42} = \dfrac{x}{6}$

    p. $\dfrac{-5m}{6} = \dfrac{-5}{21}$

    q. $4.5x - 2.61 = 0.99$
    r. $2.1x - 12.6 = 1.9x - 10.98$
    s. $4(2.55 - x) - 5.8x = 12.2 - (8 + 11.4x)$

29. Translate each of the following into an equation.

    a. The difference of a number and nine is equal to four.
    b. The product of negative three and a number is twenty-one.
    c. A number increased by seventeen is negative eight.
    d. Nine more than the product of eight and a number is the same as three times the sum
        of the number and thirteen.
    e. $\dfrac{3}{8}$ less than twice a number is the same as $\dfrac{5}{6}$ more than the number.

f. $\dfrac{7}{11}$ of a number is $3\dfrac{1}{8}$

g. 0.6 times the sum of k and 1.5 is equal to 0.42 plus the product of 1.2 and k.

30. Simplify the following expressions.

a. $2^6 - 18 \div 3 \cdot 5 - \sqrt{100}$

b. $2(7-4) + 8^2 - (16+5) \div 7$

c. $31 - 3\big[(20-6) - 3 \cdot 2\big] + 2^4$

d. $\big\{18 - 4\big[21 \div (3+4)\big]\big\} + 2\sqrt{16 \cdot 4}$

e. $4\big\{\big[25 - (19+2)\big] \cdot (3+1)\big\} - (3+5)^2$

f. $\dfrac{(12-5)^2 + 2^3}{10 \div 2 - (11-9)}$

g. $39 \div 3 + (24-30) - 5^2 + \big(-21-(-13)\big)$

h. $\big[19(-2) - (-18)\big] \div \big[15 - 5\big(2-(-1)\big)\big]$

i. $4\sqrt{16 \cdot 9} - \big\{(-4)^3 + 2\big[18 \div (-2) + \big(4-(-2)\big)\big]\big\}$

j. $3 + (4-6)^3 + 3\sqrt{25} - 18 \div 3$

k. $\dfrac{1}{6} - 5 \cdot \dfrac{7}{10}$

l. $5\dfrac{1}{3} + \dfrac{3}{4} \div \dfrac{5}{12}$

m. $7\dfrac{1}{4} + \dfrac{3}{4}\sqrt{\dfrac{4}{9}}$

$n. \quad \left(\dfrac{1}{2}\right)^3 + 2\dfrac{1}{4} - 5\left(\dfrac{3}{10} + \dfrac{1}{5}\right)$

$o. \quad 5\left(\dfrac{1}{2} - 3\dfrac{4}{5}\right) - 2\left(\dfrac{1}{6} + 4\right)$

$p. \quad 9.28 - 0.56(12)$

$q. \quad (0.4)^2 - 2.8 \div 0.2(1.6)$

$r. \quad 7.5 + 2.2\sqrt{0.25} - 36.8 \div 8$

$s. \quad 40.1 - 6.9 \div 4.6(1.4)^2 + \sqrt{0.36}$

$t. \quad \dfrac{7}{10}(12.88 - 4.38)$

$u. \quad \dfrac{2}{5} \div (-0.8) + \left(\dfrac{1}{3}\right)^2$

31. Skip owns a rectangular plot of land that is 85 ft. by 280 ft. He plans to build a house that will measure 45 ft. by 55 ft. What will be the area of the surrounding lawn?

32. A box has a volume of 30,600 cm³. If the height is 60 cm and the height is 15 cm, find the width.

33. Reduce $\dfrac{15x^5 y^3}{27x^2 y^7}$ into lowest terms.

34. Perform the indicated operation. Write your answer in simplest form.

$a. \quad \dfrac{24}{32} \cdot \dfrac{26}{30}$

$b. \quad \dfrac{60}{-81} \cdot \dfrac{45}{72}$

$c. \quad 4\dfrac{5}{8} \cdot 16$

$d. \quad 2\dfrac{7}{10} \cdot -8\dfrac{1}{3}$

$e. \quad -\dfrac{10x^4 y}{11z} \cdot \dfrac{22z}{14x^2}$

f. $\dfrac{9m^3}{25n^4 p} \cdot \dfrac{-15n}{18m^2 p}$

g. $\left(\dfrac{t^4}{4y}\right)^3$

h. $\dfrac{14}{15} \div -\dfrac{7}{12}$

i. $\dfrac{-3}{4} \div 6$

j. $\dfrac{12}{\dfrac{-2}{3}}$

k. $\dfrac{t^2 u^4}{18v^3} \div \dfrac{-10t^5}{12v}$

l. $\sqrt{\dfrac{81}{16}}$

m. $\dfrac{3}{10} + \dfrac{5}{6}$

n. $\dfrac{7}{12} - \dfrac{11}{36}$

o. $\dfrac{9}{16m} - \dfrac{3}{8m}$

p. $\dfrac{2}{3n^2} - \dfrac{7}{9n}$

q. $6\dfrac{7}{8} - \left(-3\dfrac{1}{4}\right)$

35. Find the least common multiple of the following.

    a. 16 and 20
    b. 63 and 28

     c. 26, 30, and 39

     d. $9ab$ and $3b$

     e. $20h^5k$ and $15h^2k^3$

36. Perform the indicated operation without the aid of a calculator.

     a. $56.482 + 43.9327$

     b. $72.462 - 94.5234$

     c. $(5.62)(3.4)$

     d. $93.96 \div 10.8$

     e. $19.6 \div 0.11$

37. Write the following as a decimal.

     a. $\dfrac{9}{20}$ *b.* $-\dfrac{5}{32}$ *c.* $5\dfrac{5}{9}$

38. Solve each of the following for the indicated value.

     a. Find the area of a triangle with a base of 6 cm and a height of 4 cm.

     b. Find the area of a circle whose radius is 6 m.

39. Stan buys 4.75 lb. of onions at $0.79/lb. What is the total cost of the onions?

40. Brad has a student loan balance of $1734.72. If he agrees to make equal monthly payments over a four-year period, how much will each payment be?

41. A plane is flying at 350 mph. How long will it take the plane to reach a city that is 600 miles away? (Use $d = rt$.)

42. Nine offices in an office building are to be painted. Each office is 10 ft. by 9 ft. and has 8 ft. ceilings. Each office has a 3ft. by 7 ft. doorway and a 3 ft. by 2 ft. window.

     a. How many square feet will be painted?

     b. If a gallon of paint will cover 400 square feet, then how many cans will be needed?

     c. If each gallon costs $14, then what will be the total cost of the paint?

Solve the following problems by setting up an equation. Then, solve the equation.

43. 84 ft. of border strip was used to go around a rectangular room. The width of the room is 4 ft. less than the length. What are the dimensions?

44. After completing the trim on some kitchen cabinets, Candice has 48 in. of trim wood left. She decides to make a picture frame out of the wood. She wants to make the frame so that the length is 4 in. less than three times the width. What must the dimensions be?

45. A field is developed so that the length is 2 m less than three times the width. The perimeter is 188 m. Find the dimensions of the field.

46. The sum of the angles in any triangle is 180°. Suppose we have a triangle with the second angle measuring 10° more than the first and the third angle is 7° less than the first. What are the three angle measurements?

47. Byron is a wedding photographer. He develops two different-size prints for a newlywed couple. He sells the large prints for $7 each and the small prints for $3 each. He develops twice as many small prints as large prints at a total cost of $78. How many of each size print did he sell?

48. Latisha has a change purse in which she only keeps quarters and half dollars. She has 12 more quarters then half dollars. If the total she has in the purse is $6.75, how many of each coin does she have?

49. Bernice sells drinks at college football games and gets paid by the number of each size drink she sells. There are two drink sizes, 12 oz. and 16 oz. The 12 oz. sells for $1.50 and the 16 oz. for $2.00. She knows she sold 65 drinks but cannot remember how many of each size. If her total sales is $109, how many of each size did she sell?

50. An architect consultant feels that the optimal design for a new building would be a rectangular shape where the length is four times the width. Budget restrictions force the building perimeter to be 300 feet. What will be the dimensions of the building?

51. William drove 358.4 miles using 16.4 gallons of gasoline. At this rate, how much gasoline would it take for him to drive 750 miles?

52. A recipe for bran muffins calls for $2\frac{1}{2}$ teaspoons of baking powder. The recipe yields 8 muffins. How much baking powder should be used to make two-dozen muffins?