

**Math 31**  
**Number and Algebra Review**

Name \_\_\_\_\_  
Date \_\_\_\_\_

1. Evaluate.

a)  $(-5) + 16 + (-10) - (-4)$

b)  $-9 - 12 \div (-3)$

c)  $(-8 + 4) \times (-5 - 2)$

d)  $-25 + 5^2 \times 4$

2. Express your answers as fractions in lowest terms. Show some work, not just your final answer.

a)  $\frac{3}{8} + \frac{1}{8}$

b)  $\frac{3}{10} + \frac{3}{4} - \frac{4}{5}$

3. Express your answers as fractions in lowest terms. Show some work, not just your final answer.

a)  $\frac{2}{15} \times \frac{3}{5}$

b)  $\frac{8}{25} \div \frac{16}{10}$

4. Simplify.

a)  $(3ab^3)^2$

b)  $\left(\frac{x^2}{y}\right)^3$

5. Expand and evaluate.

a)  $(-2)^3$

b)  $5^{-2}$

6. Simplify. Answer with positive exponents.

a)  $(2x^4y^2)(4x^3y)$

b)  $\frac{16a^2b^5}{4a^2b^8}$

c)  $(3a^2b)^3(2ab^4)$

d)  $(x^2y^{-1})^3$

e)  $\left(\frac{3x^3}{y^2}\right)^{-2} \cdot \frac{(6x^4y^{-2})^2}{2^{-1}x^{-3}y^{-1}}$

7. Solve.

a)  $3x + 7 = 19$

b)  $24 - 3x = 9x$

c)  $3(x - 4) = 2x - 3$

d)  $4 - 2(x + 6) = 3x - (x - 4)$

e)  $\frac{2}{3}x + \frac{1}{2} = \frac{3}{4}x$

8. At the concert on Friday night there were 30 more students than adults in attendance. The admission price for a student was \$5.00 and for an adult was \$8.00. If the total revenue from the attendance at the concert on Friday night was \$1060, how many students and adults were at the concert?

9. The length of a rectangular garden plot is 4 m shorter than twice the width. The perimeter of the garden plot is 28 m. What are the dimensions of the garden plot?

11. Multiply and simplify.

a)  $5(3x+2)(x+4)$

b)  $(2x-5)(3x^2-2x+3)$

12. Simplify.

a)  $\frac{18x^3 - 12x^2 + 6x}{6x}$

b)  $(x+5)^2 - (x+2)(x+4)$

13. Factor.

a)  $x^2 + 8x + 12$

b)  $3x^2 - 2x - 8$

c)  $5x^2 + 23x - 10$

d)  $x^2 - 16$

e)  $30x^2 + 42x + 12$

f)  $4x^2 - 11x + 6$