Name: **Key**   Date: _____   Period: _____

5.2 Polynomial Functions DAY ONE CYU

CONCEPTS	BASIC	INTERMEDIATE	ADVANCED
Writing polynomials in standard form	1 – 7(a)		
Determining the degree of expressions and terms	1 – 7 (b)		
Labeling monomial, binomial, trinomial, & polynomial	1 – 7 (c)		
Real-World Application	14 a - d	15	16
Synthetic Substitution	8 - 13		

a) Write each expression in standard form.
b) Find the degree of each expression.
c) Label the expression as a monomial, binomial, trinomial, or polynomial.

1. $x + 2$

a) $x + 2$
b) 1
c) binomial

2. $-6y^2 + 4$

a) $-6y + 4$
b) 2
c) binomial

3. $9m^3 - 5m^2 + 4m - 8$

a) $9m^3 - 5m^2 + 4m - 8$
b) 3
c) polynomial

4. $a + 5a^2 + 3a^3 - 4a^4$

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

5. $12x^4y - x^2y^2 - 12x^2y^4$

a) $-12x^2y^4 + 12x^4y - x^2y^2$
b) 6
c) trinomial

6. $7r^2s^2 + 2rs - 3rs^5$

a) $-3rs^5 + 7r^2s^2 + 2rs$
b) 6
c) trinomial

7. $3 - 5x^8$

a) $-5x^8 + 3$
b) 8
c) binomial

If $P(x) = x^2 + x + 1$ and $Q(x) = 5x^2 - 1$, find the following. Write out the set-up and your answer two ways. Show all work to earn full credit.

8. $P(7)$

$P(7) = 57$
$(7, 57)$

9. $Q(-10)$

$Q(-10) = 499$
$(-10, 499)$

10. $P(0)$

$P(0) = 1$
$(0, 1)$

11. $Q\left(\frac{1}{4}\right)$

$Q\left(\frac{1}{4}\right) = -\frac{11}{16}$
$\left(\frac{1}{4}, -\frac{11}{16}\right)$

12. $Q(4)$

$Q(4) = 79$
$(4, 79)$

13. $P(-4)$

$P(-4) = 13$
$(-4, 13)$

14. The CN Tower in Toronto, Ontario, is 1821 feet tall and is the world's tallest self-supporting structure. An object is dropped from the Skypod of the Tower, which is at 1150 feet. Neglecting air resistance, the height of the object at time t seconds is given by the polynomial function $P(t) = -16t^2 + 1150$. Find the height of the object at the given times.

a) 1 second

1134 ft

b) 7 seconds

366 ft

c) 3 seconds

1006 ft

d) 6 seconds

574 ft

15. The polynomial $-7.5x^2 + 103x + 2000$ models the yearly number of visitors (in thousands) x years after 2006 at Acadia National Park in Maine. Use this polynomial to estimate the number of visitors to the park in 2016.

2280 thousand visitors in 2016.

16. The polynomial $-0.13x^2 + x + 827$ models the yearly number of visitors (in thousands) x years after 2006 at Canyon De Chelly National Monument in Arizona. Use the polynomial to estimate the number of visitors to the park in 2010.

828.92 thousand in 2010 was the estimated number of visitors.

CYU Reflection: *How far can you go: basic, intermediate, or advanced?*
Rate your mastery level!
How confident are you with the skills this CYU covered? Circle the score you would give yours elf.

| 1 2 | 3 4 5 | 6 7 | 8 |
| Basic | Intermediate | Advanced | Solved ALL! |