

**Identity Properties**

$12 + \underline{\hspace{2cm}} = 12$

$\underline{\hspace{2cm}} - 0 = a$

$0 \underline{\hspace{2cm}} 4c = 4c$

$7 \bullet \underline{\hspace{2cm}} = 7$

$g \div \underline{\hspace{2cm}} = g$

$1 \bullet \underline{\hspace{2cm}} = 105$

**Inverse Properties**

+ is the inverse of \_\_\_\_\_     $\div$  is the inverse of \_\_\_\_\_

$\bullet$  is the inverse of \_\_\_\_\_    - is the inverse of \_\_\_\_\_

Remember...

**Repeated Addition** signals **Multiplication**  
**Repeated Multiplication** signals **Exponents**

**Simplify each Expression**

**Expand Each Expression**

1)	$a + a + a + a$	2)	$5y$
3)	$k \bullet k \bullet k \bullet k \bullet k \bullet k$	4)	$n^7$
5)	$m + m + m + x + x + x + x + x$	6)	$3c + 2h$
7)	$r \bullet r + g + g + g + t \bullet t$	8)	$d^3 \bullet x^5$
9)	$p \bullet p \bullet p \bullet b + b + b$	10)	$3a + u^2 + 4j$

**Identity Properties**

$12 + \underline{0} = 12$

$\underline{a} - 0 = a$

$0 + \underline{4c} = 4c$

$7 \cdot \underline{1} = 7$

$g \div \underline{1} = g$

$1 \cdot \underline{105} = 105$

**Inverse Properties**

+ is the inverse of -      ÷ is the inverse of •

• is the inverse of ÷      - is the inverse of +

Remember...

**Repeated Addition** signals **Multiplication**  
**Repeated Multiplication** signals **Exponents**

Simplify each Expression

Expand Each Expression

1)	$\underline{a+a+a+a}$ $4a$	2)	$5y$ $y+y+y+y+y$
3)	$\underline{k \cdot k \cdot k \cdot k \cdot k \cdot k}$ $k^6$	4)	$n^7$ $n \cdot n \cdot n \cdot n \cdot n \cdot n \cdot n$
5)	$\underline{m+m+m} + \underline{x+x+x+x+x}$ $3m+5x$	6)	$3c+2h$ $c+c+c+h+h$
7)	$\underline{r \cdot r} + \underline{g+g+g} + \underline{t \cdot t}$ $r^2 + 3g + t^2$	8)	$d^3 \cdot x^5$ $d \cdot d \cdot d \cdot x \cdot x \cdot x \cdot x \cdot x$
9)	$\underline{p \cdot p \cdot p} \cdot \underline{b+b+b}$ $p^3 \cdot 3b$	10)	$3a+u^2+4j$ $a+a+a+u \cdot u + j+j+j+j$