Unit 6 Lesson 8: Equal and Equivalent

1 Algebra Talk: Solving Equations by Seeing Structure (Warm up)

Student Task Statement

Find a solution to each equation mentally.

$3 + x = 8$

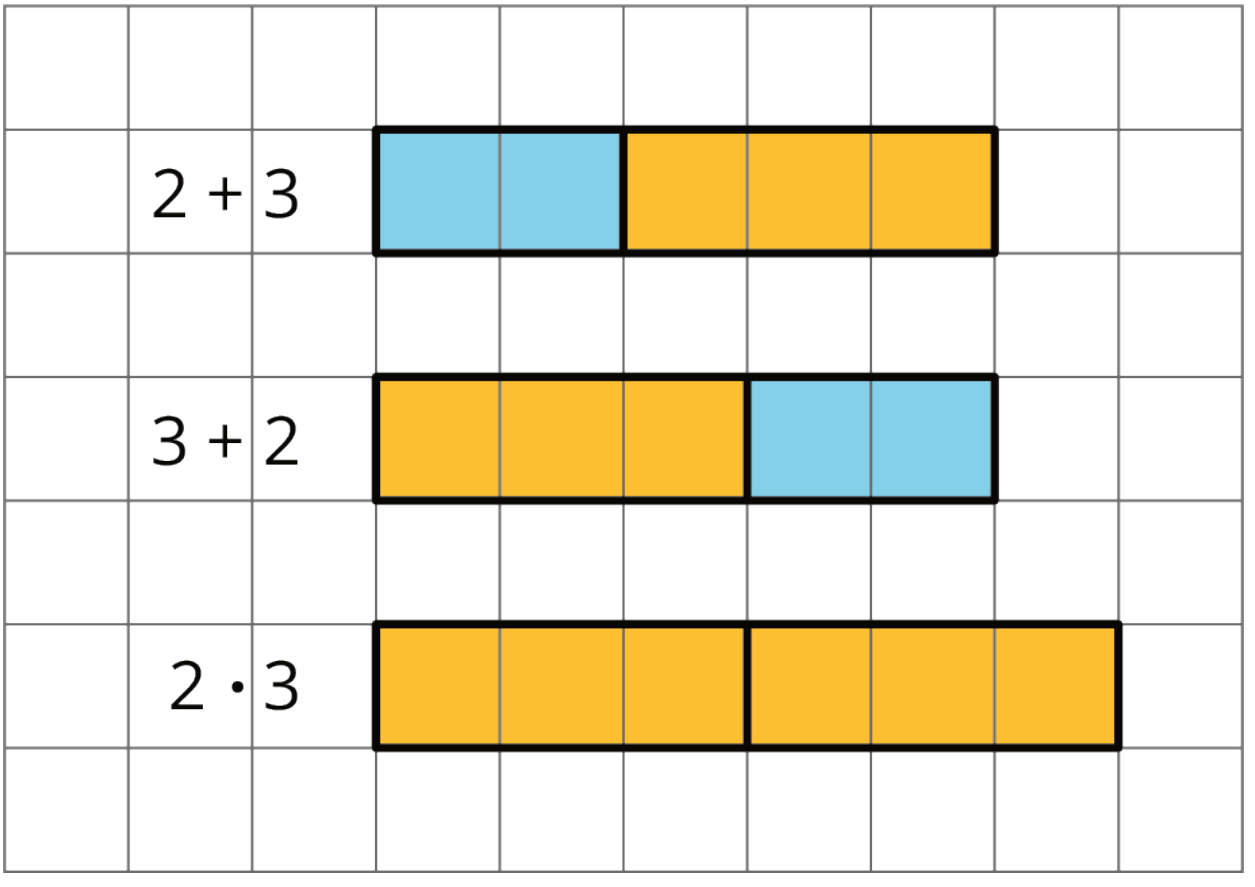
$10 = 12 - x$

$x^2 = 49$

$\frac{1}{3}x = 6$

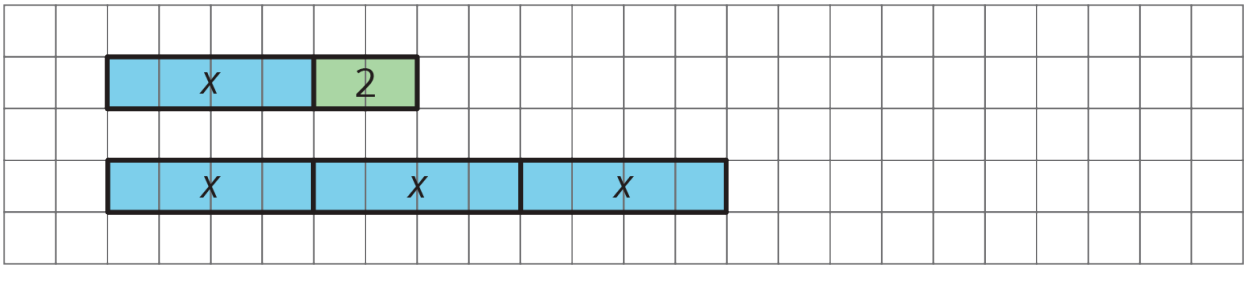
2 Using Diagrams to Show That Expressions are Equivalent

Images for Launch



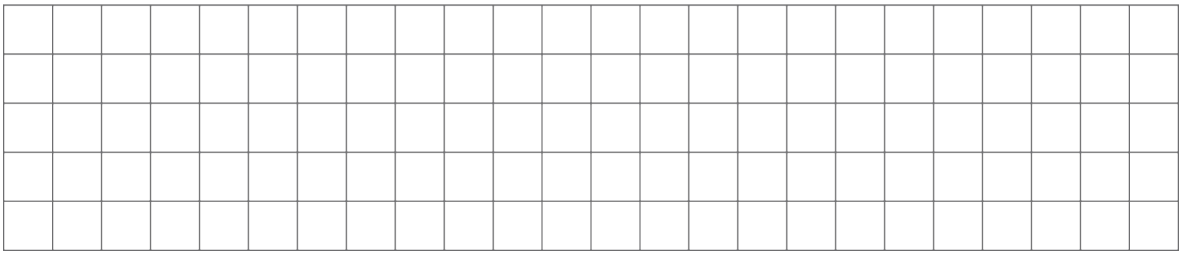
Student Task Statement

Here is a diagram of $x + 2$ and $3x$ when x is 4. Notice that the two diagrams are lined up on their left sides.

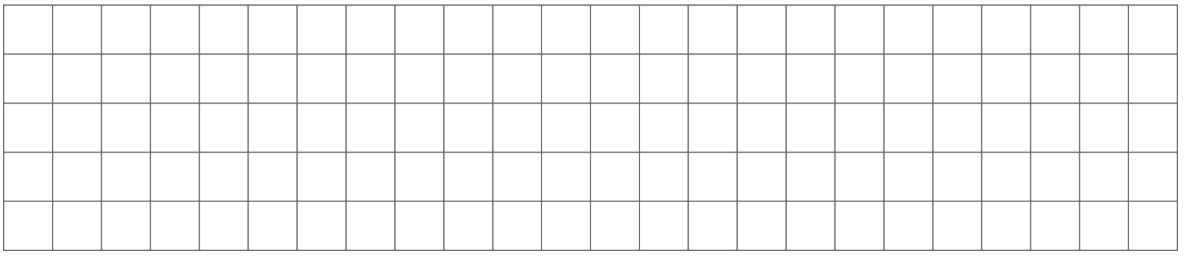


In each of your drawings below, line up the diagrams on one side.

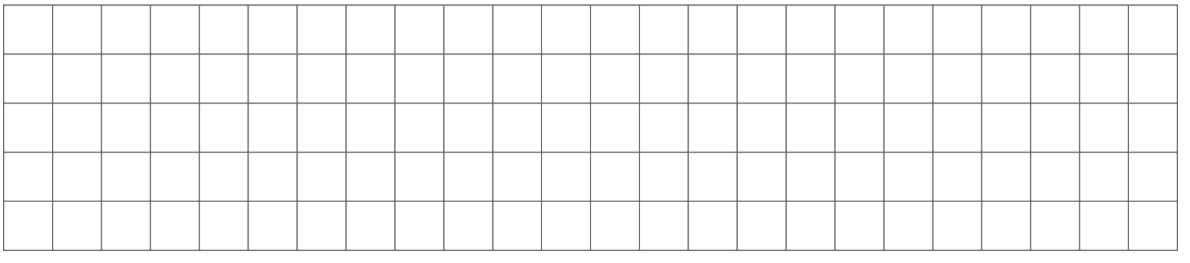
1. Draw a diagram of $x + 2$, and a separate diagram of $3x$, when x is 3.



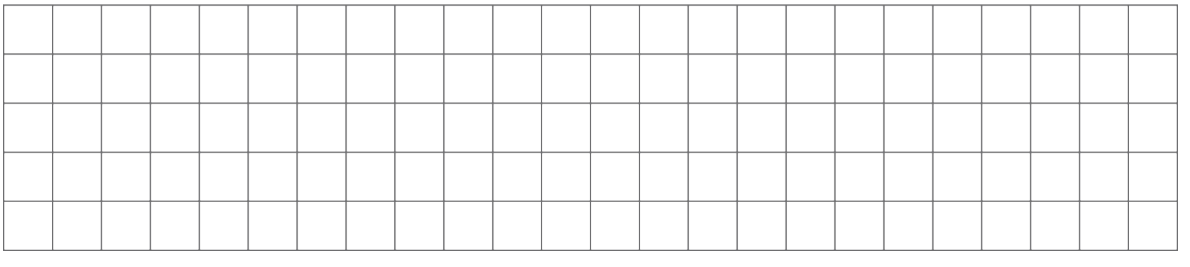
2. Draw a diagram of $x + 2$, and a separate diagram of $3x$, when x is 2.



3. Draw a diagram of $x + 2$, and a separate diagram of $3x$, when x is 1.



4. Draw a diagram of $x + 2$, and a separate diagram of $3x$, when x is 0.



5. When are $x + 2$ and $3x$ equal? When are they not equal? Use your diagrams to explain.

6. Draw a diagram of $x + 3$, and a separate diagram of $3 + x$.

7. When are $x + 3$ and $3 + x$ equal? When are they not equal? Use your diagrams to explain.

3 Identifying Equivalent Expressions

Student Task Statement

Here is a list of expressions. Find any pairs of expressions that are equivalent. If you get stuck, try reasoning with diagrams.

$a + 3$	$a \div \frac{1}{3}$	$\frac{1}{3}a$	$\frac{a}{3}$	a
$a + a + a$	$a \cdot 3$	$3a$	$1a$	$3 + a$