1-6

Essential Question: How do we determine if algebraic expressions are equivalent?

**Do Now:** Evaluate the algebraic expressions.

a) 
$$(5p + 2) - p^2$$
 when  $p = -3$  b)  $-9bc^2$  when  $b = 10$  and  $c = -2$ 

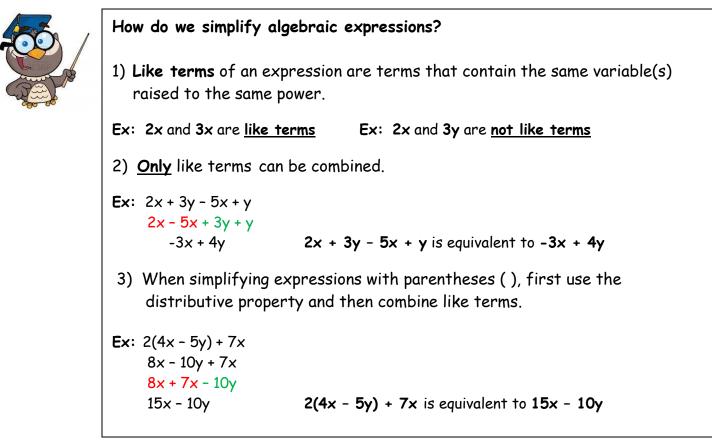
Think about this...

Are 2x + y and y + 2x equivalent? In what ways can we prove it?

1 <sup>st</sup> proof:	2 <sup>nd</sup> proof:

## Equivalent expressions...

- represent the same value for any value(s) substituted for the variables that they contain.
- look exactly the same when simplified.



## Justifying Equivalence Using the Properties of Real Numbers

Is 6 + 3(5y) equivalent to 3(4y + 2) + 3y? Simplify the expressions to find out.

Expression	Property/Process	Expression	Property/Process
3(4y + 2) + 3y	GIVEN EXPRESSION	6 + 3(5y)	GIVEN EXPRESSION
		6 + (3 • 5)(y)	
		6 + 15y	
		15y + 6	

Prove that 6 + 3(5y) is equivalent to 3(4y + 2) + 3y in another way.

1) Jack took the steps below to simplify an expression.

 $4x + 3x \rightarrow x(4 + 3) \rightarrow x(7) \rightarrow 7x$ 

- a) What properties did he use?
- b) Prove that 4x + 3x is equivalent to  $\mathcal{F}x$  in another way.

- 2) Determine which of the following algebraic expressions are equivalent. Justify your response.
  - A. 3(n 4) B. 3n 4 C. 3n 12 D. 4n 12 n
  - E. 12 + n F. 3(n + 4) G. -12 + 3n H. 2n + 4 + n

Equivalent Expressions \_\_\_\_\_

Justification:



<ol> <li>Algebraic expressions are equivalent when they represent the same</li> </ol>		
2) We can prove algebraic expressions are equivalent by either creating identical		
expressions using	_ of real numbers or by substituting values for	
the variable(s) in each expression and	to see if the result	
is the same.		