Math model drawing Heuristics

Study Notes

(A) Equal Beginning/ending

- Keywords: same amount at first/at the end
- Units to be written outside the model
- Draw the models long
- Transfer the numbers and units “up - down”
- Make sure that the model size should be the same at the start or at the end

Example 1

John had 4 times as many cards as Thomas at first. After John gave away 25 cards and Thomas bought 227 cards, They had an equal number of cards. How many cards did John have at first?

Solution:

Step 1:



Step 2:



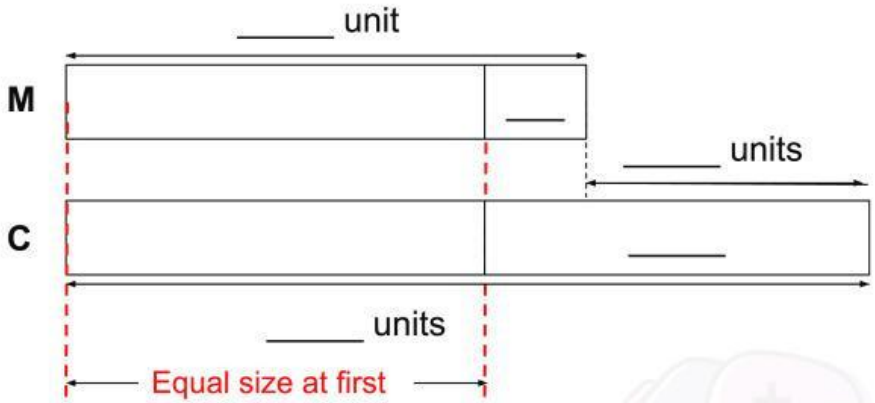
(Shade away 25 from John and add 227 to Thomas)

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Example 2

Melissa and Carolina had the same number of stickers at first. After Melissa bought 24 stickers and Carol bought 229 more stickers, Carol had 6 times as many stickers as Melissa. How many stickers did each of them have at first?

Solution:



_____ unit = 229 - 24
= 205

1 unit = _____

=

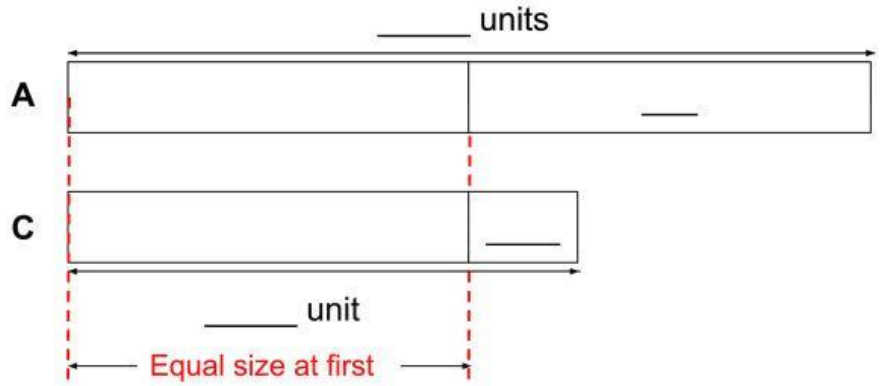
M at first = _____

Example 3

Alicia and Celine had an equal amount of money at first. After Alicia earned $180 and Celine earned $42, Alicia had 4 times as much money as Celine. How much money does Celine have at the end?

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Solution:



3 units = _____

1 unit = _____

(B) Constant difference

- Keywords: Equal amount added/ Equal amount subtracted/ age
- For age, draw a before and after model. For equal amount added/subtracted, draw the bar model at the front
- Always find the difference/ age gap in the first step

Example 1

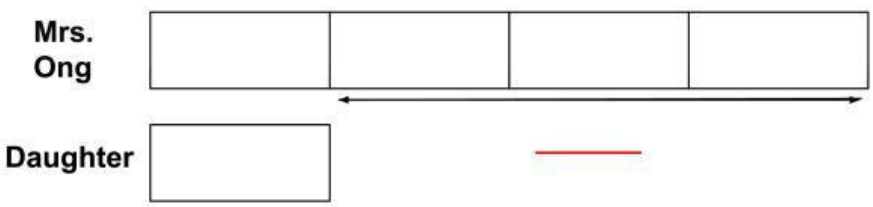
Mrs. Ong is 43 years old and her daughter is 7 years old. How many years later will Mrs. Ong be 4 times her daughter's age?

Before



Same age gap

After



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