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Name _____

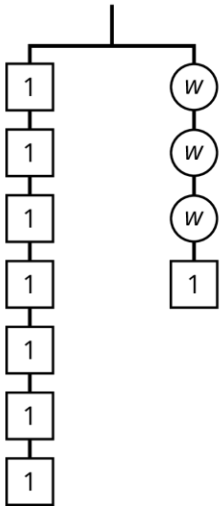
Unit 6, Lesson 7: Reasoning About Equations

7.2: Hanger and Equation Matching

On each balanced hanger, figures with the same letter have the same weight.

1. Match each hanger to an equation. Complete the equation by writing x, y, z, or w in the empty box. REWRITE THE EQUATION UNDER EACH HANGER DIAGRAM.
2. Find the solution to each equation (how much does the variable equal?). SHOW YOUR WORK.

A



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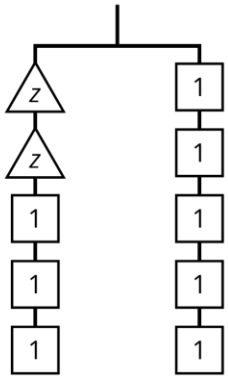

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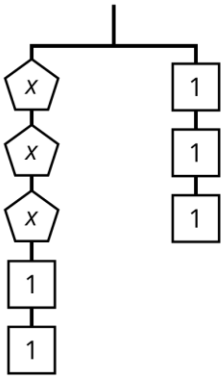

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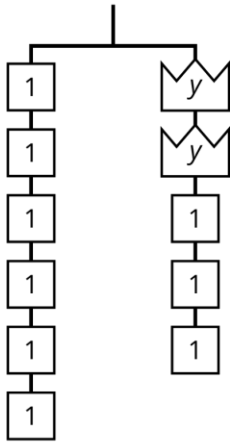

- $2\square + 3 = 5$
- $3\square + 2 = 3$
- $6 = 2\square + 3$
- $7 = 3\square + 1$

3. Draw a hanger to represent each of the equations below.

   a. $4x + 2 = 10$

   b. $5 = y + 2$

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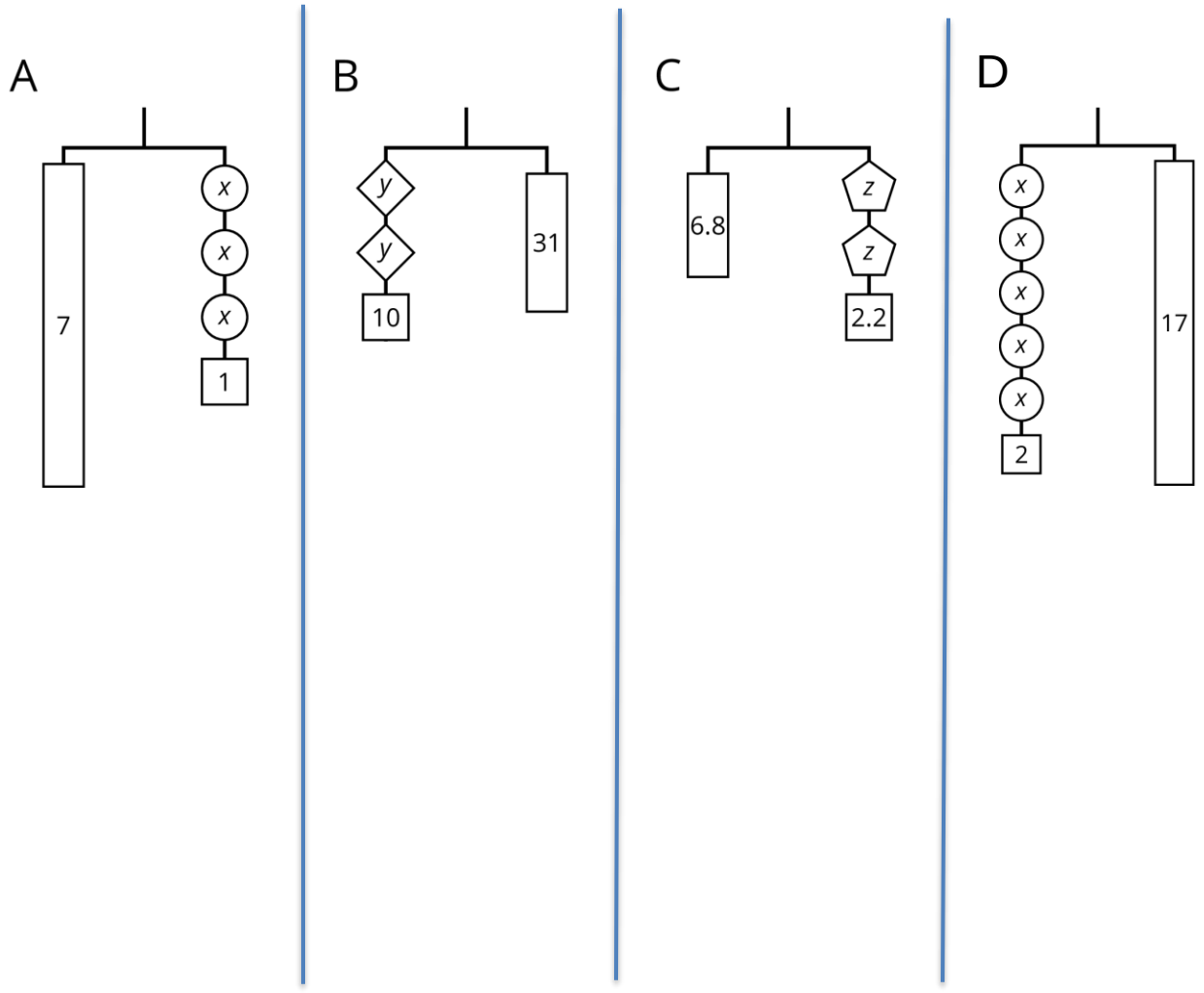
7.3: Use Hangers to Understand Equation Solving

Here are some balanced hangers where each piece is labeled with its weight. For each diagram:

1. Write an equation.
2. Draw on the hanger to show how to figure out the weight of a piece labeled with a letter using the DIAGRAM.
3. Show step by step under your equation what each step on your diagram is doing to the equation mathematically.



4. Solve each equation below. Draw a hanger to represent the equation if you want.

   a. $4x + 2 = 10$

   b. $5 = y + 2$

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Unit 6, Lesson 8: Reasoning About Equation Solving Cont. (Distribute)

8.1: Equivalent to $2(x + 3)$

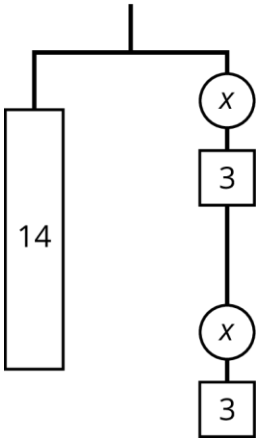
Select **all** the expressions equivalent to $2(x + 3)$.

$2 \cdot (x + 3)$ $2 \cdot x + 2 \cdot 3$ $(2 \cdot x) + 3$

$(x + 3)2$ $2 \cdot x + 3$ $(2 + x)3$

8.2: Either Or

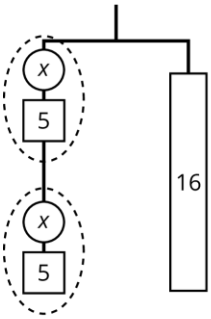
1. Explain why either of these equations could represent this hanger:

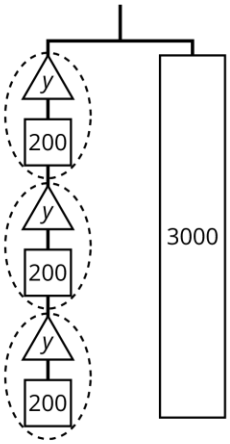


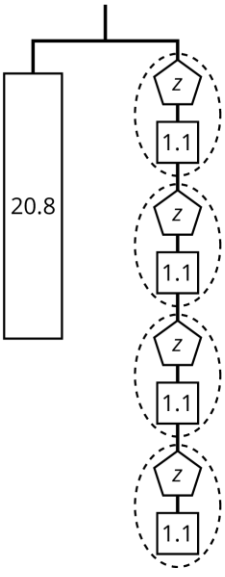
$14 = 2(x + 3)$ or $14 = 2x + 6$

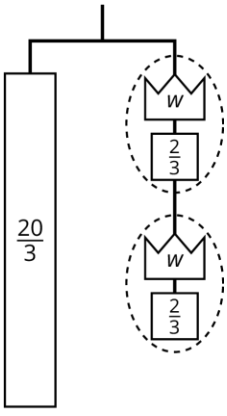
2. Find the weight of one circle. Explain your reasoning.

2. Here are some balanced hangers. Each piece is labeled with its weight. For each hanger, write TWO different equations that could represent this hanger. (Ex. from above: $14 = 2(x + 3)$ or $14 = 2x + 6$)









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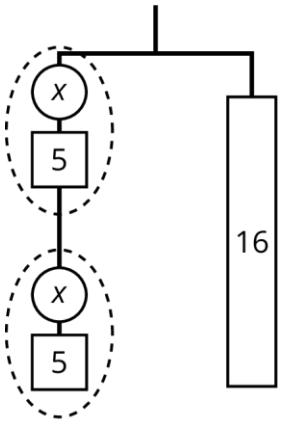
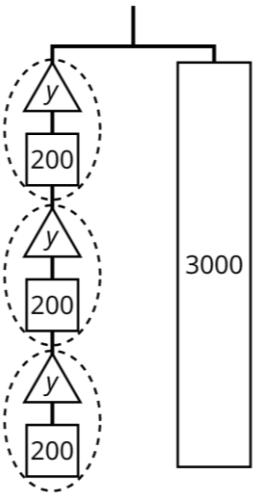
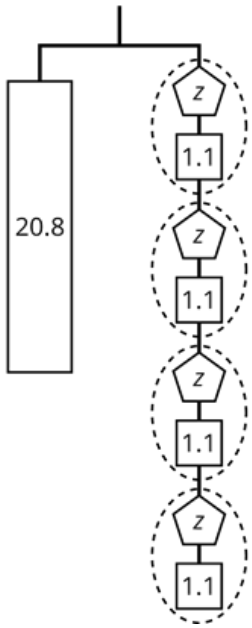
8.3: Use Hangers to Understand Equation Solving

1. Assign one of these equations to each hanger:

$20.8 = 4(z + 1.1)$ $2(x + 5) = 16$ $3(y + 200) = 3{,}000$







2. Explain & show how to figure out the weight of a piece labeled with a letter by using the hanger.

3. Explain & show how to figure out the weight of a piece labeled with a letter by using equation. (How do you show each step you did on the hanger in the math equation?)

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