

*1. Use the table below to find a pattern for the *sum of 4 times a number and twice the sum of the same number and 3*.

Number	Calculation	Results
1		
3		
5		

Now, let's prove that the result that you see in the table will always be true. Let the number now be called x , write an expression that translates the verbal description given in the problem for our calculation.

*2. Use the table below to find a pattern of the *difference of one more than six times a number and four more than three times the same number*.

Number	Calculation	Results
3		
5		
7		

Try to determine the pattern by allowing the number to be called x . Write an expression that translates the text in italics above and then mindfully manipulate to see the pattern. How would you describe the pattern to a younger student?

3. If t represents a number, which of the following represents the product of 2 more than 5 times a number and 4 less than 3 times a number? Be sure to test a value of t .

- (1) $15t^2 + 26t - 8$ (2) $15t^2 - 14t - 8$ (3) $15t^2 - 8$ (4) $15t^2 - 26t - 8$

4. The length of a rectangle is two less than three times a number x and the width is five more than that same number.

- (a) Draw a diagram that represents the rectangle. Be sure to label the sides in terms of the unknown x .
 (b) Using your diagram find what the perimeter of the rectangle is in terms of x . Write your answer as a simplified binomial.
 (c) What is the area of the rectangle in terms of x ? Write your answer as a trinomial. Remember the formula for area of a rectangle is $A = l \cdot w$.

R1. Simplify: $(x - 8)^2$

R2. Simplify: $(-2x^2)^3 + 6x^6$

*R3. Evaluate $2m^2 - 3m$ when $m = 4$

R4. Evaluate $2m^2 - 3m$ when $m = -2$

R5. Simplify: $(x + 2)(2x - 3) + 3x(x - 5)$

1.

Number	Calculation	Results
1	$4 \cdot 1 + 2(1 + 3)$	12
3	$4 \cdot 3 + 2(3 + 3)$	24
5	$4 \cdot 5 + 2(5 + 3)$	36

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

2.

Number	Calculation	Results
3	$(6 \cdot 3 + 1) - (3 \cdot 3 + 4)$	6
5	$(6 \cdot 5 + 1) - (3 \cdot 5 + 4)$	12
7	$(6 \cdot 7 + 1) - (3 \cdot 7 + 4)$	18

$$(6x + 1) - (3x + 4)$$

3. (2)

4. (a)

$$x + 5 \begin{array}{|c|} \hline 3x - 2 \\ \hline \end{array}$$

(b) $8x + 6$

(c) $3x^2 + 13x - 10$

R1. $x^2 - 16x + 64$

R2. $-2x^6$

R3. 20

R4. 14

R5. $5x^2 - 14x - 6$