P3/P4 Math
Parents Workshop

5 July 2024

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Slides will be uploaded onto the school website

Contents

Objectives

To use model drawing as a problem-solving strategy in solving word problems.

To understand common difficulties when doing word problems and elicit your child's reasoning and inference skills through questioning prompts.

2021 Primary Mathematics Syllabus

Primary Mathematics Curriculum

Primary education is a stage where students acquire important basic numeracy as well as develop logical reasoning and problem-solving skills that are required in many disciplines. It lays the foundation for the learning of mathematics for all students, equipping them with a tool for everyday life and the knowledge and skills for learning mathematics at the next level. It is also a stage where students' confidence and interest in the subject are built and their attitudes towards the discipline are shaped.

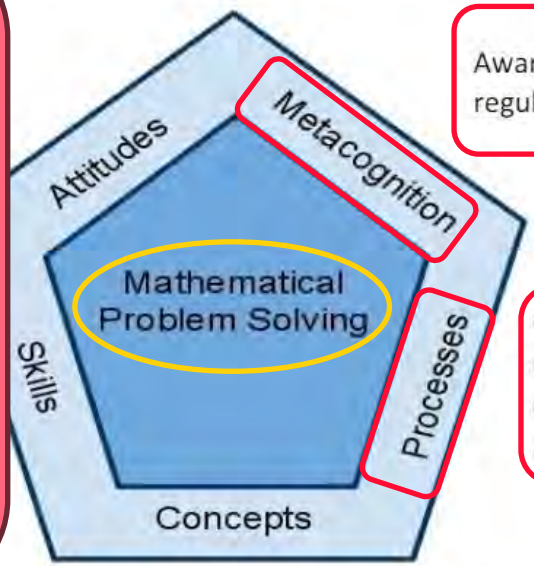
For these reasons, the Primary Mathematics Syllabus aims to enable all students to:

- acquire mathematical concepts and skills for everyday use and continuous learning in mathematics;
- develop thinking, reasoning, communication, application and metacognitive skills through a mathematical approach to problem solving; and
- build confidence and foster interest in mathematics.

Mathematics Curriculum Framework

Problem Solving

Refers to mathematical tasks that have the potential to provide intellectual challenges for enhancing students' mathematical understanding and development (NCTM, 2010).



Awareness, monitoring and regulation of thought processes

Competencies in abstracting and reasoning, representing and communicating, applying and modelling

Understanding of the properties and relationships, operations and algorithms

Thinking Aloud With Your Child

Mathematical Reasoning

Refers to the ability to think, understand and form opinions or judgements that are based on facts

Communication

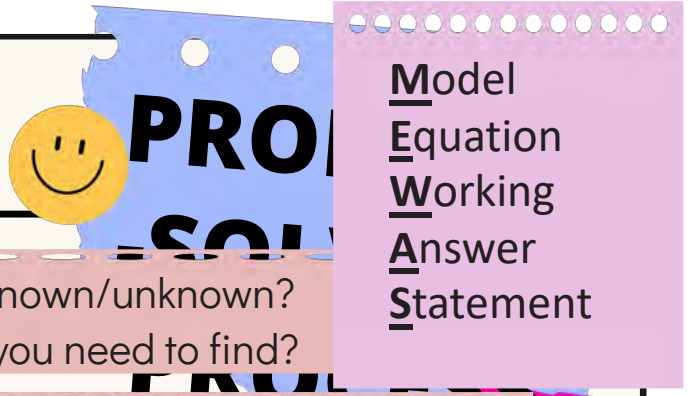
Refers to the ability to use mathematical language to express mathematical ideas and arguments precisely, concisely and logically

Thinking Aloud With Your Child

What changed?
What remains the same?

What does
this mean?
Tell me more...

Students are encouraged to take the R.I.G.H.T action



Read	Topic	What is known/unknown? What do you need to find?
Identify Keywords	Type of Question	Are there any keywords that leads to the type of question?
Get A Plan	Heuristics	Have you seen it before? What strategy would you use?
Have It Done	M.E.W.A.S	Is each step correct? Can you prove that each step is correct?
Triple Check	N.T.U.C	Is the solution reasonable? Can you show that your solution is correct?

Number
Transfer
Units
Calculation

Math Made Visual through Model Drawing

- Draw a bar model to create a pictorial representation of the problem.
- The bar model is based on the known and unknown quantities involved in the problem.
- Provides a visual tool that enables students to determine which operation (×,÷, +, −) to use.

Types of Model Drawing

Part-Whole Model

Shows the various parts that make up a whole

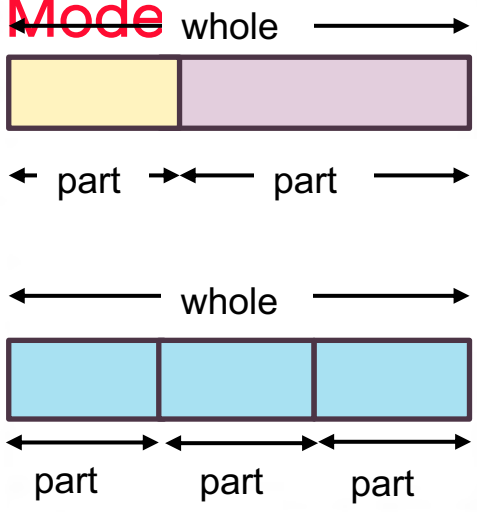
Comparison Model

Shows the relationship between 2 or more quantities when they are compared

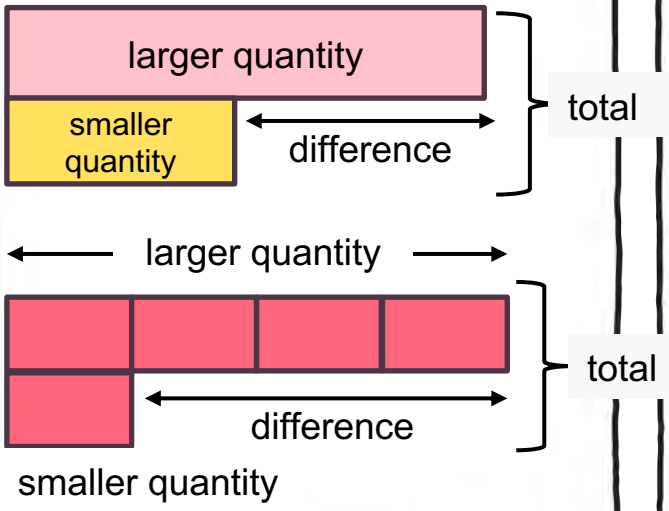
Reference: MOE., (2009). The Singapore Model Method for Learning Mathematics Pp 15 and 76

Types of Model Drawing

Part-Whole Model



Comparison Model



Before-and-After situations

Keywords:
at first, in the end, before, after, beginning, at the start

Reference: MOE., (2009). The Singapore Model Method for Learning Mathematics Pp 15 and 76

Sneak Preview

P3 More than/Less than

P3 As Many Times As

P3 Equal Concept
(at the beginning)
Unchanged Total

P4 Equal Concept
(at the beginning)

P4 Equal Concept
(in the end)

P4 Equal Concept
(in the end)
Unchanged Total

P4 As Many As

P4 Repeated Identity

more

difference

Anna cycled 3500 metres. She cycled 420 metres more than Jason. How many metres did Jason cycle?

less

compare

READ

What is known?

- How far did Anna cycle?
- Who does 'she' refer to?
- Who cycled more?
  How many metres more?
- Then who cycled less?
  How many metres less?

Given:
Anna cycled 3500 m.

Relationship:
Anna cycled more.
Anna cycled 420 m more than Jason.

Jason cycled less.
Jason cycled 420 m less than Anna.

Estimate that Jason's distance to be less than 3500 m

What is unknown?

- Do we know how far Jason cycled?

What do you need to find?

Find:
The distance that Jason cycled

more

difference

Anna cycled 3500 metres. She cycled 420 metres more than Jason. How many metres did Jason cycle?

less

compare

IDENTIFY KEYWORDS

Are there any keywords that leads to the type of question?

The word 'more than' shows this is a 'More than/Less than' type of question.

more

difference

Anna cycled 3500 metres. She cycled 420 metres more than Jason. How many metres did Jason cycle?

less

compare

GET A PLAN

Have you seen it before?
What strategy would you use?

- Would you draw a comparison model or part-whole model?
- What makes you say that?

Draw a comparison model.

- Who has a longer bar?
- Then who has a shorter bar?

Since Anna cycled more than Jason, then Jason cycled less than Anna.

Length of Anna's bar → longer
Length of Jason's bar → shorter
Difference → 420 m

more

difference

Anna cycled 3500 metres. She cycled 420 metres more than Jason. How many metres did Jason cycle?

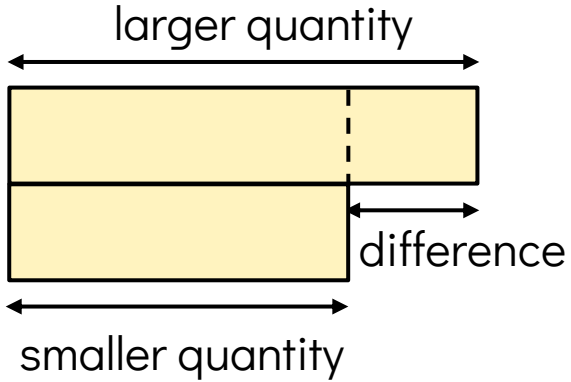
less

compare

HAVE IT DONE

Is each step correct?
Can you prove that each step is correct?

Model
Equation
Working
Answer
Statement



more

difference

Anna cycled 3500 metres. She cycled 420 metres more than Jason. How many metres did Jason cycle?

less

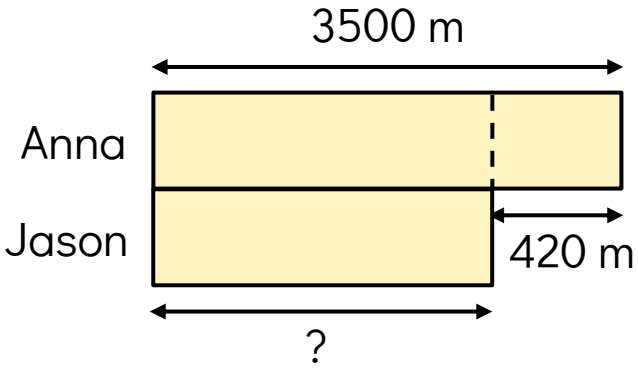
compare

Where will you put the values in the model?

HAVE IT DONE

Is each step correct?
Can you prove that each step is correct?

Model
Equation
Working
Answer
Statement



3500 – 420 = 3080

Jason cycled for 3080 m.

4 10
3500
- 420
3080

Ans: 3080 m

Number
Transfer
Units
Calculation

3500 – 420 = 3080

Jason cycled for 3080 m.

Ans: 3080 m

TRIPLE CHECK

Is the solution reasonable?

Can you show that your solution is correct?

COMMON MISCONCEPTION/DIFFICULTIES

Your child may just 'add' when they see the word 'more than'.

Your child may put the values wrongly at the bar model.

1. Check back on your estimate. Is your answer less than 3500 m?

3080 < 3500 ✓

Work Backwards

2. Using your answer, can you check if Anna cycled 420 m more than Jason?

Since Jason cycled 3080 m,

3500 – 3080 = 420 ✓

3. Since Anna cycled 420 m more, if you add 420 m to 3080 m, will you get 3500 m?

3080 + 420 = 3500 ✓

Raju and Ethan saved a total of $120.
Raju saved 4 times as much money as Ethan.
How much did Ethan save?

Without annotating and drawing model, students may do the following.

4 units = 120

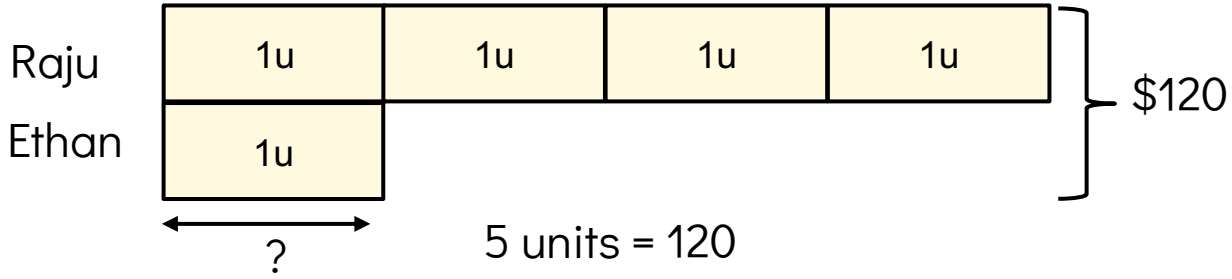
1 unit = 120 ÷ 4
= 30 ✗

Raju and Ethan saved a total of $120.

4u 1u

Raju saved 4 times as much money as Ethan.

How much did Ethan save?



5 units = 120

1 unit = 120 ÷ 5
= 24

Ethan saved $24.

Ans: $24

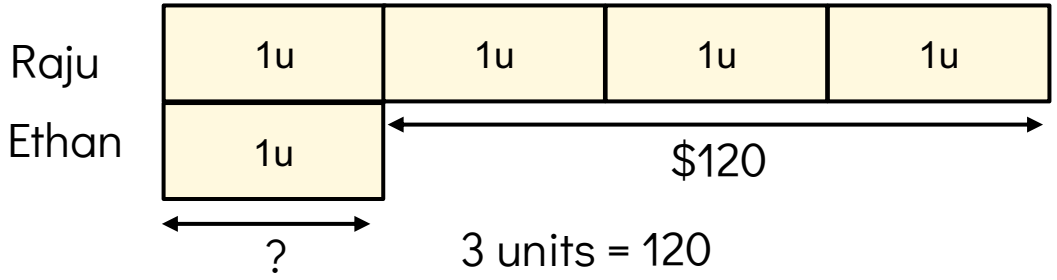
difference

Raju saved $120 more than Ethan.

4u 1u

Raju saved 4 times as much money as Ethan.

How much did Ethan save?



3 units = 120

1 unit = 120 ÷ 3
= 40

Ethan saved $40.

Ans: $40

Qn 3

P3 Equal Concept (at the beginning)

Lisa and Ivan had an equal (same) number of stickers at first (before). After (-35) Lisa gave 35 stickers to Ivan (+35), how many more (difference) stickers did Ivan have than Lisa? (in the end)

READ

What is known?

- What does 'equal' mean?
- What changed?
- After Lisa gave 35 stickers to Ivan, would she have more or less stickers now? How about Ivan?

Given:

At first

Equal number → same number of stickers

The amount of stickers Lisa had

The amount of stickers Ivan had

Transfer

Lisa gave 35 stickers to Ivan.

Lisa would have 35 less than what she had at first.

Ivan would have 35 more than what he had at first.

Qn 3

P3 Equal Concept (at the beginning)

same

Lisa and Ivan had an equal number of stickers at first. After Lisa gave 35 stickers to Ivan, how many more stickers did Ivan have than Lisa?

before -35 +35 in the end

difference more less

READ

What is known?

- What remains the same?
- After Lisa gave away, did the total change? Why/why not?

The total number of stickers remains the same.

Total unchanged → Internal Transfer

In the end

Ivan had more stickers than Lisa

same

Lisa and Ivan had an equal number of stickers
before
at first. After Lisa gave 35 stickers to Ivan, how
many more stickers did Ivan have than Lisa?
in the end

difference more less

READ

What is unknown?

Do we know how many stickers each of them have **at first** and **in the end**?

Not given:
Number of stickers each of them have.

What do you need to find?

Find:
Difference in the number of stickers between Lisa and Ivan **in the end**

Qn 3

P3 Equal Concept (at the beginning)

same

Lisa and Ivan had an equal number of stickers at first. After Lisa gave 35 stickers to Ivan, how many more stickers did Ivan have than Lisa?

before

in the end

difference

more

less

IDENTIFY KEYWORDS

Are there any keywords that leads to the type of question?

The keyword 'equal' and 'at first' show this word problem is on 'Equal Concept' → at the beginning.

Total unchanged → Internal Transfer

The keywords 'at first' and 'after' show that this is a 'Before-and-After' situation.

Qn 3

P3 Equal Concept (at the beginning)

same

Lisa and Ivan had an equal number of stickers at first. After Lisa gave 35 stickers to Ivan, how many more stickers did Ivan have than Lisa?

before

in the end

difference

more

less

GET A PLAN

Have you seen it before?
What strategy would you use?

- Which type of model would you draw?

- Since each of them has the same number of stickers at first, how would you represent it in a model?

- After Lisa gave 35 stickers away, how would the model change? Whose bar would be longer in the end?

At first

Draw equal bars (1 unit each)

In the end

Since Lisa gave away the stickers, she would have 35 less (remove 35 from the bar) and Ivan would have 35 more (add 35 to the bar). In the end, the length of Ivan's bar will be longer.

same

Lisa and Ivan had an equal number of stickers at first. After Lisa gave 35 stickers to Ivan, how many more stickers did Ivan have than Lisa?

before

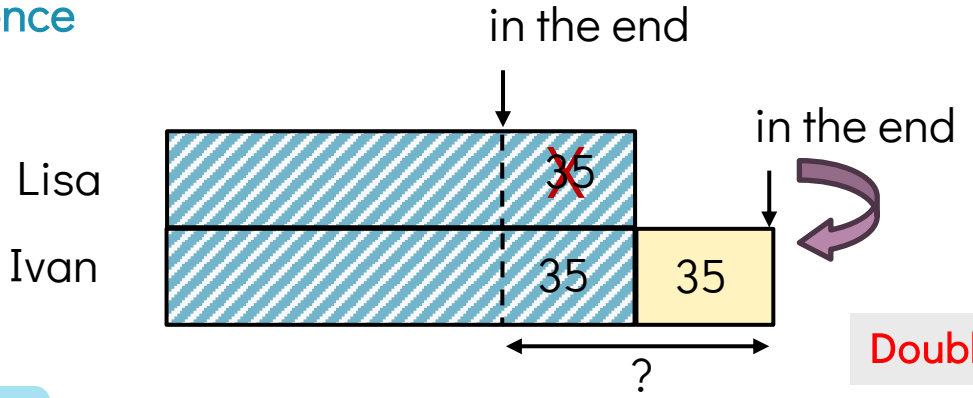
in the end

less

more

difference

HAVE IT DONE



Double effect

Where would you put '35' into the model?

35 + 35 = 70

Ivan had 70 more stickers than Lisa.

Ans: 70

same

Lisa and Ivan had an equal number of stickers at first. After Lisa gave 35 stickers to Ivan, how many more stickers did Ivan have than Lisa?

before

in the end

difference

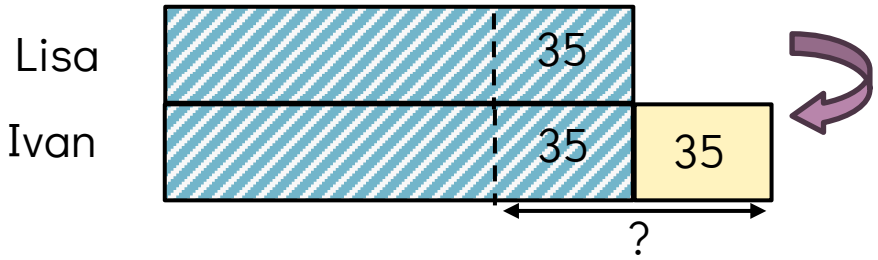
more

less

TRIPLE CHECK

Is the solution reasonable?

Can you show that your solution is correct?



Let's say Lisa and Ivan had 100 stickers each at first, will the difference in the end be 70?

Lisa → 100 – 35 = 65
Ivan → 100 + 35 = 135
Difference → 135 – 65 = 70 ✓

COMMON MISCONCEPTION/DIFFICULTIES

Your child may just assume Ivan has 35 more stickers than Lisa.

Let's compare..

same before

Anna had as many stickers as Xinyi at first.

3u

After Xinyi gave 2460 stickers to her brother, Anna had 3 times as many stickers as Xinyi.

1u

How many stickers did Xinyi have at first?

Reference: P4A Textbook Pg 65

Same at first → Equal Concept

'at first', 'after' → before-and-after

What changed? The amount of stickers Xinyi had

Unitary method

Xinyi gave to her brother (not to Anna) → Total does not remain unchanged

What remains the same? The amount of stickers Anna had

Qn 4

P4 Equal Concept (at the beginning)

Josh and Siti had the same number of pencils at first. After Josh bought another 20 pencils and Siti lost 7 pencils, Josh had twice as many pencils left as Siti. How many pencils did each of them have at first?

+20 -7 2u 1u

READ
What is known?

- What does 'bought another', 'lost', 'twice' mean?

- After Josh bought 20 pencils, would he have more or less pencils now? How about Siti?

Given:
At first
Same number of pencils

Josh bought another 20. He would have 20 more than what he had at first.

Siti lost 7. She would have 7 less than what she had at first.

Qn 4

P4 Equal Concept (at the beginning)

Josh and Siti had the same number of pencils at first. After Josh bought another 20 pencils and Siti lost 7 pencils, Josh had twice as many pencils left as Siti. How many pencils did each of them have at first?

+20 -7 2u in the end 1u

READ

What is known?

What happened in the end?

Given:

In the end

Josh 2u, Siti 1u →

Josh had more pencils than Siti

Qn 4

P4 Equal Concept (at the beginning)

Josh and Siti had the same number of pencils at first. After Josh bought another 20 pencils and Siti lost 7 pencils, Josh had twice as many pencils left as Siti. How many pencils did each of them have at first?

+20 -7 2u in the end 1u

READ

What is unknown?

- Do we know how many pencils each of them have **at first** and **in the end**?

Not given:
Number of pencils each of them have.

What do you need to find?

Find:
Number of pencils each of them have **at first**

Qn 4

P4 Equal Concept (at the beginning)

Josh and Siti had the same number of pencils at first. After Josh bought another 20 pencils and Siti lost 7 pencils, Josh had twice as many pencils left as Siti. How many pencils did each of them have at first?

+20 -7 2u in the end 1u

IDENTIFY KEYWORDS

Are there any keywords that leads to the type of question?

The keywords 'same at first' shows this word problem is on 'Equal Concept' → at the beginning.

The keywords 'at first' and 'after' show that this is a 'Before-and-After' situation.

Qn 4

P4 Equal Concept (at the beginning)

Josh and Siti had the same number of pencils at first. After Josh bought another 20 pencils and Siti lost 7 pencils, Josh had twice as many pencils left as Siti. How many pencils did each of them have at first?

+20 -7 2u in the end 1u

GET A PLAN

Have you seen it before?
What strategy would you use?

- Since each of them has the same number of pencils at first, how would you represent it in a model?
- Which type of model would you draw?
- After Josh bought 20 and Lisa lost 7, how would the model change?

At first

- Draw equal bars (1 unit each)

In the end

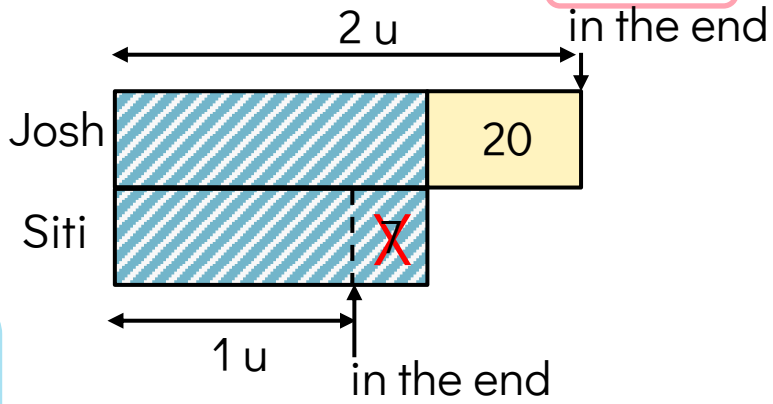
- After Josh bought 20 pencils, add 20 to the bar. The length of Josh's bar become longer than before.

  After Siti lost 7 pencils, remove 7 from the bar. The length of Siti's bar become shorter than before.

Josh and Siti had the same number of pencils at first. After Josh bought another 20 pencils and Siti lost 7 pencils, Josh had twice as many pencils left as Siti. How many pencils did each of them have at first?

+20 -7 2u in the end 1u

HAVE IT DONE

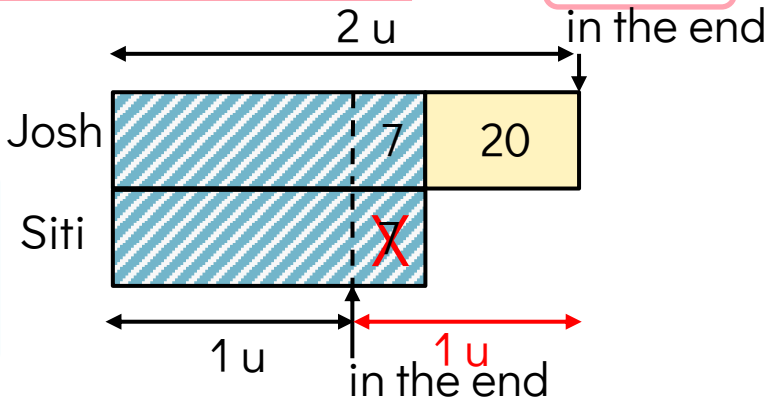


How would you show 2 units for Josh and 1 unit for Siti?

Josh and Siti had the same number of pencils at first. After Josh bought another 20 pencils and Siti lost 7 pencils, Josh had twice as many pencils left as Siti. How many pencils did each of them have at first?

+20 -7 2u in the end 1u

HAVE IT DONE

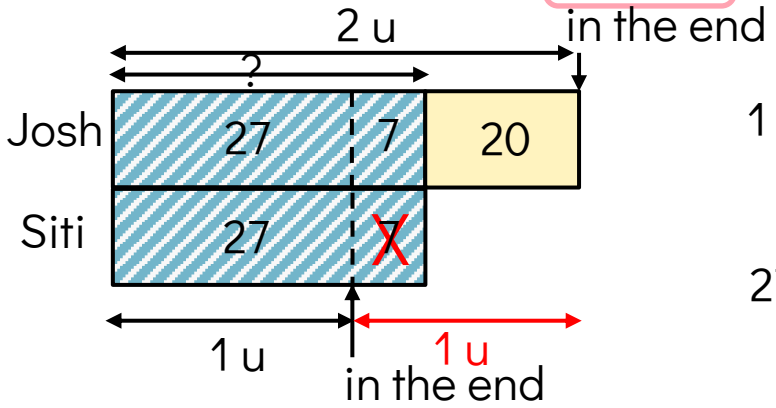


- What other information have you not put into the model yet?
- How would you find the value of 1 unit?

Josh and Siti had the same number of pencils at first. After Josh bought another 20 pencils and Siti lost 7 pencils, Josh had twice as many pencils left as Siti. How many pencils did each of them have at first?

+20 -7 2u in the end 1u

HAVE IT DONE



1 unit = 20 + 7
= 27

27 + 7 = 34

Each of them had 34 pencils at first.

Ans: 34

Josh and Siti had the same number of pencils at first. After Josh bought another 20 pencils and Siti lost 7 pencils, Josh had twice as many pencils left as Siti. How many pencils did each of them have at first?

+20

-7

2u

in the end

1u

TRIPLE CHECK

Is the solution reasonable?

Can you show that your solution is correct?

COMMON MISCONCEPTION/DIFFICULTIES

Your child may not know how to begin as there is too much information.

Can you check if Josh has twice as many pencils as Siti in the end?

In the end,

Josh → 34 + 20 = 54

Siti→ 34 – 7 = 27

Check that 54 is twice of 27 ✓

To summarise

Keywords that show "Equal Concept (at the beginning)"		
Q3) Lisa and Ivan had an equal number of stickers at first.	4A Textbook Pg 65 Anna had as many stickers as Xinyi at first.	Q4) Josh and Siti had the same number of pencils at first.

Uncle Tan had a total of 115 apples and mangoes. He sold half of the apples and 25 mangoes. In the end, he had an equal number of apples and mangoes left. How many mangoes did he have at first?

READ
What is known?

- What is the total number of apples and mangoes that he have?
- What did he do to the apples and mangoes?
- How many apples and mangoes did he have left?

Given:

At first
Total 115 apples and mangoes

Sold half of the apples
Sold 25 mangoes

In the end
Equal number of apples and mangoes

Uncle Tan had a total of 115 apples and mangoes. He sold half of the apples and 25 mangoes. In the end, he had an equal number of apples and mangoes left. How many mangoes did he have at first?

READ

What is unknown?

Do we know how many apples or mangoes he had **at first** and **in the end**?

Not given:
Number of apples and mangoes

What do you need to find?

Find:
Number of mangoes he had at first

Uncle Tan had a total of 115 apples and mangoes. He sold half of the apples and 25 mangoes. In the end, he had an equal number of apples and mangoes left. How many mangoes did he have at first?

IDENTIFY KEYWORDS

Are there any keywords that leads to the type of question?

'The keywords 'in the end, ... equal number' shows this is an 'Equal Concept (in the end)' type of question.

The keywords 'in the end', 'left', 'at first', 'sold' show that this is a 'Before-and-After' situation.

Uncle Tan had a total of 115 apples and mangoes. He sold half of the apples and 25 mangoes. In the end, he had an equal number of apples and mangoes left. How many mangoes did he have at first?

GET A PLAN

Have you seen it before?
What strategy would you use?

- How would you represent 'total' in the model?

Label at the side. However, I wouldn't know the size of the bar to represent each fruit.

- Which type of model would you draw?

- Since he had an equal number of apples and mangoes left, how would you represent it in a model?

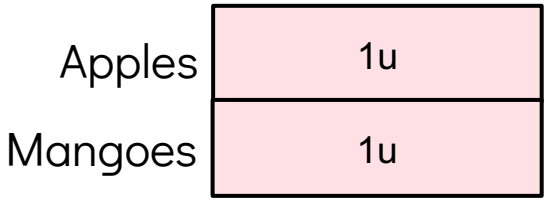
Draw equal bars (1 unit each)

Start by drawing equal bars in the end

Uncle Tan had a total of 115 apples and mangoes. He sold half of the apples and 25 mangoes. In the end, he had an equal number of apples and mangoes left. How many mangoes did he have at first?

HAVE IT DONE

In the end



How will the model look like before he sold the apples and mangoes?

Let's **work backwards** for number of apples first.

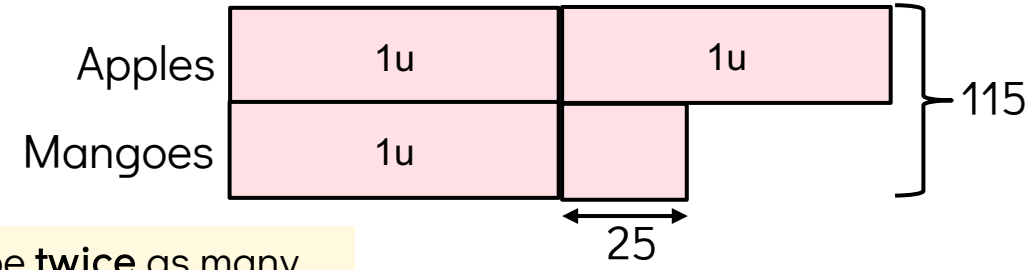
We know **in the end**, the number of units for apples is 1 unit.

Since half of the apples were sold, how will the bar look like **at first**?

Uncle Tan had a total of 115 apples and mangoes. He sold half of the apples and 25 mangoes. In the end, he had an equal number of apples and mangoes left. How many mangoes did he have at first?

HAVE IT DONE

At first



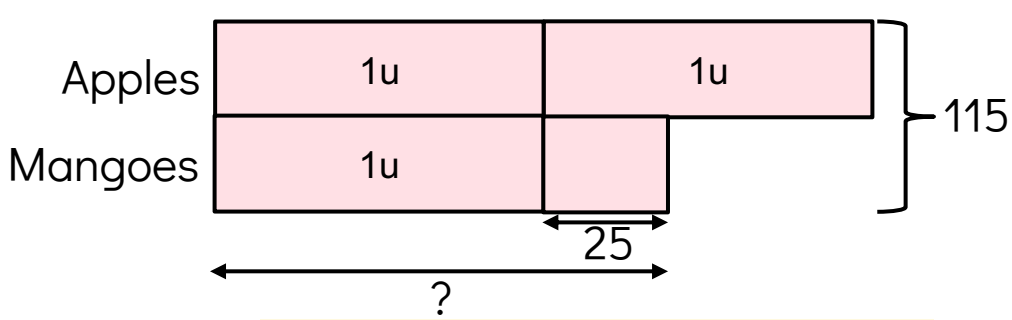
There will be **twice** as many apples at first. So, the number of units for apples at first will be 2 units. → Draw another equal bar.

Since he sold 25 mangoes, he would have 25 more mangoes at first.
→ Add 25 to the bar.

Uncle Tan had a total of 115 apples and mangoes. He sold half of the apples and 25 mangoes. In the end, he had an equal number of apples and mangoes left. How many mangoes did he have at first?

HAVE IT DONE

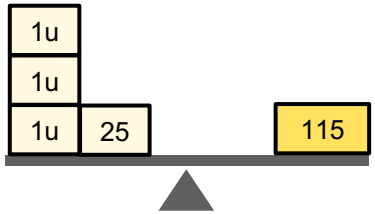
At first



- How would you find the value of 1 unit?
- Can you divide 115 by 3? Why not?

115 represents the total number for 3 units of fruits and 25 mangoes.

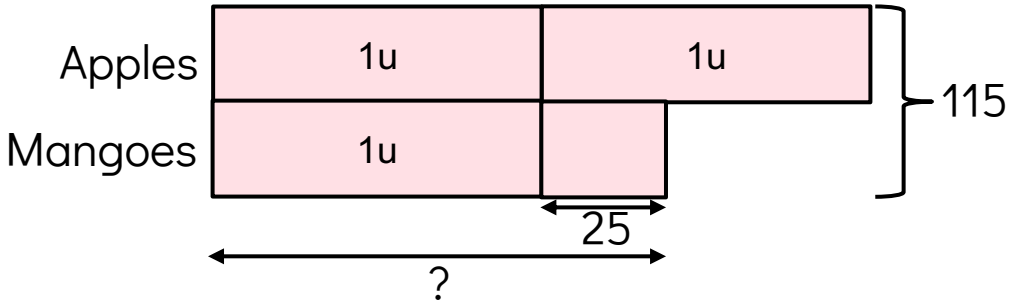
I need to subtract 25 to get number of fruits represented by 3 units.



Uncle Tan had a total of 115 apples and mangoes. He sold half of the apples and 25 mangoes. In the end, he had an equal number of apples and mangoes left. How many mangoes did he have at first?

HAVE IT DONE

At first



3 units = 115 - 25
= 90

1 unit = 90 ÷ 3
= 30

30 + 25 = 55

He had 55 mangoes at first.

Ans: 55

Uncle Tan had a total of 115 apples and mangoes. He sold half of the apples and 25 mangoes. In the end, he had an equal number of apples and mangoes left. How many mangoes did he have at first?

TRIPLE CHECK

Is the solution reasonable?

Can you show that your solution is correct?

COMMON MISCONCEPTION/DIFFICULTIES

Your child may not know how to begin. Remind your child to focus on what information is given and use that to start. (Draw equal bars first)

Can you check if the total number of apples and mangoes is 115 at first?

In the end,

Apples → 30 (1 unit)

Mangoes → 30 (1 unit)

At first,

Apples → 30 x 2 = 60

Total → 55 + 60 = 115 ✓

4u at first 1u

Ken had 4 times as many marbles as Ravi. They have 3420 marbles altogether. How many marbles must Ken give to Ravi so that they have the same number of marbles in the end?

total

READ

What is known?

- Who has more marbles at first? What is the total?
- After Ken gave away some of his marbles to Ravi, would he have more or less now? How about Ravi?

Given:

At first

Ken → 4u

Ravi → 1u

Total 3420 marbles

Transfer

Ken gives some marbles to Ravi. Ken would have less now. Ravi would have more now.

4u at first 1u

Ken had 4 times as many marbles as Ravi. They have 3420 marbles altogether. How many marbles must Ken give to Ravi so that they have the same number of marbles in the end?

total

READ

What is known?

- What remains the same?

The total number of marbles remains the same.

- After Ken gave away, did the total change? Why/why not?

Total unchanged → Internal Transfer

In the end

Same number of marbles

4u at first 1u

Ken had 4 times as many marbles as Ravi. They have 3420 marbles altogether. How many marbles must Ken give to Ravi so that they have the same number of marbles in the end?

total

READ

What is unknown?

Do we know how many marbles each of them have **at first** and **in the end**?

Not given:
Number of marbles each of them have.

What do you need to find?

Find:
Number of marbles Ken give to Ravi

Qn 6

P4 Equal Concept (in the end)

4u at first 1u

Ken had 4 times as many marbles as Ravi. They have total 3420 marbles altogether. How many marbles must Ken give to Ravi so that they have the same number of marbles in the end?

IDENTIFY KEYWORDS

Are there any keywords that leads to the type of question?

The keywords 'same number...in the end' shows this is an 'Equal Concept (in the end)' type of question.

The keywords 'give to', 'in the end' show that this is a 'Before-and-After' situation.

4u at first 1u

Ken had 4 times as many marbles as Ravi. They have 3420 marbles altogether. How many marbles must Ken give to Ravi so that they have the same number of marbles in the end?

total

GET A PLAN

Have you seen it before?
What strategy would you use?

- How many units would you need to draw to represent number of marbles Ken had at first? How about Ravi?
- Which type of model would you draw?

At first

- Ken's number of marbles
  → 4 units
  Ravi's number of marbles
  → 1 unit

In the end

- Equal bars for Ken and Ravi

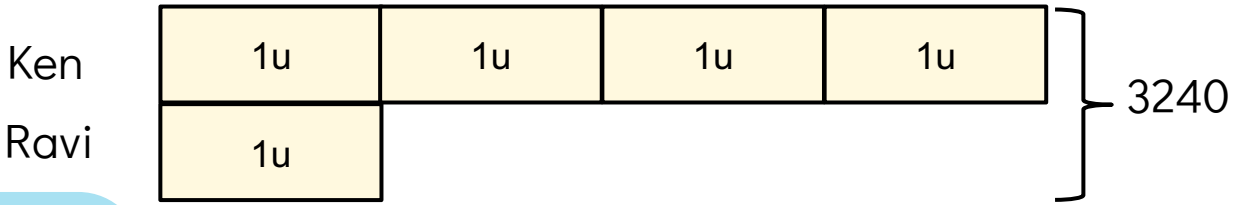
4u at first 1u

Ken had 4 times as many marbles as Ravi. They have total 3420 marbles altogether. How many marbles must Ken give to Ravi so that they have the same number of marbles in the end?

HAVE IT DONE

Method 1

At first



- How many more units does Ken have than Ravi?
- How many units should Ken give to Ravi such that both have equal number of units?

Ken has 3 more units than Ravi so Ken needs to give 1 and a half unit to Ravi.

OR

Ken needs to give half of the difference.

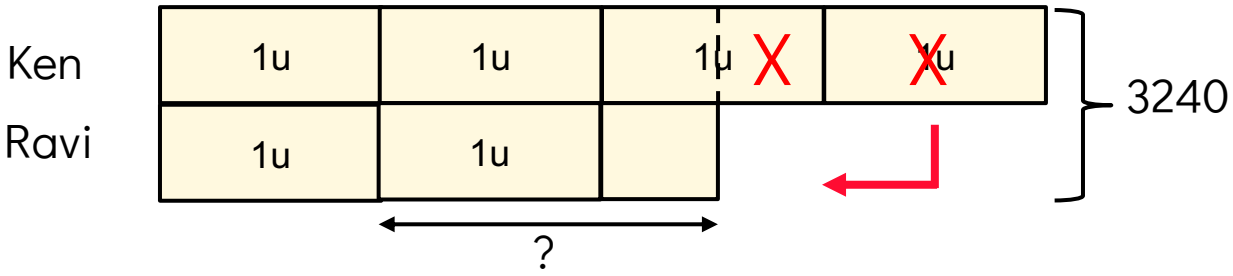
4u at first 1u

Ken had 4 times as many marbles as Ravi. They have total 3420 marbles altogether. How many marbles must Ken give to Ravi so that they have the same number of marbles in the end?

HAVE IT DONE

Method 1

In the end



- How would you find the value of '1 unit'?

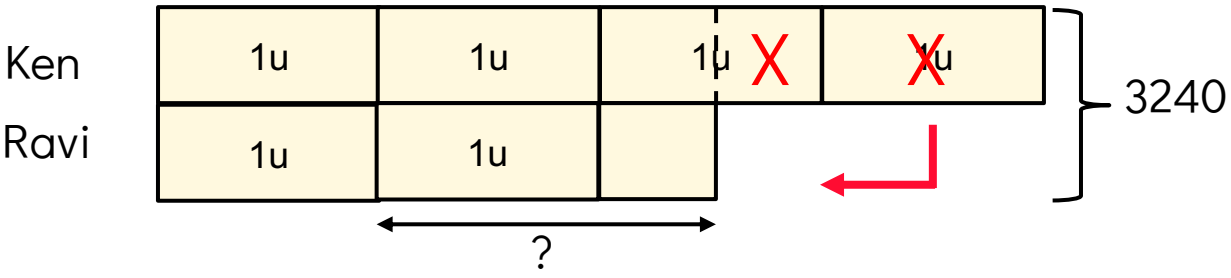
4u at first 1u

Ken had 4 times as many marbles as Ravi. They have total 3420 marbles altogether. How many marbles must Ken give to Ravi so that they have the same number of marbles in the end?

HAVE IT DONE

Method 1

In the end



5 units = 3420
1 unit = 3420 ÷ 5
= 684

684 ÷2 = 342
Give → 684 + 342
= 1026

Ken must give Ravi 1026 marbles.

Ans: 1026

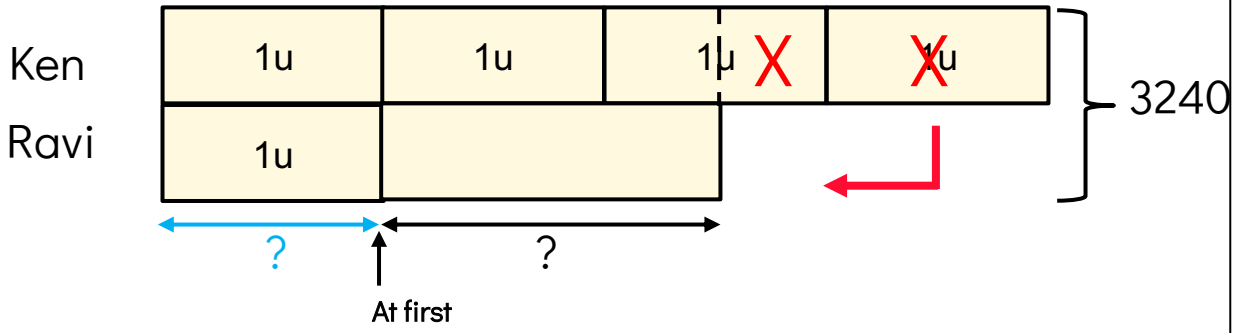
4u at first 1u

Ken had 4 times as many marbles as Ravi. They have total 3420 marbles altogether. How many marbles must Ken give to Ravi so that they have the same number of marbles in the end?

- Total unchanged → Can you find how many marbles each of them have in the end?
- Would you be able to find how many marbles Ravi have at first?
- Would you then be able to find how many marbles he needs to get from Ken?

Method 2

In the end



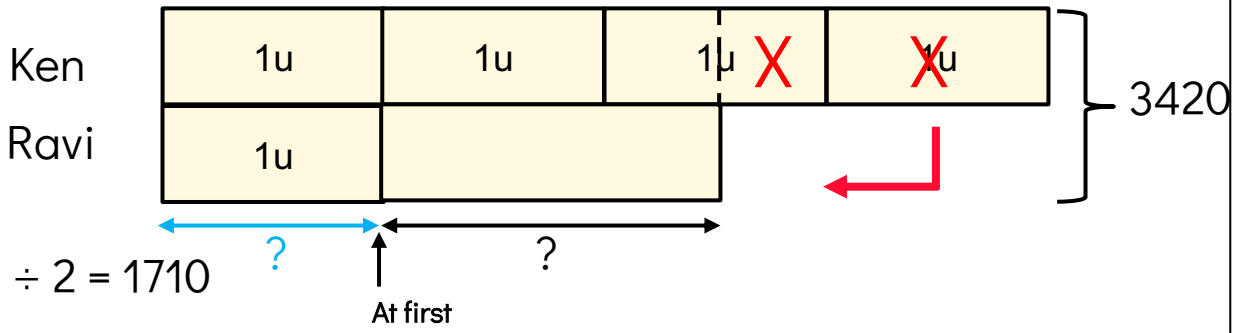
4u at first 1u

Ken had 4 times as many marbles as Ravi. They have total 3420 marbles altogether. How many marbles must Ken give to Ravi so that they have the same number of marbles in the end?

HAVE IT DONE

Method 2

In the end



5 units = 3420
1 unit = 3420 ÷ 5
= 684

Ravi at first → 684

Ravi in the end → 3420 ÷ 2 = 1710

Give → 1710 − 684
= 1026

Ken must give Ravi 1026 marbles.

Ans: 1026

4u at first 1u

Ken had 4 times as many marbles as Ravi. They have 3420 marbles altogether. How many marbles must Ken give to Ravi so that they have the same number of marbles in the end?

total

TRIPLE CHECK

Is the solution reasonable?

Can you show that your solution is correct?

Can you check if the total number of marbles at first is 3240?

COMMON MISCONCEPTION/DIFFICULTIES

Your child may not know how to begin. Remind your child to focus on what information is given and use that to start.

In the end,

Ravi → 684 + 1026 = 1710

Total → 1710 × 2 = 3420 ✓

To summarise

Keywords that show “Equal Concept (in the end)”	
Q5) **In the end**, he had an **equal number** of apples and mangoes **left**.	Q6) How many marbles must Ken give to Ravi so that they have the **same number** of marbles **in the end**?

more

less

in the end

David had $70 more than Joanne at first. After David donated $150 to charity, Joanne had 3 times as much money as David. How much money did Joanne have?

-150

3u

1u

READ

What is known?

- Who had more money at first? Then, who had less money at first?
- After David donated, would he have more or less money now?
- What remains the same? How about Joanne's money?
- Who had more money in the end? Then who had less money in the end?

Given:

At first

David had $70 more than Joanne

David donated $150. He would have less than what he had at first.

Joanne's amount remains the same

In the end

Joanne 3u, David 1u →

Joanne had more money than David

more less in the end

David had $70 more than Joanne at first. After David donated $150 to charity, Joanne had 3 times as much money as David. How much money did Joanne have?

-150 3u 1u

READ

What is unknown?

Do we know how much money each of them have **at first** and **in the end**?

Not given:
Amount of money each of them have

What do you need to find?

Find:
Amount of money Joanne had

more less in the end

David had $70 more than Joanne at first. After David donated $150 to charity, Joanne had 3 times as much money as David. How much money did Joanne have?

-150 3u 1u

IDENTIFY KEYWORDS

Are there any keywords that leads to the type of question?

The keywords 'as much money as' shows this is an 'As many as' type of question

The keywords 'at first', 'after' show that this is 'Before-and-After' situation

David had $70 more than Joanne at first. After David donated $150 to charity, Joanne had 3 times as much money as David. How much money did Joanne have?

more
-150
1u
less
3u
in the end

GET A PLAN

Have you seen it before?
What strategy would you use?

- Which type of model would you draw?

- Since David has more, how would you draw the model?
- After David donated, how would his bar change?
- Will the size of Joanne's bar change?

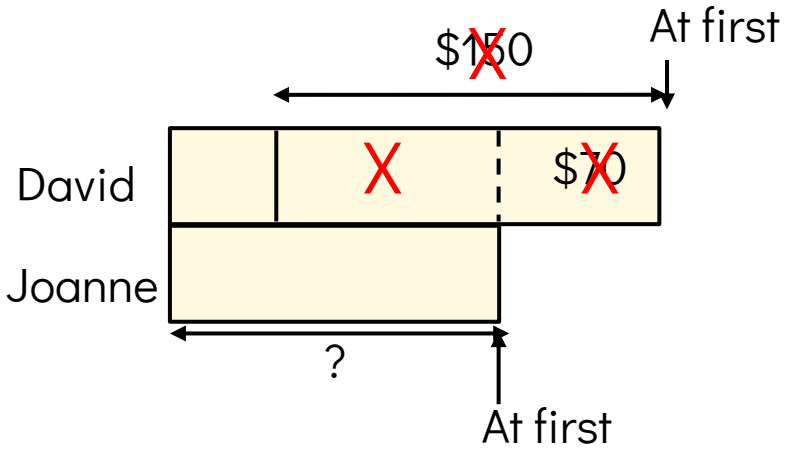
- Draw a longer bar for David as compared to Joanne.
- After David donated $150, subtract $150 from his bar. Hence, his bar will become shorter.
- Joanne's bar remained the same size.

David had $70 more than Joanne at first. After David donated $150 to charity, Joanne had 3 times as much money as David. How much money did Joanne have?

more
less
in the end
-150
3u
1u

HAVE IT DONE

- What other information have you not put into the model yet?
- How do you show '3u' for Joanne and '1u' for David?

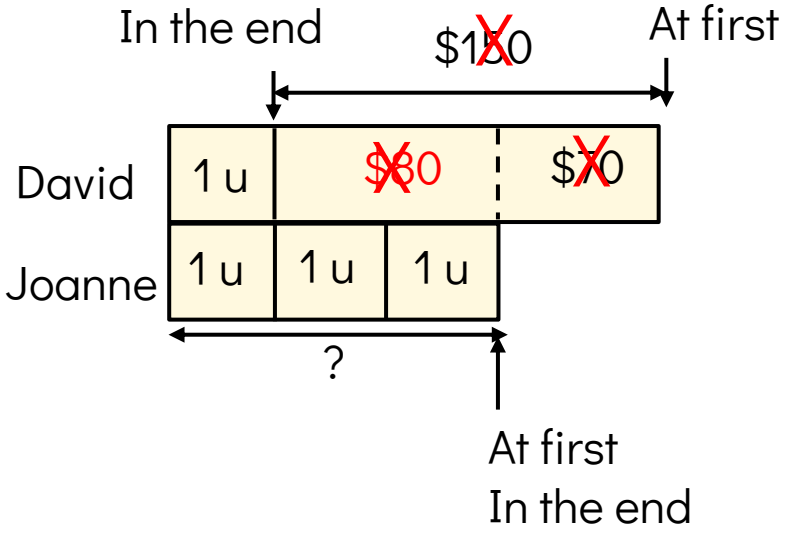


David had $70 more than Joanne at first. After David donated $150 to charity, Joanne had 3 times as much money as David. How much money did Joanne have?

more
-150
1u
less
3u
in the end

HAVE IT DONE

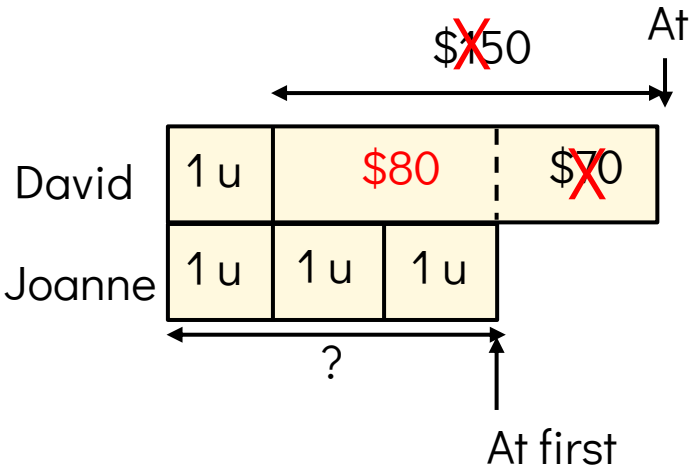
- What can you find first?
- How would you find the value of 2 units?



David had $70 more than Joanne at first. After David donated $150 to charity, Joanne had 3 times as much money as David. How much money did Joanne have?

more
less
in the end
-150
3u
1u

HAVE IT DONE



2 units = $150 - $70
= $80

1 unit = $80 ÷ 2
= $40

3 units = $40 x 3
= $120

Joanne had $120.

Ans: $120

David had $70 more than Joanne at first. After David donated $150 to charity, Joanne had 3 times as much money as David. How much money did Joanne have?

more
less
in the end
-150
3u
1u

TRIPLE CHECK

Is the solution reasonable?

Can you show that your solution is correct?

COMMON MISCONCEPTION/DIFFICULTIES

Your child may not know how to begin.

Drawing a model helps your child to see that $70 is part of $150.

Can you check if David had $70 more than Joanne at first?

At first,

David → $150 + $40 = $190

Difference between David and Joanne

→ $190 – $120 = $70 ✓

2u 1u 3u

Jerry had twice as many sweets as Linda. Sam had 3 times as many sweets as Linda. If they had 54 sweets altogether, how many sweets did Jerry have?

1u

READ

What is known?

- Who had more sweets, Jerry or Linda?
- Who had more sweets, Sam or Linda?

Given:
Jerry 2u, Linda 1u
Sam 3u, Linda 1u

Altogether → 54 sweets

What is unknown?

- Do we know how many sweets each of them have?

Not given:
Number of sweets each of them have

What do you need to find?

Find:
Number of sweets Jerry had

2u 1u 3u 1u

Jerry had twice as many sweets as Linda. Sam had 3 times as many sweets as Linda. If they had 54 sweets altogether, how many sweets did Jerry have?

IDENTIFY KEYWORDS

Are there any keywords that leads to the type of question?

Who is the repeated identity?

'Linda' is the repeated identity

2u 1u 3u

Jerry had twice as many sweets as Linda. Sam had 3 times as many sweets as Linda. If they had 54 sweets altogether, how many sweets did Jerry have?

1u

GET A PLAN

Have you seen it before?
What strategy would you use?

- How many units would you need to draw to represent the number of sweets each of them have?

Draw equal sized units
Jerry → 2 units
Linda → 1 unit
Sam → 3 units

- Which type of model would you draw?

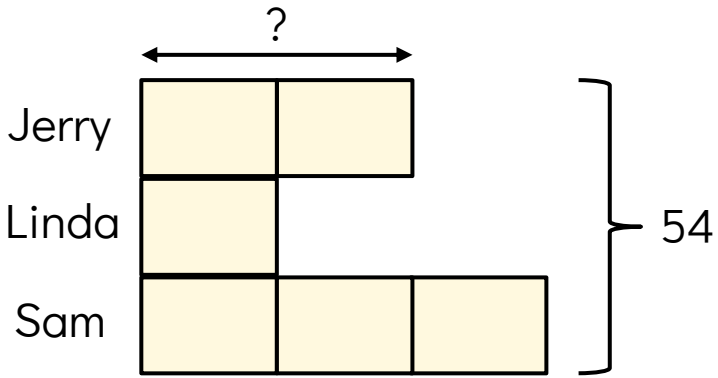
2u 1u 3u

Jerry had twice as many sweets as Linda. Sam had 3 times as many sweets as Linda. If they had 54 sweets altogether, how many sweets did Jerry have?

1u

HAVE IT DONE

How would you find the value of 1 unit?



6 units = 54

1 unit = 54 ÷ 6
= 9

2 units = 9 x 2
= 18

Jerry had 18 sweets.

Ans: 18

What If...

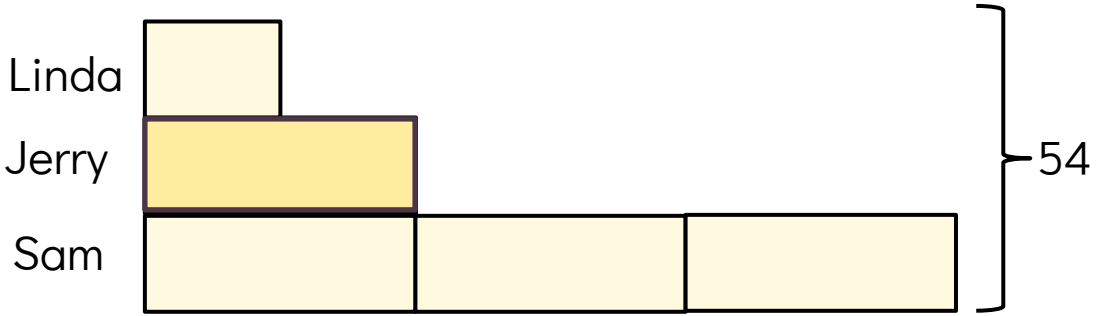
2u 1u 3u

Jerry had twice as many sweets as Linda. Sam had 3 times as many sweets as Jerry. If they had 54 sweets altogether, how many sweets did Jerry have?

1u

'Jerry' is the repeated identity

How would you draw the units for Sam?



Do we divide 54 by 6?

P4 Repeated Identity

What If...2u

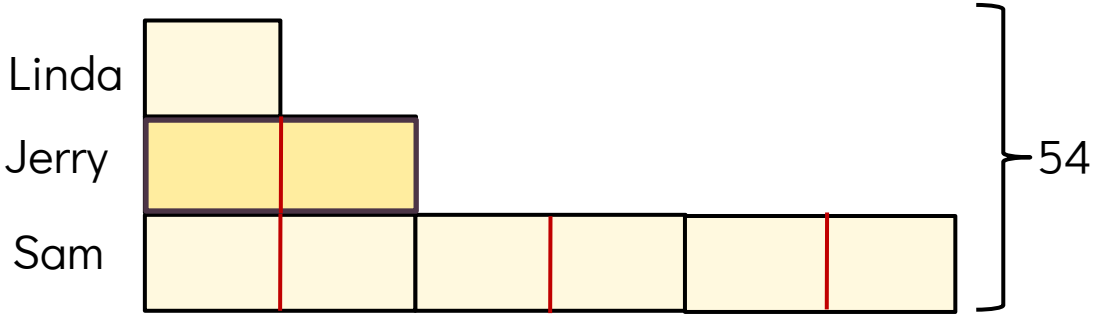
1u 3u

Jerry had twice as many sweets as Linda. Sam had 3 times as many sweets as Jerry. If they had 54 sweets altogether, how many sweets did Jerry have?

1u

'Jerry' is the repeated identity

Since Jerry → 2 small units, how many small units does Sam have?



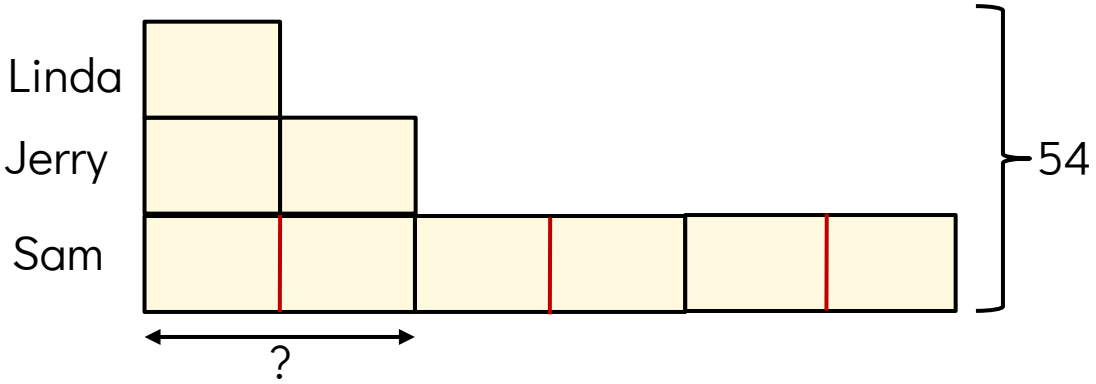
What If...

1u 3u

Jerry had twice as many sweets as Linda. Sam had 3 times as many sweets as Jerry. If they had 54 sweets altogether, how many sweets did Jerry have?

1u

'Jerry' is the repeated identity



9 units = 54

1 unit = 54 ÷ 9
= 6

2 units = 6 x 2
= 12

Jerry had 12 marbles.

Ans: 12

What If...

1u 3u

Jerry had twice as many sweets as Linda. Sam had 3 times as many sweets as Jerry. If they had 54 sweets altogether, how many sweets did Jerry have?

1u 2u 1u

TRIPLE CHECK

Is the solution reasonable?

Can you show that your solution is correct?

MISCONCEPTION/DIFFICULTIES

Your child may not be sure how to draw the bar model for Sam.

Can you check if the total number of sweets is 54?

Jerry → 12

Linda → 12 ÷ 2 = 6

Sam → 12 × 3 = 36

Total = 12 + 6 + 36

= 54 ✓

P3 More than/Less than

P3 As Many Times As

P3 Equal Concept
(at the beginning)
Unchanged Total

P4 Equal Concept
(at the beginning)

P4 Equal Concept
(in the end)

P4 Equal Concept
(in the end)
Unchanged Total

P4 As Many As

P4 Repeated Identity

Students are encouraged to take the R.I.G.H.T action

Read	Topic	What is known/unknown? What do you need to find?
Identify Keywords	Type of Question	Are there any keywords that leads to the type of question?
Get A Plan	Heuristics	Have you seen it before? What strategy would you use?
Have It Done	M.E.W.A.S	Is each step correct? Can you prove that each step is correct?
Triple Check	N.T.U.C	Is the solution reasonable? Can you show that your solution is correct?

Model
Equation
Working
Answer
Statement

Number
Transfer
Units
Calculation

Seeing the JOY in solving Math problems wherever you go

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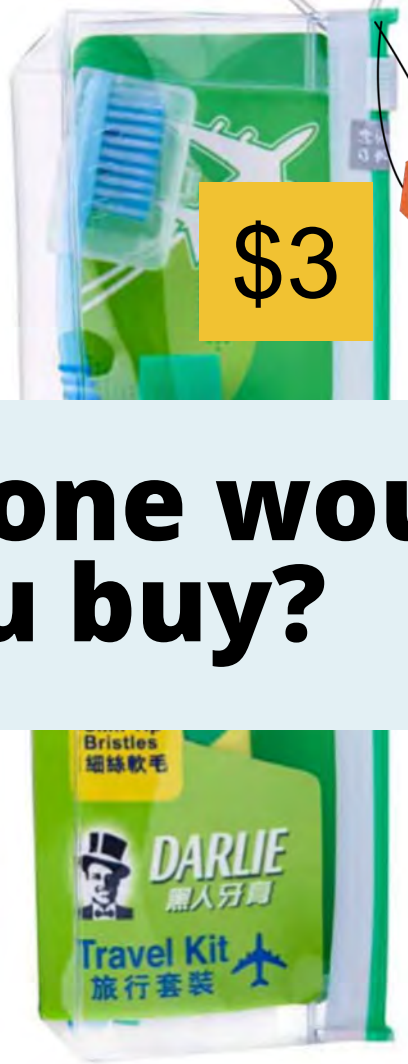

$3

Buy 2, get 1 *free*!

Which one would you buy?

Promotion

2 kits = $3

1 kit = $1.50

Promotion

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1 kit = $2

Q & A

Feedback

SCAN ME

Thank You!