

Unit Assessment  
The Algebra of Quadratic Expressions

Name: \_\_\_\_\_

K/U	/30	APP.	/18	TIPS	/9	COMM.	/6
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KNOWLEDGE/UNDERSTANDING

1. Simplify ( 1 mark each = 3 marks )

a)  $(x^3)(x^5)$                       b)  $5x^3 + 6x^3$                       c)  $\frac{8x^4}{4x^2}$

2. Expand and Simplify ( 2, 2, 2, 3, 3, 3 = 15 marks )

a)  $5a(a - 3)$                       b)  $(x - 2)^2$                       c)  $(x - 4)(x + 3)$

d)  $-3x(2x - 3) - x(x + 5)$                       e)  $5(x + 2)(x - 4)$                       f)  $-3a(a + 5)^2$

3. Factor the following. ( 2 marks each = 12 marks )

a)  $3xy^2 + 6xy - 9x^4y^3$                       b)  $x^2 + x - 12$                       c)  $x^2 - 16$

d)  $6x^2 - 15x + 6$                       e)  $y^2 + 12y + 20$                       d)  $2x^2 - 9x - 5$

APPLICATION:

4. A rectangle has a width of  $2x - 3$  and a length of  $3x + 1$ .
- a) Write its area as a simplified polynomial. ( 3 marks )
- b) Write expressions for the dimensions if the width is doubled and the length is increased by 3. ( 2 marks )
- c) Write the new area as a simplified polynomial. ( 3 marks )
5. The area of a triangle is  $10m^2 - 20m + 20$  and its base is 20, determine the height. ( 4 marks )
6. Factor the following. ( 2 marks each = 6 marks )
- a)  $(x+y)^2 + x + y$       b)  $(x+y)^2 - 6(x+y) + 7$       c)  $12a^2 + 52a - 40$

TIPS

7. A circular pizza has radius of  $x$  cm.  
The formula for the area of a circle is  $A = \pi r^2$
- a) Write an expression for the area of the pizza. ( 1 mark )



- b) Write an expression for the area of a pizza with a radius that is 5 cm greater.  
( 2 marks )
- c) How much greater is the second area? Write the difference as a simplified expression. ( 3 marks )

8. Name all the possible integers,  $k$ , that will make the quadratic trinomial factorable. Only POSITIVE solutions. ( 3 marks )

$$kx^2 + 10x + 1$$

COMMUNICATION:

9. How is factoring a polynomial related to expanding a polynomial?  
Use an example in your explanation. ( 2 marks )
10. Explain how you would recognize a polynomial as difference of squares.  
( 2 marks )
11. A polynomial with three terms is called \_\_\_\_\_. ( 1 mark )  
A polynomial with one term is called \_\_\_\_\_. ( 1 mark )