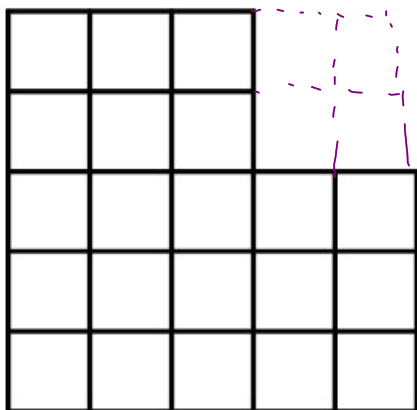


Section 6 – Topic 2
Polynomial Identities – Part 1

Let's look at visual representations of various polynomial identities.

Let's Practice!

1. Consider the figure below.



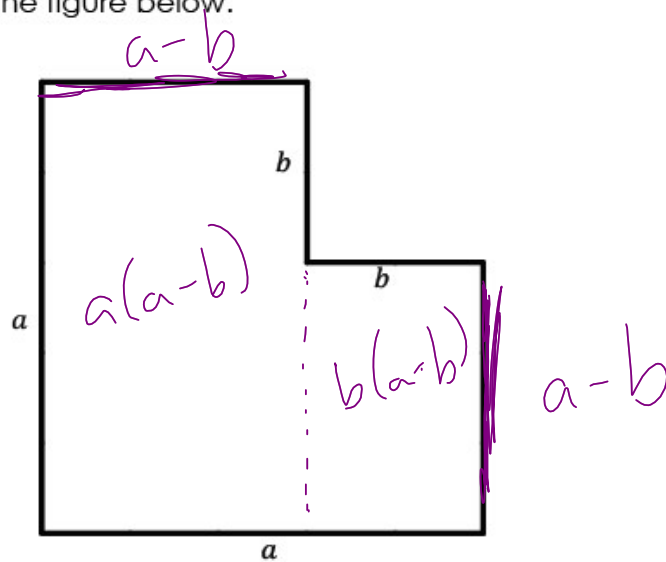
$$5^2 - 2^2$$

Find the area of the figure by dividing it into regions.

$$25 - 4 = 21 \text{ units}^2$$

Try It!

2. Consider the figure below.



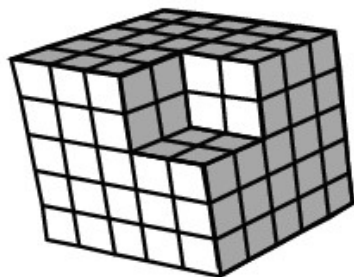
Find the area for the figure by dividing it into regions.

$$a(a-b) + b(a-b)$$
$$a^2 - \cancel{ab} + \cancel{ab} - b^2 = a^2 - b^2$$

Let's think about how to find the volume of this cube with the corner taken out.

Let's Practice!

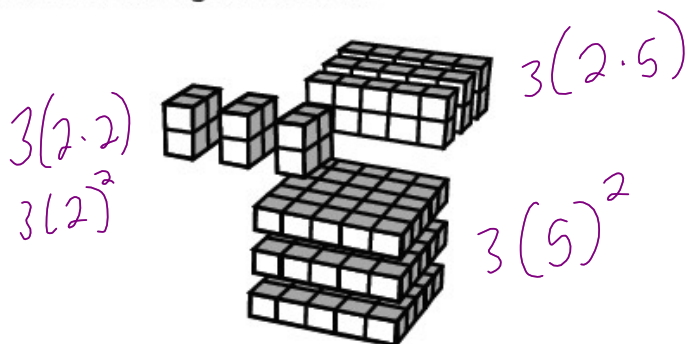
3. Write an expression to represent the volume of the cube.



$$5^3 - 2^3$$

$$125 - 8 = 117 \text{ units}^3$$

- a. Write a numeric expression to represent the total volume of the figures below.



$$3(2 \cdot 2)$$

$$3(2)^2$$

$$3(2 \cdot 5)$$

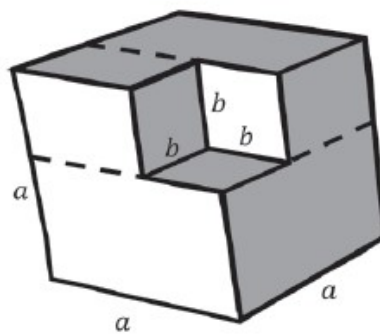
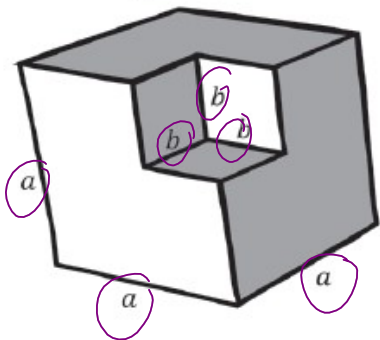
$$3(5)^2$$

- b. Write equivalent expressions for the volume of the two images.

$$3(4 + 10 + 25)$$

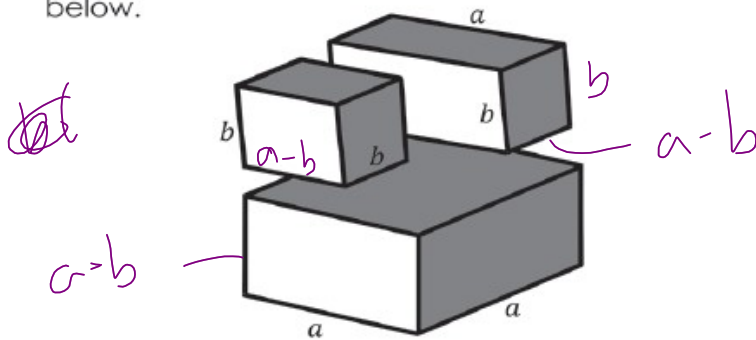
Try It!

4. Write an algebraic expression to represent the volume for the figure below.



$$a^3 - b^3$$

- a. Next, let's split the cubes apart. Write algebraic expressions to represent the total volume of the figures below.



- b. Write equivalent expressions for the volume of the two images.

$$b(b)(a-b) + ab(a-b) + a(a)(a-b)$$

$$(a-b)(b^2 + ab + a^2)$$

$$ab^2 - b^3 + a^2b - ab^2 + a^3 - a^2b \quad -b^3 + a^3$$

$$a^3 - b^3$$

