

### 4.5 Translate Expressions Involving Exponents

**\*\*Look for commas to identify where to place grouping symbols or a new term!\*\***

Word Phrase	Math Expression
five cubed	$5^3$
one half of y squared, minus 14	$\frac{1}{2}y^2 - 14$
the third power of the sum of six and four, times two	$(6 + 4)^3 \times 2$

**Example:** Determine whether the mathematical expression for each word phrase includes an exponent. Identify the key word if it does.

1.) nine times two

no exponents

2.) a number <sup>times 2</sup> doubled, plus three

no exponents

3.) four cubed times eight

exponents

4.) seven <sup>times 3</sup> tripled, minus nine

no exponents

5.) x cubed plus six

exponents

**Example:** Write each word phrase as a mathematical expression. Use  $n$  as the variable when needed. Then simplify if possible.

6.) the third power of two  $2^3 = 2 \cdot 2 \cdot 2 = \boxed{8}$

7.) (four times some number), plus the fourth power of two  
 $(4n) + 2^4$

8.) (five times two cubed) plus four times three squared

$$\begin{aligned} &(5 \times 2^3) + 4 \times 3^2 \\ &(5 \times 8) + 4 \times 3^2 \\ &40 + 4 \times 3^2 \\ &40 + 4 \times 9 \\ &40 + 36 = \boxed{76} \end{aligned}$$

**Example:** Write each word phrase as a mathematical expression. Use  $n$  as the variable when needed. Then simplify if possible.

9.) the fourth power of two, minus three squared

10.) the sum of a number and four, raised to an exponent of 3, minus five

**Example:** Write each expression as a word phrase.

11.)  $3^3 - x$

12.)  $(4y - 2) + 9$

13.) Ann sells 15 tickets to the school play. Gail sells 5 fewer tickets than Ann. Michele sells twice as many tickets as Gail, squared. How many tickets do Ann, Michelle, and Gail sell in all?