MFM2P Name: _____ Date: _____

Algebraic Expressions
Summative Assignment

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1. Expand and simplify the following. [10 marks]

a) $(x + 2)(x + 5)$ b) $(2x + 5)^2$ c) $(3x – 2)(2x – 7)$

d) $(x – 3)(2x + 1)$ e) $(x – 10)(x + 10)$

2. Factor each of the following fully. [14 marks]

COMMON FACTOR:

a) $3x – 12$ b) $x^3 + 6x^2$ c) $8x^2 + 4x – 16x^3$

DIFFERENCE OF SQUARES:

d) $x^2 – 64$ e) $49 – 4x^2$ f) $p(4 + p) – 3(4 + p)$

SUM/PRODUCT:

g) $x^2 + 5x + 6$

h) $x^2 - 5x - 24$

i) $x^2 - 15x + 50$

j) $x^2 + 2x - 35$

COMMON FACTOR FIRST:

k) $5x^2 + 25x + 20$

l) $-3x^2 + 9x - 6$

3. The dimensions of an Olympic pool can be written as Length = $(3x + 2)$ metres and the Width = $(x + 5)$ metres

a. Write a trinomial expression for the AREA of an Olympic pool. [2 mark]

b. Substitute $x = 16$ to find the actual DIMENSIONS **and** the actual AREA. [3 marks]

4. The area of Tracy's garden is represented by the trinomial $x^2 + 12x + 36$.

a. Factor the trinomial to find the length and width of Tracy's garden. [1 mark]

b. What is the shape of Tracy's garden? How do you know? [2 marks]

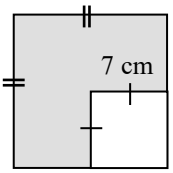
c. Calculate the actual dimensions if $x = 1$ m. [1 mark]

5. Circle which of the following are examples of a difference of squares? [2 marks]

a) $x^2 - 9$ b) $4x^2 - 25$ c) $x^2 + 16$

6. To completely factor $3x^2 + 12x$ Jessica says the answer is $x(3x + 12)$ but Dennis says the answer is $3x(x + 4)$. Who is correct, Jessica or Dennis? Explain why. [2 marks]

7. A square has area $4x^2$ centimetres. At one corner, a smaller square with sides 7 cm long has been removed.



a. Write the binomial to represent the <u>difference</u> between the two areas. [1 mark]

b. Factor the binomial to find expressions for the dimensions of an area equal to the remaining area of the large square (shaded area). [2 marks]