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**Lesson 3: Functions and Exponents-Heart of Algebra**

1) What is the area of a square with the length of a side equaling 

2) What is the area of the rectangle with the width of 

**Simplify each Quotient and then find the Value of the Result:**

3)  4)  5)  6)  7) 

**Simplify Each Expression:**

8)  9)  10)  11) 

12)  13)  14) 

15)  16)  17) 

18)  19)  20) 

21)  22)  23) 

**Evaluate each Quotient if x = 2 , y = -2 , and z = 10 :**

24)  25)  26) 

27)  28)  29) 

30)  31)  32) 

1. $f\left(a\right)=2a^{2}-80$

If $f(2c)=100$, what is the value of *c*?

1. $x∆y=4x-2y+3xy$

This describes a relation for any two real numbers, *x*+*y*. If $\left(2a+1\right)∆4=50$, find the value of $a∆a$?

1. $a\$=12a+a^{2}$s

If $4i\$=10i$, find all values of *i*.

1. $c∇d=4ac+2cd+8d-8$

If $4∇5=240$, find $2∇3$.

1. Sales (*s*) are a function of price (*p*). $s\left(p\right)=2p-14c+1800$. When price is $8.00, sales are $1800.00. What should price be in order for sales to reach $2100.00?
2. $g\left(a\right)=3a^{2}+60$

If $g\left(2y\right)=300$, find $g(y)$.

1. $2x-4y+2xy=3xz-8z+80$

Solve for *x* as a function of *y* and *z*.

1. $\hat{b}=-b^{2}+12b$, for any real value of *b*.

If $\hat{m}=35$, find all values of *m*.

1. Grades (*g*) are a function of effort (*e*) such that $g=g\left(e\right)=2ke+80$. Sam earns a grade of 100 when effort is only 8. To earn a grade of 95, what value of effort should he exert?

Solve for the variable of interest in each of the following:

1. $4^{4}=128^{3x-3}$
2. $729^{2m}=27^{5+6m}$
3. $\frac{1}{5}^{m}=625^{20-8b}$
4. $\frac{1}{9}^{3}=9^{10c-8}$
5. $8^{6x}=256^{14+5x}$
6. $16^{7k}=\frac{1}{128}^{2k+5}$
7. $1=\frac{1}{4}^{y-2}$