

Learning Goal 5.2

I can add and subtract polynomials.

Developing

1. Add or subtract the following polynomials. Use algebra tiles if you like.

a.	$(-x^2 + 2x - 4) + (-2x^2 + 2x - 2)$	b.	$(-x^2 + 2x - 4) - (-2x^2 + 2x - 2)$
c.	$(1 + 2x^2 + 5x) + (x^2 + 5x)$	d.	$(1 + 2x^2 + 5x) - (x^2 + 5x)$
e.	$(2x^2 + 8x - 1) + (4x - 2x^2 + 4)$	f.	$(2x^2 + 8x - 1) - (4x - 2x^2 + 4)$
g.	$(4x^2 + 7x - 1) + (3x - x^2 + 5)$	h.	$(4x^2 + 7x - 1) - (3x - x^2 + 5)$
i.	$(7s + 14) + (-6s^2 + s - 6)$	j.	$(7s + 14) - (-6s^2 + s - 6)$
k.	$(3x^2 + 2x + 4) + (-5x^2 + 3x - 5)$	l.	$(3x^2 + 2x + 4) - (-5x^2 + 3x - 5)$
m.	$(-2a^2 + a - 1) + (a^2 - 3a + 2)$	n.	$(-2a^2 + a - 1) - (a^2 - 3a + 2)$

i. $(7s + 14) + (-6s^2 + s - 6)$

$$= 7s + 14 - 6s^2 + s - 6$$

$$= -6s^2 + 7s + s + 14 - 6$$

$$= -6s^2 + 8s + 8$$

j. $(7s + 14) - (-6s^2 + s - 6)$

$$= 7s + 14 + 6s^2 - s + 6$$

$$= 6s^2 + 7s - s + 14 + 6$$

$$= 6s^2 + 6s + 20$$

Proficient

2. Add or subtract the following polynomials.

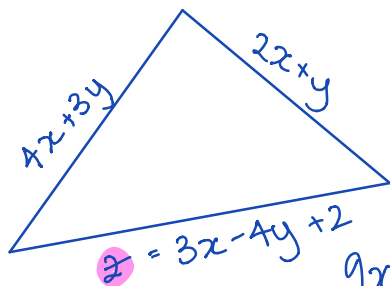
a.	$(9p + 4pq - 2pqr) + (6pq - 2p + 8pqr)$	b.	$(9p + 4pq - 2pqr) - (6pq - 2p + 8pqr)$
c.	$(6p - 4pq + 13pqr) + (5pq - 2p + 7pqr)$	d.	$(6p - 4pq + 13pqr) - (5pq - 2p + 7pqr)$
e.	$(13a + 8b^2 - c^3) + (14c^3 - 2b^2 + a)$	f.	$(13a + 8b^2 - c^3) - (14c^3 - 2b^2 + a)$
g.	$(11a + 2b^2 - 6c^3) + (9c^3 - 5b^2 + 3a)$	h.	$(11a + 2b^2 - 6c^3) - (9c^3 - 5b^2 + 3a)$
i.	$(3x^2 - 2y^2 + xy) + (-2xy - 2y^2 - 3x^2)$	j.	$(3x^2 - 2y^2 + xy) - (-2xy - 2y^2 - 3x^2)$
k.	$(3 - 8f + 5g - f^2) + (2g^2 - 3f + 4g - 5)$	l.	$(3 - 8f + 5g - f^2) - (2g^2 - 3f + 4g - 5)$
m.	$(5x^2 - 3xy + 2y^2) + (8x^2 - 7xy - 4y^2)$	n.	$(5x^2 - 3xy + 2y^2) - (8x^2 - 7xy - 4y^2)$

$$\begin{aligned}
 \text{k. } (3 - 8f + 5g - f^2) + (2g^2 - 3f + 4g - 5) &= 3 - 8f + 5g - f^2 + 2g^2 - 3f + 4g - 5 \\
 &= -f^2 + 2g^2 - 8f - 3f + 5g + 4g + 3 - 5 \\
 &= -f^2 + 2g^2 - 11f + 9g - 2
 \end{aligned}$$

$$\begin{aligned}
 \text{l. } (3 - 8f + 5g - f^2) - (2g^2 - 3f + 4g - 5) &= 3 - 8f + 5g - f^2 - 2g^2 + 3f - 4g + 5 \\
 &= -f^2 - 2g^2 - 8f + 3f + 5g - 4g + 3 + 5 \\
 &= -f^2 - 2g^2 - 5f + g + 8
 \end{aligned}$$

Extending

- What polynomial must be added to $4x^2 - 5y + 3x + 2y^2$ to obtain a sum of zero?
- Create a polynomial that is added to $3x^2 + 7x + 2$ to get a sum of $-x^2 + x - 1$
- The polynomials $4x + 3y$ and $2x + y$ represent the lengths of two sides of a triangle. The perimeter of the triangle is $9x + 2$. Determine the length of the third side.
- The difference of two polynomials is $3x^2 + 4x - 7$. One polynomial is $-8x^2 + 5x - 4$. What are the two choices for the other polynomial?



$$P = 9x + 2$$

↳ distance around the object

$$= (4x + 3y) + (2x + y) + z$$

$$9x + 2 = (4x + 3y) + (2x + y) + z$$

$$9x + 2 = 4x + 3y + 2x + y + z$$

$$9x + 2 = 4x + 2x + 3y + y + z$$

$$9x + 2 = 6x + 4y + z$$

$$-6x \quad -6x$$

$$3x + 2 = 4y + z$$

$$-4y \quad -4y$$

$$3x - 4y + 2 = z$$