

Quiz Friday

2/24

Equivalent = equal (same)

# Lesson 3: Reasoning about Contexts with Tape Diagrams (Part 2)

Let's see how equations can describe tape diagrams.

No equal sign → expressions → has variables, +, -, ÷, x, & numbers

## 3.1: Find Equivalent Expressions

Select all the expressions that are equivalent to  $7(2 - 3n)$ . Explain how you know each expression you select is equivalent.

equations → same as expressions but w/ equal sign

~~1.~~  $9 - 10n$  ADD

~~2.~~  $14 - 3n$  Ddnt multiply all

3.  $14 - 21n$

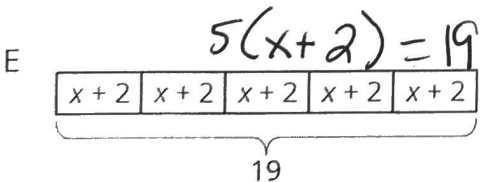
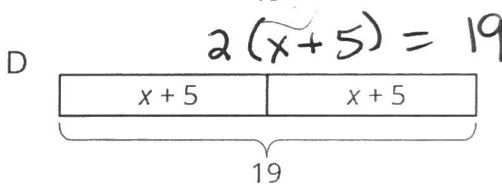
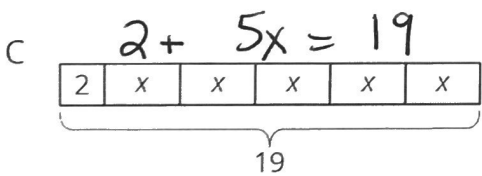
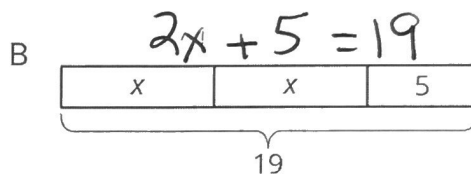
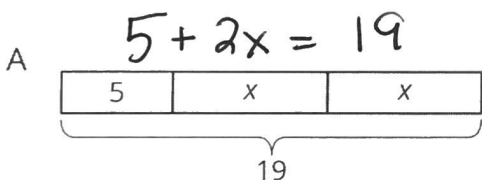
Operate n/k everyone gets

4.  $(2 - 3n) \cdot 7$

~~5.~~  $7 \cdot 2 \cdot (-3n)$  Ddnt distribute

Distribute → multiply the number on the outside by everything on the inside.

## 3.2: Matching Equations to Tape Diagrams



( ) ← grouping

1. Match each equation to one of the tape diagrams. Be prepared to explain how the equation matches the diagram.

$2x + 5 = 19$  B, A

$2 + 5x = 19$  C

$2(x + 5) = 19$  D

$5(x + 2) = 19$  E

$19 = 5 + 2x$  A, B

$(x + 5) \cdot 2 = 19$  D

$19 = (x + 2) \cdot 5$  E

$19 \div 2 = x + 5$  D

$19 - 2 = 5x$  C

2. Sort the equations into categories of your choosing. Explain the criteria for each category.

- ~~o  $2x + 5 = 19$~~
- ~~o  $2 + 5x = 19$~~
- ~~o  $2(x + 5) = 19$~~
- ~~o  $5(x + 2) = 19$~~
- ~~o  $19 = 5 + 2x$~~
- ~~o  $(x + 5) \cdot 2 = 19$~~
- ~~o  $19 = (x + 2) \cdot 5$~~
- ~~o  $19 \div 2 = x + 5$~~
- ~~o  $19 - 2 = 5x$~~

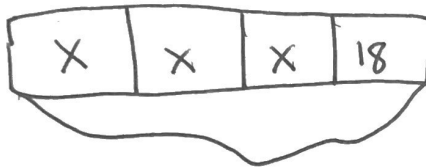
### 3.3: Drawing Tape Diagrams to Represent Equations

m.openup.org/1/7-6-3-3



- $114 = 3x + 18$
- $114 = 3(y + 18)$

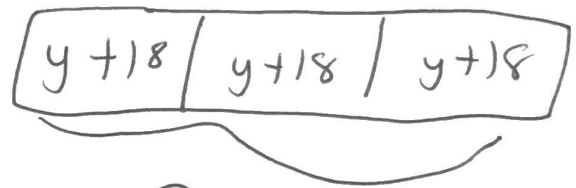
1. Draw a tape diagram to match each equation.



114

$$\begin{array}{r} 114 = 3x + 18 \\ - 18 \quad - 18 \\ \hline 96 = 3x \end{array}$$

$$\begin{array}{r} 96 = 3x \\ \hline 3 \quad 3 \\ \hline 33 = x \end{array}$$



114

$$\begin{array}{r} 114 = 3(y + 18) \\ 114 = 3y + 54 \\ - 54 \quad - 54 \\ \hline 60 = 3y \end{array}$$

$$\begin{array}{r} 60 = 3y \\ \hline 3 \quad 3 \\ \hline 20 = y \end{array}$$

2. Use any method to find values for  $x$  and  $y$  that make the equations true.

$2x$  and  $2+x \rightarrow$  Not equivalent  
 $\uparrow$                        $\uparrow$   
 Multiply              ADD

$3+x$  and  $x+3 \rightarrow$  equivalent



Commutative property (order does not matter)