

1.10 Add and Subtract Polynomials

Recall: Like terms have the same variable(s) with the same exponent.

To **simplify** polynomials, **combine like terms** by adding or subtracting their coefficients. The variable and its exponent stays the same.

Ex.1: Simplify

a) $-a^2 + ab - b^2 - 2b^2 + ab^2 - 4a^2 + 5ab$

b) $6x^3 + (-2) - (-3x) - 3x^2 + x + 4x^3 + 6$

Ex. 2 Colin added a monomial, a binomial and a trinomial. The result was a binomial. What could the three polynomials he added together be?

Guiding Questions:

If a monomial and binomial have like terms, how many terms will be in their sum?

If a monomial and binomial do not have any like terms, how many terms will be in their sum?

How can the sum of a binomial and a trinomial produce a binomial?

Ex. 3 Determine the missing numbers to make the following true:

$$(3x^2 + \underline{\quad}x - 7) + (4x^2 + (-3x) + \underline{\quad}) = \underline{\quad}x^2 + 2x - 9$$

Q1 If two binomials have two like terms, their sum will be a binomial.
T/F

Q2 A monomial added to a binomial will produce a polynomial with at least 2 terms.
T/F

Q3 The rules for adding integers apply to adding like terms.
T/F

Q4 Adding polynomials is just like simplifying polynomials.
T/F

Q5 Algebra tiles can always help with polynomial addition.
T/F

Q6 To add polynomials, group the like terms then add their coefficients.
T/F

Ex. 5 Simplify.

a) $(5x - 3) + (4x + 6)$

Adding a bracket means that you are adding each term inside the bracket.

b) $(3m^2 - 8m + 2) + (5m - 1 + 2m^2)$

To subtract an expression in brackets, remove the brackets and subtract **each** term.

Ex. 6 Simplify.

a) $(3x - 7) - (7x + 2)$

b) $(5x^2 + 8x - 2) - (4x^2 - 3)$

Ex. 7 Simplify, THEN evaluate when $m = -2$

$(m - 3) + (6 - 5m + m^2) - (2m^2 + 4m + 1) - (6m^2 - 1)$

Example 8: John is building a dock at his cottage. The length of the dock is twice the width, plus 3 meters.

a) Find a simplified algebraic expression for the perimeter of the dock.



b) If the width of the dock is 4 m, find the perimeter of the dock.



off the mark.com by Mark Parisi



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2.3 nelson

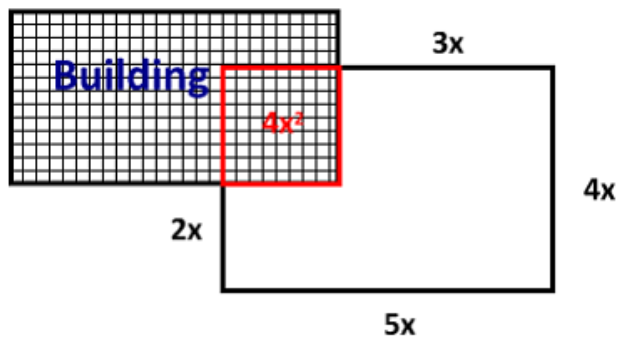
1. Mina is building an enclosure for her pet goat. She is considering two plans. Plan A is a simple rectangle. Plan B uses the sides of a building to reduce the amount of materials that she will need (no fencing needed along the building). She isn't sure what size the enclosure should be. Her math loving friend makes the following diagrams using 'x' so that the dimensions can be easily changed. Determine how much area and fencing she is saving with plan B using multiple methods.

(This could be created on the SMART board with x by x squares so that they could be removed to show the new area for Plan B.)

Plan A:



Plan B: <option of showing $4x^2$ or not>



Guided Task Questioning:

- What is the perimeter of the rectangle in Plan A?
- What is the length of the enclosure in Part B? Is this the perimeter?
- How much fencing would be saved using Plan B?
- What are the dimensions of the red part?
- <optional> What is the area of the red part?
- How can you calculate the area of the enclosure in Plan B?
- What is the difference in area between Plan A and Plan B?

Questioning:

- Is there more than one way to find the area in Plan B?
- Can you write the difference of perimeters using only the given information? (ie. Perimeter: $(4x + 5x + 4x + 5x) - (3x + 4x + 5x + 2x)$)

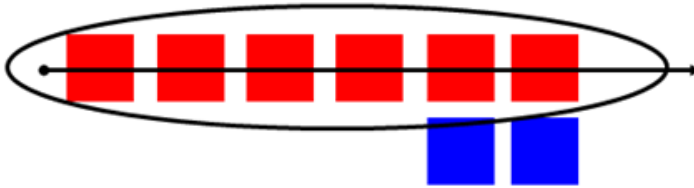
Step 1: start with 4



Step 2: add 2 sets of zero pairs



Step 3: take away 6



Step 4: you have -2 left



How do you do $4 - 6$? \rightarrow 4 positive counters, want to take away 6
 pairs so need to add two sets of zero pairs, take away zero pairs, you are
 left with -2;

Apply same principle to $(x + 4) - (x + 2)$; Then to $(x + 4) - (2x + 6)$

How do you do $0 - 3$? \rightarrow you can't take away 3 from nothing...add 3
 zero pairs then take away 3, leaving -3. Apply same principle to $(4x - 3) - (2x^2 +$

