Student: _____ **Date:** _____ **Time:** _____	**Instructor:** Tom Blackburn **Program:** NEIU MATHEMATICS PLACEMENT TESTS **Test Bank:** MyMathTest: Developmental Mathematics	**Assignment:** NEIU MPT PRACTICE TEST: Intermediate Algebra

1. Square the binomial.

$(5x-4)^2$

$(5x-4)^2 =$ ☐

(Simplify your answer.)

2. Use the exponent rule to simplify the expression. Assume the variables represent nonzero real numbers.

$$\frac{(m^6n)^{-6}}{m^{-31}n^7}$$

$$\frac{(m^6n)^{-6}}{m^{-31}n^7} =$$ ☐

(Simplify your answer. Type answer in exponential notation using positive exponents.)

3. Factor.

$s^2-2s-48$

Select the correct choice below and, if necessary, fill in the answer box within your choice.

○A. The answer is ▒. (Factor completely.)

○B. The trinomial is not factorable.

4. Factor.

$4a^2+21a+5$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

○A. $4a^2+21a+5 =$ ▒

○B. The trinomial is not factorable.

5. Solve.

$5w^2 = 36w+32$

The solution is $w =$ ☐.

(Type an integer or a simplified fraction. Use a comma to separate answers as needed.)

6. Write the rational expression in lowest terms.

$$\frac{14\,(y-4)}{10\,(y-4)}$$

$\frac{14\,(y-4)}{10\,(y-4)} = \square$

(Simplify your answer. Use integers or fractions for any numbers in the expression.)

7. Write the rational expression in lowest terms.

$$\frac{z^2-11z+30}{z^2+2z-35}$$

$\frac{z^2-11z+30}{z^2+2z-35} = \square$

(Simplify your answer.)

8. Multiply. Write your answer in lowest terms.

$$\frac{2(c+d)}{7}\cdot\frac{98}{14(c+d)^2}$$

$\frac{2(c+d)}{7}\cdot\frac{98}{14(c+d)^2} = \square$

(Simplify your answer.)

9. Multiply.

$$\frac{3x-6}{7x+14}\cdot\frac{6x+12}{14x-28}$$

$\frac{3x-6}{7x+14}\cdot\frac{6x+12}{14x-28} = \square$

(Type an integer or a fraction. Simplify your answer.)

10. Add as indicated. Express your answer in lowest terms.

$$\frac{7+7k}{4}+\frac{1+k}{8}$$

$\frac{7+7k}{4}+\frac{1+k}{8} = \square$

11. Solve the equation and check your answer.

$$\frac{d}{2}-\frac{d-2}{4}=\frac{9}{4}$$

The solution is $d = \square$.

(Simplify your answer.)

12. Solve for x.

$$\frac{9-x}{5}=\frac{x}{10}$$

$x =$ ☐

(Simplify your answer.)

13. Divide.

$$\frac{16x^8y^7+24x^5y^5+48x^4y^4}{8x^4y^4}$$

○A. $2x^4y^3+3xy^5+6$

○B. $16x^4y^3+24xy+48$

○C. $2x^4y^7+3x^4y^4+6$

○D. $2x^4y^3+3xy+6$

14. Solve by the substitution method.

$x+y=3$

$-2x+y=-3$

What is the solution of the system?

☐

(Type an ordered pair.)

15. Solve the following system by the elimination method.

$$3x-7y=15$$
$$-5x+4y=-25$$

What is the solution?

☐

(Type an ordered pair.)

16. Find an equation of the line containing the given pair of points.

(2,3) and (6,4)

$y =$ ☐

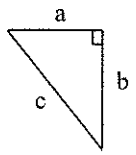
(Simplify your answer. Type your answer in slope-intercept form. Use integers or fractions for any numbers in the expression.)

17. Find an equation of the line having the given slope and containing the given point.

$m = -6, (2,3)$

The equation of the line is $y =$ ☐.
(Simplify your answer. Type your answer in slope-intercept form. Use integers or fractions for any numbers in the equation.)

18. In a right triangle, find the length of the side not given.



$a = 3, b = 4$

The length of the third side is ☐.
(Simplify your answer. Type an exact answer, using radicals as needed.)

19. Find the product and simplify.

$\sqrt{98} \cdot \sqrt{72}$

- ○ A. 72
- ○ B. $42\sqrt{2}$
- ○ C. 42
- ○ D. 84

20. Use the properties of exponents to simplify the expression. Write with positive exponents.

$d^{3/5} \cdot d^{8/5}$

$d^{3/5} \cdot d^{8/5} =$ ☐
(Simplify your answer. Type exponential notation with positive exponents.)

21. Solve the equation. Express radicals in simplest form.

$5m^2 + 12m + 3 = 0$

○A. $\frac{-12 + \sqrt{21}}{5}, \frac{-12 - \sqrt{21}}{5}$

○B. $\frac{-6 + \sqrt{21}}{5}, \frac{-6 - \sqrt{21}}{5}$

○C. $\frac{-6 + \sqrt{51}}{5}, \frac{-6 - \sqrt{51}}{5}$

○D. $\frac{-6 + \sqrt{21}}{10}, \frac{-6 - \sqrt{21}}{10}$

22. Factor by grouping.

$3v^2 + 2v - 21$

$3v^2 + 2v - 21 =$ ☐

23. Factor the trinomial.

$10t^2 + 36t - 16$

Choose the correct factored form of $10t^2 + 36t - 16$.

○A. $2(5t-2)(t+4)$ ○B. $(5t-2)(t+4)$

○C. $-2(5t-2)(t+4)$ ○D. $2(5t+2)(t+4)$

24. Solve using the zero-factor property.

$(13s + 7)(6s - 18) = 0$

The solutions are s = ☐.
(Type an integer or a simplified fraction. Use a comma to separate answers.)

25. Write an equation of the line containing the given point and parallel to the given line.

$(3, -7)$; $4x - 5y = 9$

The equation of the line is y = ☐.
(Simplify your answer. Type answer in the form y = mx + b using integers or fractions.)

26. Write an equation of the line containing the given point and perpendicular to the given line.

$(0,4);\ 2x+9y=5$

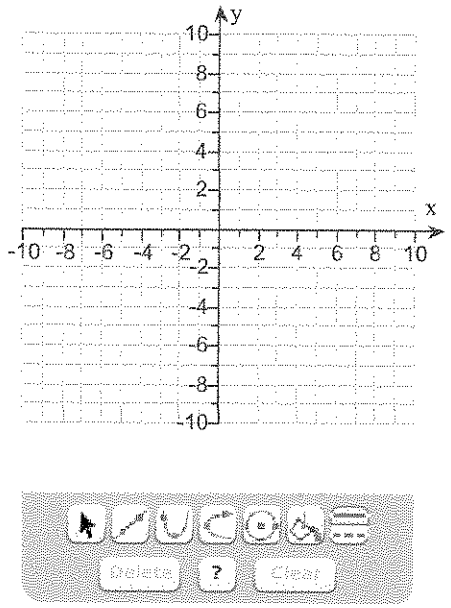
The equation of the line is $y=$ ☐.
(Simplify your answer. Use integers or fractions for any numbers in the expression.)

27. Graph the inequality.

$5x+3y>15$

Use the graphing tool on the right to graph the inequality.

Click to enlarge graph



28. Use radical notation to write the expression. Simplify if possible.

$(-27)^{\frac{1}{3}}$

Select the correct choice below and fill in any answer boxes in your choice.

○A. $(-27)^{\frac{1}{3}} =$ ▩

○B. The answer is not a real number.

29. Find the vertex of the graph of the following quadratic function.

$f(x) = -x^2 - 10x - 9$

The vertex is ☐. (Type an ordered pair.)

30. Find the vertex of the graph of the quadratic function shown below. Determine whether the graph opens upward or downward, find any intercepts, and sketch the graph.

$f(x) = x^2 + 4x + 3$

The vertex is ☐.
(Simplify your answer. Type an ordered pair.)

Does the graph open upward or downward?

○ The parabola opens upward.

○ The parabola opens downward.

Find any x-intercepts of the graph.

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

○A. The x-intercept(s) is(are) ▒.
(Simplify your answer. Type an ordered pair. Use a comma to separate answers as needed.)

○B. There is no x-intercept.

Find any y-intercepts of the graph.

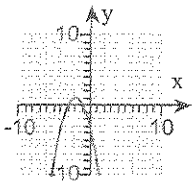
Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

○A. The y-intercept(s) is(are) ▒.
(Simplify your answer. Type an ordered pair. Use a comma to separate answers as needed.)

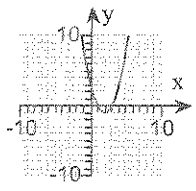
○B. There is no y-intercept.

Choose the correct graph below.

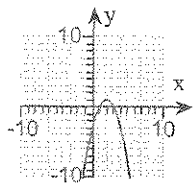
○A.



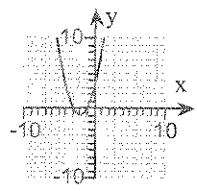
○B.



○C.



○D.



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1. $25x^2 - 40x + 16$

2. $\frac{1}{m^5 n^{13}}$

3. A, $(s+6)(s-8)$

4. A, $(4a+1)(a+5)$

5. $8, -\frac{4}{5}$

6. $\frac{7}{5}$

7. $\frac{z-6}{z+7}$

8. $\frac{2}{c+d}$

9. $\frac{9}{49}$

10. $\frac{15(1+k)}{8}$

11. 7

12. 6

13. D

14. $(2,1)$

15. $(5,0)$

16. $\frac{1}{4}x + \frac{5}{2}$

17. $-6x + 15$

18. 5

19. D

20. $d^{11/5}$

21. B

22. $(3v - 7)(v + 3)$

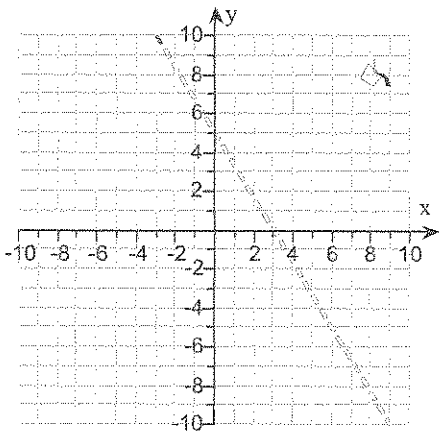
23. A

24. $-\frac{7}{13}, 3$

25. $\frac{4}{5}x - \frac{47}{5}$

26. $\frac{9}{2}x + 4$

27.



28. A, -3

29. $(-5,16)$

30. $(-2,-1)$
the first choice
A, $(-3,0),(-1,0)$
A, $(0,3)$
D