

8 Algebra CC **ANSWER KEY**

Unit 2 - Polynomial Expressions

Multiple Choice: Write the letter corresponding to the correct answer.

1. If the width of a rectangle is represented by w and the length is 2 units more than the width, express the **perimeter** of the rectangle in terms of w .

$w = \text{width}$
 $w + 2 = \text{length}$

$2(w) + 2(w + 2)$
 $2w + 2w + 4$
 $4w + 4$

- a) $2w + 2$ b) $4w + 2$ **c) $4w + 4$** d) $w(w + 2)$

2. What is the total number of calories in x **peanuts** and y **potato chips** if each **peanut** contains **6 calories** and each **potato chip** contains **14 calories**?

- a) $20xy$ b) $20(x + y)$ c) $14x + 6y$ **d) $6x + 14y$**

3. A kennel has d dogs and c cats. How many more cats are there than dogs?

More cats ...
 Start with cats
 Subtract dogs

- a) $c + d$ b) $d - c$ c) cd **d) $c - d$**

Which expression is **not** equivalent to $\frac{2}{3}(6x + 4)$?

$\frac{2}{3}(6x + 4)$
 $4x + \frac{8}{3}$

- a) $3(\frac{4}{3}x + \frac{8}{9})$ b) $2(2x + \frac{4}{3})$ **c) $4x + 4\frac{2}{3}$** d) $4x + 2\frac{2}{3}$

Use the distributive property →

- $4x + \frac{8}{3}$ $4x + \frac{8}{3}$ $4x + \frac{14}{3}$ $4x + \frac{8}{3}$

Perform the indicated operation. Write your answer as a simplified polynomial expression in standard form.

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

$3a - 4b + 5c + 2a - 5b - 5a - 2c$

$3a + 2a - 5a - 4b - 5b + 5c - 2c$

$-9b + 3c$

6. $(2y^3 - 6y) - (2y + y^3)$

$2y^3 - 6y - 2y - y^3$

$2y^3 - y^3 - 6y - 2y$

$y^3 - 8y$

7. $(6x^3 + 7x) - (-3x^2 + 5) + (x^2 - 10x - 1)$

$6x^3 + 7x + 3x^2 - 5 + x^2 - 10x - 1$

$6x^3 + 3x^2 + x^2 + 7x - 10x - 5 - 1$

$6x^3 + 4x^2 - 3x - 6$

8. **Subtract** $9x - 1$ **from** $4x^2 - 2x + 3$

$(4x^2 - 2x + 3) - (9x - 1)$

$4x^2 - 2x + 3 - 9x + 1$

$4x^2 - 2x - 9x + 3 + 1$

$4x^2 - 11x + 4$

9. $(3x^2y^3)(-10xy^4)$
 $-30x^3y^7$

10. $3x^2(2x + 7)$
 $6x^3 + 21x^2$

11. $(x - 3)(x + 5)$
 $x^2 + 2x - 15$

	x	-3
x	x^2	$-3x$
+5	$+5x$	-15

12. $(y - 2)(y^2 + 3y - 5)$
 $y^3 + y^2 - 11y + 10$

	y^2	$+3y$	-5
y	y^3	$+3y^2$	$-5y$
-2	$-2y^2$	$-6y$	$+10$

Applications with Polynomials:

13. The area of a rectangle ABCD is $2x^2 + 17x + 30$ square units. The area of rectangle EFGH is $x^2 - x - 6$ square units. Express the area of the shaded region as a simplified polynomial expression written in standard form.

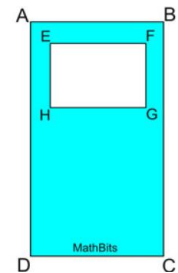
Area of large rectangle - Area of small rectangle = Area of shaded region

$$(2x^2 + 17x + 30) - (x^2 - x - 6)$$

$$2x^2 + 17x + 30 - x^2 + x + 6$$

$$2x^2 - x^2 + 17x + x + 30 + 6$$

$$x^2 + 18x + 36 \text{ square units}$$



14. The length of a rectangular billboard is three feet less than twice its width, w . Express the **area** of the billboard as a simplified polynomial expression written in standard form.

Area = length x width

w = width

$2w - 3$ = length

$$w(2w - 3)$$

$$2w^2 - 3w \text{ square feet}$$

15. The ages of three friends in a band are represented by three *consecutive even integers*. If the youngest band member's age is represented by a , express the **sum** of the ages of the friends as a simplified polynomial expression written in standard form.

a = age of the youngest band member

$a + 2$ = age of the middle band member

$a + 4$ = age of the oldest band member

$$a + (a + 2) + (a + 4)$$

$$3a + 6$$