

singapore chinese girls' school



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MATHEMATICS

Conceptual Approach to Problem Solving

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Rationale

- Model Drawing -
A good representation of solving problems
- There are other approaches in solving problem sums



Important Truths for Model Drawing

3. For the difference between 2 quantities, write down the difference in whole number in the model.

Example:

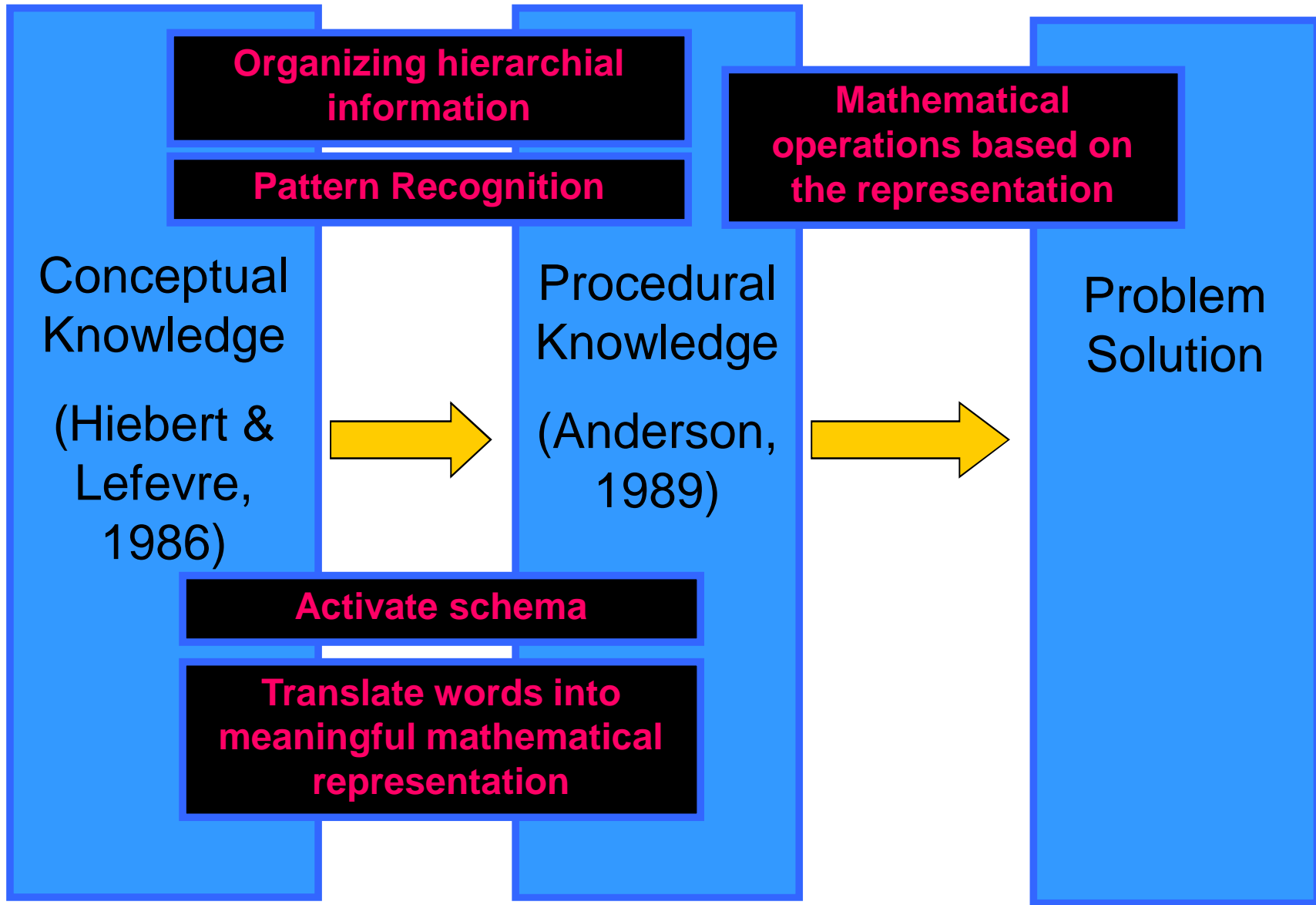
There are 24 more girls than boys

girls		24
boys		



What's Conceptual Approach?

- Emphasize on the **“whys”** and **“whats”** as well as the **“hows”** of problem solving
- **Cuts across topics**



Key Teaching points

Before attempting to solve the word problems, teach your child to think through them by asking them questions

Examples

Read the following word problems, do you find any similarity between the questions?

Did any value change? What has changed?


Is there anything that did not change?





Concepts covered

- More Than / Less than
- Repeated Identity
- Equal Stage



**More than/ Less than
(Division)**



More than/ Less than

Word problem 1

Mr Tan gave \$600 to his two sons. His elder son received \$250 more than his younger son. How much did his younger son receive?



More than/ Less than

Word problem 1

Mr Tan gave **\$600** to his **two sons**.

His elder son received **\$250 more** than his younger son.

How much did his younger son receive?

More than/ Less than

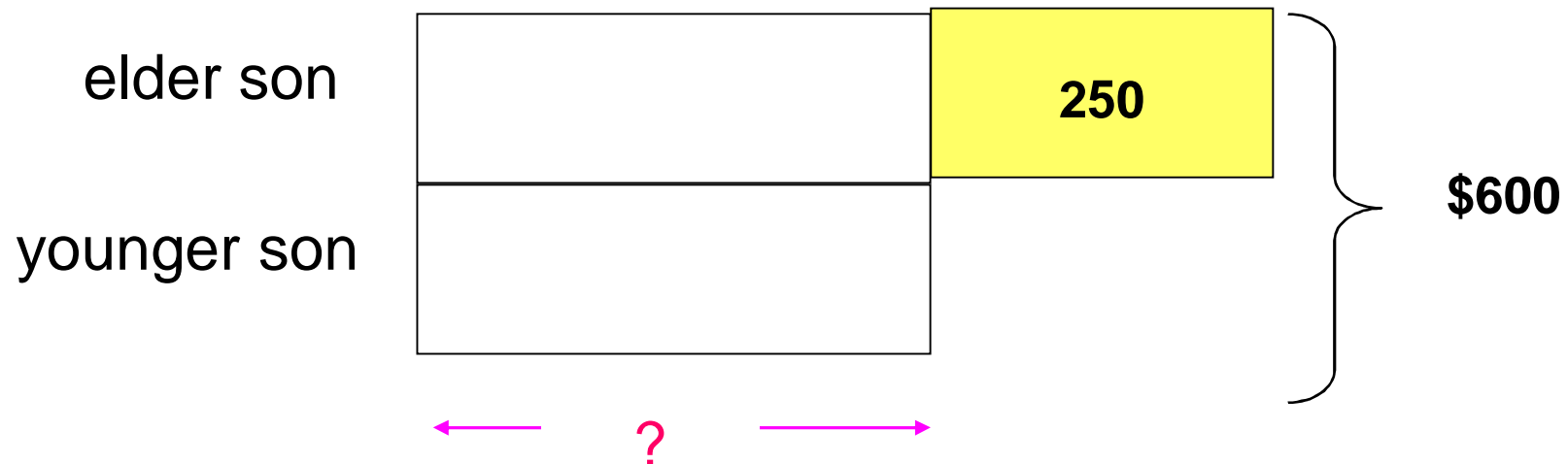
Mr Tan gave \$600 to his two sons. His elder son received \$250 more than his younger son. How much did his younger son receive?

Who was given more money? Elder son.

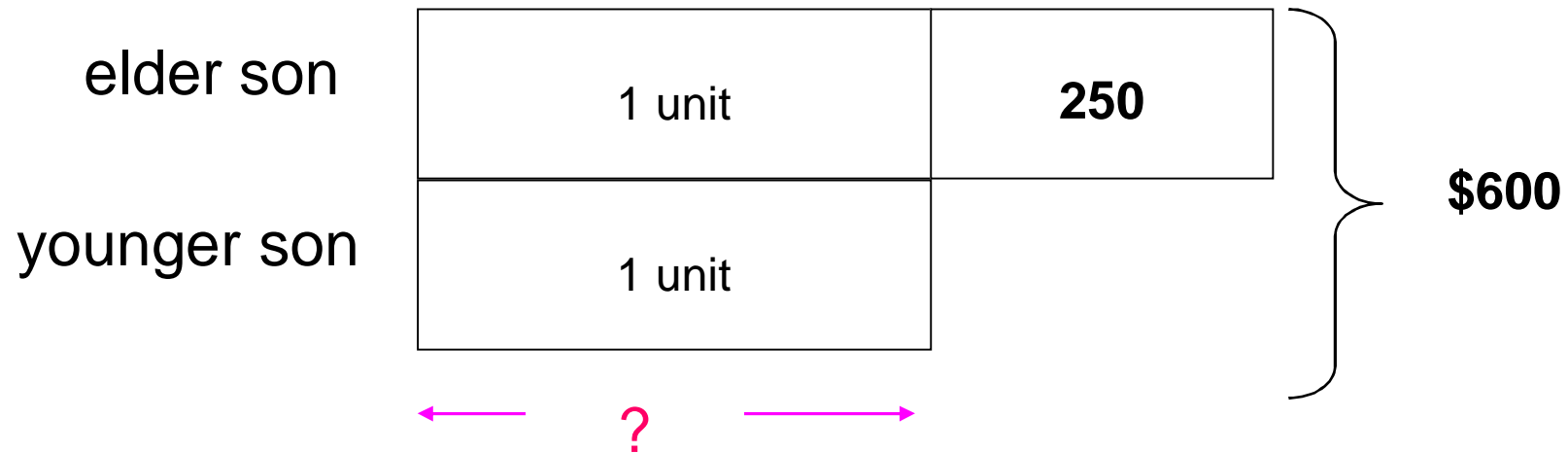
How much more? \$250.

How much was given altogether? \$600

What are we to find? Younger son's share.



More than/ Less than



$$\begin{aligned} 2 \text{ units} & \quad \dashrightarrow \quad \$600 - \$250 \\ & \quad \quad \quad = \$350 \end{aligned}$$

$$\begin{aligned} \text{younger son, 1 unit} & \quad \dashrightarrow \quad \$350 \div 2 \\ & \quad \quad \quad = \$175 \end{aligned}$$



More than/ Less than

1. Imran and Ashley had 184 stamps. Imran had 32 stamps more than Ashley. How many stamps did Ashley have?

Who has more stamps? **Imran.**

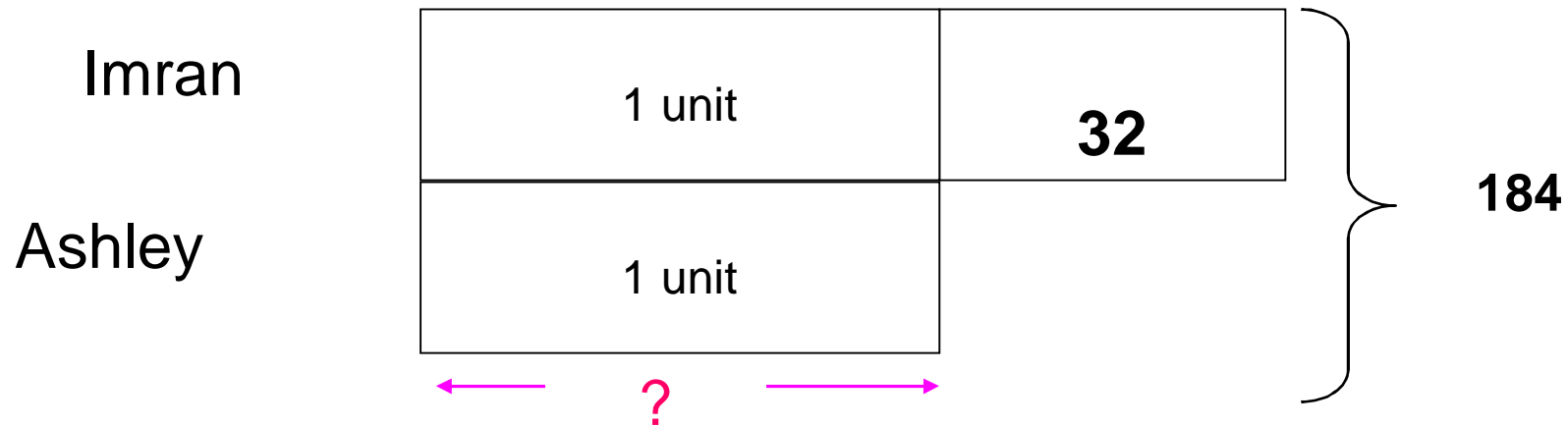
How many more? **32**

How many stamps do they have altogether? **184**

What are we to find? **Number of Ashley's stamps.**

More than/ Less than

1. Imran and Ashley had 184 stamps. Imran had 32 stamps more than Ashley. How many stamps did Ashley have?



$$2 \text{ units} \quad \dashrightarrow \quad 184 - 32 \\ = 152$$

$$\text{Ashley, 1 unit} \quad \dashrightarrow \quad 152 \div 2 \\ = 76$$



More than/ Less than (Multiple Individuals)





More than/ Less than (Multiple Individuals)

Mary, Calvin and Jenny share 224 marbles. Given that Mary has 24 more marbles than Jenny and Calvin had 35 more marbles than Mary, how many marbles does Mary have?



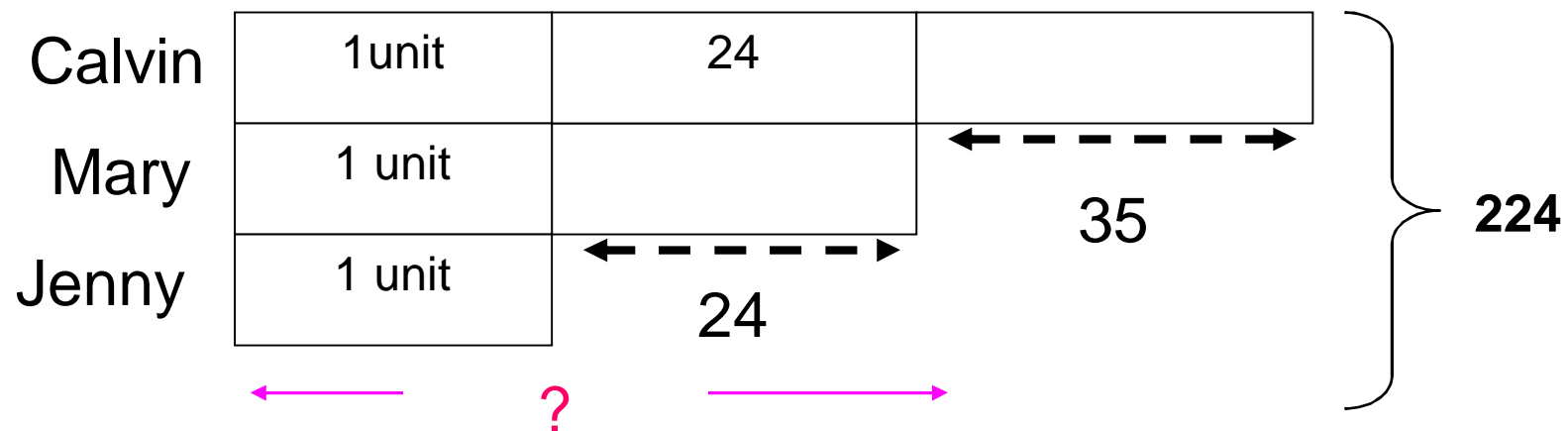
More than/ Less than (Multiple Individuals)

Mary, Calvin and Jenny share 224 marbles. Given that Mary has 24 more marbles than Jenny and Calvin had 35 more marbles than Mary, how many marbles does Mary have?

- How many people are mentioned? 3
- Who has more marbles than Jenny? Mary.
- How many more? 24
- Who has more marbles than Mary? Calvin.
- How many more? 35.
- How many marbles are there altogether? 224
- What are we to find? Number of marbles Mary has.

More than/ Less than (Multiple Individuals)

Mary, Calvin and Jenny share 224 marbles. Given that Mary has 24 more marbles than Jenny and Calvin had 35 more marbles than Mary, how many marbles does Mary have?



$$3 \text{ units} \quad \text{---} \rightarrow \quad 224 - 35 - 24 - 24$$

$$= 141$$

$$1 \text{ unit} \quad \text{---} \rightarrow \quad 141 \div 3$$

$$= 47$$

$$\text{Mary} \quad \text{---} \rightarrow \quad 47 + 24 = 71$$



More than/ Less than (Multiple Individuals)

1. Three boys shared a total of 250 stamps. John had 56 more stamps than Bryan and Bryan had 67 stamps more than Lucas. How many stamps did Bryan have?



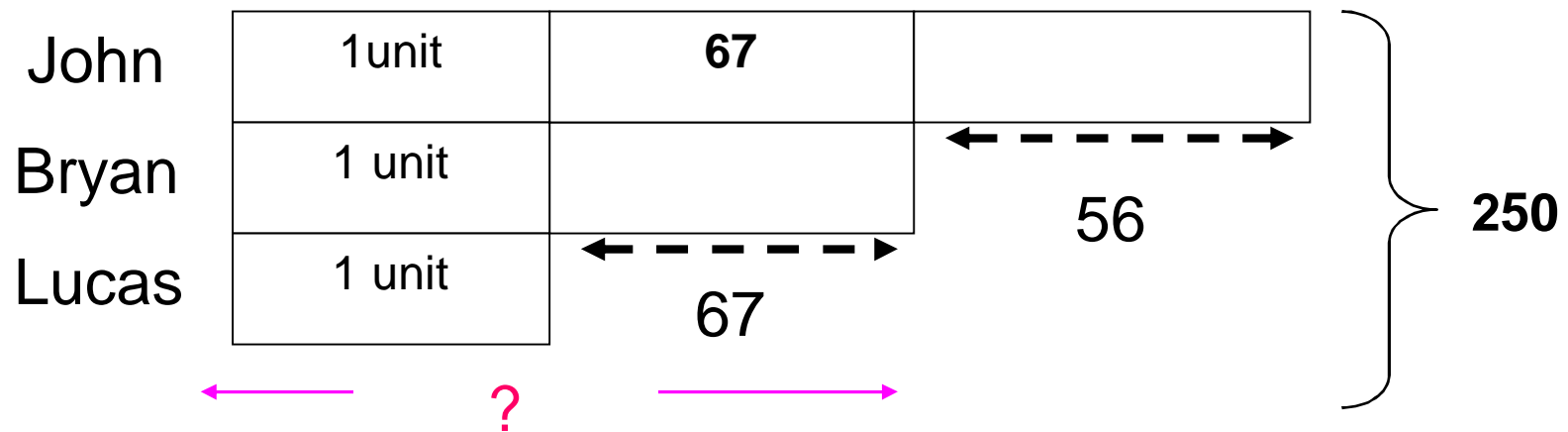
More than/ Less than (Multiple Individuals)

1. Three boys shared a total of 250 stamps. John had 56 more stamps than Bryan and Bryan had 67 stamps than Lucas. How many stamps did Bryan have?

- How many people are mentioned? 3
- Who has more stamps than Bryan? John.
- How many more? 56
- Who has more stamps than Lucas? Bryan
- How many more? 67.
- How many stamps are there altogether? 250.
- What are we to find out? Number of stamps Bryan has.

More than/ Less than (Multiple Individuals)

1. Three boys shared a total of 250 stamps. John had 56 more stamps than Bryan and Bryan had 67 stamps than Lucas. How many stamps did Bryan have?



$$3 \text{ units} \quad \text{---} \rightarrow 250 - 56 - 67 - 67$$

$$= 60$$

$$1 \text{ unit} \quad \text{---} \rightarrow 60 \div 3$$

$$= 20$$

$$\text{Bryan} \quad \text{---} \rightarrow 20 + 67$$

$$= 87$$

More than/Less than

✓ How do I know it is a more than/less than question?

- By the key phrase “more than”, “less than”

✓ What should be done?

- Draw model

