MATHEMATICS WORKSHOP FOR PARENTS (PRIMARY 1 AND 2)

5 March 2021

AIMS OF WORKSHOP

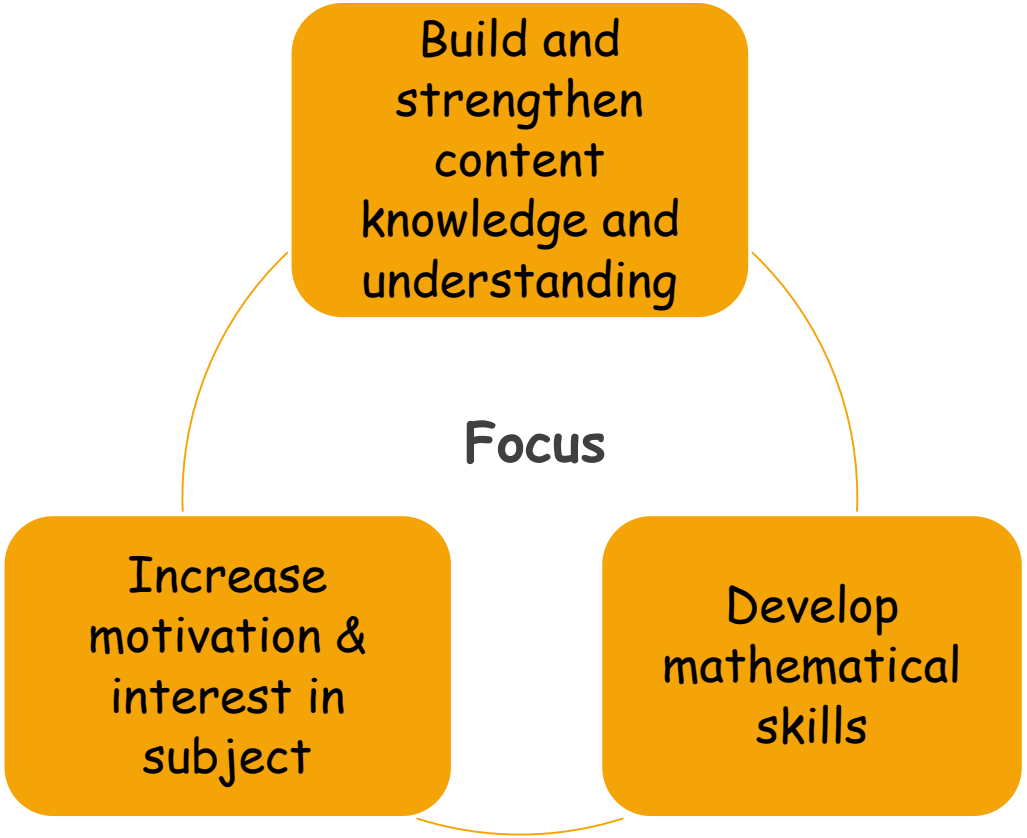
(1) Assessment Structure

(2) Basic Understanding of the Model Method

(3) Proper Presentation of Mathematical Solutions

It’s not about learning so that I can teach my child

TEACHING AND LEARNING



Teaching Approaches

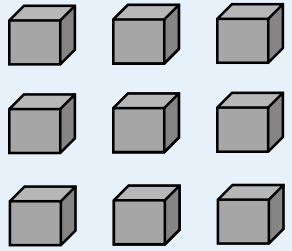
Concrete-Pictorial-Abstract (CPA)

Gradual Release Responsibility (GRR)

Problem Solving

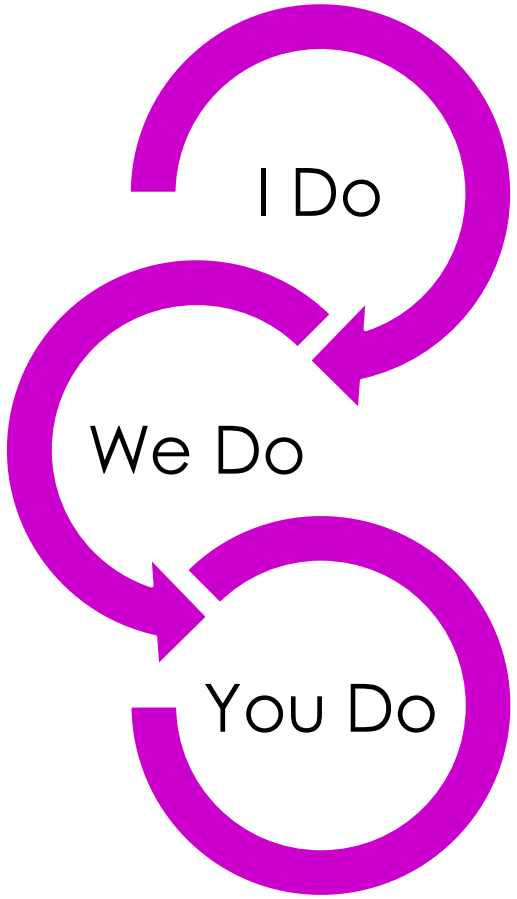
Teaching approaches

Concrete **P**ictorial **A**bstract (**CPA**)

	Characteristics	Example
Concrete	Use of manipulatives, measuring tools or objects	 Count using objects
Pictorial	Use of drawings, diagrams, charts or graphs	Count using diagrams 
Abstract	Use of abstract representations such as numbers and letters	Write the number statement **3 + 5 = 8**

Teaching approaches

Gradual Release Responsibility (GRR)



Teacher Demonstrates

Teacher/Students Do Together

Students Try on Their Own

TEACHING AND LEARNING

P1 – P2

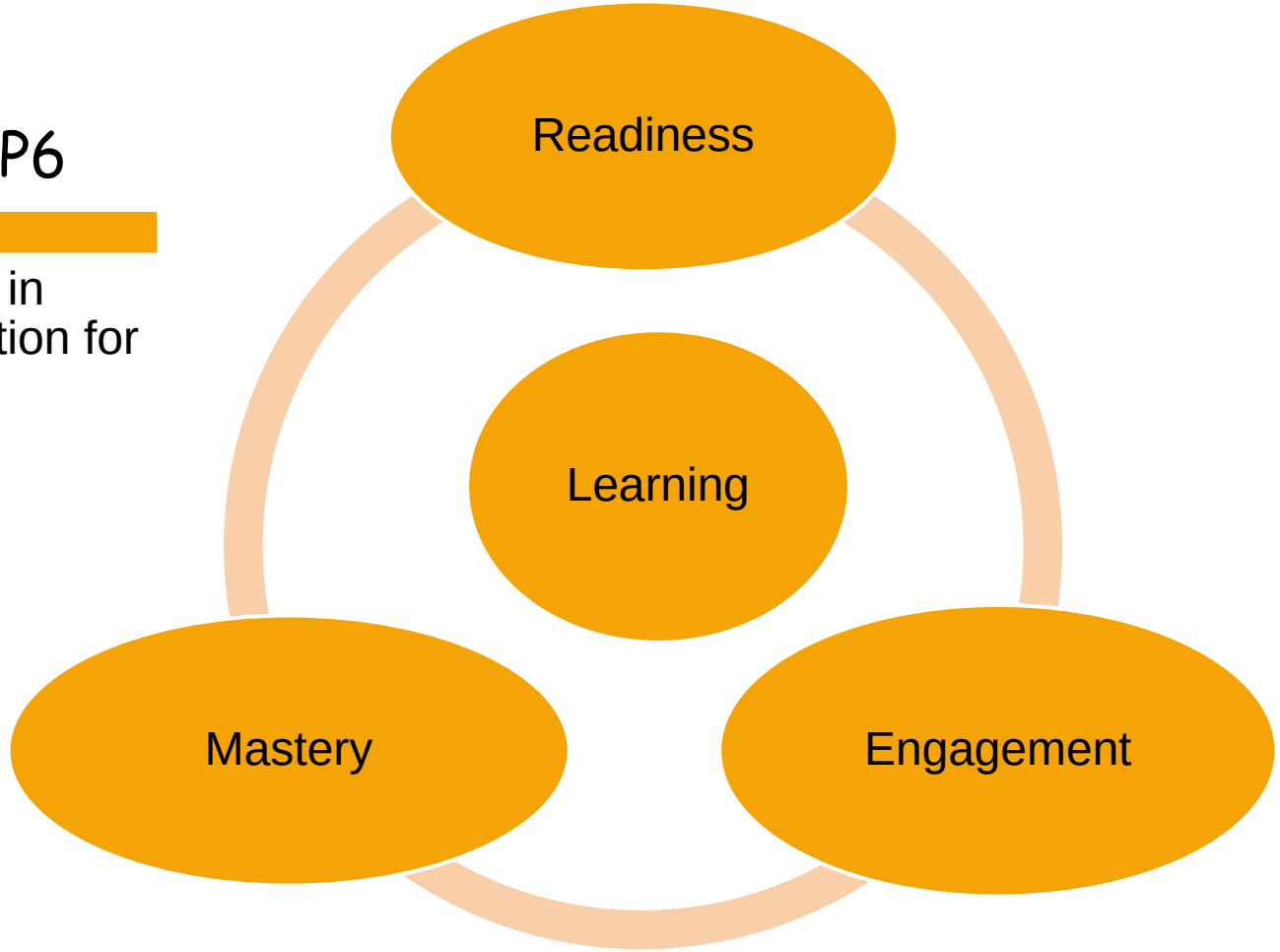
Building on Foundation in Numeracy

P3 – P4

Leverage on Strengths and Work on Weaknesses

P5 – P6

Mastery in Preparation for PSLE

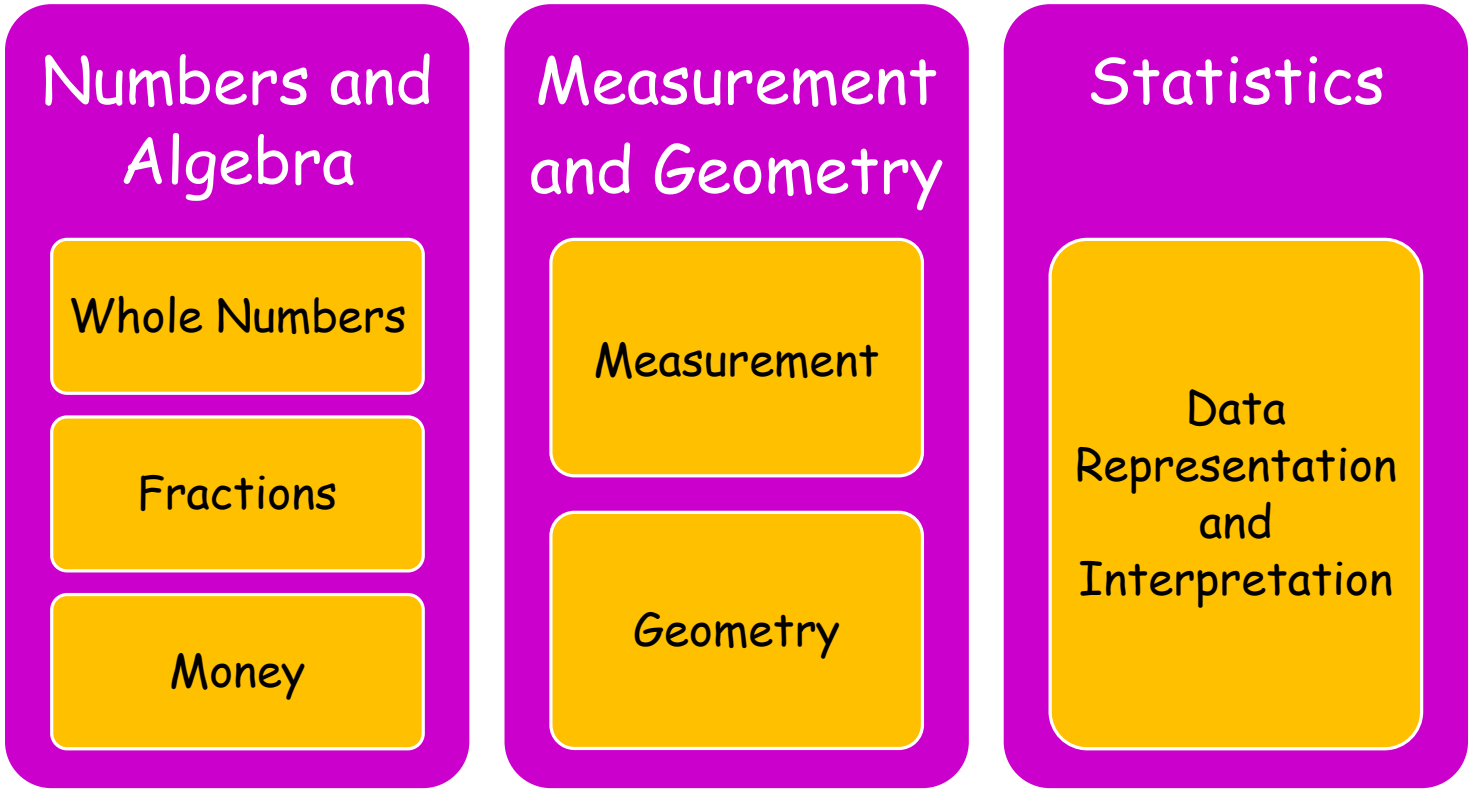


Curricula Goal

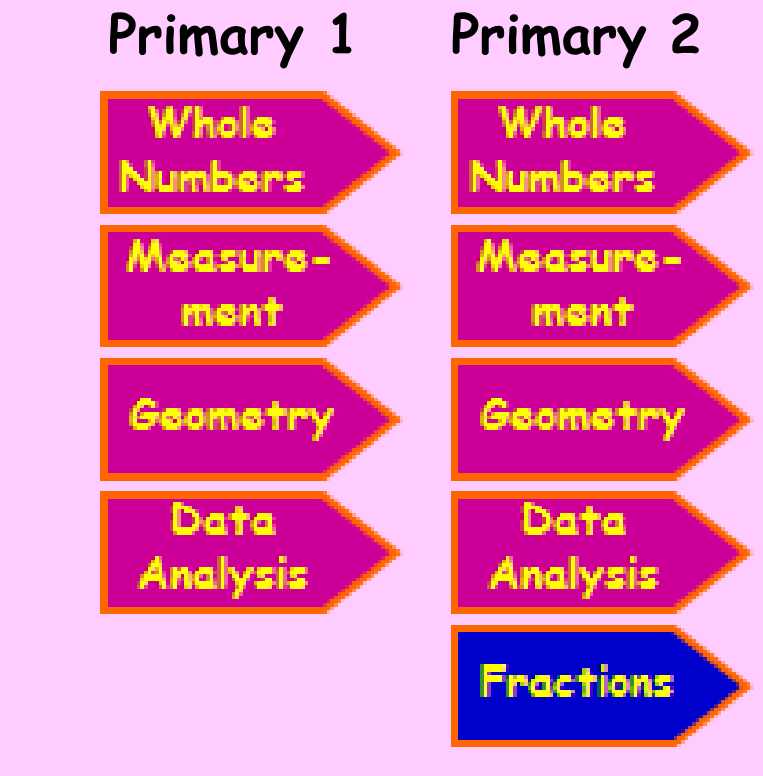
Competent Problem-Solvers

CURRICULUM

Content Strands – Spiral Curriculum



CURRICULUM



Problem Solving - Heuristic skills

P1	P2
Act It Out	Act It Out
Draw a Diagram	Draw a Diagram
Make a List	Make a List
	Look for Patterns
	Work Backwards

Purpose of Assessment

Assessment assesses the extent to which students have attained and achieved the learning outcomes specified in the Mathematics syllabus.

Purpose of Assessment

The learning outcomes cover mathematical concepts, skills and processes in the syllabus.

The paper also assess the learning outcomes from the *previous years* that support current learning.

ASSESSMENT

ASSESSMENT ITEM TYPES

Multiple Choice Questions (MCQ)	• Four options are provided of which only one is correct • For each question, a student chooses the correct answer and shade in the **OAS**.
Short Answer Questions (SAQ)	• For each question, a student writes his answer in the space provided. • For questions which require units, give answers in the units stated. • Working steps are optional but where applicable, a method mark may be awarded for correct working if the answer is wrong.
Long Answer Questions (LAQ)	• Workings, equations and statements are to be shown • Method marks are awarded for critical steps of workings

ASSESSMENT

Primary 1 and 2 Assessment Structure

- No weighted assessment in P1 and P2
- Focus on formative assessment
  - Authentic Learning
    - Lesson-based
    - Performance Tasks, Learning Experiences
    - Topical / Learning Reviews (Progressive - check students' mastery of concepts and skills)
- Assessment information to better support learning needs and close gaps

TERM 1	TERM 2	TERM 3	TERM 4
Topical Reviews	Topical Reviews	Topical Reviews	Topical Reviews
Learning Review (only for P2)	Learning Review	Learning Review	Learning Review

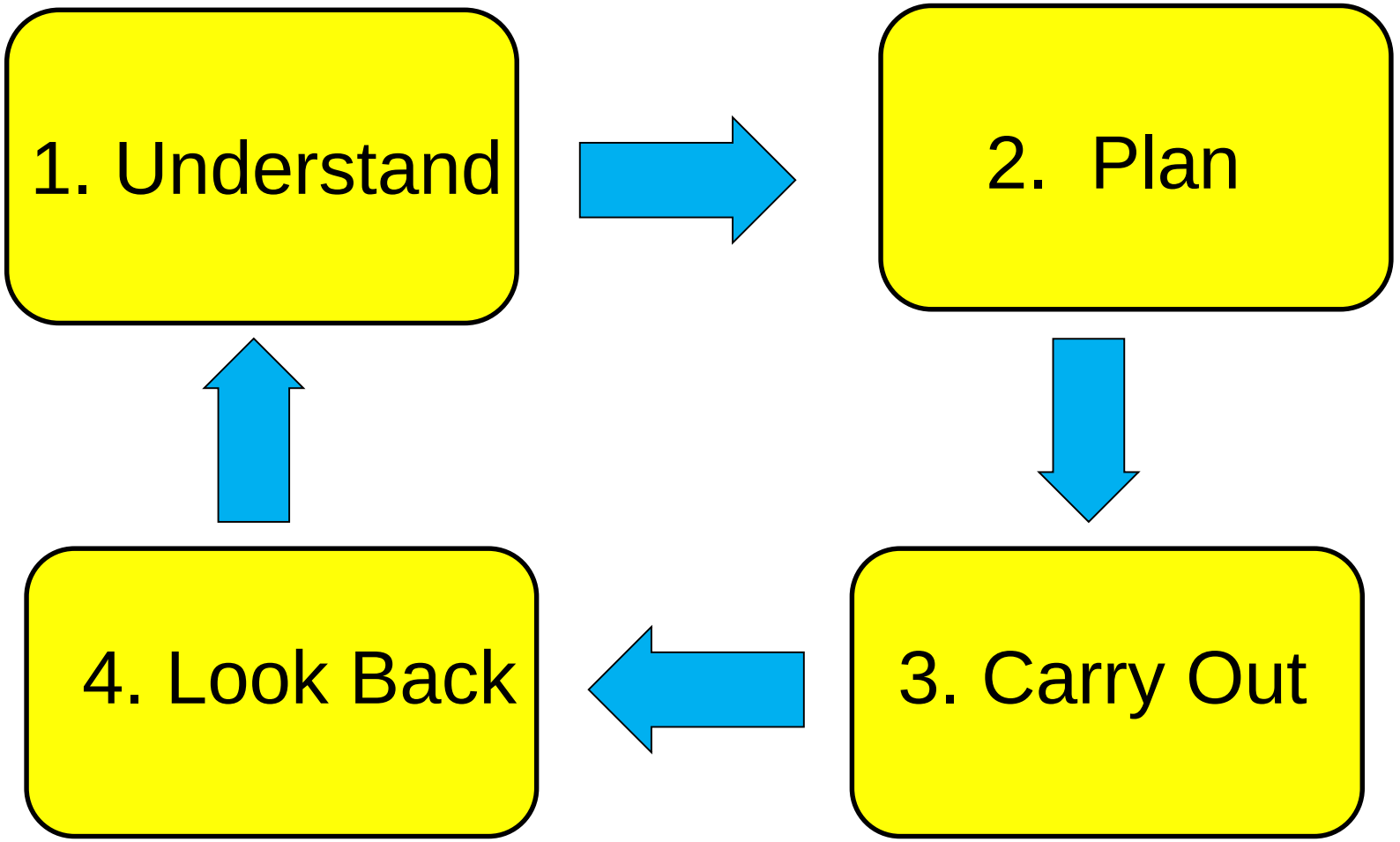
Learning Outcomes for P1

- Understand numbers up to hundred.
- Understand addition and subtraction.
- Add and subtract numbers
- Identify, name, describe and sort shapes
- Measure and compare lengths of objects.
- Understand multiplication and division
- Tell time to 5 minutes
- Read and interpret picture graphs

Learning Outcomes for P2

- Understand numbers up to thousand
- Solve mathematical problems involving addition and subtraction
- Multiply and divide numbers within multiplication tables
- Compare and order objects by length, mass or volume
- Understand fractions
- Read and interpret picture graphs with scales
- Identify, name, describe and sort shapes and objects
- Tell time to 5 minutes

POLYA'S 4 STEPS MATHEMATICAL PROBLEM SOLVING APPROACH



Polya's 4 step Problem Solving Model:

1.Understand the Problem:

- ❑ Read and understand the problem by identifying key information and the information that needs to be found.
- ❑ Some techniques for understanding the problem can be:
  - Retell the story
  - I know…. (underline, circle)
  - I want to find…. (?)

2. Plan a Solution (Make a plan)

- Devise a plan by determining the concepts, methods, strategies or heuristics

  Eg: Model Drawing, Other heuristic strategies.

3. Carry Out the Plan

- ❑ Solve the problem by writing the equation and change strategies if the plan does not work.

4. Look Back

- ❑ Check the answers
  - → Reasonable?
  - → Any other alternative way(s)?

Problem Solving - Heuristic skills

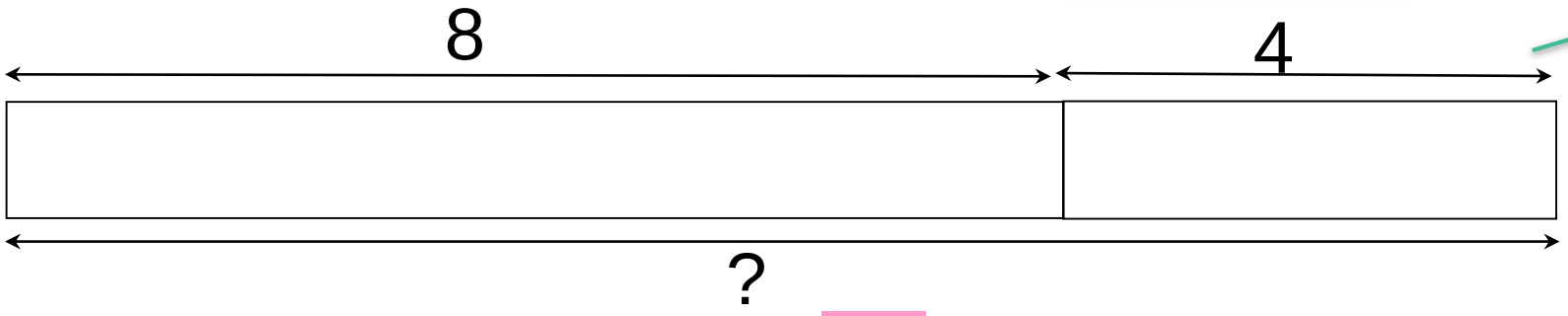
P1	P2
Act It Out	Act It Out
Draw a Diagram	Draw a Diagram
Make a List	Make a List
	Look for Patterns
	Work Backwards

Part-Whole Model

Mary has 8 sweets.

Jane has 4 sweets.

How many sweets do they have altogether?



Model

8 + 4 = 12

Number Equation

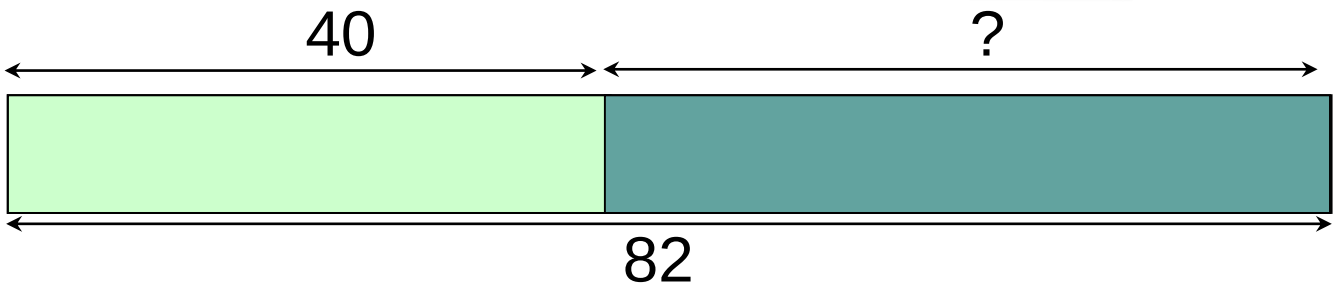
They have 12 sweets altogether.

Answer Statement

Part-Whole Model

Mrs Tan had 82 apples.
She sold 40 apples in the morning.
How many apples had she left ?

Model



82 - 40 = 42

Number Equation

Mrs Tan had 42 apples left.

Answer Statement

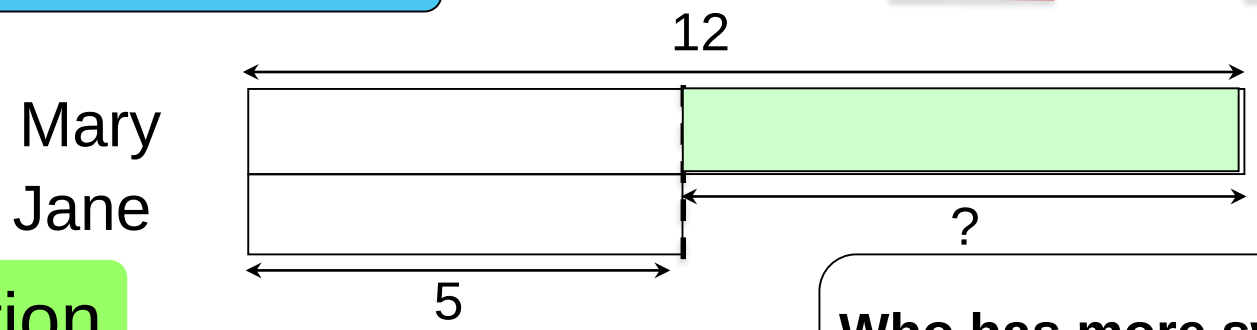
Comparison Model

Mary has 12 sweets.
Jane has 5 sweets.

Comparing

How many more sweets does Mary have than Jane?

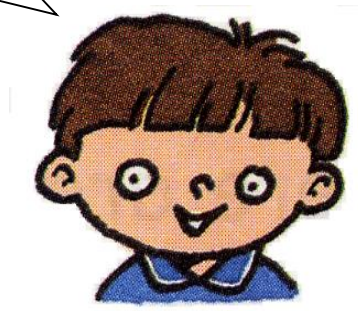
Model



Number Equation

12 - 5 = 7

Who has more sweets?
Which sentence tells us so?

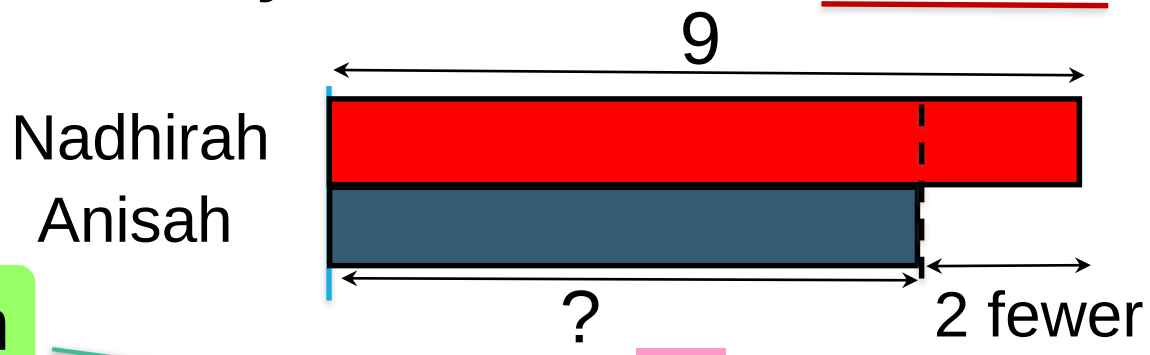


Mary has 7 more sweets.

Answer Statement

Nadhirah has 9 cookies.
Anisah has 2 fewer cookies than Nadhirah.
How many cookies does Anisah have?

Model



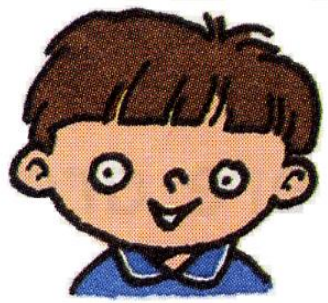
Number Equation

9 - 2 = 7

Anisah has 7 cookies.

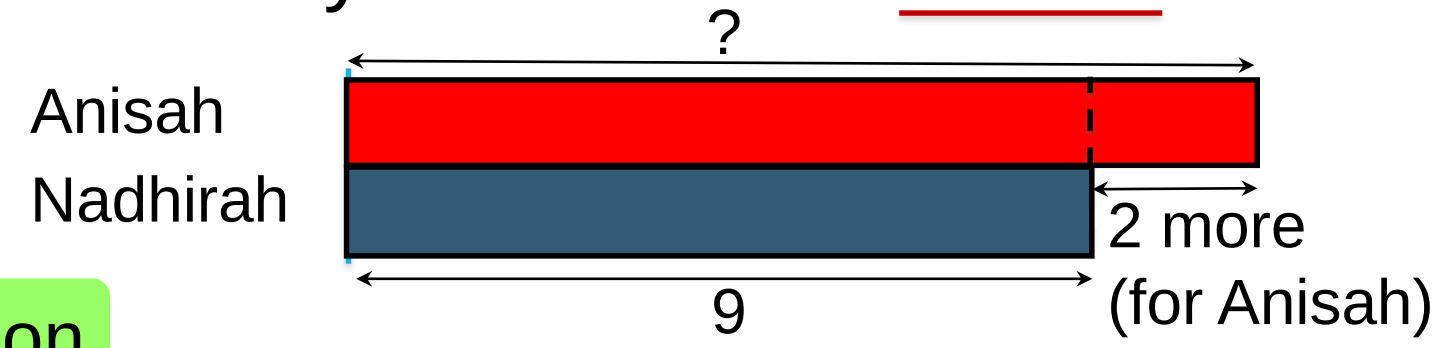
Answer Statement

Who has more cookies?
Which sentence tells us so?



Nadhirah has 9 cookies.
She has 2 fewer cookies than Anisah.
How many cookies does Anisah have?

Model



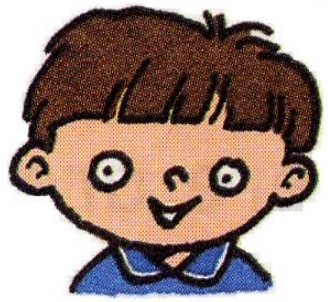
Number Equation

9 + 2 = 11

Anisah has 11 cookies.

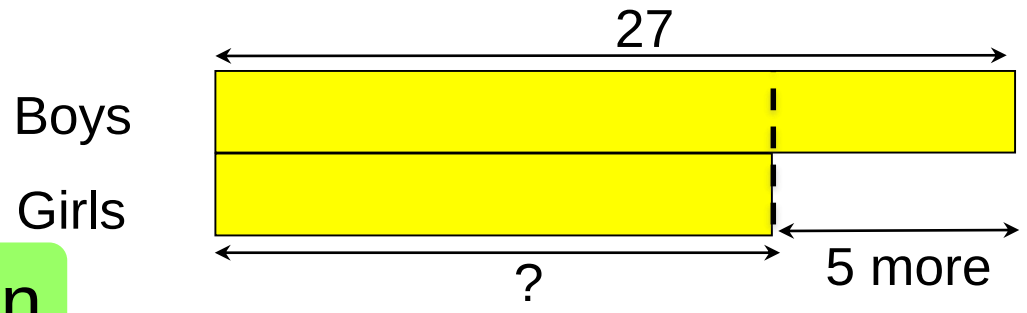
Answer Statement

Who has more cookies?
Which sentence tells us so?



There are 27 boys at a party.
There are 5 more boys than girls at the party.
How many girls are there?

Model



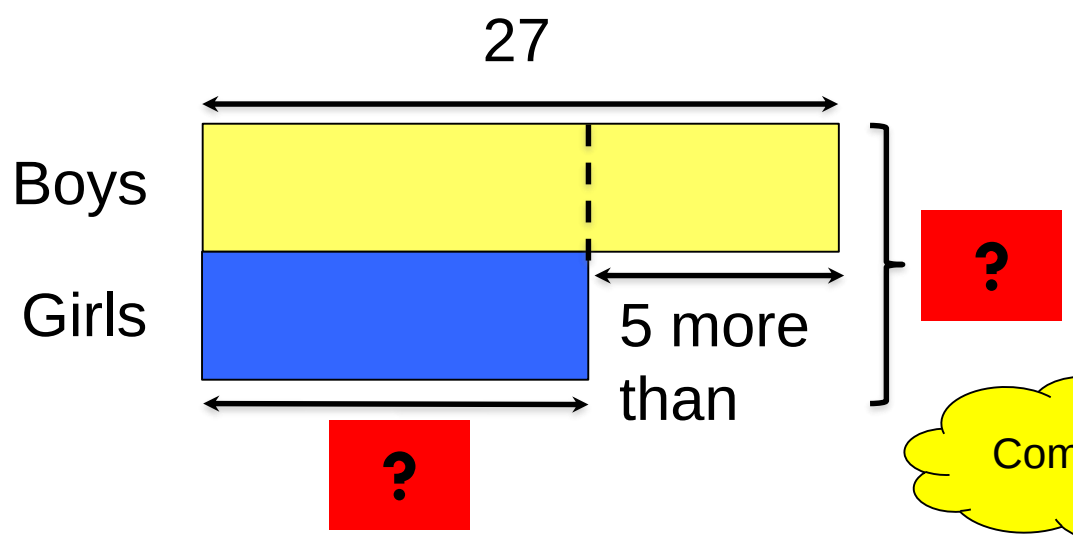
Number Equation

27 - 5 = 22

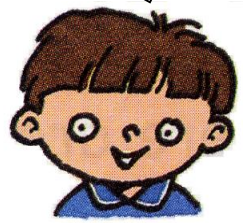
Answer Statement

There are 22 girls.

Part-Whole and Comparison Model



Are there more boys or girls?
What does children mean?
Are there any missing information I need to find?

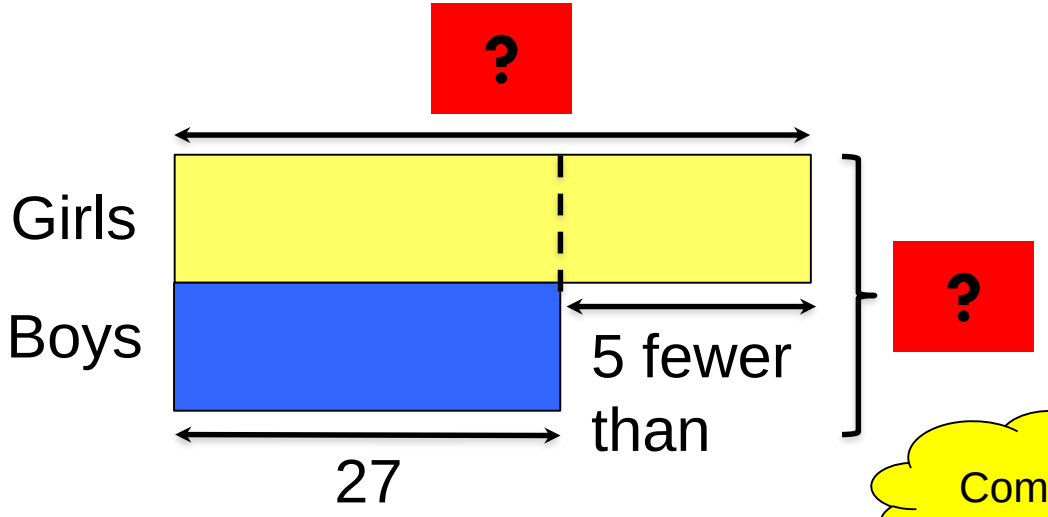


Comparing

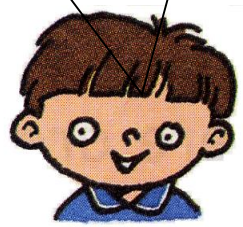
There are 27 boys at a party.
There are 5 more boys than girls at the party.
How many children are there at the party?

Boys and girls

Part-Whole and Comparison Model



Are there more boys or girls?
What does children mean?
Are there any missing information I need to find?



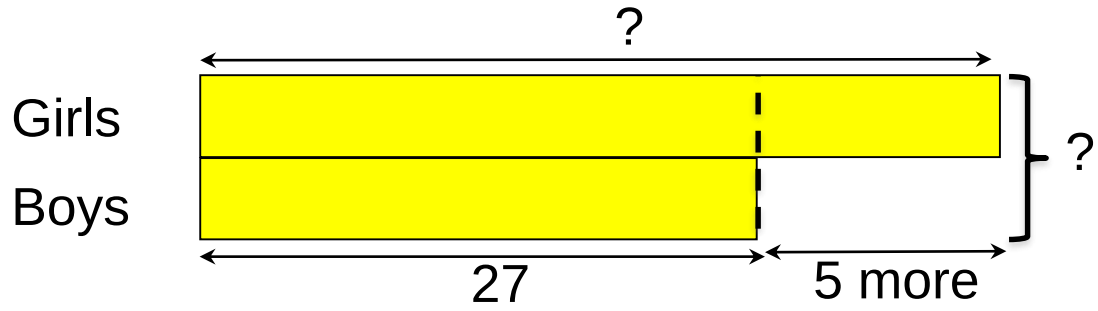
Comparing

There are 27 boys at a party.
There are 5 fewer boys than girls at the party.
How many children are there at the party?

Boys and girls

There are 27 boys at a party.
There are 5 more girls than boys at the party.
How many children are there?

Model



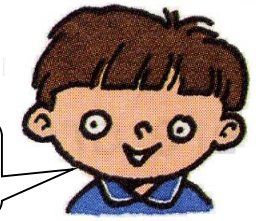
Number Equation

27 + 5 = 32

27 + 32 = 59

There are 59 children.

Answer Statement



Are there more boys or girls?

Let's Practise (1)

PRACTICE QUESTIONS

1) Olivia baked 19 muffins for her birthday party.

15 muffins were chocolate muffins and the rest were strawberry muffins.

How many strawberry muffins did Olivia bake?

2) Jack had 780 beads.

After giving 176 beads away, he had 274 beads more than Catherine.

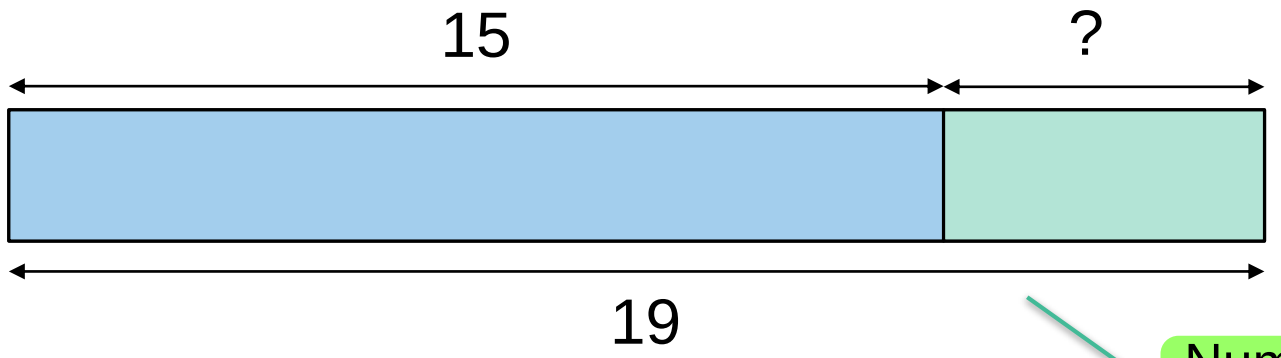
How many beads did Catherine have?

SOLUTION TO PRACTICE QUESTION (1)

Olivia baked 19 muffins for her birthday party.

15 muffins were chocolate muffins and the rest were strawberry muffins.

How many strawberry muffins did Olivia bake?



Model

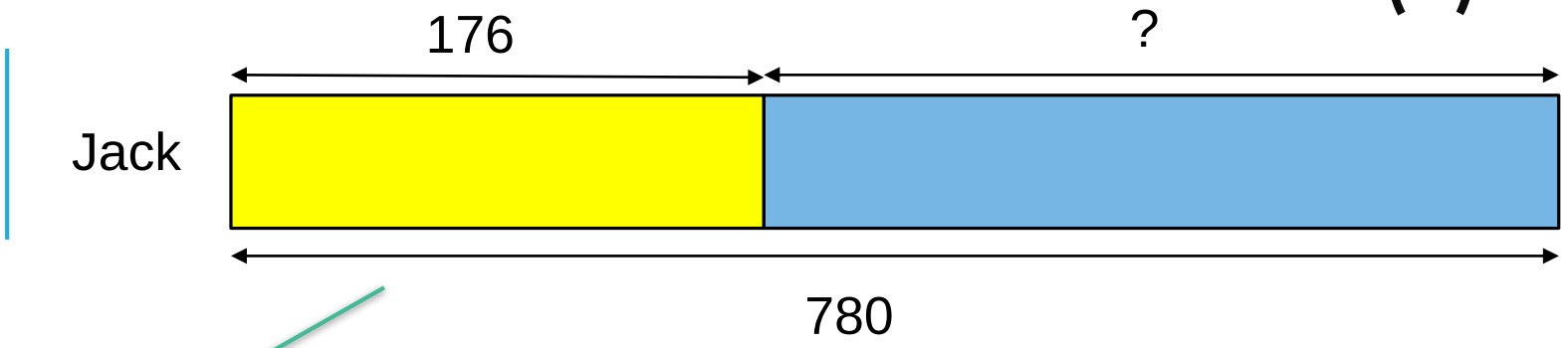
Number Equation

19 – 15 = 4

Olivia baked 4 strawberry muffins.

Answer Statement

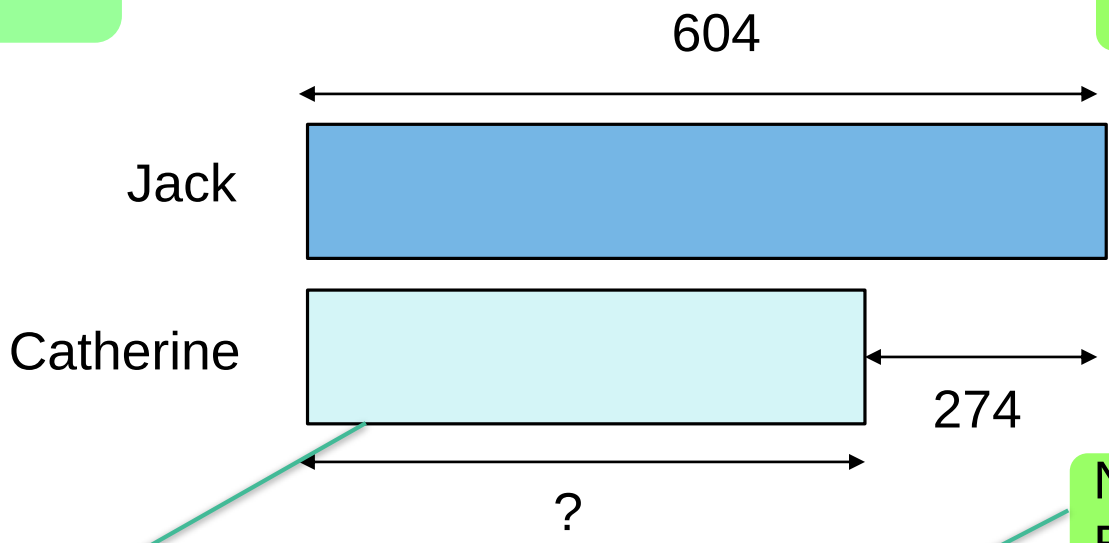
SOLUTION TO PRACTICE QUESTION (2)



Model

780 – 176 = 604

Number Equation



Model

604 – 274 = 330

Number Equation

Catherine had 330 beads.

Answer Statement

MATHEMATICS PROGRAMME

Presentation of Mathematical Solutions

(1) Clear Working

- Intermediate Statements (where necessary)
- Number Equations

(2) Statements

- Final Answer Statements

(3) Units (when necessary)

- Standard Units & Non-standard Units

PRESENTATION

Beware

- Mathematically incorrect workings/statements

  Some examples

  - Use of wrong units or wrong use of equal signs
    - 20 - 5 = 15 + 3 = 18 x 2 = 36
    - 1.5 = 90
    - 3 apples = $1.50

3 apples = $1.50 ×
Cost of 3 apples = $1.50 ✓

    - Apples : Oranges = 5 : 3

Apples : Oranges = 5 : 3 ×
Number of Apples: Number of Oranges = 5: 3 ✓

  - Missing units
    - 5000 = 5 km

PRESENTATION

Avoid the use of arrows and long dash

- For example
  - Amount of money → $40 - $12 = $28
  - 7 units → 28 boys
  - 7 units -------- 28 boys

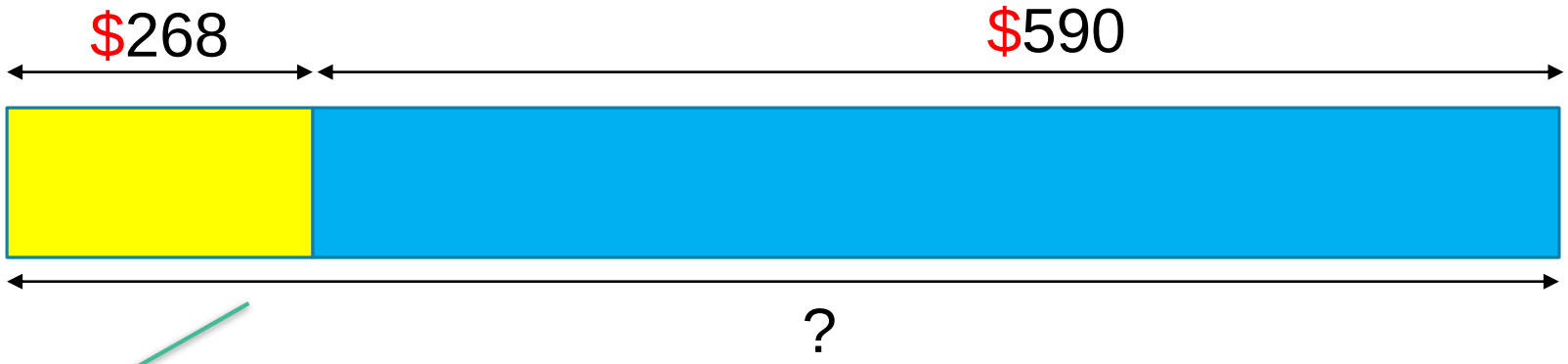
Proper use of labels. Avoid the use of short forms.

- For example
  - B, G for Boys, Girls (Spell out in full)

Example 1

A radio cost $268 and an iron cost $590.

How much did the radio and the iron cost altogether?



Model

Number Equation

268 + 590 = 858

The radio and the iron cost $858 altogether.

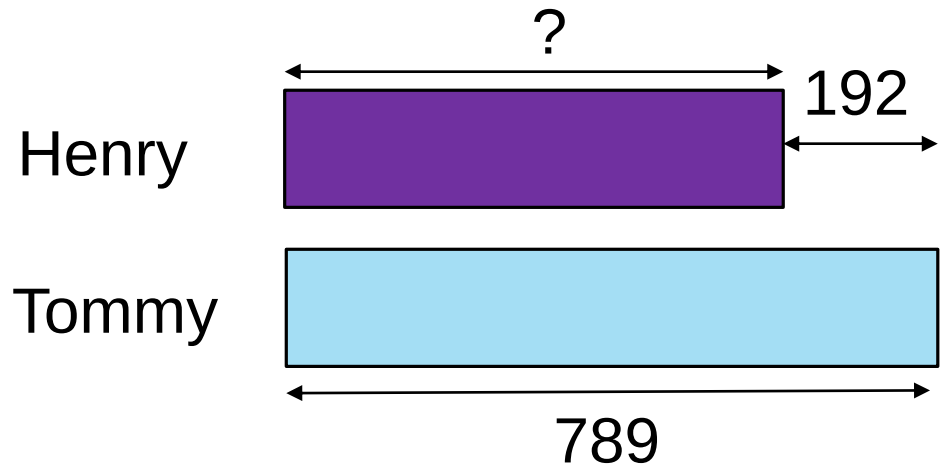
Answer Statement

Example 2

Tommy collected 789 stickers.

Henry collected 192 stickers fewer than Tommy.

How many stickers did Henry collect?



Model

$$789 - 192 = 597$$

Number Equation

Henry collected 597 stickers.

Answer Statement

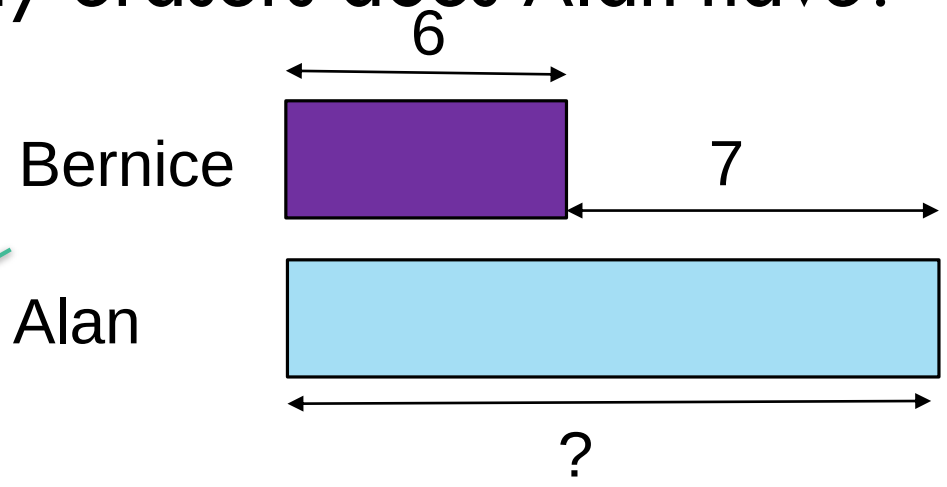
Let's Practise (2)

SOLUTION TO PRACTICE QUESTION (1)

Bernice had 6 erasers.

She has 7 fewer erasers than Alan.

How many erasers does Alan have?



Model

$6 + 7 = 13$

Number Equation

Alan has 13 erasers.

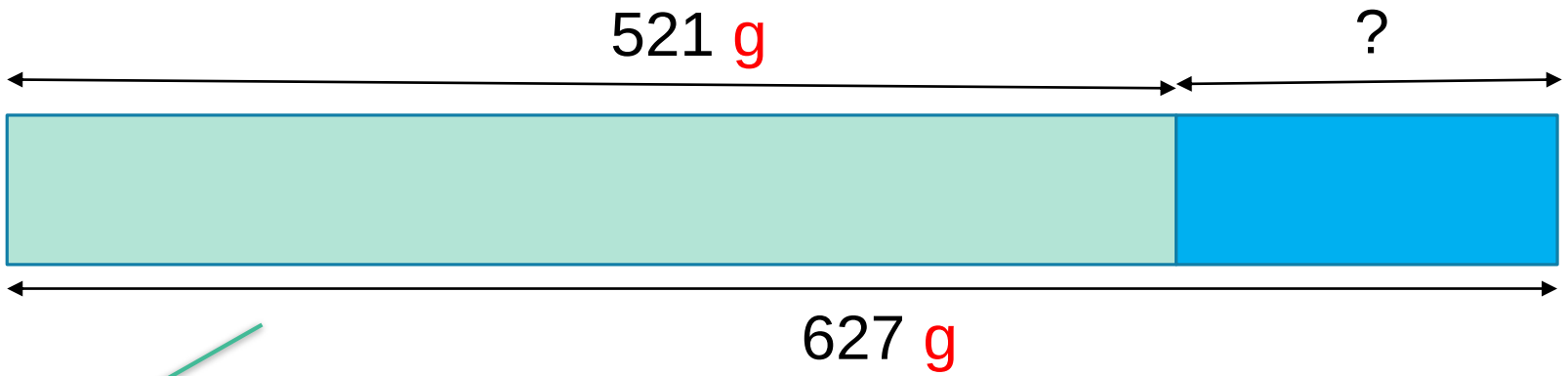
Answer Statement

SOLUTION TO PRACTICE QUESTION 2

The mass of a bag of pears is 627 g.

The mass of the pears without the bag is 521 g.

What is the mass of the empty bag?



Model

627 g – 521 g = 106 g

Number Equation

The mass of the bag is 106 g.

Answer Statement