Oakland Community College: Math Practice Test

1. **Basic Operations with Integers**:
$36+(-20)+50-(-17)-10=$

2. **Basic Operations with Fractions**:
What number added to $\frac{1}{3}$ plus $\frac{1}{4}$ will equal the number 1?

3. **Basic Operations with Decimals**:
$36\div 0.4=$

4. **Basic Operations with Exponents**:
$\frac{(4^3)^2}{16}=$

5. **Order of Operations**:
$8-5\times 2+9=$

6. **Ratio and Proportion**:
$\frac{w}{5}=\frac{7}{10}$ solve for w

7. Jan is making clay coasters for an art fair. Each coaster costs $2.25 to make. If she sells the coasters for $4.00 each, how many will she have to sell to make a profit of exactly $70.00?

8. Four pieces of ribbon are cut from a length of ribbon that is 80 ft long. One of the pieces is 15 feet long. Two of the pieces are 7 ½ feet long. One of the pieces is 3 ¾ feet long. How many feet of ribbon are left from the original length?

9. **Percentages**:
What number is 65% of 420?

10. **Scientific Notation**:
Write answer in scientific notation
$(2,700,000,000)(0.00003)=$

11. Amy charged $500 worth of merchandise on her credit card. When she got her bill, which did not include any interest, she paid $100. During the next month she charged another $70 worth of goods. When she got her next bill she was charged 2% interest on her entire unpaid balance. How much interest was she charged?

12. A taxi cab charges $0.80 for the first $\frac{1}{5}$ of a mile and $0.10 for each additional $\frac{1}{10}$ of a mile. What is the cost of a 3 mile trip?

13. **Averages**:
John works a variety of different jobs. On Monday he earned $50. Tuesday he earned $40. On Wednesday and Thursday he earned $30 each day, and on Friday he earned $100. What was John's average daily pay for the 5 days?

14. **Rates**:
2½ inches per minute, 240 inches per hour, $\frac{1}{4}$ foot per minute; which is fastest?

15. **Evaluate an Expression**:
Evaluate $3x^2-2xy+y^2$ for $x=-2$ and $y=3$

16. **Operations with Polynomials**:
$(x+y)^2-(9xy-6x^2)=$

17. **Multiply Polynomials**:
$(2x-5)(6x+4)=$

18. **Divide Polynomials**:
$\frac{12x^5-6x^3+4x^2}{4x^2}=$

19. **Factor**:
$6x^3 + 27x^2 - 105x =$

20. **Simplify a Rational Expression**:
$\dfrac{x^2 - 5x + 4}{x - 1} =$

21. **Simplify a Radical Expression**:
$\sqrt{18x} - 4\sqrt{x^3} =$

22. **Evaluate an Expression**:
$A = P(1 + r)$
If $P = \$450$ and $r = 12\%$, find A

23. **Simplify a Radical Expression**:
$\sqrt[3]{27} + \sqrt[3]{64} =$

24. **Rationalize the Denominator**:
$\dfrac{2 + \sqrt{3}}{2 - \sqrt{3}} =$

25. **Solve a Linear Equation**:
$3x + 7 = 2(x - 1)$

26. **Solve a Quadratic Equation**:
Find the sum of the solutions of
$x^2 - 6x = 7$

27. **Solve an Equation w/Rational Expressions:**
$\dfrac{1}{x} + \dfrac{2}{x} = 10$

28. **Solve a Linear Inequality**:
$-2x + 3 < 5$

29. **Solve a System of 2 Linear Equations**:
$2x + 3y = -11$
$6x + y = 7$

30. **Use Laws of Exponents**:
$\dfrac{2a^{-2}}{(2a)^{-3}} =$

31. **Use Laws of Exponents**:
$\left(2.1 \times 10^5\right)^2 =$

32. **Radicals and Rational Exponents**:
$\sqrt[3]{a} \cdot \sqrt[4]{a} =$

33. In selling stock an investor made a profit of \$160 plus 20% of the amount originally paid for the stock. If the cost of the stock was originally \$800 what percent of the cost was the total profit?

34. Altogether Mark, John, and Alan earned \$ 104. John earned twice as much as Mark and Alan earned \$4 more that John. How much did Alan earn?

35. A train travels 4 hrs at 60 miles per hour and 2 hours at 75 miles per hour. What is the train's average rate for 6 hours?

36. **Graph a Linear Equation**:
Graph $2x + y = 5$

37. **Slope**:
Are these 2 lines parallel?
L_1 2x + 3y = 6
L_2 line through (3, 10) (5, 7)

38. **Write the Equation of the Line**:
A line goes thru $(2, -1)$ and has slope $m = 3$, what is the equation in general form?

39. **Distance Formula**:
What is the distance between $A(2, -5)$ and $B(6, 3)$?
(Round answer to nearest hundredth)

40. **Graph**:
$y = 4 - x^2$

41. **Graph**:
$x^2 + y^2 = 36$

42. **Functions**:

43. **Domain of a Function**:

$f(x)=x^2+2x+3$

find $f(a+1)$

What is the domain of

$f(x)=\dfrac{7}{2x+6}$

44. **Domain of a Function**:
What is the domain?

$f(x)=\sqrt{x-7}+2$

45. **Range of a Function**:
What is the range?

$f(x)=\dfrac{1}{x-9}$ ___

46. **Composite Functions**:

$f(x)=3x-2,\quad g(x)=x^2+1$

find $f(g(3))$

* other notation $((f\circ g)(3)$

47. **Inverse Functions**:

If $h(x)$ contains the point $(4,-1)$ then

h^{-1} must contain the point (,)

48. **Complex Numbers**:
Leave your answer in a+bi form

$\dfrac{3+2i}{3-2i}$

49. **Solve an Exponential Equation**:

$9^{x+2}=\dfrac{1}{3}$

50. **Logarithms**:
Express as a single log

$2\log_a x-3\log_a y=$

51. **Logarithms**:

$\log_2 16 =$

52. **Sequences**:
Find the 10^{th} term of the geometric sequence 2, -6, 18, -54...

53. **Factorial**:

$8!=5!*$ _____

54. **Solve a Quadratic Equation**:
solve using quadratic formula

$x^2+3x+6=0$

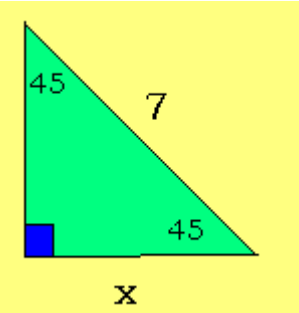
55. **Solve an Exponential Equation**:

$A=P_0 10^r$

If $A=80,\ P_0=90$, find r

56. A saline solution is 20% salt. How many gallons of water must be added to dilute the mixture to 8 gals of a 15% saline solution?

57. **Trigonometry**:



58. **Trigonometry**:

If $\sin(x+y)=\sin x\cos y+\cos x\sin y$

Find $\sin\left(\dfrac{\pi}{2}+\alpha\right)$

59. **Trigonometry**:

If $\sin\theta=\dfrac{5}{13}$ and $\tan\theta<0$

then $\sec\theta=$

60. **Trigonometry**:
Rewrite using only the sine function

$2\cos^2 x+\sin^2 x=$