
Singapore Math Bar Model Strategy

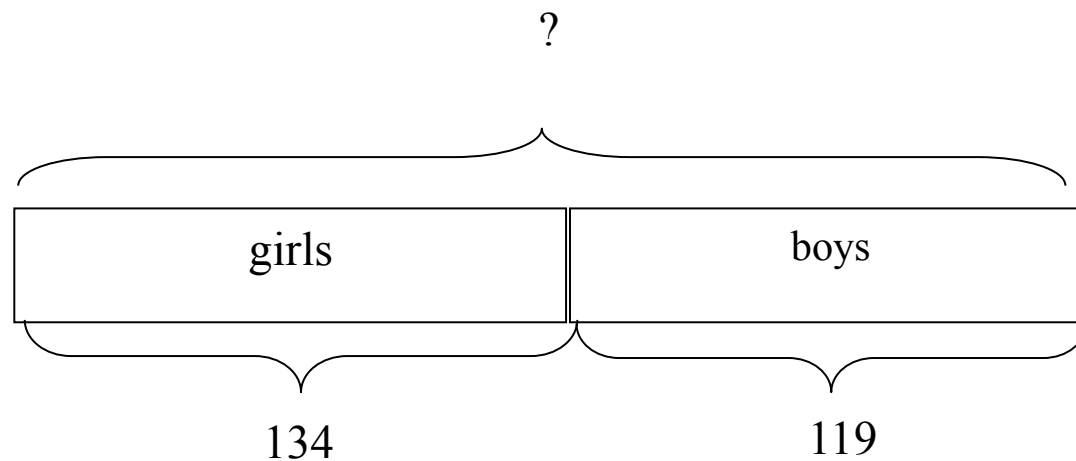
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Part-Whole Model for Addition and Subtraction

134 girls and 119 boys took part in an art competition. How many children took part in the competition?

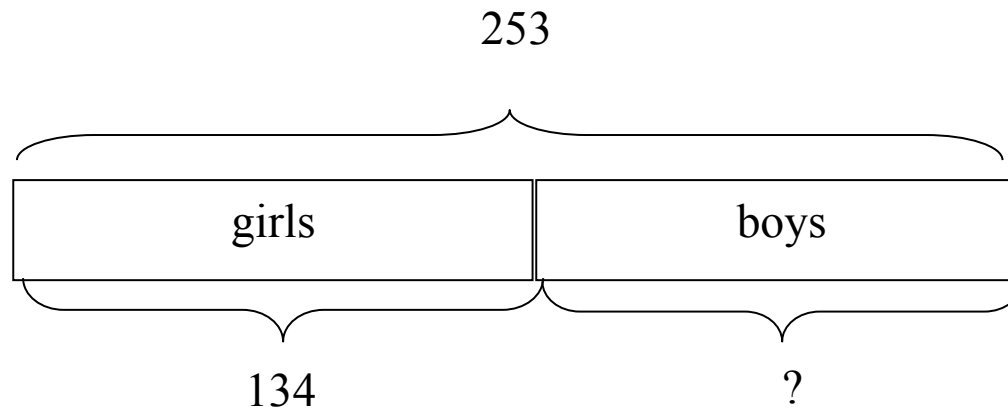
- We know the 2 parts. To find the whole, we add $134 + 119$.



This problem and the following problems are taken from
Primary Mathematics, Marshall Cavendish, publisher

253 children took part in an art competition. There are 134 girls. How many boys are there?

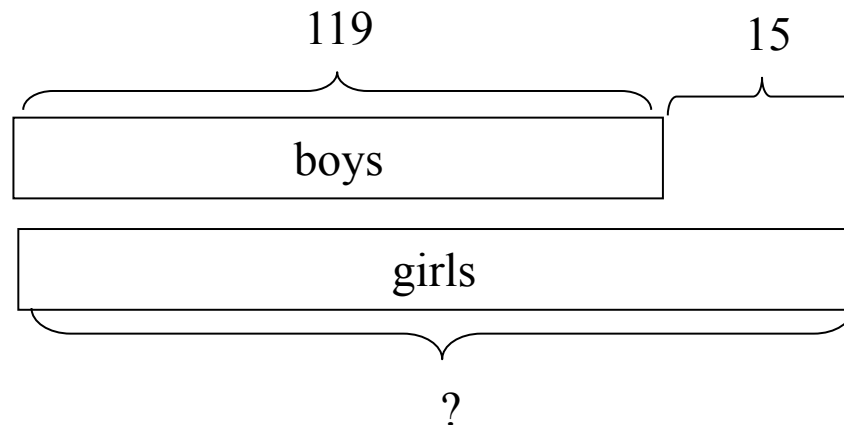
- We know the whole and 1 part. To find the missing part, we subtract $253 - 134$.



Comparison Model for Addition and Subtraction

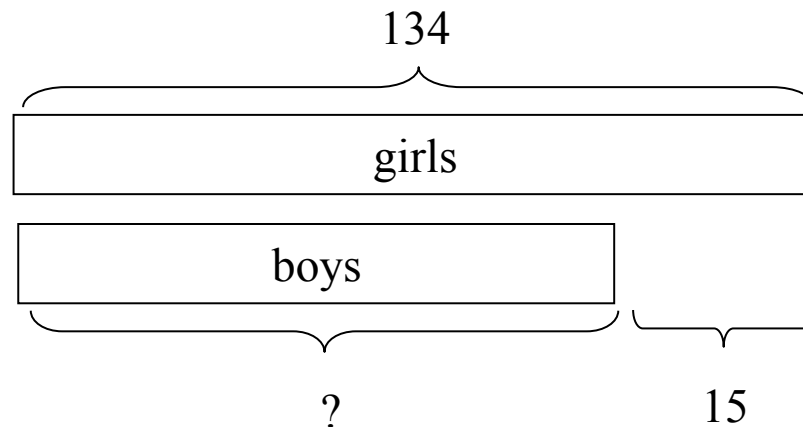
119 boys took part in an art competition. 15 more girls than boys took part. How many girls took part in the competition?

- We are comparing the boys to the girls. We know the smaller quantity. To find the bigger quantity we add $119 + 15$.



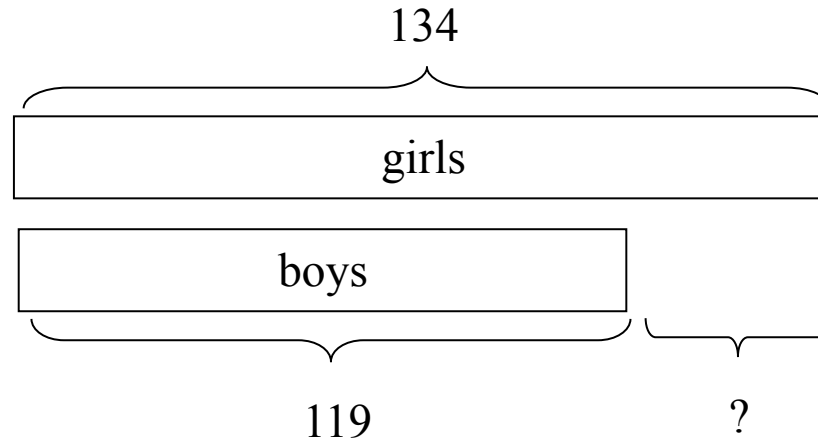
134 girls took part in an art competition. 15 fewer boys than girls took part. How many boys took part in the competition?

- We are comparing the girls to the boys. We know the bigger quantity. To find the smaller quantity we subtract $134 - 15$.



134 girls and 119 boys took part in an art competition. How many more girls than boys took part in the competition?

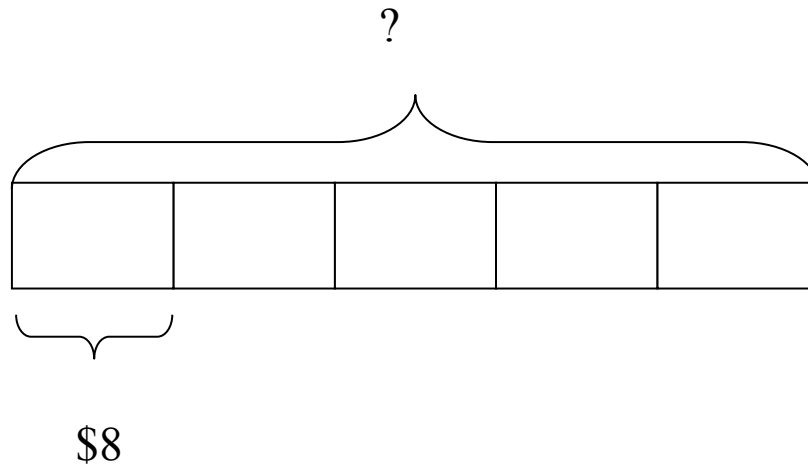
- We are comparing the girls to the boys. To find the difference we subtract $134 - 119$.



Part-Whole Model for Multiplication and Division

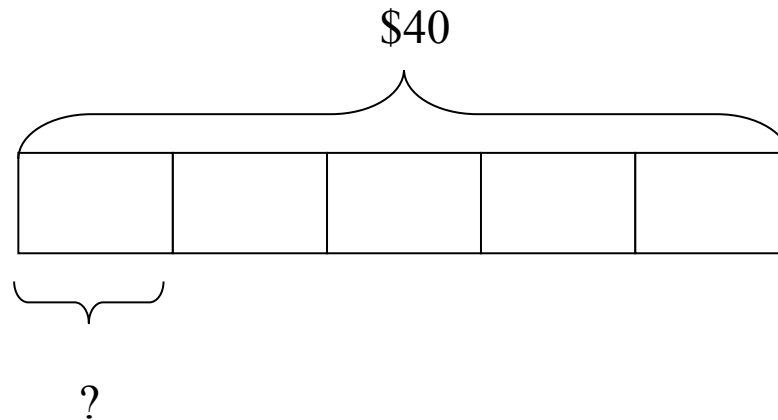
Devi saved \$8 a week for 5 weeks. How much did she save altogether?

- We know 1 part and the number of parts. To find the whole we multiply 8×5 .



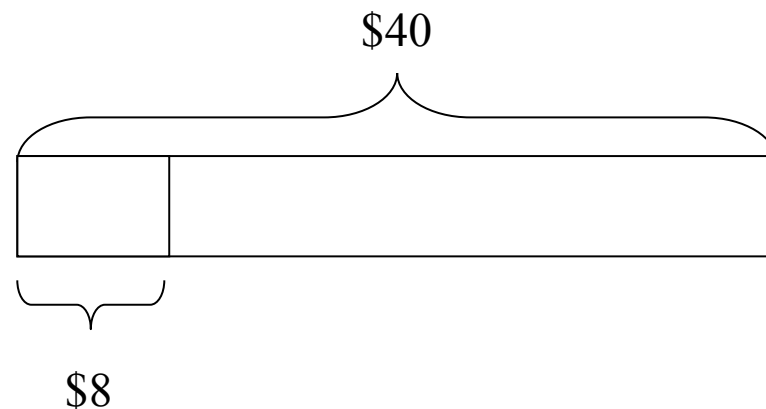
Devi saved \$40 in 5 weeks. How much did she save each week?

- We know the whole and the number of parts. To find one part we divide $40 \div 5$.



Devi saves \$8 each week, How many weeks will it take her to save \$40?

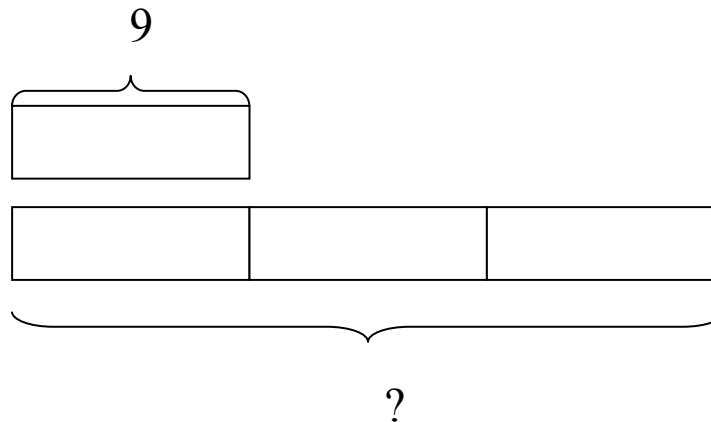
- We know the whole and one part. To find the number of parts we divide $40 \div 8$.



Comparison Model for Multiplication and Division

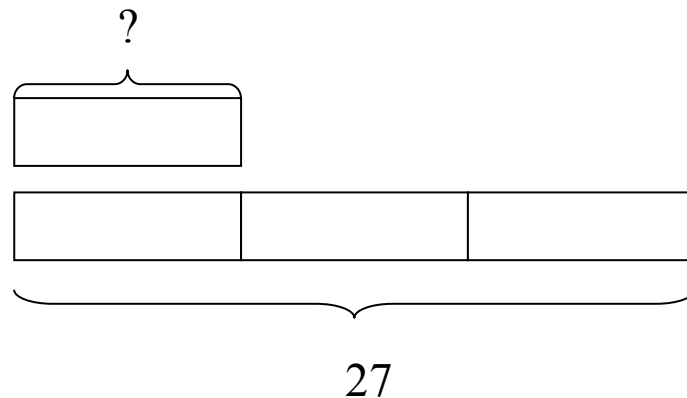
There are 9 white flowers. There are 3 times as many red flowers as white flowers. How many red flowers are there?

- Two quantities are compared. One is a multiple of the other. We know the smaller quantity. To find the bigger quantity we multiply 9×3 .



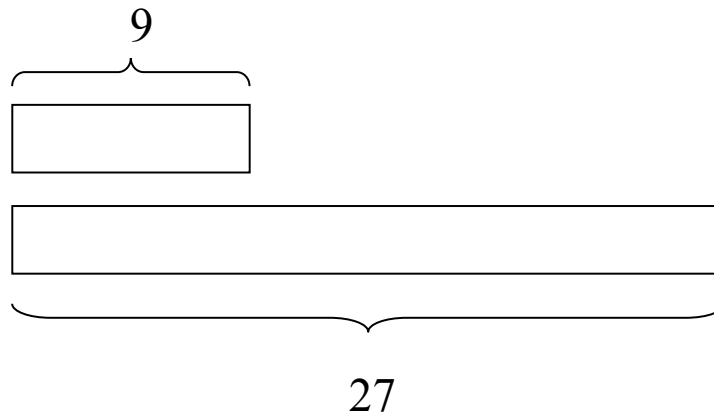
There are 27 red flowers. There are 3 times as many red flowers as white flowers. How many white flowers are there?

- Two quantities are compared. One is a multiple of the other. We know the bigger quantity. To find the smaller quantity we divide $27 \div 3$.



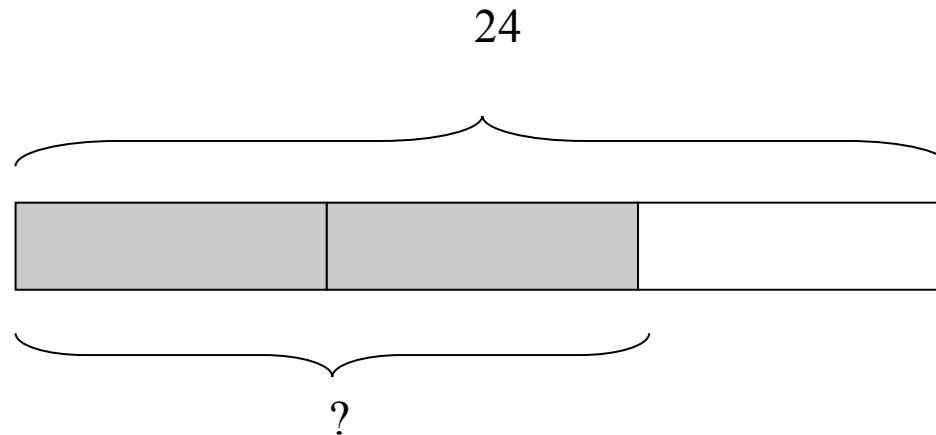
There are 27 red flowers and 9 white flowers. How many times as many red flowers as white flowers are there?

- Two quantities are compared. One is a multiple of the other. We know both quantities. To find the multiplier we divide $27 \div 9$.



Fraction models

Kelley buys 24 flowers. $\frac{2}{3}$ of them are white.
How many white flowers are there?



Try one!

- *David spent $\frac{2}{5}$ of his money on a storybook. The storybook cost \$20. How much money did he have at first?*
-

Tips for using models effectively

- Steps for problem solving
 - Understand the problem situation.
 - Represent the situation with a model.
 - Write an expression and solve.
 - Write the answer and look back (check).

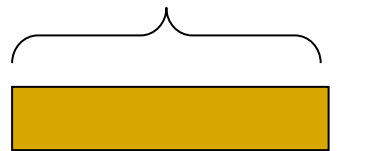
- Tips

- Draw bars neatly (sharp pencil)
- Partition bars accurately.

- Use



instead of



.

How would you solve this problem from the 5th grade Singapore textbook?

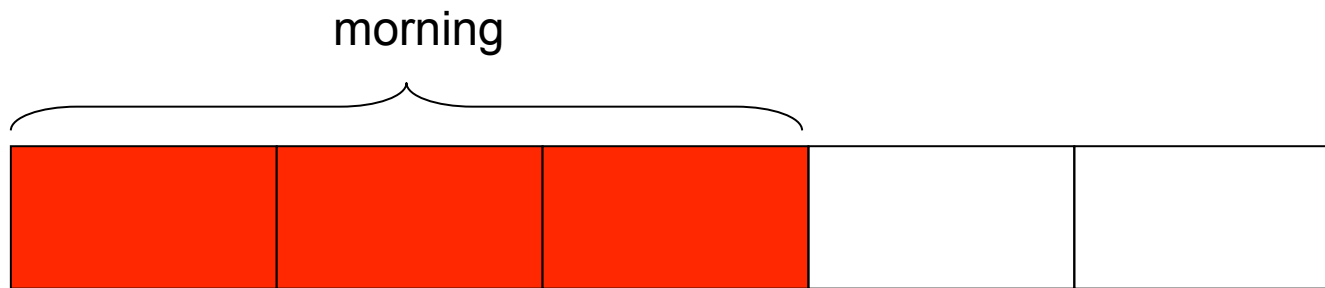
Mrs. Chen made some tarts. She sold $\frac{3}{5}$ of them in the morning and $\frac{1}{4}$ of the remainder on the afternoon. If she sold 200 more tarts in the morning than in the afternoon, how many tarts did she make?

Mrs. Chen made some tarts.



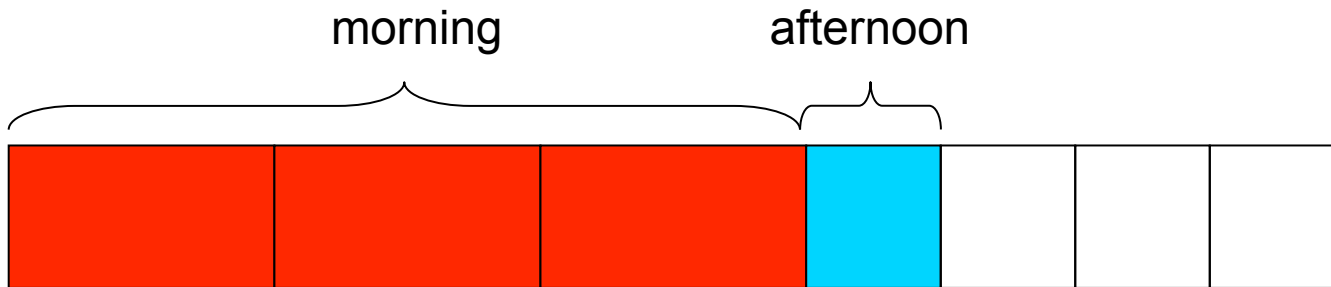
Draw a bar to represent all the tarts.

She sold $\frac{3}{5}$ of them in the morning...



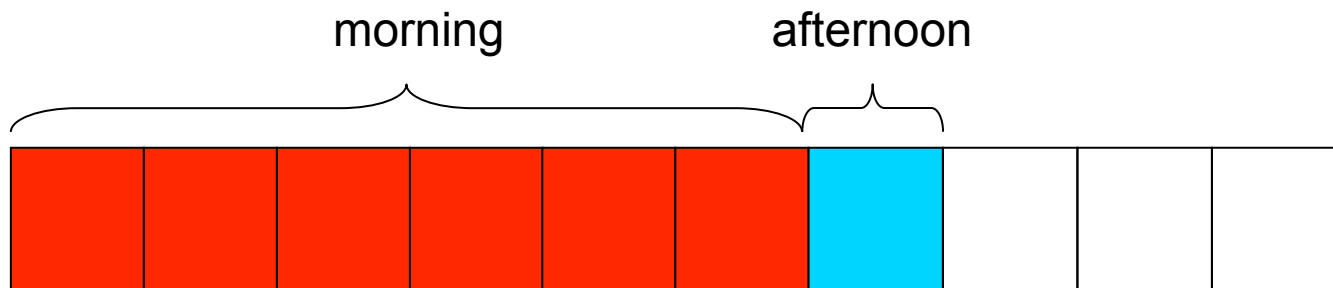
Cut the bar into 5 equal pieces. Shade 3 of them to show the tarts sold in the morning.

...and $\frac{1}{4}$ of the remainder in the afternoon.



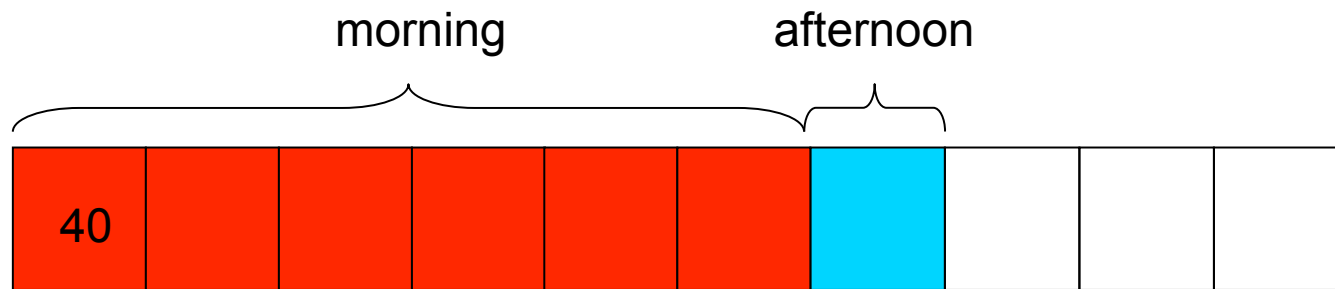
Cut the unshaded part into 4 equal pieces. Shade 1 of them to show the tarts sold in the afternoon.

...and $\frac{1}{4}$ of the remainder in the afternoon.



Cut the red boxes in half to make all of the boxes the same size.

...she sold 200 more tarts in the morning than in the afternoon...



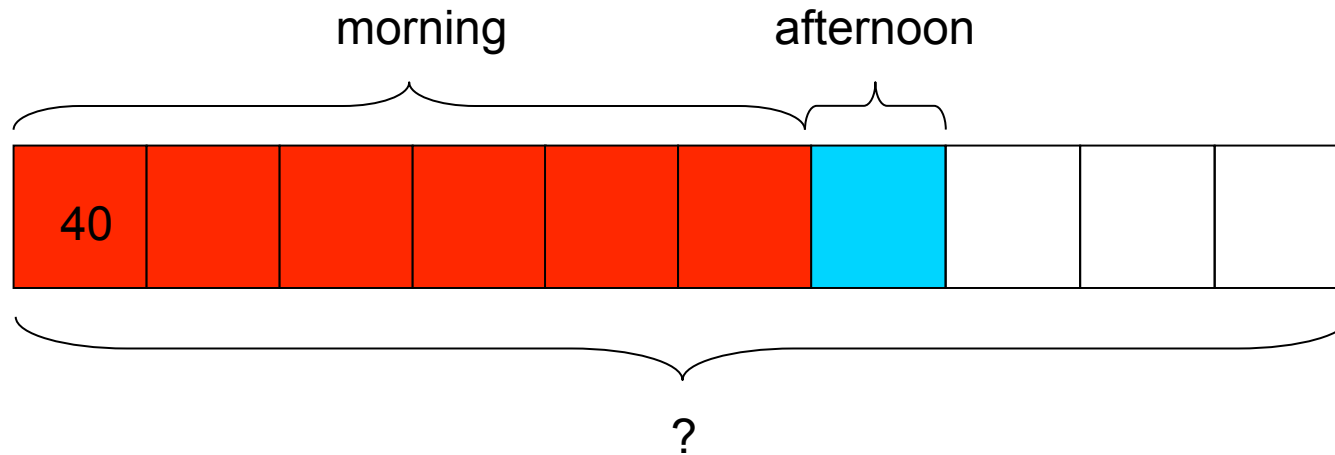
There are 5 more morning boxes than afternoon boxes. We can use the unitary method to find the value of 1 box.

$$5 \text{ units} = 200 \text{ tarts}$$

$$1 \text{ unit} = 200 \div 5 = 40 \text{ tarts}$$

“Unitary” method

...how many tarts did she make?



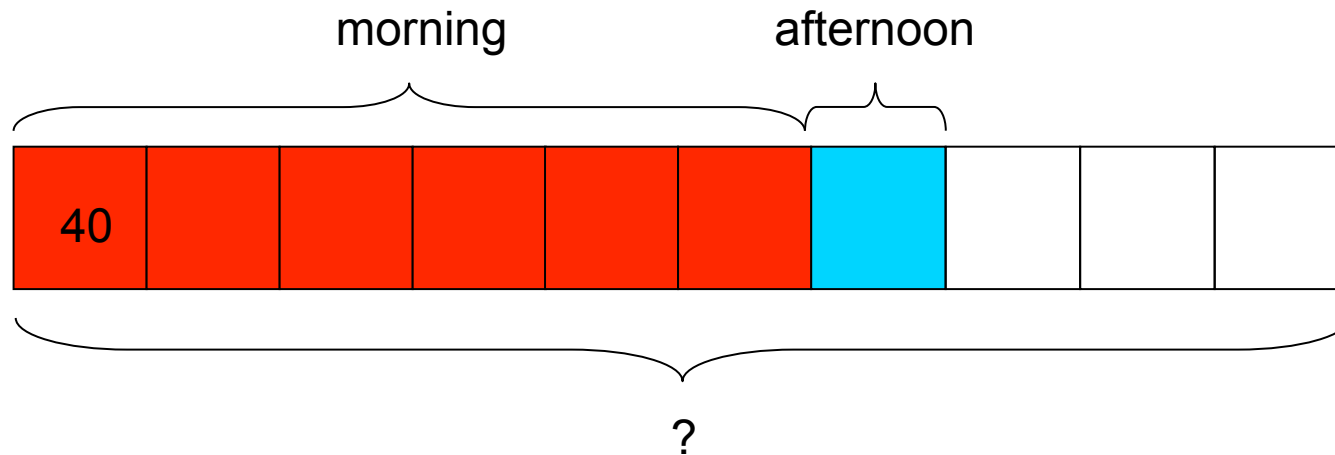
There are 10 boxes in all.

5 units = 200 tarts

1 unit = $200 \div 5 = 40$ tarts

10 units = $40 \times 10 = 400$ tarts

Mrs. Chen made some tarts. She sold $\frac{3}{5}$ of them in the morning and $\frac{1}{4}$ of the remainder on the afternoon. If she sold 200 more tarts in the morning than in the afternoon, how many tarts did she make?



Mrs. Chen made 400 tarts.

Expression: $200 \div 5 \times 10 = 400$