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Chapter 4 Review

For each type of question, the achievement level is indicated. Showing work is an important strategy in communicating your knowledge and ideas so please be thorough.

Learning Goal 5.1	I can identify characteristics of polynomials and simplify polynomials by collecting like terms.

Developing					
1. Identify how many terms there are in each polynomial.					
a.	$2x + 9$	b.	$9x^2 - 4x + 1$	c.	$x^3 - 5$
d.	$a^5 - 4a^3 + 3a^4 + a^2$	e.	$12 - j + j^4$	f.	$p^3 + p^4$
2. Identify the degree of each polynomial.					
a.	$2x + 9$	b.	$9x^2 - 4x + 1$	c.	$x^3 - 5$
d.	$a^5 - 4a^3 + 3a^4 + a^2$	e.	$12 - j + j^4$	f.	$p^3 + p^4$
3. Identify the constant term in each polynomial.					
a.	$2x + 9$	b.	$9x^2 - 4x + 1$	c.	$x^3 - 5$
d.	$a^5 - 4a^3 + 3a^4 + a^2$	e.	$12 - j + j^4$	f.	$p^3 + p^4$
4. Identify the coefficient of the highest degree term in each polynomial.					
a.	$2x + 9$	b.	$9x^2 - 4x + 1$	c.	$x^3 - 5$
d.	$a^5 - 4a^3 + 3a^4 + a^2$	e.	$12 - j + j^4$	f.	$p^3 + p^4$
5. Label each polynomial as a monomial, binomial, trinomial or a polynomial with what number of terms.					
a.	$2x + 9$	b.	$9x^2 - 4x + 1$	c.	$x^3 - 5$
d.	$a^5 - 4a^3 + 3a^4 + a^2$	e.	$12 - j + j^4$	f.	$p^3 + p^4$
Proficient					
6. Which of the following expressions are polynomials? Explain how you know.					
a.	$5x + x^7$	b.	$\frac{3}{x}$	c.	$\sqrt{9x^3}$
d.	$\frac{1}{x^2} + \frac{1}{x} + 1$	e.	$\frac{x^2}{2} + \frac{x}{4} + \frac{1}{8}$	f.	$p^3 + p^4$
7. Identify which of the following can be represented by algebra tiles. For those that can, draw the model.					
a.	$2x + 9$	b.	$x^2 - 4x + 1$	c.	$x^3 - 5$
d.	$a^5 - 4a^3 + 3a^4 + a^2$	e.	$12 - j + j^2$	f.	$p + p^2$
8. Identify the polynomial being modelled by the algebra tiles.					
a.		b.		c.	

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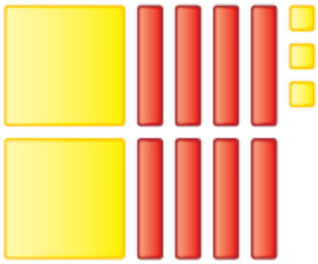
d. 

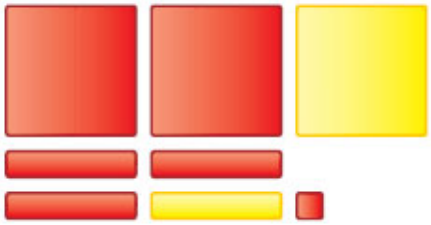
e. 

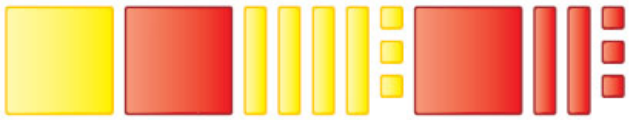
f. 

9. Identify the polynomial being modelled by the algebra tiles. Simplify if possible.

a. 

b. 

c. 

d. 

10. Simplify the polynomial.

a. $6 - 3x + x^2 + 9 - x$

b. $-6x^2 + 17x - 4 - 3x^2 + 8 - 12$

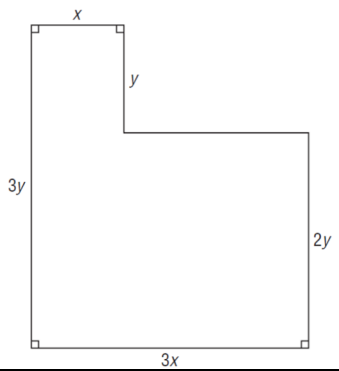
c. $15x^2 - 12xy + 5y + 10xy - 8y - 9x^2$

d. $4xy - y^2 - 3x^2 + 2xy - x - 3y^2$

Extending

11. The stopping distance of a car is the distance the car travels between the time the driver applies the brakes and the time the car stops. The polynomial $0.4s + 0.02s^2$ can be used to calculate the stopping distance in metres of a car travelling at s kilometres an hour on dry pavement.
    a. Determine the stopping distance for $50\ {}^{\text{km}}/_{\text{hr}}$.
    b. Does doubling the speed double the stopping distance? Explain.

12. Write a polynomial for the perimeter of this shape. Simplify the polynomial.



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For each type of question, the achievement level is indicated. Showing work is an important strategy in communicating your knowledge and ideas so please be thorough.

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.	$(-2a^2+a-1)-(a^2-3a+2)$
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.	$(5x^2-3xy+2y^2)-(8x^2-7xy-4y^2)$
Extending			
3. What polynomial must be added to $4x^2-5y+3x+2y^2$ to obtain a sum of zero?			
4. Create a polynomial that is added to $3x^2+7x\ +2$ to get a sum of $-x^2+x-1$			
5. 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.			
6. 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?			

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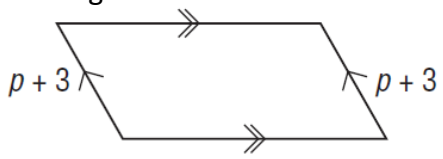
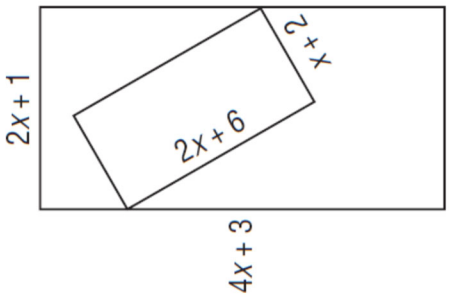
7. The perimeter of the polygon is $10p + 8$. Determine the missing side length.



8. The diagram shows one rectangle inside another rectangle. What is the difference in the perimeters of the rectangles?



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Learning Goal 5.3	I can multiply and divide polynomials by a constant, monomial and binomial.

Developing			
1. Multiply or divide the following polynomials. Use algebra tiles if you like.			
a.	$5(-x^2+2x-4)$	b.	$3(-2x^2+2x-2)$
c.	$4(1+2x^2+5x)$	d.	$7(x^2+5x)$
e.	$2(2x^2+8x-1)$	f.	$6(4x-2x^2+4)$
g.	$8(4x^2+7x-1)$	h.	$10(3x-x^2+5)$
i.	$\frac{7x+14}{7}$	j.	$\frac{-6x^2+9x-6}{3}$
k.	$\frac{6x^2+2x+4}{2}$	l.	$\frac{-5x^2+10x-5}{5}$
m.	$\frac{12x-8x^2+4}{4}$	n.	$\frac{8x^2+24x-16}{8}$
o.	$\frac{-6x^2+18x-6}{3}$	p.	$\frac{-6x^2+18x-12}{6}$
Proficient			
2. Multiply or divide the following polynomials.			
a.	$-5(-a^2+2a-4)$	b.	$-3(-2b^2+2b-2)$
c.	$-4(1+2d^2+5d)$	d.	$-7(c^2+5c)$
e.	$\frac{6g^2+2gh+4h^2}{-2}$	f.	$\frac{8j+24jk-16k}{-8}$
g.	$\frac{7x^5+14x^3}{-7}$	h.	$\frac{-6m^2n+18mn^2-12n^3}{-6}$
i.	$2y(2x^2+8x-1)$	j.	$9x^3(4x-2x^2+4)$
k.	$6mn(4p+7m-n)$	l.	$-3q^2(3q-q^2+5q^3)$
m.	$\frac{-6x^5+18x^3}{3x^2}$	n.	$\frac{-6x^5+18x^3+12x^4}{-6x^2}$

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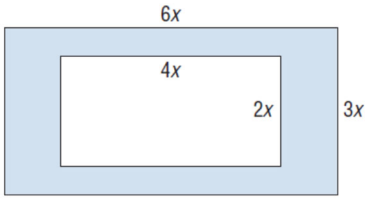
o.	$\frac{12m^4n - 8m^3n^2 + 4m^2n^3}{4mn}$	p.	$\frac{-6z^2 + 21z^3}{-3z^2}$
q.	$(2y + 1)(3x - 1)$	r.	$(x + 6)(6 - x)$
s.	$(x + 5)^2$	t.	$(3a + b)(3b + a)$
u.	$(x + 2)(x - 4)$	v.	$(2x - 1)(x - 6)$
w.	$(x - 4)^2$	x.	$(x + 4)^2$
y.	$\frac{x^2 + 5x + 6}{x + 2}$	z.	$\frac{x^2 + 8x + 7}{x + 7}$
aa.	$\frac{x^2 + 6x + 8}{x + 4}$	bb.	$\frac{x^2 + 7x + 10}{x + 2}$
cc.	$\frac{x^2 + 7x + 12}{x + 3}$	dd.	$\frac{x^2 + 8x + 16}{x + 4}$

Extending

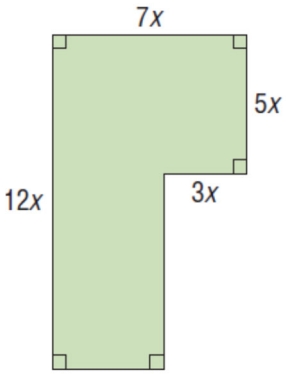
3. This diagram shows one rectangle inside another. Determine the area of the shaded region.



4. The area of a rectangular deck is $8d^2 + 20d$ square metres. The deck is $4d$ metres long. Determine a polynomial that represents the width of the deck.

5. The polynomial $54s^2$ represents the surface area of a cube. Determine a polynomial that represents the area of one face. Determine the polynomial that represents the length of one side.

6. Find the polynomial that represent the area of the polygon.



7. Factor the following polynomials.

a. $x^2 + 4x + 4$	b. $x^2 + 5x + 6$
c. $x^2 + 8x + 12$	d. $x^2 + 6x + 8$
e. $x^2 + 10x + 25$	f. $x + 8x + 15$
g. $x^2 + 10\,x + 9$	h. $x^2 + 7x + 10$
i. $x^2 + 10x + 16$	j. $x^2 + 14x + 40$
k. $x^2 + 10x + 21$	l. $x^2 + 9x + 20$
m. $x^2 - x - 6$	n. $x^2 - 4x + 4$
o. $x^2 + 3x - 10$	p. $x^2 + 5x - 14$

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