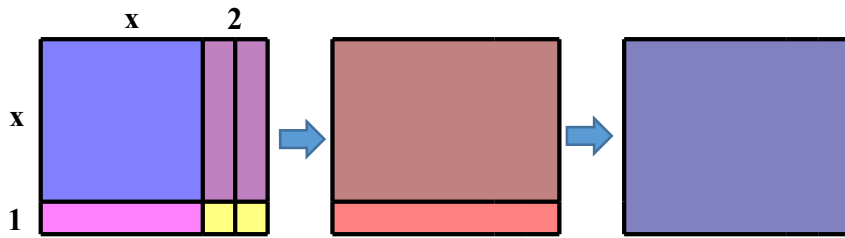


Video Log 2.5a

1. Write an algebraic expression for each of the three stages of the rectangles below.

a.



2. Using the previous example as your guide, draw rectangles showing all stages to show how the left hand side expression factors to become the right hand side. See above examples to help you solve these problems. **Hint:** start with the quantity furthest to the left.

a.  $2x + 2 + bx + b = 2(x + 1) + b(x + 1) = (2 + b)(x + 1)$

Video Log 2.5b

Factor each polynomial by grouping.

1.  $au - bv - bu + av$

2.  $ax^2 - bx + acx - bc$

3.  $ax - ay + bz + az - by + bx$

4.  $a(u + v) - c(u - v) - c(u + v) + a(u - v)$

1. Use algebra tiles to factor the examples in the video log questions below. *Make sure you draw the rectangle representing your final answer..*

Polynomial	Algebra Tiles	Rearranged tiles
a. $x^2 + 3x + 2$		
b. $2x^2 + 8x + 6$		

## Video Log 2.5d

1. Factor each trinomial or state that it is not factorable over the integers.

a.  $x^2 + 7x + 10$

f.  $6x^2 + 7x + 2$

b.  $x^2 + 2x - 3$

g.  $2x^2 + 5x - 3$

c.  $x^2 - 3x + 2$

h.  $4x^2y - 5xy^2 - 6y^3$

d.  $2x^2 - x - 1$

i.  $15a^3b^4 - 14a^2b^5 - ab^6$

e.  $2x^2 + x - 1$

j.  $25a^6b^3 + 10a^5b^4 - 15a^4b^5$

2. Perform the following operations and simplify your answers.

a. 
$$\frac{3x}{x^2+2x-3} - \frac{x+2}{x+3}$$

b. 
$$\frac{3x-1}{2x+1} - \frac{4-x}{6x^2+7x+2}$$

c. 
$$\frac{4-x}{1-x} + \frac{2x-3}{-5x^2+8x-3}$$

d. 
$$\frac{5x}{x^2-3x+2} - \frac{1}{2x^2-x-1}$$

e. 
$$\frac{x+1}{2x^2-x-1} + \frac{x}{6x^2+7x+2}$$

f. 
$$\frac{2x^2+3x+1}{2x^2-3x+1} - \frac{3x^2-2x-1}{2x^2+x-1}$$

## Video Log 2.5e

Let  $x = 3a$ ,  $y = 2b$ ,  $u = 2x$ ,  $v = 5y$ ,  $z = -3$ ,  $s = 4$ . Use substitution to rewrite the expressions below in terms of the new variables  $a$ ,  $b$ ,  $t$ , and  $c$ .

1.  $s^2 - 3sz + z^2$
2.  $(x - y)(x + y)$
3.  $(x - y)(x^2 + xy + y^2)$
4.  $(s + x)(s^2 - sx + x^2)$

## Video Log 2.5g

1. Factor the following completely.

- a.  $p^3 - 8q^3$
- b.  $4q^3 - 32p^3$
- c.  $27a^6 - 125b^3$
- d.  $8a^3 - 27b^3c^3$
- e.  $p^3 + 8q^3$
- f.  $27a^6 + 125b^3$

[Video Log 2.5h](#)

Perform the following operations. First factor denominators to find the least common denominator.

$$\frac{3}{1-x} - \frac{4x}{x^2-1} \quad (\text{Hint: } (1-x) = -(x-1))$$

$$\frac{3}{2x} + \frac{2}{x^2-4} - \frac{3}{x^2+2x}$$

$$\frac{1}{x^3-8} - \frac{x}{x^2+2x+4}$$

$$\frac{3}{x^2-9} - \frac{5x+2}{x^3-27}$$