GROUP REPORT

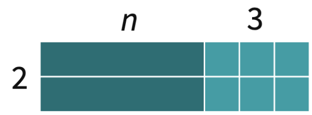
Express Yourself

WORDS	EXPRESSION	VISUAL
W1		
W2		
W3		
W4		
W5		
W6		
W7		
W8		
W9		
W10		
W11		
W12		

W1 Multiply ***n*** by 2, then add 6	**W7** Multiply ***n*** by 2, then add 12
W2 Multiply ***n*** by 3, then square the result	**W8** Divide ***n*** by 2, then add 6
W3 Add 6 to ***n***, then multiply by 2	**W9** Square ***n***, then add 6
W4 Add 6 to ***n***, then divide by 2	**W10** Square ***n***, then multiply by 3
W5 Add 3 to ***n***, then multiply by 2	**W11**
W6 Add 6 to ***n***, then square the result	**W12**

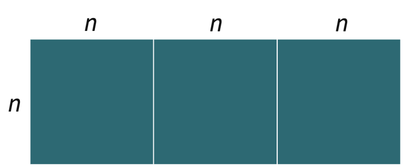
E1	E7
$\frac{n+6}{2}$	$(3n)^2$
E2	**E8**
$3n^2$	$(n + 6)^2$
E3	**E9**
$2n + 12$	$n^2 + 12n + 36$
E4	**E10**
$2n + 6$	$3 + \frac{n}{2}$
E5	**E11**
$2(n + 3)$	
E6	**E12**
$\frac{n}{2} + 6$	

A1

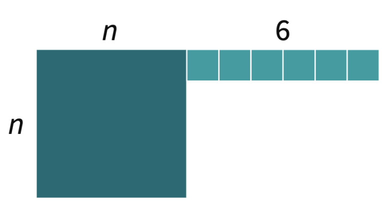


A2

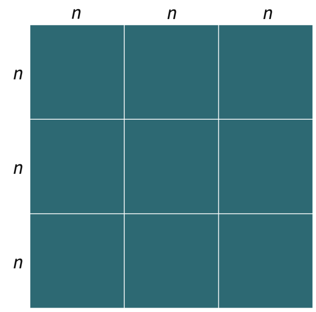
A3



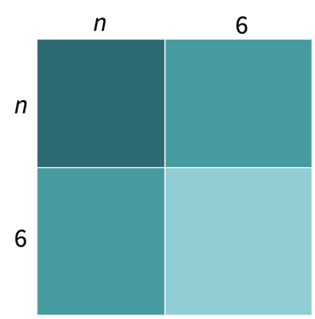
A4



A5



A6



A7

A8

ON YOUR OWN

Express Yourself

How can we prove that expressions are equivalent (or not)?

Mai, Kai, and Ty are discussing why ***4(n + 1)*** is (or isn't) equivalent to ***4n + 4***.

Mai

It works with numbers! Let's say n = 10.
4(n + 1) would be 4(10 + 1), which is 4(11), which is 44.
4n + 4 would be 4(10) + 4, which is also 44.

Ty

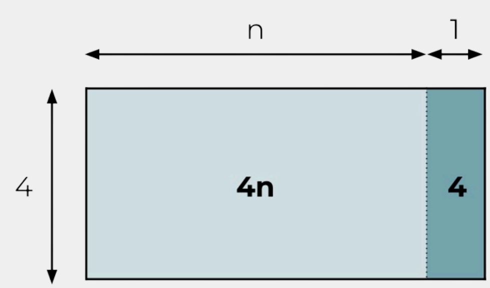
Multiplication is just repeated addition. For example, 4(3) is the same as 3+3+3+3.
We can do the same thing with 4(n + 1).
So, 4(n + 1) is basically n + 1 + n + 1 + n + 1 + n + 1.
Reordering things gives us n + n + n + n + 1 + 1 + 1 + 1, which is 4n + 4.

Kai

The area of a rectangle is length x width.
So, 4(n + 1) can represent the area of a rectangle with a length of (n + 1) and a width of 4.

The picture shows that the whole rectangle can be thought of as two parts, one with an area of 4n and another with an area of 4. So, the total area must be 4n + 4.

That means 4(n + 1) = 4n + 4



1. Which explanation do you think is the ***easiest to understand***? Why?
2. Which explanation do you think is the ***most convincing***? Why?
3. Practice using each of the explanations.
   - **a.** Use Mai's method to show that $-2(3x - 1)$ and $-6x - 2$ are/aren't equivalent.
   - **b.** Use Ty's method to show that $4(W - 2)$ and $4W - 2$ are/aren't equivalent.
   - **c.** Use Kai's method to show that $6(3 + y)$ and $6y + 18$ are/aren't equivalent.
4. Create an expression equivalent to the one given. You can use any method you'd like, but you must be able to explain how you know your expression is equivalent.
   - **a.** $5(Z - 2)$
   - **b.** $3(x + 2 - y)$
   - **c.** $(s + 4)(s + 3)$
   - ***d.*** (+) Create a diagram that could be used to find an expression equivalent to $(x + 3)^3$

5. For each expression below, there can be more than one correct answer. So, be sure to find *all* of the equivalent expressions.

The expression $3(x \cdot 5)$ is equivalent to	**a.** $5x \cdot 3$	**b.** $3x + 15$	**c.** $15x$
	d. $5 \cdot (3x)$	**e.** $3x \cdot 5$	**f.** $3x \cdot 15$
The expression $\frac{3x}{4}$ is equivalent to	**a.** $\frac{3}{4} \cdot x$	**b.** $3 \cdot \frac{x}{4}$	**c.** $3x \div 4$
	d. $3 \div (4 \cdot x)$	**e.** $\frac{3}{4x}$	**f.** $3 \div \frac{4}{x}$
The expression $\frac{a+b}{3}$ is equivalent to	**a.** $\frac{1}{3}(a + b)$	**b.** $1 \div \frac{3}{a+b}$	**c.** $(a + b) \div 3$
	d. $\frac{a}{3} + b$	**e.** $\frac{a}{3} + \frac{b}{3}$	**f.** $a + b \div 3$