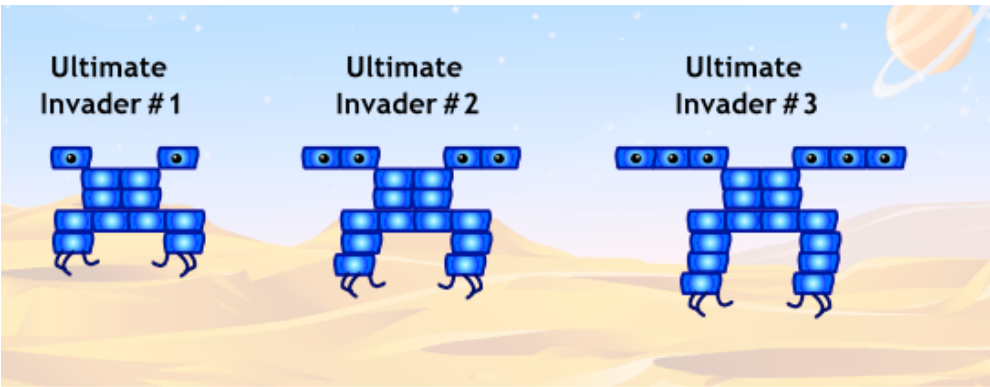
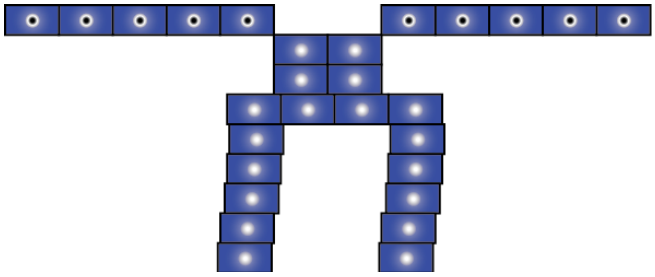
Equations and inequalities

Block 4 Student Activity Sheet

1. Study the growth of The Ultimate Invader aliens. What are different ways to see the growth? Draw Alien #5. **[EX2, page 1]**



Answers will vary. A sample response might be that the Ultimate Invaders have four body parts added with each family member.



2. Build a table of family member number, ***x***, and the number of body parts, ***y***. **[EX2, page 1]**

Invader number, *x*	Number of body parts, *y*
1	12
2	16
3	20
4	24
5	28

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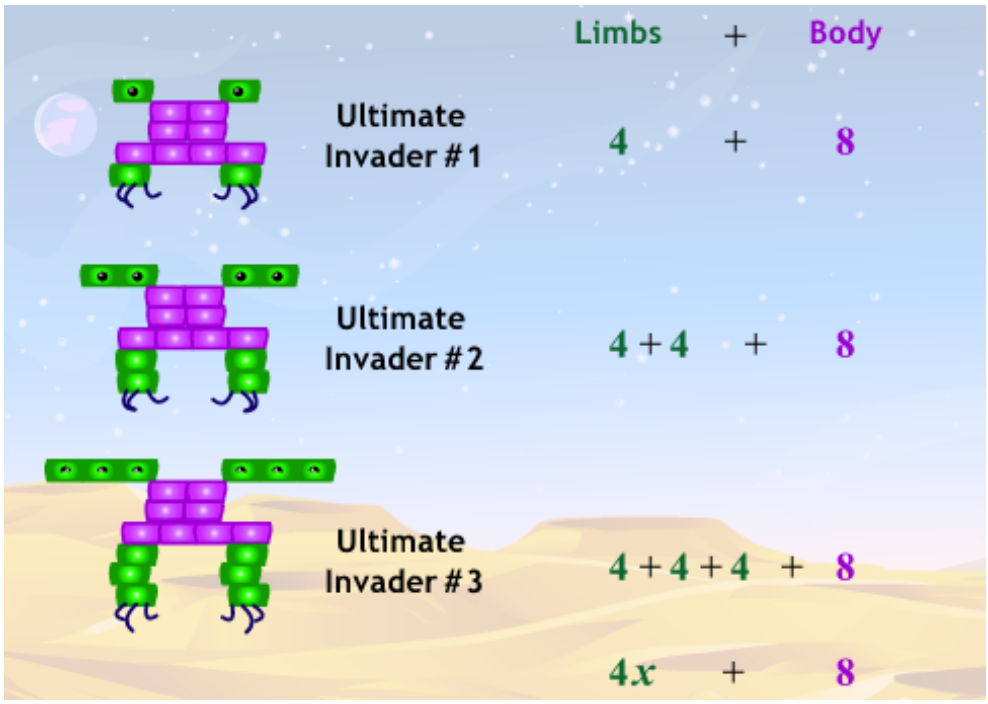
Equations and inequalities

Block 4 Student Activity Sheet

For questions 3 through 5, show three different ways of seeing how the invader family is growing. [EX2, page 1]

3. Method 1 of growth:

   a. Illustrate the growth using a picture of the first three members.



   b. Explain this method of counting the growth.

   Example answer: I see the "core body" of 8 squares that is shaped like an upside down "T" of the Invader and, with each family member, four squares are added to the corners or the limbs of the Invader. So, the total number of squares is $4x + 8$.

   c. Write an equation that reflects this way of thinking about the growth if y is the number of body parts (or squares) and x is the family member number.

   $y = 4x + 8$

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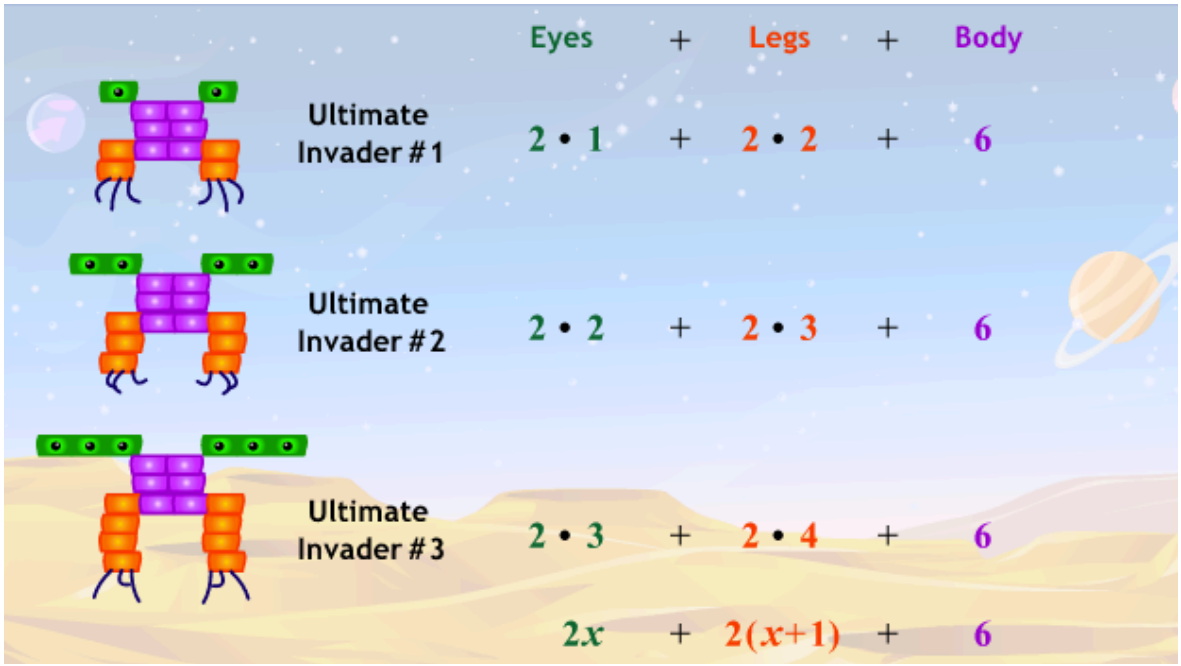
4. Method 2 of growth:

   a. Illustrate the growth using a picture of the first three members.



   b. Explain this method of counting the growth.

   Example answer: I see the center of the Invader that is rectangular in shape and has 6 squares. And then, with each family member, there an eye added on either side and two squares added on either side for the legs. There is always one more square added on to the legs than on to the eyes. So, the total number of squares is the "eyes" plus "legs" plus "body" is $2x + 2(x + 1) + 6$.

   c. Write an equation that reflects this way of thinking about the growth if y is the number of body parts (or squares) and x is the family member number.

   $$y = 2x + 2(x + 1) + 6$$

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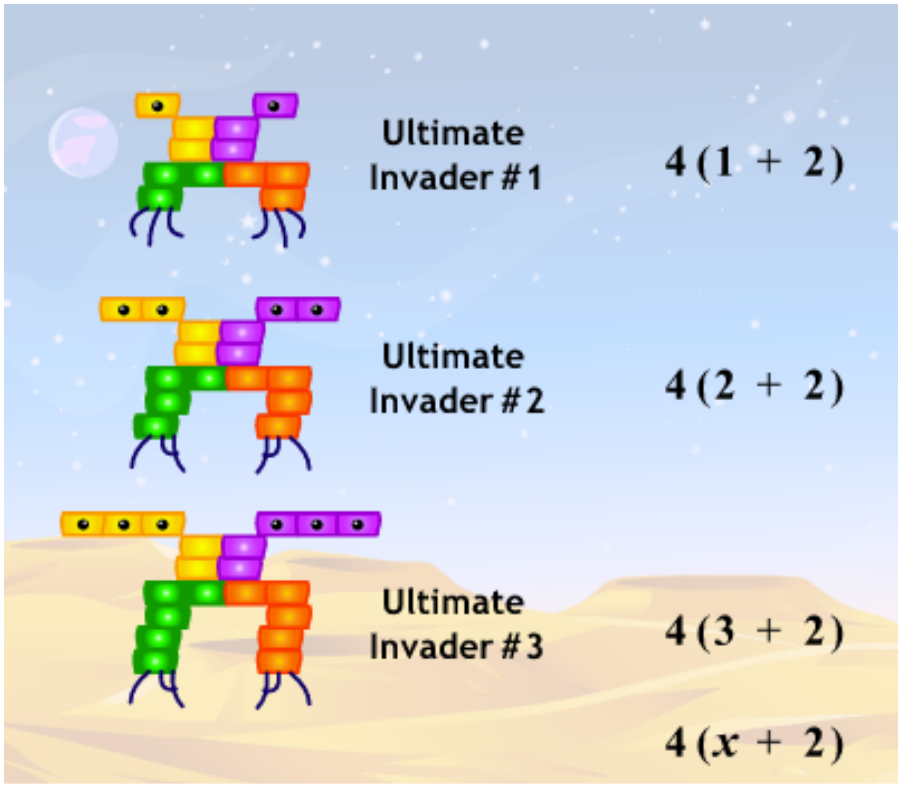
5. Method 3 of growth:

   a. Illustrate the growth using a picture of the first three members.



   b. Explain this method of counting the growth.

   Example answer: I see a piece that is repeated four times. You can see it in the first alien as one of the eyes plus 2 square that make up the body. In the second alien, this is two of the eyes plus 2 of the body squares. In the third alien, this is 3 of eyes plus two of the body parts. So, there is an expression $x + 2$ that is repeated four times.

   c. Write an equation that reflects this way of thinking about the growth if y is the number of body parts (or squares) and x is the family member number.

   $y = 4(x + 2)$

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