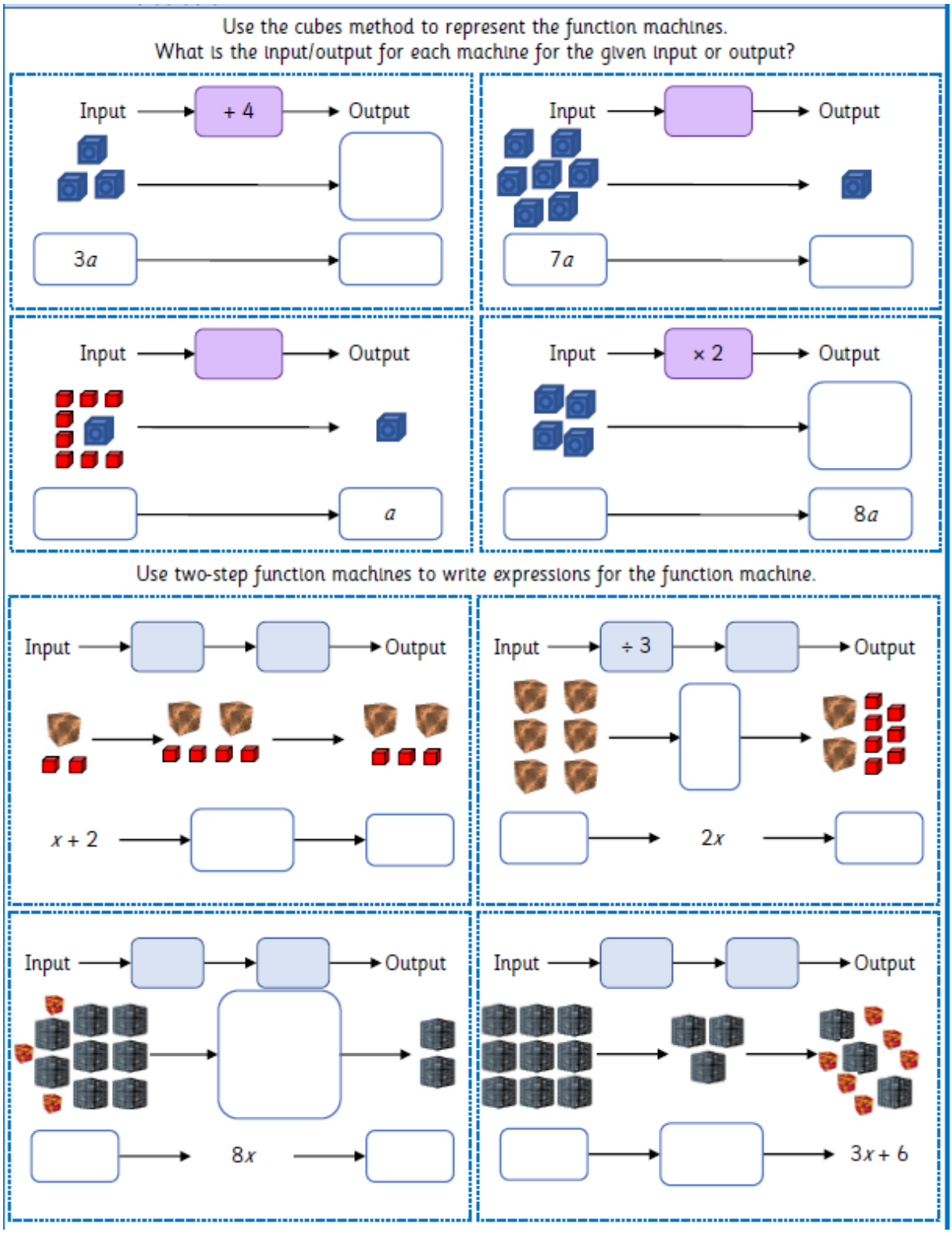
3/2/21

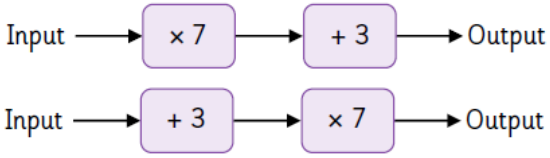
LO: to form algebraic expressions (hard).

Varied Fluency



Reasoning and Problem Solving

Zach inputs m into these function machines.



He says the outputs of the machines will be the same.

Do you agree? Explain your answer.

This function machine gives the same output for every input.
For example if the input is 9 then the output is 9 and so on.

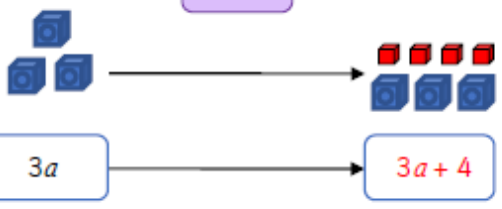
What could be the missing parts of the function?

How many pairs of numbers can fit the rule of the function machine?

Answers on next page

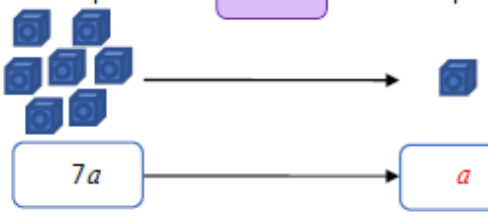
Use the cubes method to represent the function machines.
What is the input/output for each machine for the given input or output?

Input → + 4 → Output



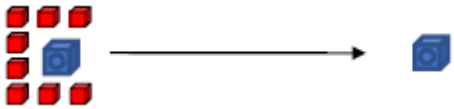
$3a$ → $3a + 4$

Input → ÷ 7 → Output



$7a$ → a

Input → − 8 → Output



$a + 8$ → a

Input → × 2 → Output

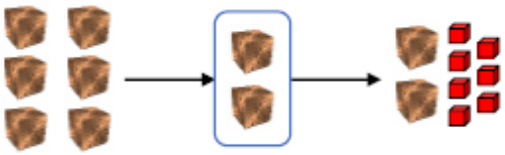
$4a$ → $8a$

Use two-step function machines to write expressions for the function machine.

Input → × 2 → -1 → Output

$x + 2$ → $2x + 4$ → $2x + 3$

Input → ÷ 3 → + 7 → Output



$6x$ → $2x$ → $2x + 7$

Input → − 3 → ÷ 4 → Output

$8x + 3$ → $8x$ → $2x$

Input → ÷ 3 → + 6 → Output

$9x$ → $3x$ → $3x + 6$

Zach inputs m into these function machines.

Input → × 7 → + 3 → Output

Input → + 3 → × 7 → Output

He says the outputs of the machines will be the same.

Do you agree? Explain your answer.

No, because 7m + 3 isn't the same as 7m + 21:

7m + 3

Input

× 7

+ 3

7m + 21

Input

+ 3

× 7

This function machine gives the same output for every input.
For example if the input is 9 then the output is 9 and so on.

Input → ÷ 6 → × 6 → Output

What could be the missing parts of the function?

How many pairs of numbers can fit the rule of the function machine?

÷ 6 and × 6

Other pairs of functions that will do the same are functions that are the inverse of each other e.g. + 9, – 9.