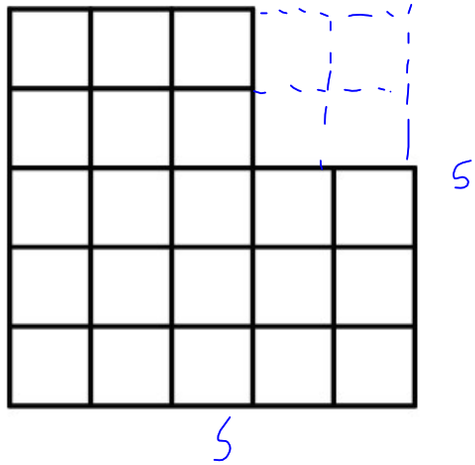
Section 6 – Topic 2
Polynomial Identities – Part 1

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

Let's Practice!

1. Consider the figure below.



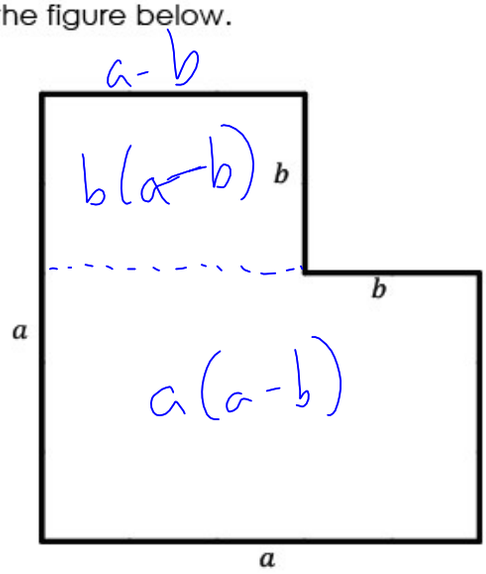
$5^2 - 2^2$

$25 - 4 = 21$ units^2

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

Try it!

2. Consider the figure below.



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

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

$-b^2 + a^2$

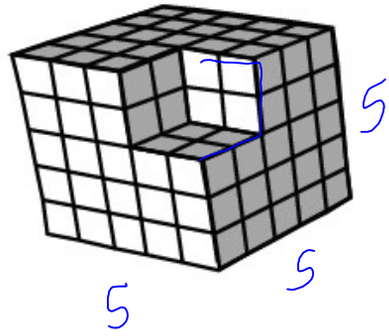
$a^2 - b^2$

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

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

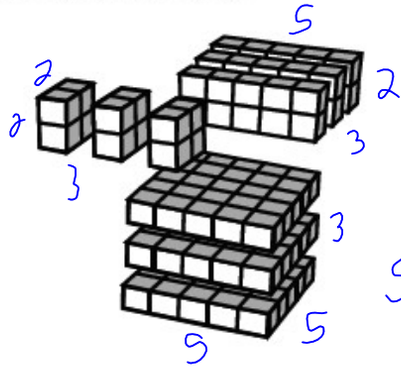
Let's Practice!

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



$5^3 - 2^3$

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



$3(2)(2)$ $5(2)(3)$ $5(5)(3)$

$3(2)(2)+5(2)(3)+5(5)(3)$

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

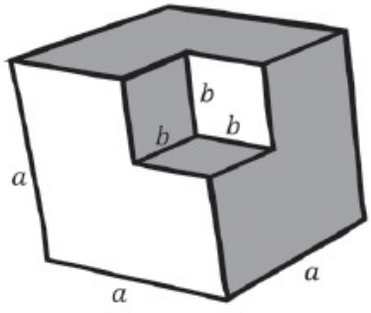
$3(4+10+25)$

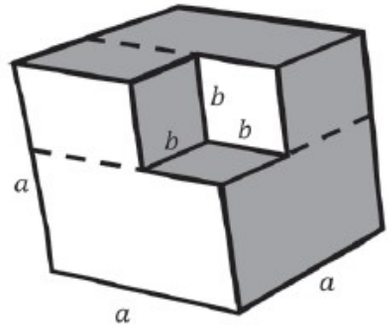
$3(2\cdot 2+5\cdot 2+5\cdot 5)$

$3(2^2+10+5^2)$

Try It!

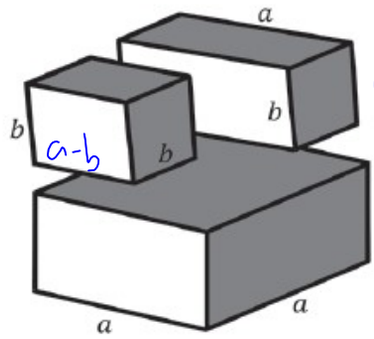
4. Write an algebraic expression to represent the volume for the figure below.





$a^3 - b^3$

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



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

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

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

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

$-b^3 + a^3 \rightarrow a^3 - b^3$