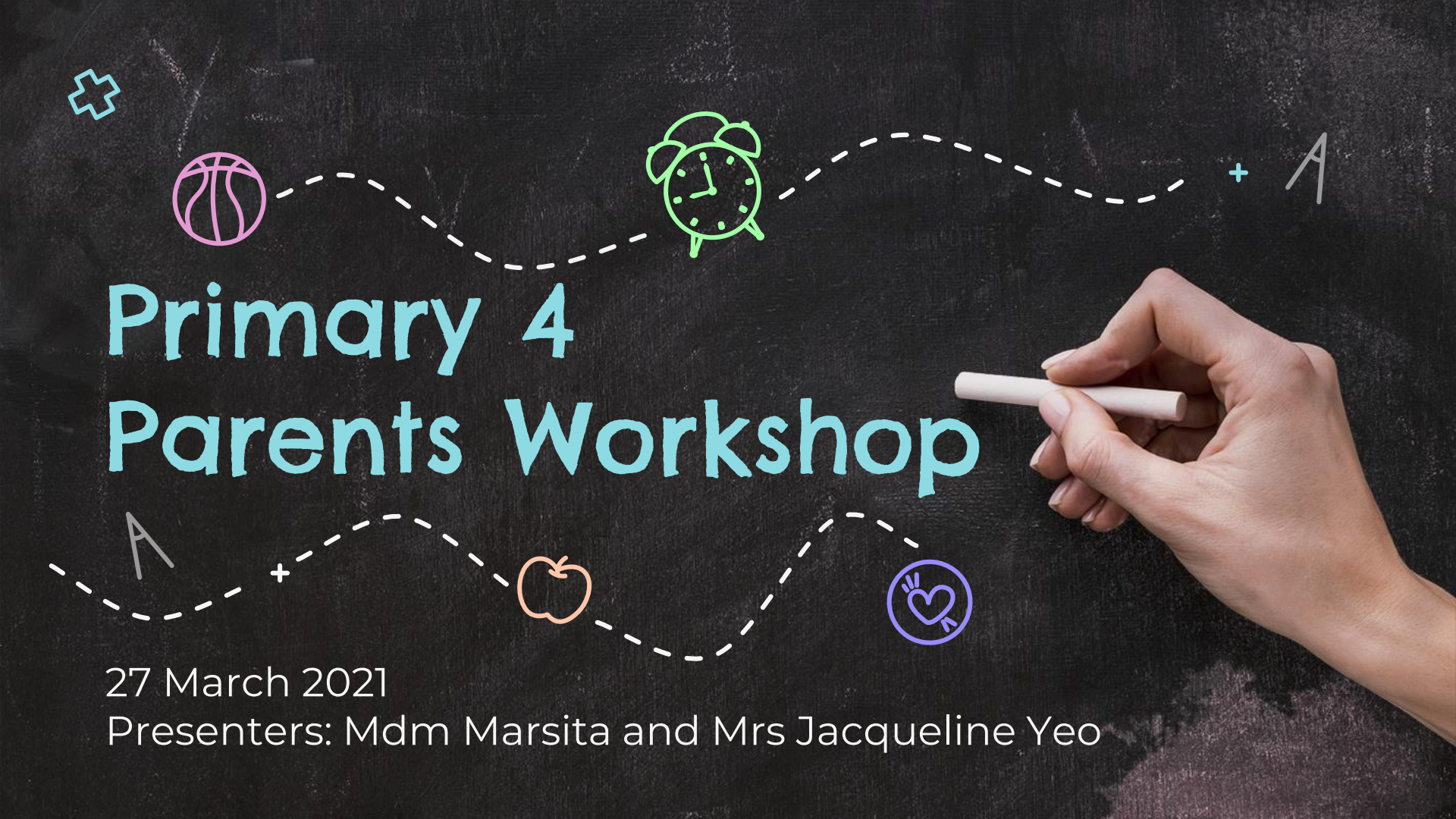
1. Please ensure that you mute your microphone to keep
1. the background noise to a minimum.

2. Please get ready some writing materials for the hands-on segment. (Eg: paper, pencil, ruler and eraser)

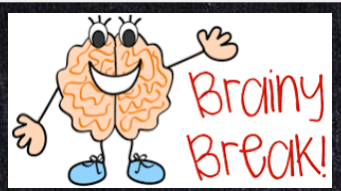
Primary 4 Parents Workshop



27 March 2021

Presenters: Mdm Marsita and Mrs Jacqueline Yeo

Programme Layout

Session 1	Break	Session 2	Q & A
9.00 – 9.40 a.m.	9.40 – 9.45 a.m.	9.45 – 10.20 a.m.	10.20- 10.30 a.m.
Model Drawing (Unitary Model)		Guess & Check Make a Supposition	

The slides will be uploaded onto our school website by **3 April 2021**

Objectives:

- To create awareness among parents of the different types of heuristics taught in schools.
- To give suggestions on how parents can engage or help their children learn mathematics at home.

Whole School Approach

STAR Approach to Problem-Solving

Instructions: Please proceed to complete the worksheet using Steps 1 to 4.

Step 1: Study the Problem

- What is the important given information?
- How can I connect/ link/ organize the information?

Step 2: Think of a Plan

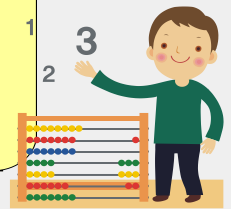
- What is the missing information I need to find?
- What strategy should I use to find the missing information e.g. model drawing, Guess and Check, listing? Why?

Step 3: Act on the Plan

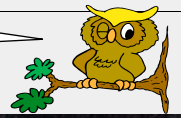
- How do I solve the problem?
- Does each step make sense?

Step 4: Reflect on Solution

- How do I know if I have answered the problem?



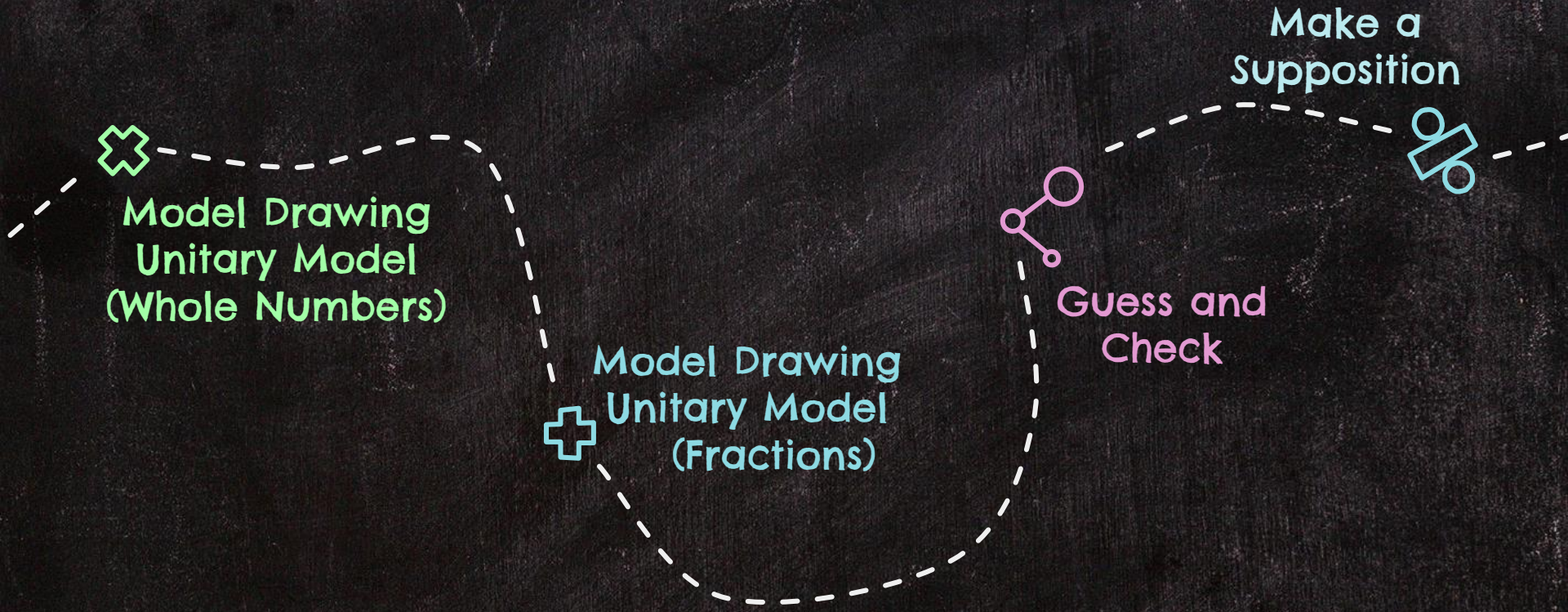
Go on. Try these steps to solve math problems! They really help!



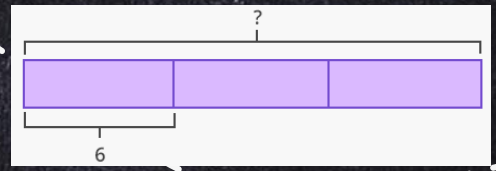
Heuristics covered @P4

Term 1:	Systematic Listing
Term 2:	Model Drawing
Term 3:	Guess and Check/ Make a Supposition
Term 4:	Revision

Heuristics


Model Drawing
Unitary Model
(Whole Numbers)
Model Drawing
Unitary Model
(Fractions)
Guess and
Check
Make a
Supposition

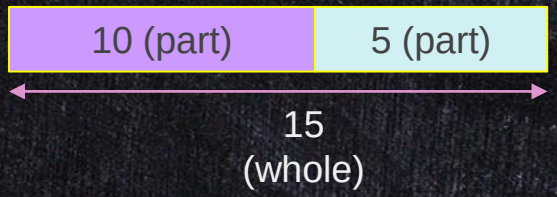
What is model drawing ?



- It is a technique to help a child understand complex Math word problems.
- It aids in visual representation from abstract to concrete.
- Length of the rectangular bars is drawn proportionately in relation to one another.

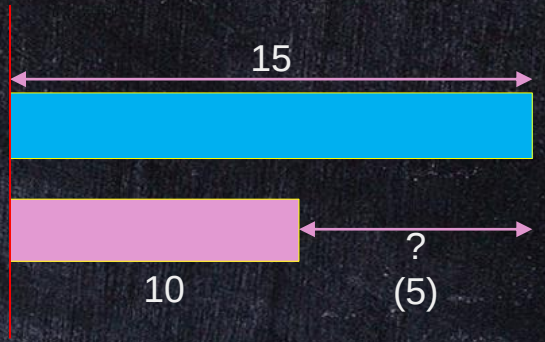
Part-whole model:

Example:
Tom has 10 toy cars.
He has 5 toy trains.
How many toy cars and train does he have altogether?



Comparison model:

Example:
Jane has 15 bookmarks.
Mary has 10 bookmarks
How many **more** bookmarks does Jane have **than** Mary?



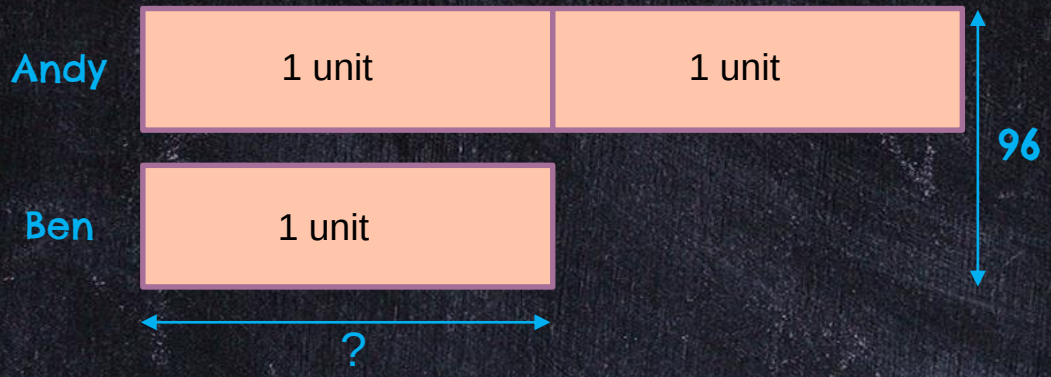
(T1) Unitary Model: Whole Numbers

Andy and Ben have a total of 96 guppies.

Andy has twice as many guppies as Ben.

How many guppies does Ben have?

Study the problem
Think of a plan
Act on it
Reflection



3 units = 96
1 unit = 96 ÷ 3
= 32

Ben has 32 guppies.

(T1) Reflection

Andy and Ben have a total of 96 guppies.

Andy has twice as many guppies as Ben.

How many guppies does Ben have?

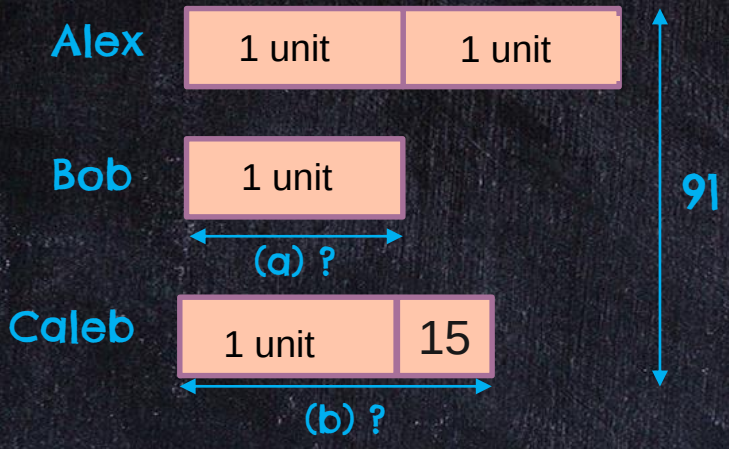
Study the problem
Think of a plan
Act on it
Reflection

Ben has 32 guppies.
Andy has twice as many guppies as Ben → 32 x 2= 64

Total no. of guppies = 32 + 64
= 96 (I'm right)

(T2) Unitary Model: Whole Numbers

Alex, Bob and Caleb have a total of 91 stamps.
Alex has twice as many stamps as Bob.
Caleb has 15 more stamps than Bob.
a) How many stamps does Bob have?
b) How many stamps does Caleb have?



Study the problem
Think of a plan
Act on it
Reflection

(a)

4 units = 91 − 15
= 76
1 unit = 76 ÷ 4
= 19

Bob has 19 stamps.

(b)

Caleb = 19 + 15
= 34

Caleb has 34 stamps.

(T2) Reflection

Alex, Bob and Caleb have a total of 91 stamps.
Alex has twice as many stamps as Bob.
Caleb has 15 more stamps than Bob.
a) How many stamps does Bob have?
b) How many stamps does Caleb have?

Study the problem
Think of a plan
Act on it
Reflection

Bob has 19 stamps.

Alex has twice as many as Bob → 19 x 2 = 38

Caleb has 15 more stamps than Bob → 19 + 15 = 34

Total no. of stamps = 19 + 38 + 34

= 91 (I'm right)

Hands-on Session Unitary Model (Whole Numbers)

Let's give it a try!

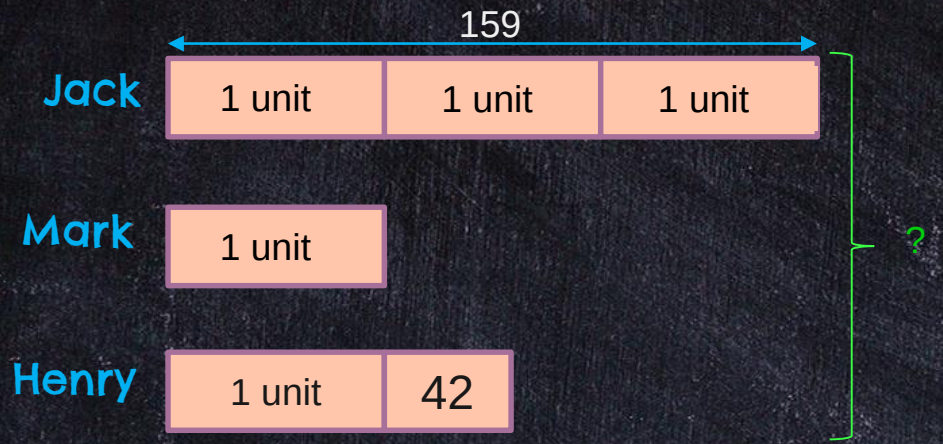
Study the problem
Think of a plan
Act on it
Reflection

P1) Jack collected 3 times as many stickers as Mark.
Henry collected 42 more stickers than Mark.
If Jack collected 159 stickers,
how many stickers did they collect altogether?

P2) Alex has 5 times as much money as Bob.
Charles has $20 less than Bob.
The three boys have $1569 altogether.
How much money does Charles have?

(P1) Unitary Model: Whole Numbers

Jack collected 3 times as many stickers as Mark.
Henry collected 42 more stickers than Mark.
If Jack collected 159 stickers,
how many stickers did they collect altogether?



Study the problem
Think of a plan
Act on it
Reflection

3 units = 159
1 unit = 159 ÷ 3
= 53

5 units = 53 x 5
= 265

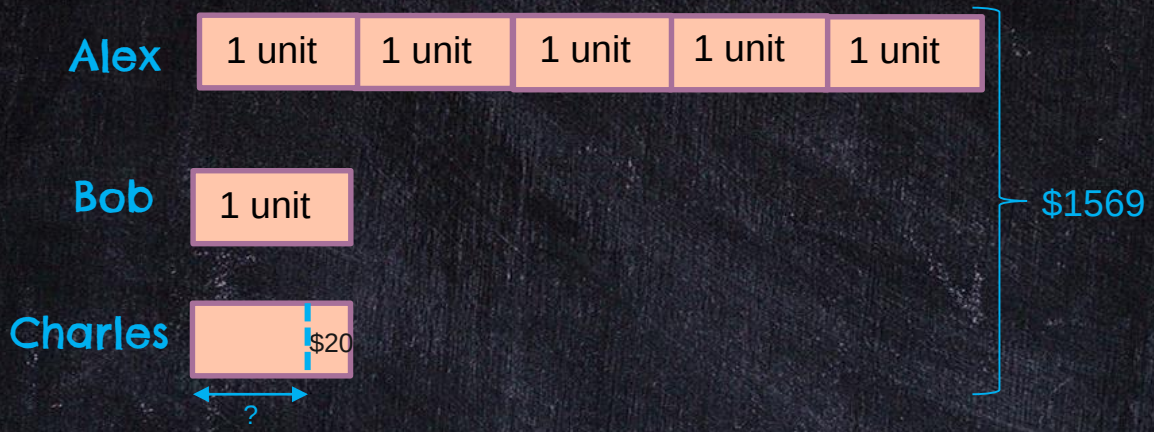
Total = 265 + 42
= 307

They have 307 stickers altogether.

(P2) Unitary Model: Whole Numbers

Alex has 5 times as much money as Bob.
Charles has $20 less than Bob.
The three boys have $1569 altogether.
How much money does Charles have?

Study the problem
Think of a plan
Act on it
Reflection



7 units = $1569 + $20
= $1589

1 unit = $1589 ÷ 7
= $227

Charles = $227 - $20
= $207

Charles has $207.

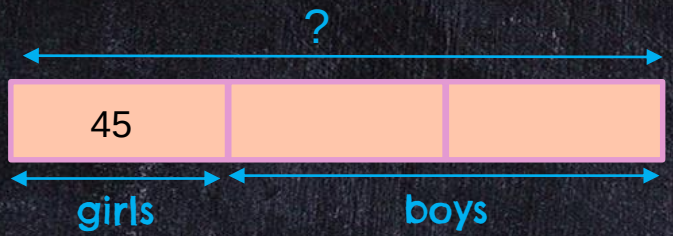
(T3) Unitary Model: Fractions

Study the problem
Think of a plan
Act on it
Reflection

$\frac{1}{3}$ of the children in the library are girls.

There are 45 girls in the library.

How many children are there in the library?



45

1 unit = 45
3 units = 45 x 3
= 135

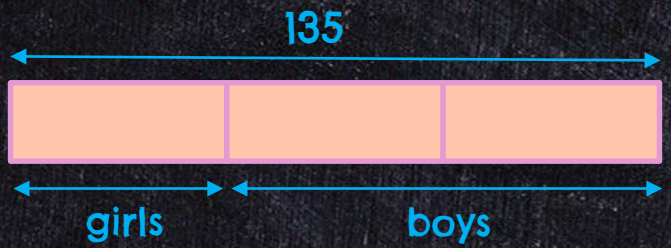
There are 135 children in the library.

(T3) Reflection

$\frac{1}{3}$ of the children in the library are girls.

There are 45 girls in the library.

How many children are there in the library?



There are 135 children (3 units)

Girls (1 unit) = 135 ÷ 3

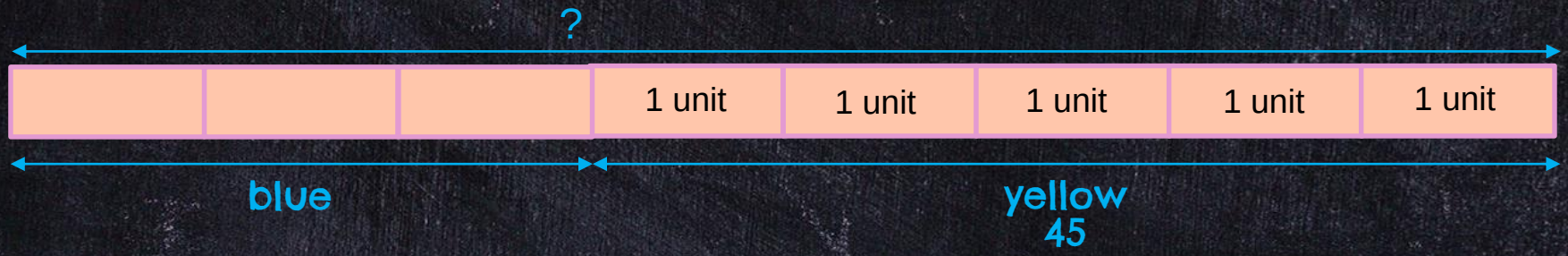
= 45 (I'm right)

Study the problem
Think of a plan
Act on it
Reflection

(T4) Unitary Model: Fractions

Study the problem
Think of a plan
Act on it
Reflection

There are some buttons in a box.
$\frac{3}{8}$ of the buttons are blue and the rest are yellow.
There are 45 yellow buttons.
How many buttons are there in box?



5 units = 45
1 unit = 45 ÷ 5
= 9
8 units = 9 x 8
= 72

There are 72 buttons in the box.

(T4) Reflection

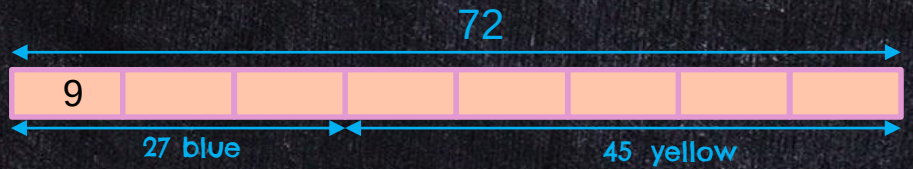
Study the problem
Think of a plan
Act on it
Reflection

There are some buttons in a box.

$\frac{3}{8}$ of the buttons are blue and the rest are yellow.

There are 45 yellow buttons.

How many buttons are there in box?



There are 72 buttons in total (8 units)

$\frac{5}{8}$ of the buttons are yellow ($\frac{5}{8}$ x 72 = 45)

There are 45 yellow button. (I'm right)

Hands-on Session Unitary Model (Fractions)

Let's give it a try!

Study the problem
Think of a plan
Act on it
Reflection

Q1)

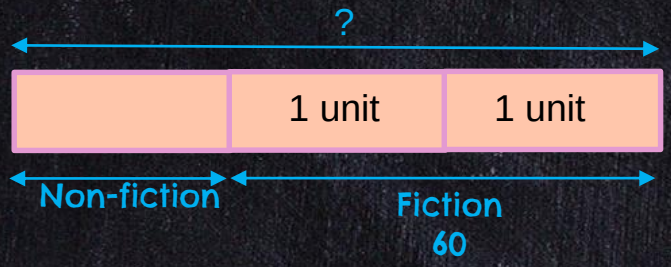
$\frac{1}{3}$ of the books in a bookshop are non-fiction books and the remaining are fiction books.
If there are 60 fiction books, how many books are there in the bookshop altogether?

Q2)

Ali bought 36 sweets.
He gave $\frac{1}{2}$ of the sweets to his brother and $\frac{2}{9}$ of them to his sister.
How many sweets had he left?

(P1) Unitary Model: Fractions

$\frac{1}{3}$ of the books in a bookshop are non-fiction books and the remaining are fiction books.
If there are 60 fiction books, how many books are there in the bookshop altogether?



Study the problem
Think of a plan
Act on it
Reflection

2 units = 60
1 unit = 60 ÷ 2
= 30
3 units = 30 x 3
= 90

There are 90 books altogether.

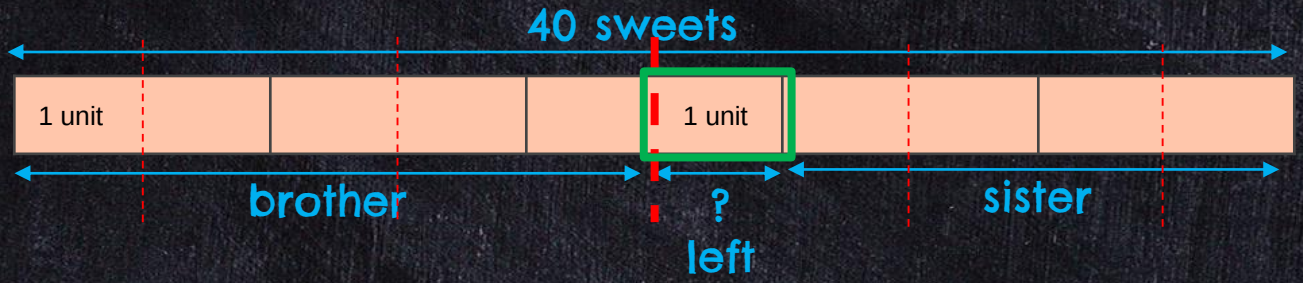
(P2) Unitary Model: Fractions

Ali bought 40 sweets.

He gave $\frac{1}{2}$ of the sweets to his brother and $\frac{2}{5}$ of them to his sister.

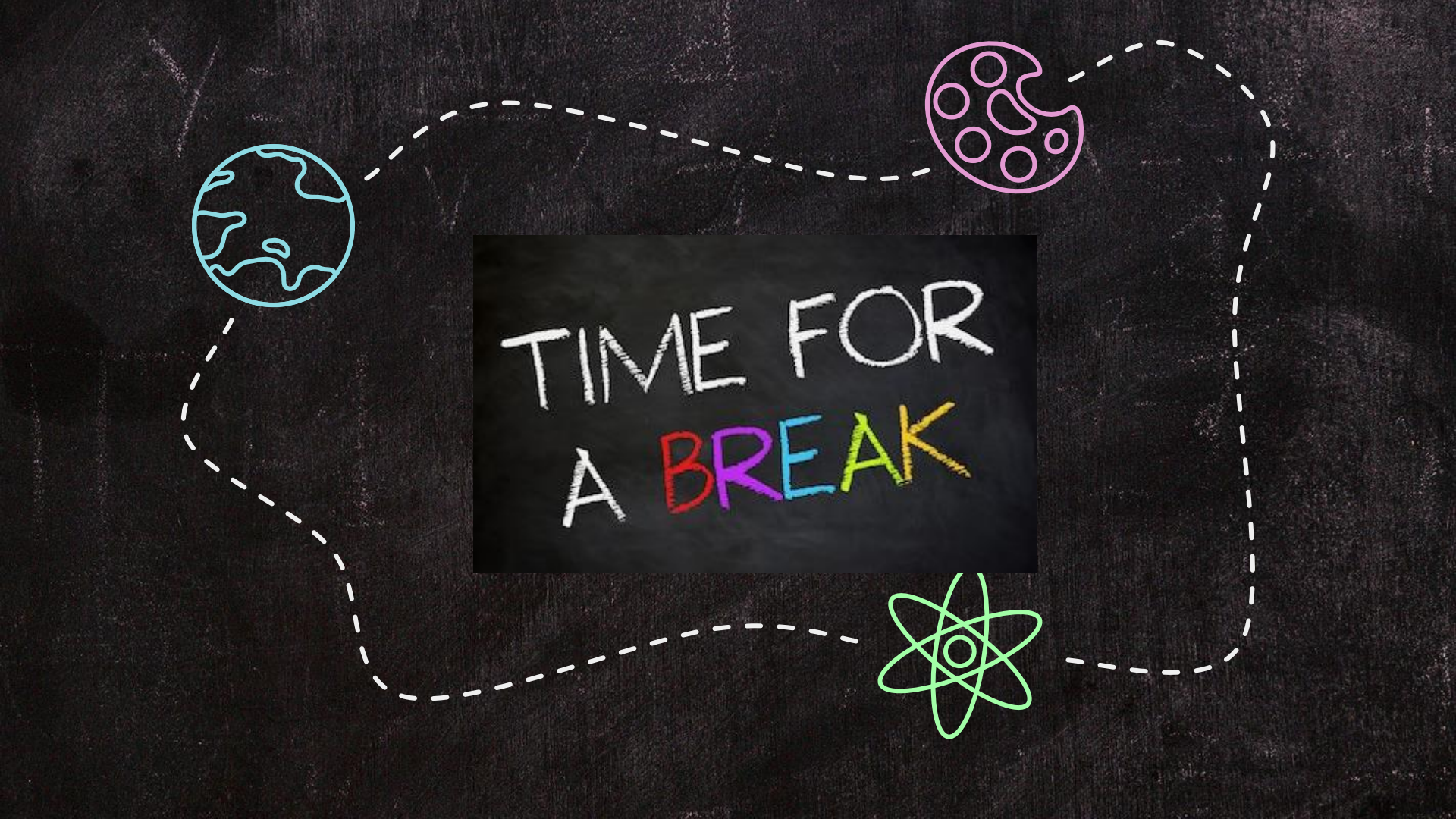
How many sweets had he left?

Study the problem
Think of a plan
Act on it
Reflection



10 units = 40
1 unit = 40 ÷ 10
= 4

There are 4 sweets left.


TIME FOR
A BREAK

Heuristics

Model Drawing
Unitary Model
(Whole Numbers)

Model Drawing
Unitary Model
(Fractions)

Guess and
Check

Make a
Supposition

What is Guess & Check?

- Make a logical/reasonable guess.
- Test your guess.
- Adjust your guess based on the results of #2 until you are correct.

Why Supposition?

- A faster and more efficient method.

When to use Guess & Check and/or Supposition?

Example A:

There are **19 cows and hens** in a farm. If there are **altogether 56 legs**, how many hens are there in the farm?

You can use both **Supposition** and **Guess & Check.**

There are 2 totals given:
- 19 animals
- 56 legs

Example B:

Ahmad has **200 cents worth of coins**. He has as many 20-cent coins as 5-cent ones. How many of each type of coins does he have?

You can use only **Guess & Check**.

There is only 1 total given:
- 200 cents

- *The total number of 20-cent coins and 5- cent coins is **not given** in the question.*

(Q1) Guess and Check

Study the problem
Think of a plan
Act on it
Reflection

In a car park, there are 14 cars and motorcycles.

Altogether, 44 wheels are counted.

How many cars and how many motorcycles are there in the car park?

No. of cars	No. of car wheels	No. of motorcycles	No. of motorcycles wheels	Total no. of wheels	Check
7	7 x 4 =28	7	7 x 2 = 14	28 + 14 = 42	X (not enough)
9	9 x 4 =36	5	5 x 2 = 10	36 + 10 = 46	X (too many)
8	8 x 4 =32	**6**	6 x 2 = 12	32 + 12 = 44	√

There are 8 cars and 6 motorcycles.

(Q1) Make a Supposition

Total
Excess
Difference
Opposite

In a car park, there are **14 cars and motorcycles**.
Altogether, **44 wheels** are counted.
How many cars and how many motorcycles are there in the car park?

Assume all 14 vehicles are 

Total no. of car wheels = 14 x 4
= 56

Excess in the no.of wheels = 56 − 44
= 12

Diff. in the no.of car wheels & motorcycles wheels = 4 − 2
= 2

(Opposite) No. of motorcycles = 12 ÷ 2
= 6

No. of cars = 14 − 6
= 8

Assume all 14 vehicles are 

Total no. of motorcyles wheels = 14 x 2
= 28

Excess in the no.of wheels = 44 − 28
= 16

Diff. in the no.of car wheels & motorcycles wheels = 4 - 2
= 2

(Opposite) No. of cars = 16 ÷ 2
= 8

No. of motorcycles = 14 − 8
= 6

There are 8 cars and 6 motorcycles.

(Q1) Reflection

Study the problem
Think of a plan
Act on it
Reflection

In a car park, there are 14 cars and motorcycles.

Altogether, 44 wheels are counted.

How many cars and how many motorcycles are there in the car park?

There are 8 cars and 6 motorcycles.

Total no. of car wheels = 8 x 4
= 32

Total no. of motorcycle wheels = 6 x 2
= 12

Total no. of wheels = 32 + 12
= 44 (I'm right!)

Hands-on Session
Guess and Check
Supposition

(Q2) Guess and Check/ Supposition

Martin bought a total of 20 plates and bowls for $175.

Each plate cost $7 and each bowl cost $12.

How many more plates than bowls did he buy?

Study the problem
Think of a plan
Act on it
Reflection

No. of plates	Total cost of plates	No. of bowls	Total cost of bowls	Total cost	Check
10	10 x $7 = $70	10	10 x $12 = $120	$70 + $120 = $190	X (too much)
12	12 x $7 = $84	8	8 x $12 = $96	$84 + $96 = $180	X (too much)
13	13 x $7 = $91	**7**	7 x $12 = $84	$91 + $84 = **$175**	√

He bought = 13 − 7
= 6 more plates

He bought 6 more plates.

(Q2) Make a Supposition

Study the problem
Think of a plan
Act on it
Reflection

Martin bought a total of 20 plates and bowls for $175.

Each plate cost $7 and each bowl cost $12.

How many more plates than bowls did he buy?

Assume all are bowls :

Total cost of the bowls = 20 x $12
= $240

Excess in the cost = $240 - $175
= $65

Diff. in the cost of plate and bowl =$12 - $7
= $5

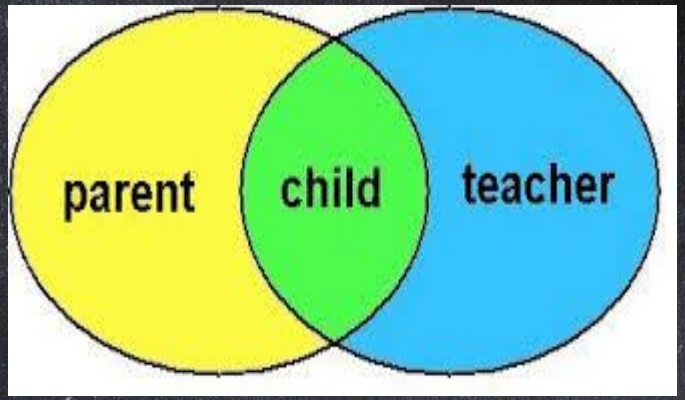
(Opposite) No. of plates = $65 ÷ $5
= 13

No. of bowls = 20 – 13
= 7

He bought = 13 - 7
= 6 more plates

He bought 6 more plates.

Parent Involvment



Motivation and support:

- Affirm their effort.
- Encourage your child to be self-directed in their learning.

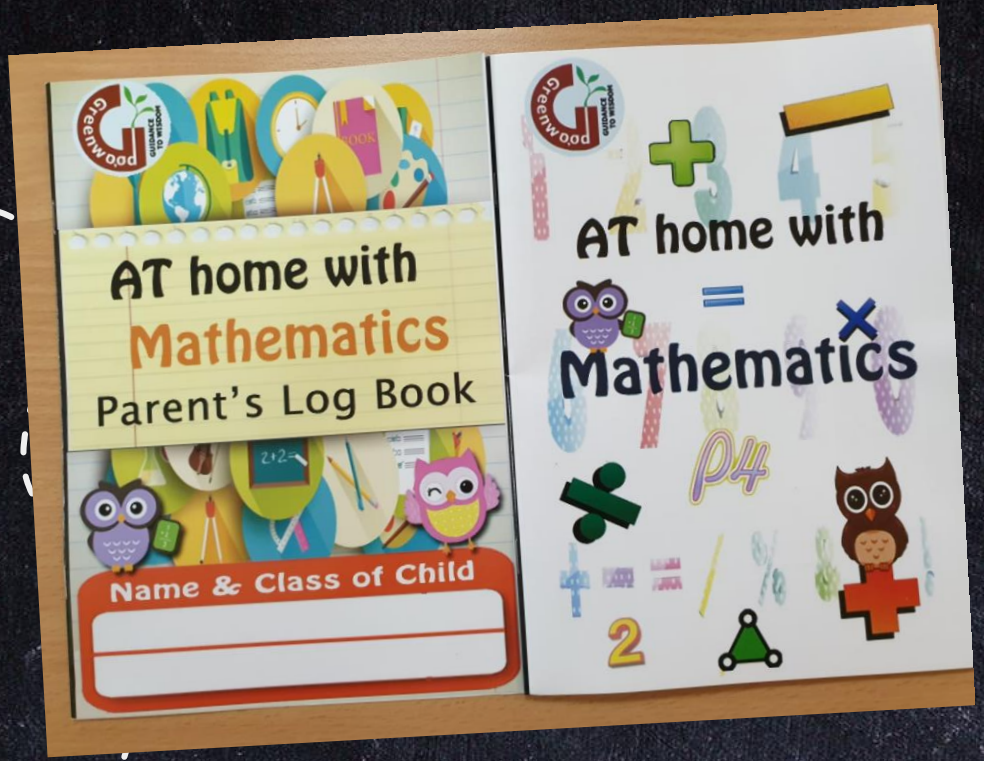
Be Present:

- Show interest in their learning through regular chats.
- Encourage alternative solutions.
- Learn together with your child.

Making connections:

- Seize opportunities to relate Math to the real world.

ATM Book



Establish Routines at Home:

- Set goals with your child.
- Complete the assigned set of questions by Sunday.
- Submit the log book to teachers for checking on Mondays.
- Revisit and reinforce concepts that the child is still developing.

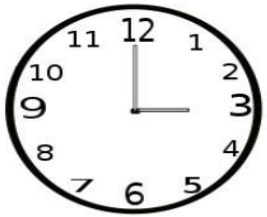
MATH IS EVERYWHERE!

Use what's around your busy family to support learning—Wherever you are!
Start with these questions:

WAITING IN LINE

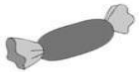
What buttons do you touch to make 56?

Can you find the 3 on my watch? What number comes before 7?



Where is aisle 4?

Which candy is shaped like a cylinder?

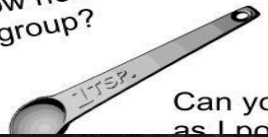


What candy is BELOW the lollipop?

COOKING DINNER

Do you know how many carrots are in this group?

How many forks do we need on the table for everyone to eat?



Can you count the teaspoons as I pour the oil?

Can you make a pattern with forks, knives, and spoons?

Whole numbers, Time & Decimals

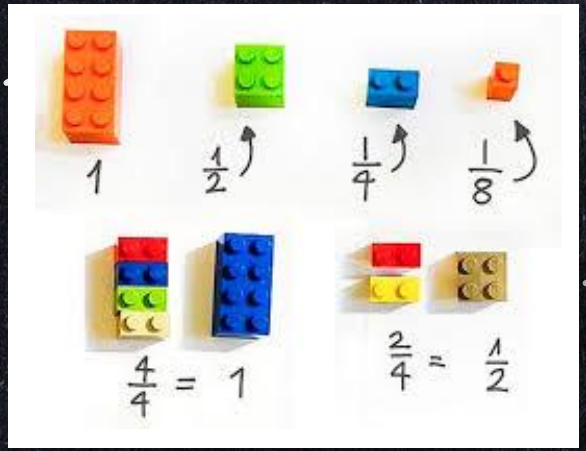
Movie Schedule

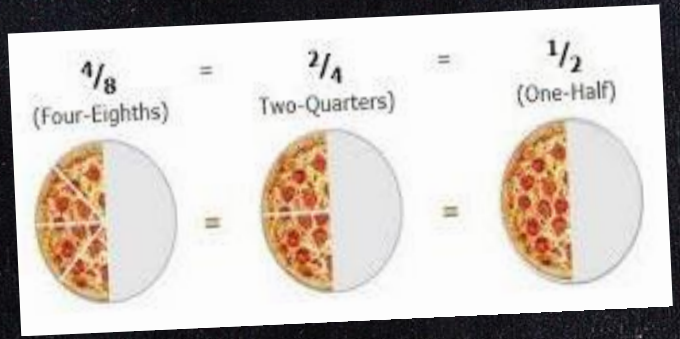
Little	0005 - 0153	1205 - 1353
Spies in Disguise	0208 - 0350	1408 - 1550
Ad Astra	0405 - 0608	1605 - 1808
The Angry Birds Movie 2	0622 - 0758	1822 - 1958
Toy Story 4	0814 - 0954	2014 - 2254
Dora and the Lost City of Gold	1010 - 1152	2210 - 2352

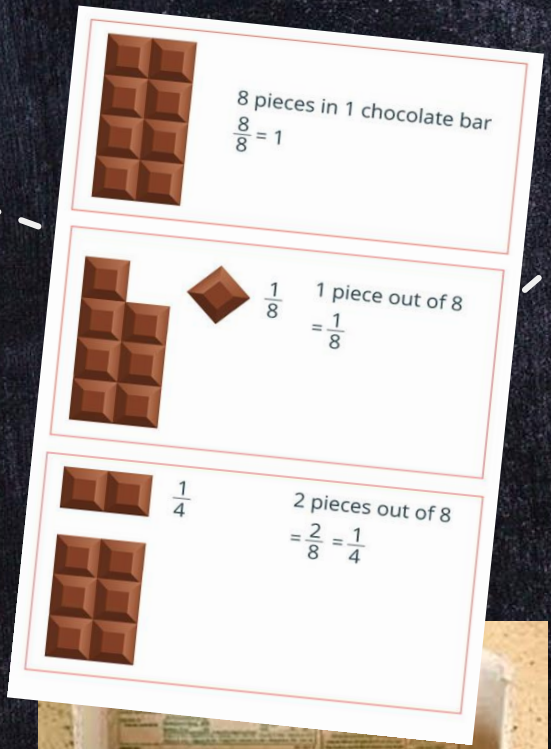
Cleaning of movie theatre will be done daily at 1200hrs and 0000hrs.

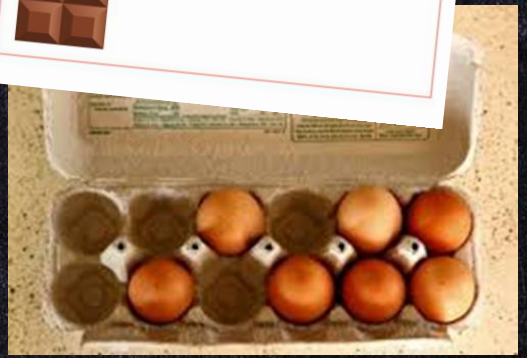
Movie theatre will be closed every Thursday 1100 hrs to Friday 0400 hrs for weekly maintenance.

Equivalent Fraction:





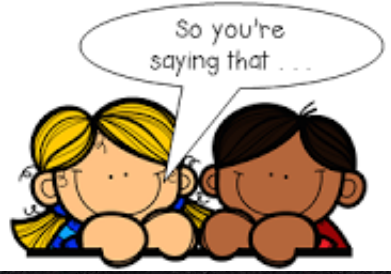




Communication and Reasoning in the Classroom using talk moves:

Revoicing

Restate what someone else is saying by repeating, summarizing, rephrasing, or translating his/her words



Repeating

Repeat what someone said to show that what he/she said was heard and understood

Reasoning

Think about what someone else is saying and compare your reasoning to his/her reasoning

Adding On

Connect your thoughts and ideas to what someone else is saying

Wait Time

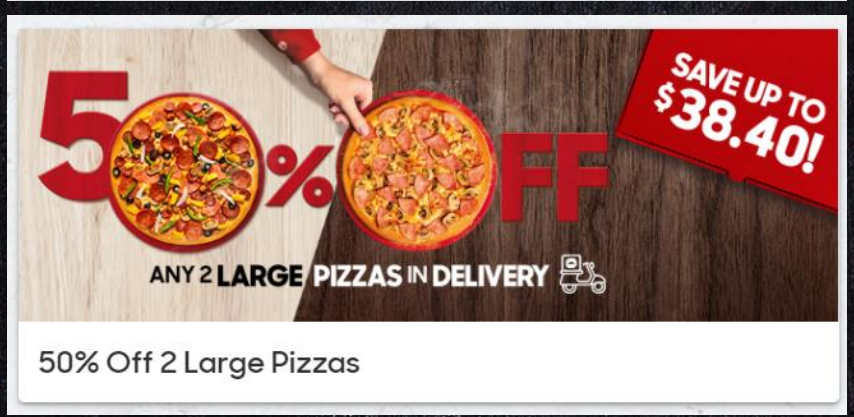
Give others time to think about the problem or discussion and time to respond

Revise Your Thinking

After listening to the thoughts and ideas of others, make changes to your thinking

Communication and Reasoning at Home

50% Off 2 Regular Pizzas



50% Off 2 Large Pizzas

Use thinking questions:

Which promotion is worth buying?

What makes you say that?

Explain your choice.

Communication and Reasoning at Home

Mummy has $50 and I have 8 people for dinner. 1 person should have at least 2 pieces of chicken.

What are the options that I have? (Eg: Listing)

What is the best deal?

What makes you say that?

Communication and Reasoning at Home

Details of Current Charges — **Invoice Period:#** 23/09/2020 - 23/10/2020

Premise Address:
122 WOODLANDS AVENUE 5
#[redacted]
SINGAPORE 739021

MSS No.
9303947353

Contract End Date:
14/02/2021

	Rate	Quantity	Amount (SGD)
Electricity Services			
Energy Usage Charges			
G Energy Charge (Fixed Rate)	0.168000 $/kWh	634.000 kWh	106.51
Total Charges (subject to GST)			**106.51**
Total Charges (not subject to GST)			**0.00**
GST (7%)			**7.46**
Total (incl. GST)			**113.97**

Details of Current Charges — **Invoice Period:#** 23/11/2020 - 21/12/2020

Premise Address:
122 WOODLANDS AVENUE 5
[redacted]
SINGAPORE 739021

MSS No.
9303947353

Contract End Date:
14/02/2021

	Rate	Quantity	Amount (SGD)
Electricity Services			
Energy Usage Charges			
G Energy Charge (Fixed Rate)	0.168000 $/kWh	662.000 kWh	111.22
Total Charges (subject to GST)			**111.22**
Total Charges (not subject to GST)			**0.00**
GST (7%)			**7.79**
Total (incl. GST)			**119.01**

G: Subject to 7
O: Not subject
*: Estimated C
#: Consumptio

Details of Current Charges — **Invoice Period:#** 21/08/2020 - 22/09/2020

Premise Address:
122 WOODLANDS AVENUE 5
[redacted]
SINGAPORE 739021

MSS No.
9303947353

Contract End Date:
14/02/2021

	Rate	Quantity	Amount (SGD)
Electricity Services			
Energy Usage Charges			
G Energy Charge (Fixed Rate)	0.168000 $/kWh	716.000* kWh	120.29
Total Charges (subject to GST)			**120.29**
Total Charges (not subject to GST)			**0.00**
GST (7%)			**8.42**
Total (incl. GST)			**128.71**

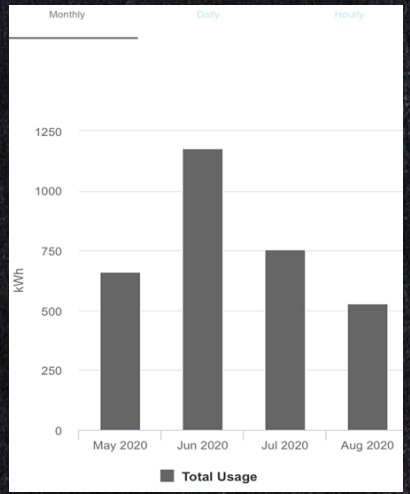
G: Subject to 7% GST
O: Not subject to GST
*: Estimated Consumption from SP Group
#: Consumption Period may differ from Invoice Period subject to MSSL meter read date.

Use thinking questions:

In which month is the utility bill the highest?

Why is it so?

Explain how we can reduce the bill.



An example of how bar graphs are used in real life.

Online Resources

https://toytheater.com/	Games
https://toytheater.com/category/teacher-tools/virtual-manipulatives/ https://Matholia.com	Manipulatives
https://toytheater.com/category/teacher-tools/	Test
https://twww.mathisfun.com	Interactive independent learning


Q&A


thank you