2023 Parents' Engagement Session

Study Skills and Expectation of Primary Mathematics

(Primary 3 & 4)

22 July 2023

Objectives

- To better equip you with knowledge and skills in coaching your child in Mathematics by creating an awareness of the expectations for Primary 3 & 4 Mathematics

- To increase collaboration between parents and the school

Aims of Primary Mathematics: Laying a strong foundation

- ✓ 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 in problem-solving
- ✓ Build confidence and foster interest in mathematics

Topics Covered in P3 & P4

Topics	P3	P4	P5
Whole Numbers	1. Numbers up to 10 000 2. Addition and Subtraction within 10 000 3. Multiplication and Division (6, 7, 8 & 9)	1. Numbers up to 100 000 2. Factors and Multiples 3. Four Operations (+ , - , x , ÷)	• Numbers up to 10 million • Four Operations (+ , - , x , ÷) without calculator
Fractions	1. Equivalent fractions 2. Addition and subtraction (related fractions)	1. Mixed Numbers and Improper Fractions 2. Fraction of a Set of Objects 3. Addition and Subtraction	• Fraction and Division • Four Operations (+ , - , x , ÷) with & without calculator

Topics Covered in P3 & P4

Topics	P3	P4	P5
Measurement	1. Length, Mass and Volume 2. Time 3. Area and Perimeter	1. Area and Perimeter	• Area of Triangle • Volume of cube and cuboid
Decimals	*Adding and subtracting money in decimal notation*	1. Decimals up to 3 decimal places 2. Addition and Subtraction 3. Multiplication and Division	• Four Operations (x & ÷ by 10, 100, 1000 and their multiples without calculator) • Converting measurements (km & m, m & cm, kg & g, ℓ & mℓ)

Topics Covered in P3 & P4

Topics	P3	P4	P5
Geometry	1. Angles 2. Perpendicular and Parallel Lines	1. Angles 2. Rectangle and Square 3. Line Symmetry *4. Nets (P4 2024)*	• Angles • Triangles • Parallelogram, Rhombus & Trapezium
Data Analysis	1. Bar Graphs	1. Tables and Line Graphs *2. PIE Charts (P4 2024)*	

Topic: Whole Numbers

PRIMARY 1	PRIMARY 2	PRIMARY 3	PRIMARY 4	PRIMARY 5
Numbers up to 100	Numbers up to 1 000	Numbers up to 10 000	Numbers up to 100 000	Numbers up to 10 million
Addition and Subtraction within 100	Addition and Subtraction up to 3-digits	Addition and Subtraction up to 4-digits		
Concepts of multiplication and division	Multiplication and Division (Multiplication tables of 2, 3, 4, 5 & 10)	Multiplication and Division (Multiplication tables of 6, 7, 8, 9)	Factors and Multiples	Four Operations (Order of Operations)

Topic: Whole Numbers

- Pupils need to remember multiplication tables, especially multiplication tables of **6, 7, 8 and 9.**
- Pupils need to know how to perform Division of Whole Numbers especially long division algorithm
- Parents can help by **revising** with your child and ensure that they have mastered their multiplication tables.

Factual Fluency

Ability to recall the answers to basic Math facts automatically without hesitation.

Level	Number Facts
P1 Term 1	Number Bonds up to 10
End of P1	Addition and Subtraction within 20
P2	Multiplication tables of 2, 3, 4, 5 and 10
P3	Multiplication tables of 6, 7, 8 and 9

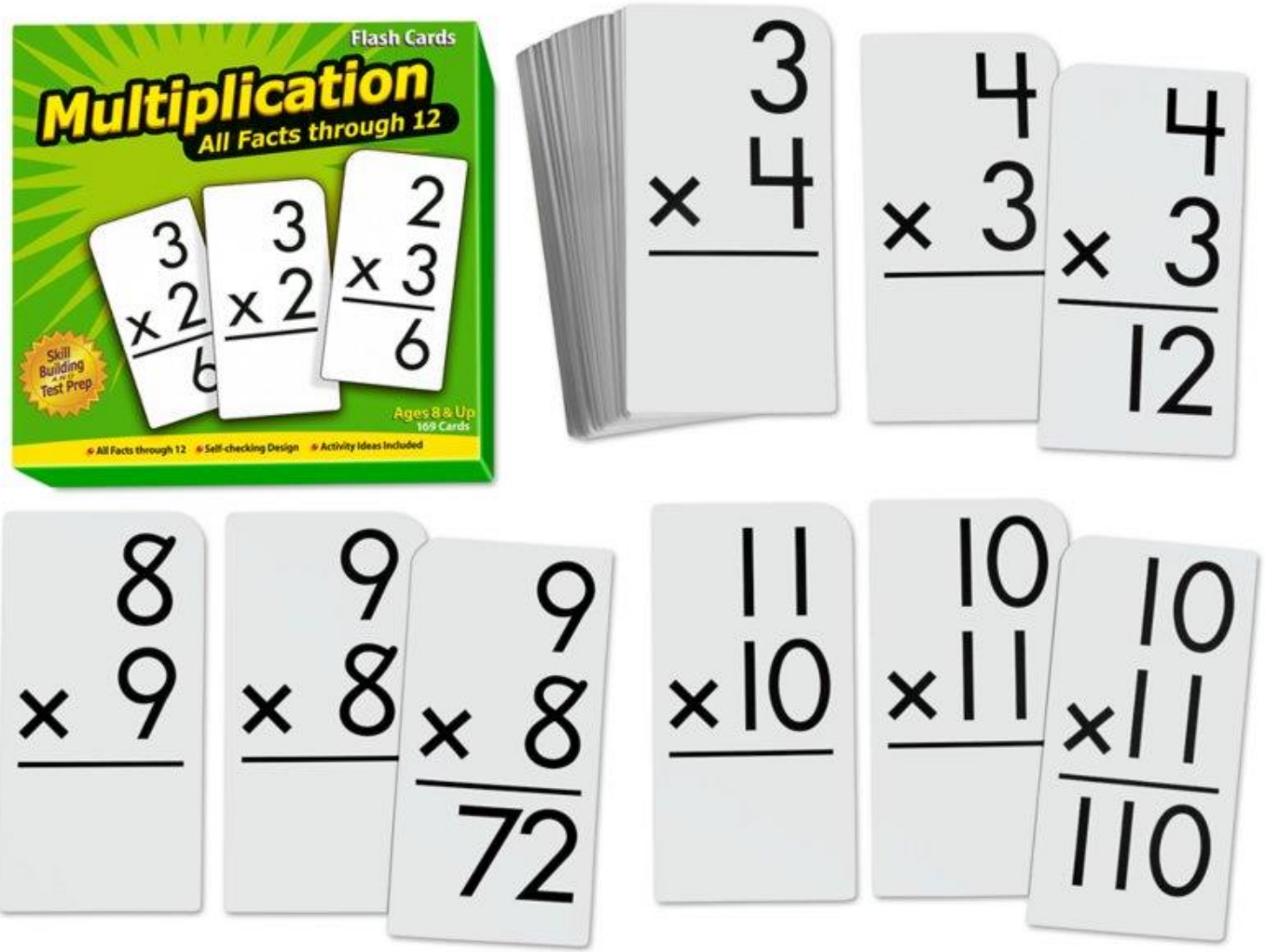
How to develop Factual Fluency?

- ✓ Practice
- ✓ Learning using concrete materials
- ✓ Games

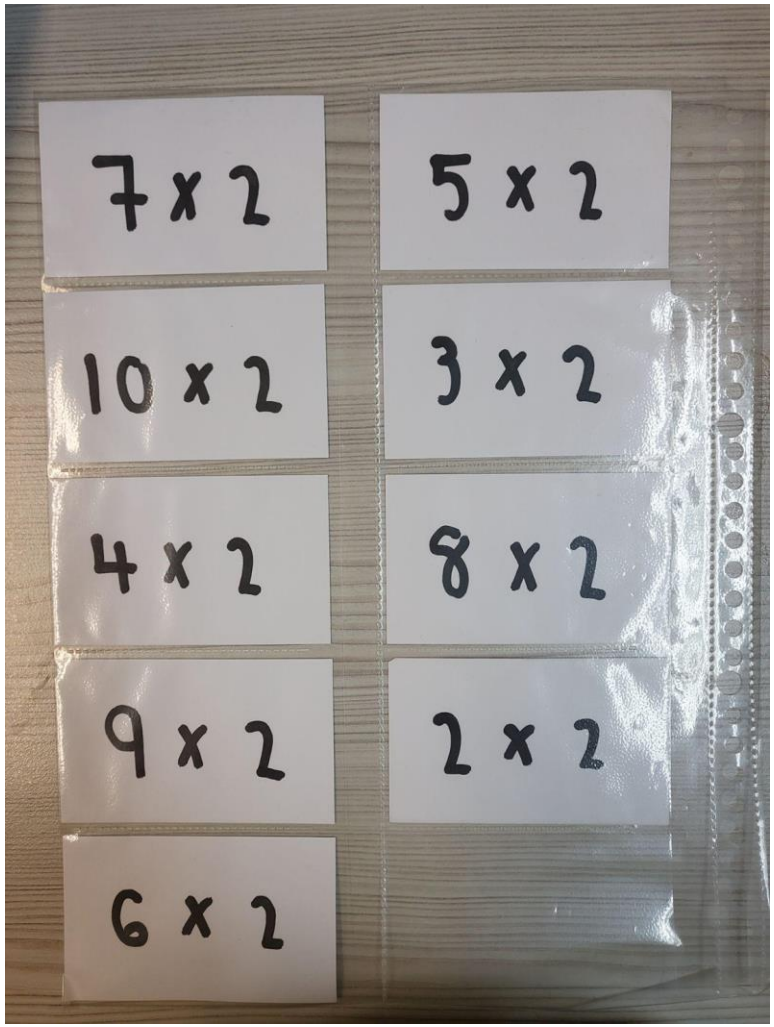
Strategies for learning multiplication tables

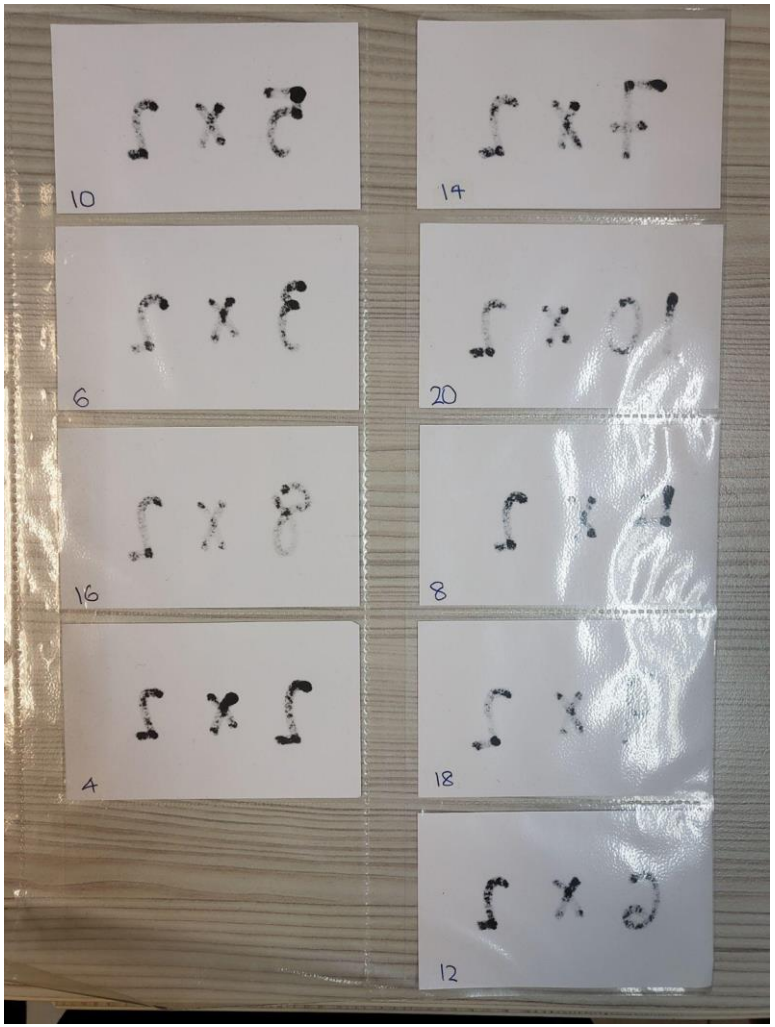
- **Multiplication Fact Cards**
- Multiplication Songs
- Show patterns/fingers for 9 times table
- Games or Online resources

Multiplication Fact Cards



Multiplication Fact Cards





Strategies for learning multiplication tables

- Multiplication Fact Cards
- **Multiplication Songs**
- Show patterns/fingers for 9 times table
- Games or Online resources

Multiplication Songs

6 Times-Table
(Sing to the tune of Six Little Ducks)

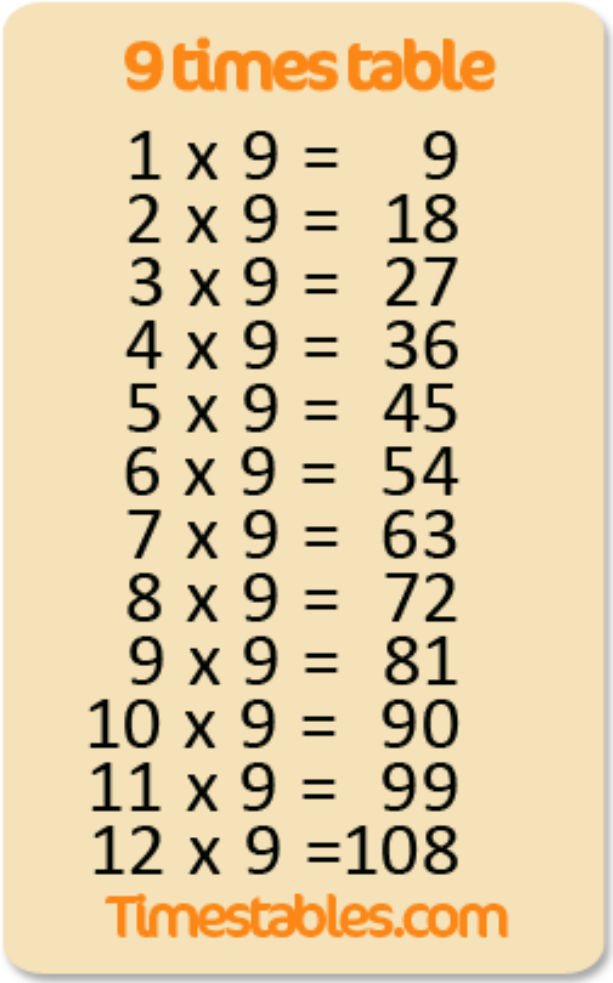
6, 12, 18, 24
30 and 36
42 and 48
54 and 60

Strategies for learning multiplication tables

- Multiplication Fact Cards
- Multiplication Songs
- **Show patterns / using fingers for 9 times table**
- Games or Online resources

9 times table – Pattern

09
18
27
36
45
54
63
72
81
90

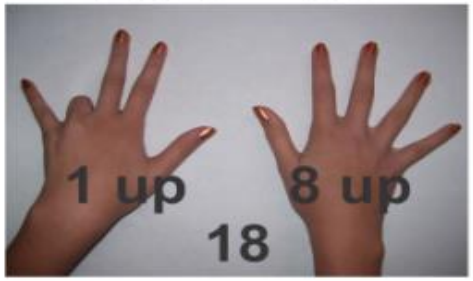


9 times table – Using fingers

1 x 9 = 9

1st finger is down

2 x 9 = 18

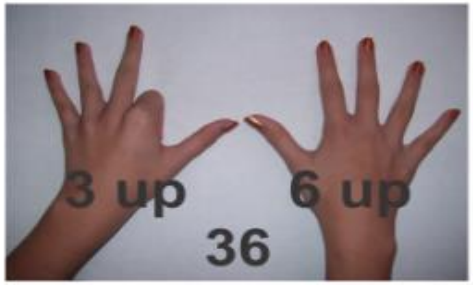


2nd finger is down

3 x 9 = 27

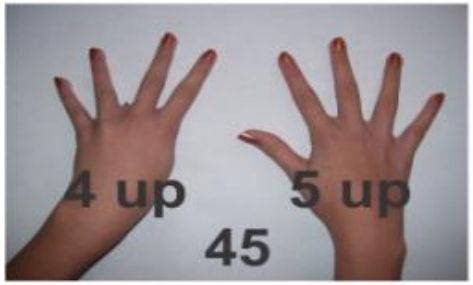
3rd finger is down

4 x 9 = 36



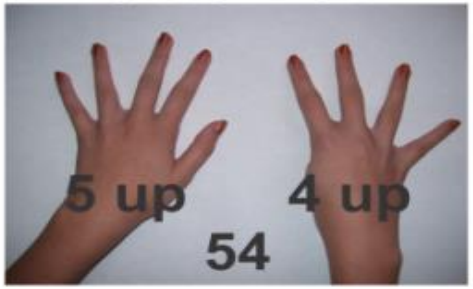
4th finger is down

5 x 9 = 45



5th finger is down

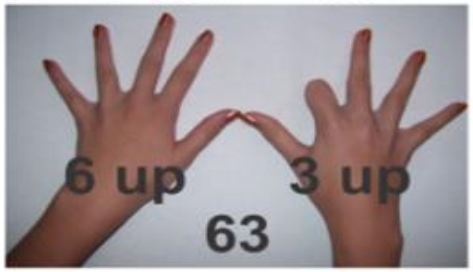
6 x 9 = 54



6th finger is down

9 times table – Using Fingers

7 x 9 = 63



7th finger is down

8 x 9 = 72

8th finger is down

9 x 9 = 81

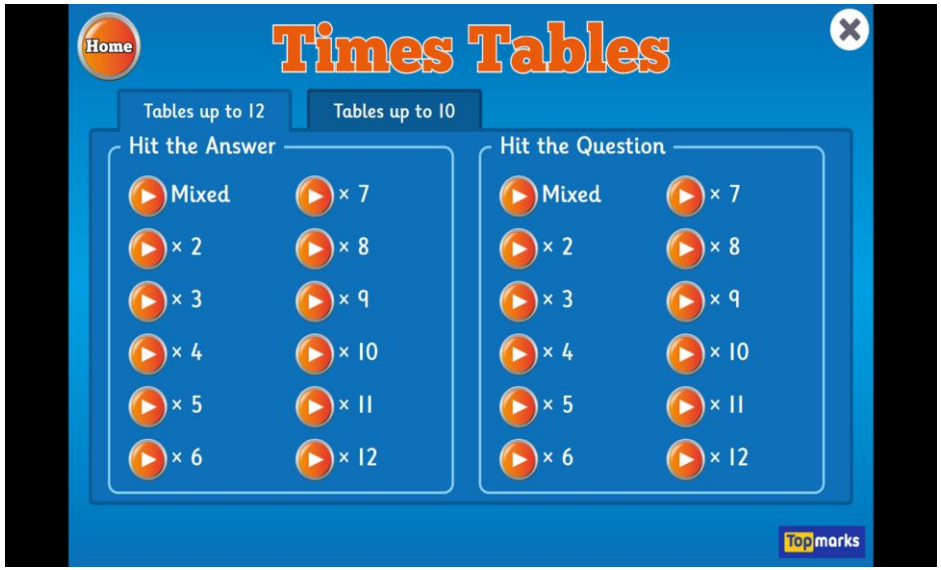
9th finger is down

Strategies for learning multiplication tables

- Multiplication Fact Cards
- Multiplication Songs
- Show patterns/fingers for 9 times table
- **Games or Online resources**

Games or Online Resources

- https://www.topmarks.co.uk/maths-games/hit-the-button



Challenges in problem solving

- Understanding the language in word problems

- Identifying operations needed for word problems

Mathematical Language

Mathematical terms/ phrases	Part-Whole	Combine	Compare
Sum / Difference Product / Multiply Quotient / Divide Remainder Factor / Multiple Groups of Equal groups 3 times as many as	Some of them $\frac{1}{3}$ of them Remaining Left Shared equally	Total In all Altogether	More Less/ Fewer Heavier Lighter Taller Shorter

Mathematical Language

Q1) The difference between two numbers is 25.

The smaller number is 17.

What is the greater number?

Q2) The difference between two numbers is 25.

The greater number is 57.

What is the smaller number?

Q3) The sum of two numbers is 68.

One of the numbers is 56.

What is the other number?

Mathematical Language

Q1) The difference between two numbers is 25.

The smaller number is 17.

What is the greater number? [25 + 17 = 42]

Q2) The difference between two numbers is 25.

The greater number is 57.

What is the smaller number? [57 – 25 = 32]

Q3) The sum of two numbers is 68.

One of the numbers is 56.

What is the other number? [68 – 56 = 12]

Problem Solving

STEPS

to

Problem Solving

Problem Solving

STUDY

Understanding the Problem

- Read and understand the problem
- Paraphrase the problem
  - explain in your own words
- Check
  - all information is used

Problem Solving

At a carnival, every 4th child gets a free party hat. Every 6th child gets a free balloon. If there are 40 children at the carnival, how many children will get both the free gifts?

Study

At a carnival, **every 4th child** gets a free party hat. **Every 6th child** gets a free balloon. If there are **40** children at the carnival, how many children will get **both** the free gifts?

Problem Solving

THINK

Devising a Plan

- Visualize
  - using models, diagrams and/or tables
- Hypothesize
  - decide on the strategies to solve the problems
- Estimate
  - predict the answer using estimation

Problem Solving

EXECUTE

Implementing the Plan

- Compute
  - transform the models/diagrams/tables into number sentences
- Check
  - check that answer is close to the predicted answer

Think & Execute

- **every 4th child:**

  4, 8, 12,16, 20, 24, 28, 32, 36, 40

- **every 6th child:**

  6, 12, 18, 24, 30, 36

- **40** children
- how many children will get **both**

Think & Execute

every 4th child:

4, 8, 12, 16, 20, 24, 28, 32, 36, 40

every 6th child:

6, 12, 18, 24, 30, 36

Answer: 3

Marking Scheme

Multiples of 4: 4, 8, **12**, 16, 20, **24**, 28, 32, **36**, 40

[M1] *for listing multiples of 4*

Multiples of 6: 6, **12**, 18, **24**, 30, **36**

[M1] *for listing multiples of 6*

Ans: <u>3</u> [A1]

Solution 1

1, 2, 3, **4**, 5, 6, 7, **8**, 9, 10
11, **12**, 13, 14, 15, **16**, 17, 18, 19, **20**
21, 22, 23, **24**, 25, 26, 27, **28**, 29, 30
31, **32**, 33, 34, 35, **36**, 37, 38, 39, **40**
[M1]

Ans: 3 [A1]

Solution 2

1, 2, 3, **4**, 5, 6, 7, **8**, 9, 10
11, **12**, 13, 14, 15, **16**, 17, 18, 19, **20**
21, 22, 23, **24**, 25, 26, 27, **28**, 29, 30
31, **32**, 33, 34, 35, **36**, 37, 38, 39, **40**
[M2]

Ans: 6 [A0]

Solution 3

1, 2, 3, 4, 5, 6, 7, 8, 9, 10
11, 12, 13, 14, 15, 16, 17, 18, 19, 20
21, 22, 23, 24, 25, 26, 27, 28, 29, 30
31, 32, 33, 34, 35, 36, 37, 38, 39, 40
[M0]

Ans: 3 [A0] {Answer marked as fluke}

Problem Solving

PROVE

Looking back

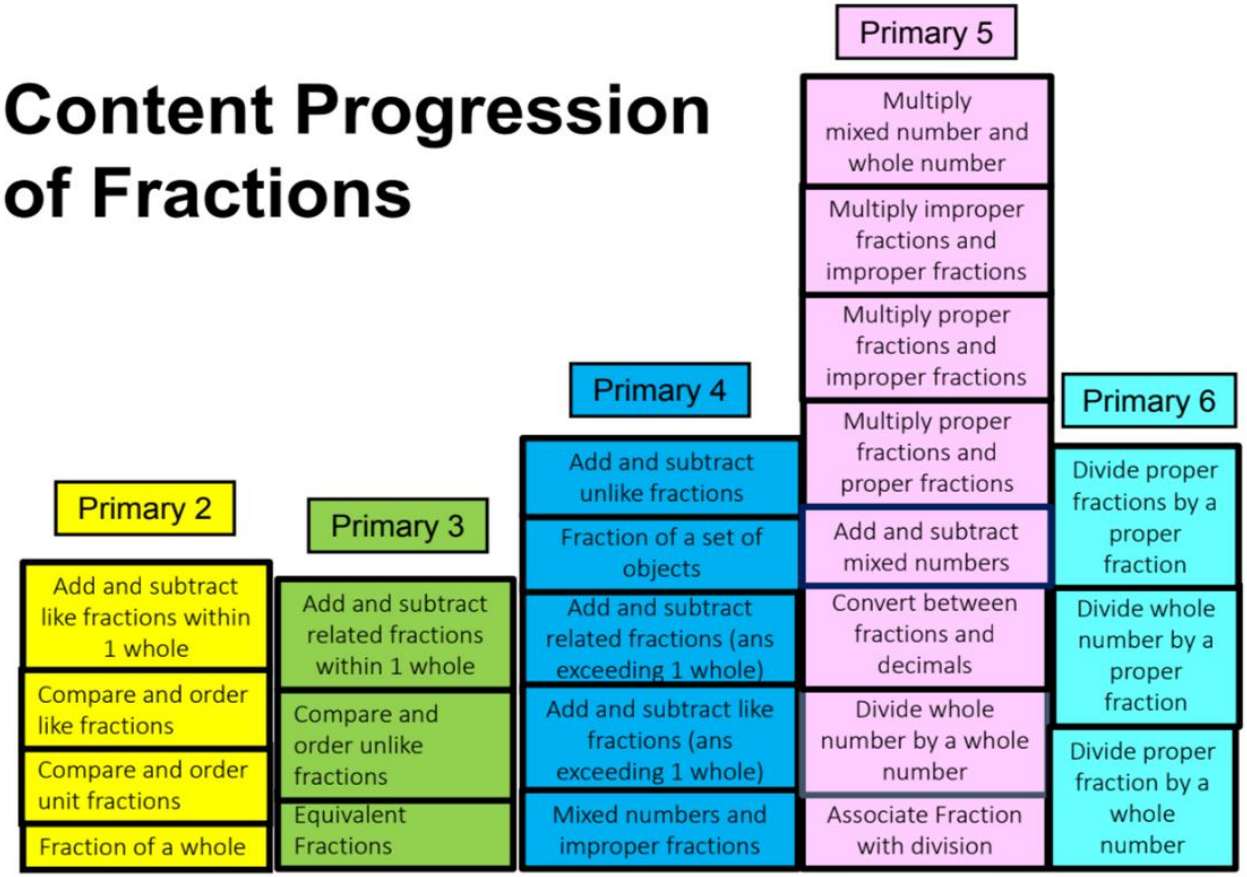
- Check
  - computation
  - number sentences, working and statements are written correctly
  - answer make sense

Topic: Fractions

- Pupils generally have difficulty understanding the concept of Fractions

- Important to grasp concept of equivalent fractions as it will help in understanding future topics like ratio, percentage and decimals.

Topic: Fractions



Equivalent Fractions

- Fractions that look different but have the same value

- Basis for comparing fractions and addition and subtraction of fractions

Equivalent Fractions

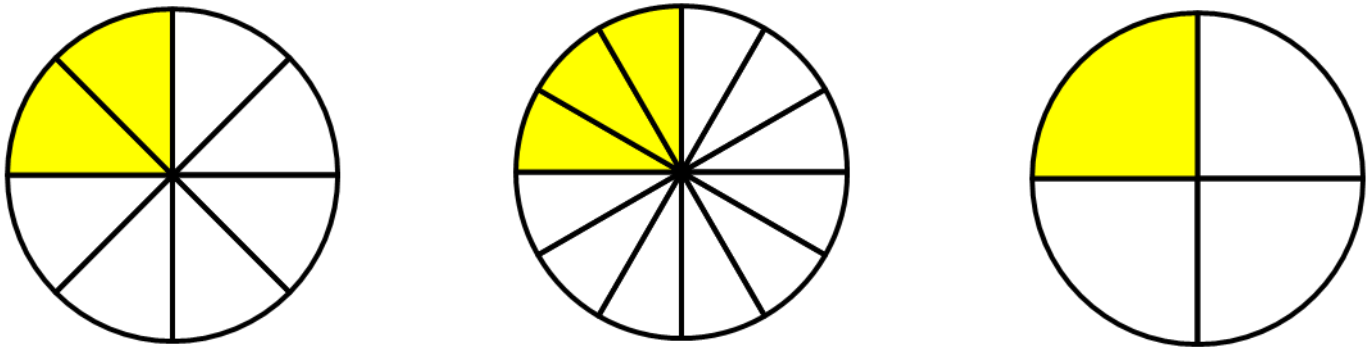
- Do you think these are equivalent fractions?

$\frac{2}{8}$ $\frac{3}{12}$ $\frac{1}{4}$

Equivalent Fractions

- Do you think these are equivalent fractions?

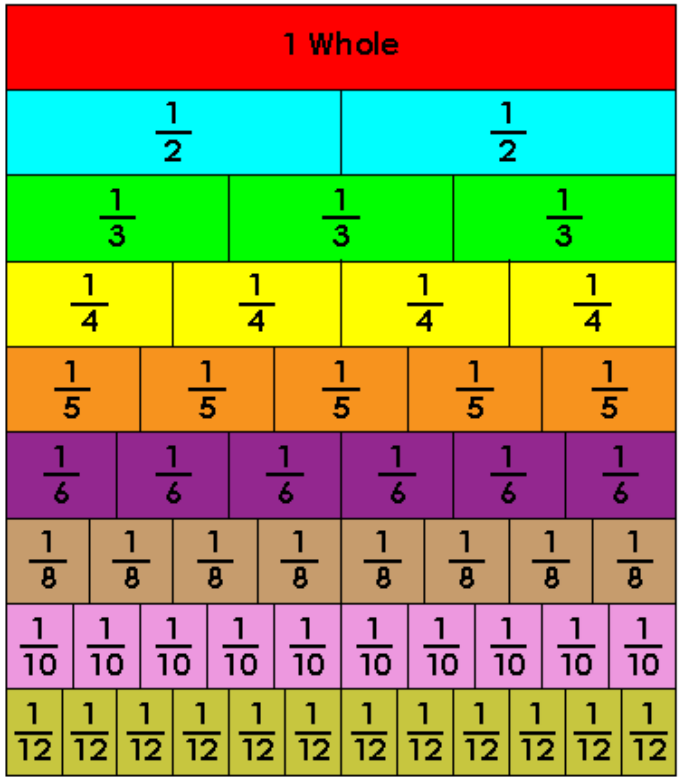
$\frac{2}{8}$ $\frac{3}{12}$ $\frac{1}{4}$



Equivalent Fractions

1. Paper Folding

2. Fraction bars / discs



Equivalent Fractions

Paper Folding Activity

Passionate Learners, Gracious Citizens

Equivalent Fractions

$\frac{1}{4}$ $\frac{2}{8}$ $\frac{3}{12}$

Comparison of fractions: same denominator

✓ **Multiply** both the numerator and denominator by the same number

Express fractions in simplest form

✓ **Divide** both the numerator and denominator by the same number

Addition and Subtraction of Fractions

Q1: What is $\frac{1}{6} + \frac{2}{3}$?

Q2: What is $\frac{2}{3} - \frac{5}{12}$?

Remember to leave your answer in simplest form

Addition and Subtraction of Fractions

Q1: What is $\frac{1}{6} + \frac{2}{3}$?

$\frac{1}{6} + \frac{2}{3} = \frac{3}{9}$ ✗

$\frac{1}{6} + \frac{2\times2}{3\times2} = \frac{5}{6}$ ✓

Common error:

To add the numerator and denominator separately

Addition and Subtraction of Fractions

Q2: What is $\frac{2}{3} - \frac{5}{12}$?

$$\frac{5}{12} - \frac{2\times4}{3\times4}$$

$$= \frac{5}{12} - \frac{8}{12}$$

$$= \frac{3}{12}$$

Common error:
To change the order when subtracting fractions

$$\frac{8}{12} - \frac{5}{12}$$

$$= \frac{3}{12}$$

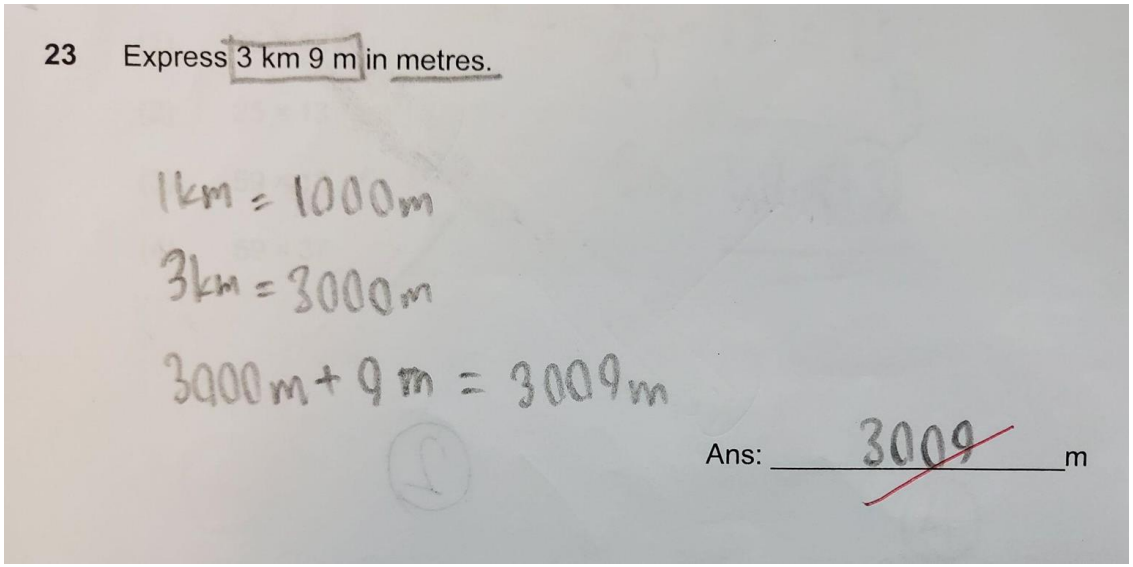
Measurements

- ✓ Conversion of units
- ✓ Importance of using timeline
- ✓ Difference between area and perimeter
- ❖ Wrong or no units written
- ❖ Difficulty applying concept of perimeter and area

Length, Mass and Volume

Conversion of units

- ✓ 100 cm = 1m
- ✓ 1000 m = 1km
- ✓ 1000 g = 1 kg
- ✓ 1000 mℓ = 1ℓ



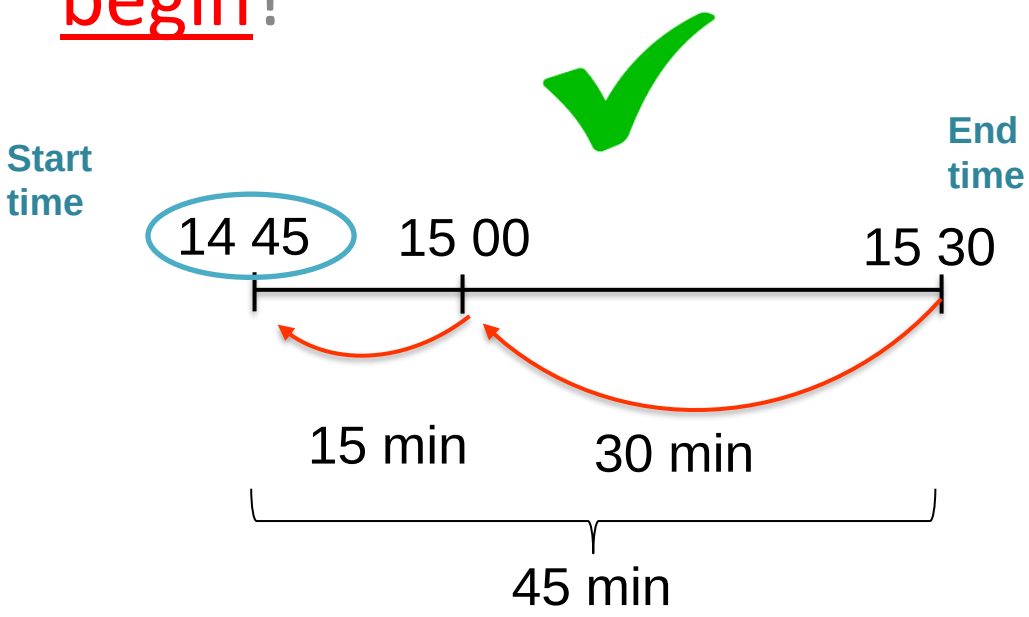
Length, Mass and Volume

Have conversations with your child on :

- how heavy things are e.g. packet of rice, salt, sugar
- length of the items e.g. door, window, cupboard
- capacity of bottles or containers e.g. milk, fruit juice

Time

Q1) Cindy's piano lesson ended at 15 30. It lasted 45 minutes. What time did the piano lesson begin?



15 30 – 45 min = 14 45

3.30pm – 45 min=2.45pm

Common error:

Presents incorrect mathematical statements

Presentation of working

Check that number sentences are written correctly

★ Time

15 min after 4.30 p.m.

4.30 + 15 = 4.45 p.m.

Ans: 4:45 pm or 16:45

★ Time

15 min after 4.30 p.m.

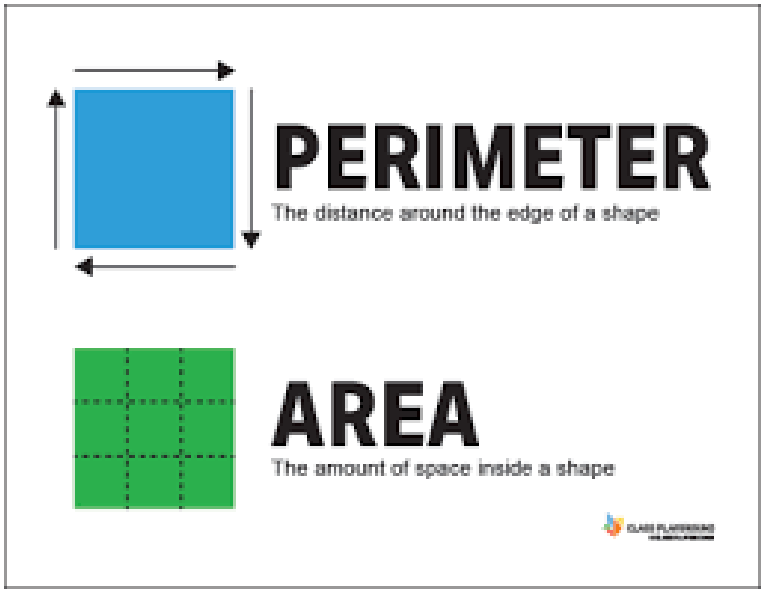
4.30 p.m. → 15 min = 4.45 p.m.

(draw timeline)

Ans: **4.45 pm or 16 45**

Area and Perimeter

- Wrong or no units written for perimeter (cm/m) and area (cm^2 or m^2)
- Difficulty applying concept of perimeter and area

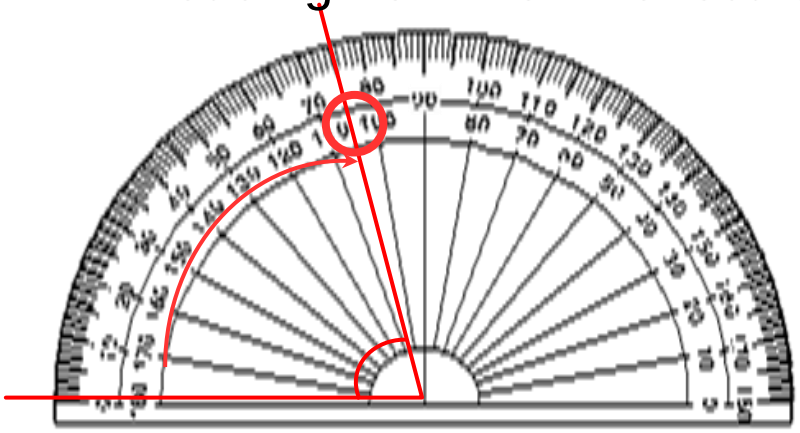


Geometry

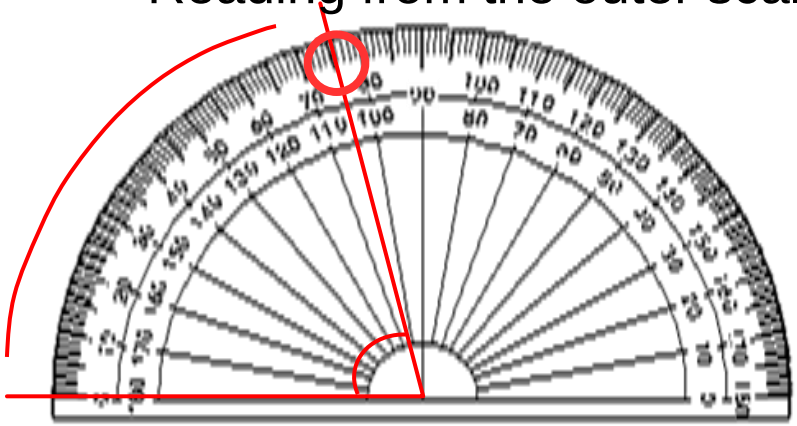
- ✓ For geometry, important to have the mathematical instruments, protractor, ruler and set square.
- ✓ Know how to use the tools eg: ruler starting from zero
- ✓ Accuracy is important for this topic

Geometry

Reading from the inner scale:



Reading from the outer scale:

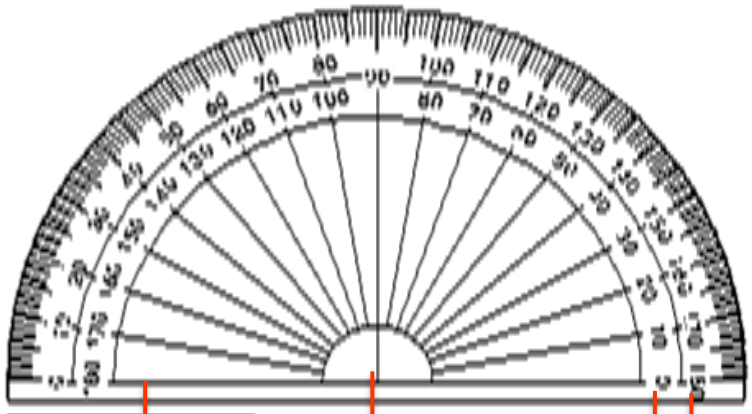


Common error:

Using the wrong scale when measuring angle

Geometry

- Know the parts of the protractor
- Be very accurate when drawing or measuring angles



1 degree or 1°

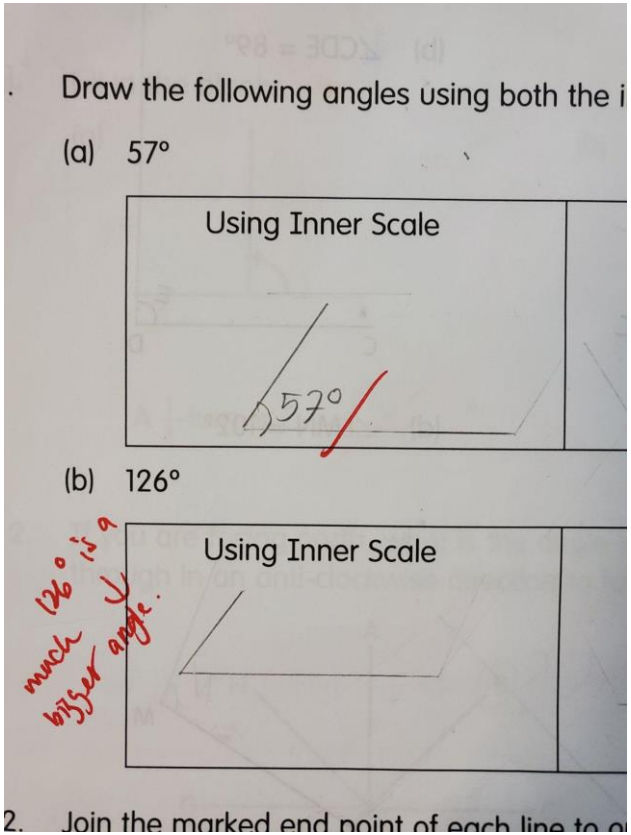
base line

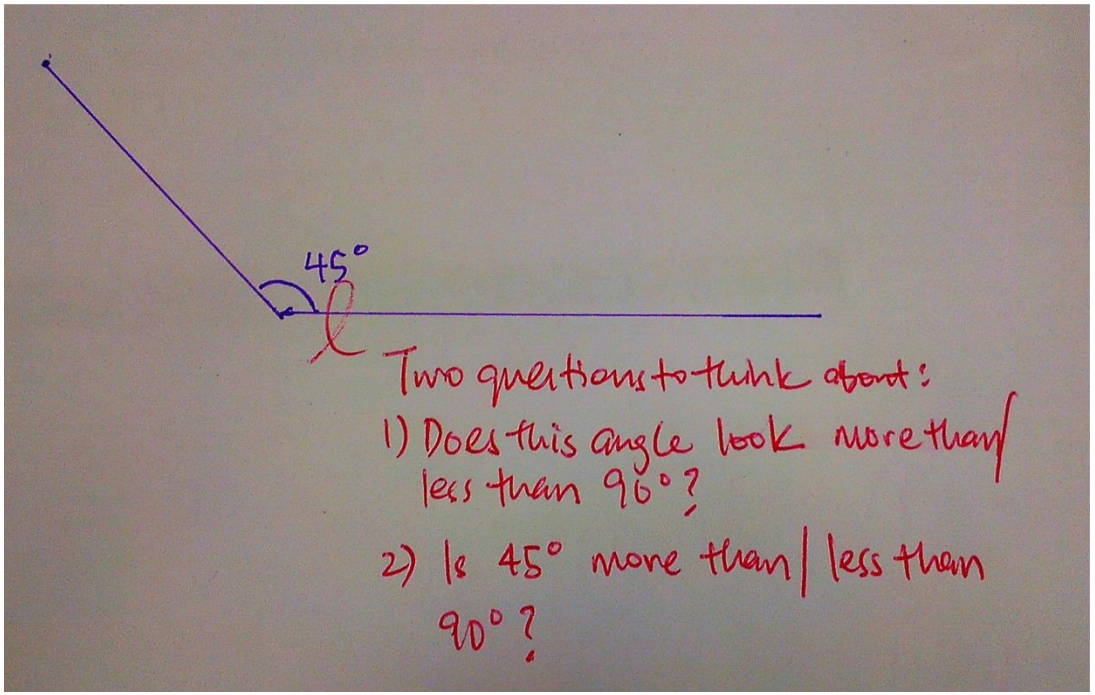
centre mark

inner scale

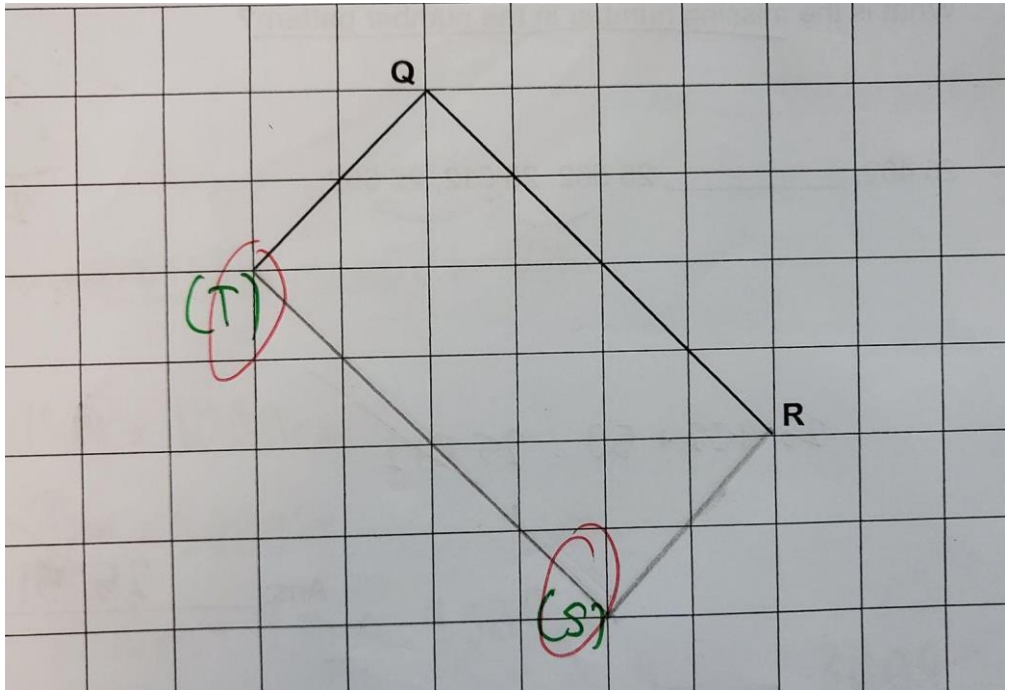
outer scale

Geometry


Draw the following angles using both the i
(a) 57°
Using Inner Scale
57°
(b) 126°
Using Inner Scale
126° is a much bigger angle.
2. Join the marked end point of each line to o


45°
Two questions to think about:
1) Does this angle look more than/ less than 90°?
2) Is 45° more than/ less than 90°?

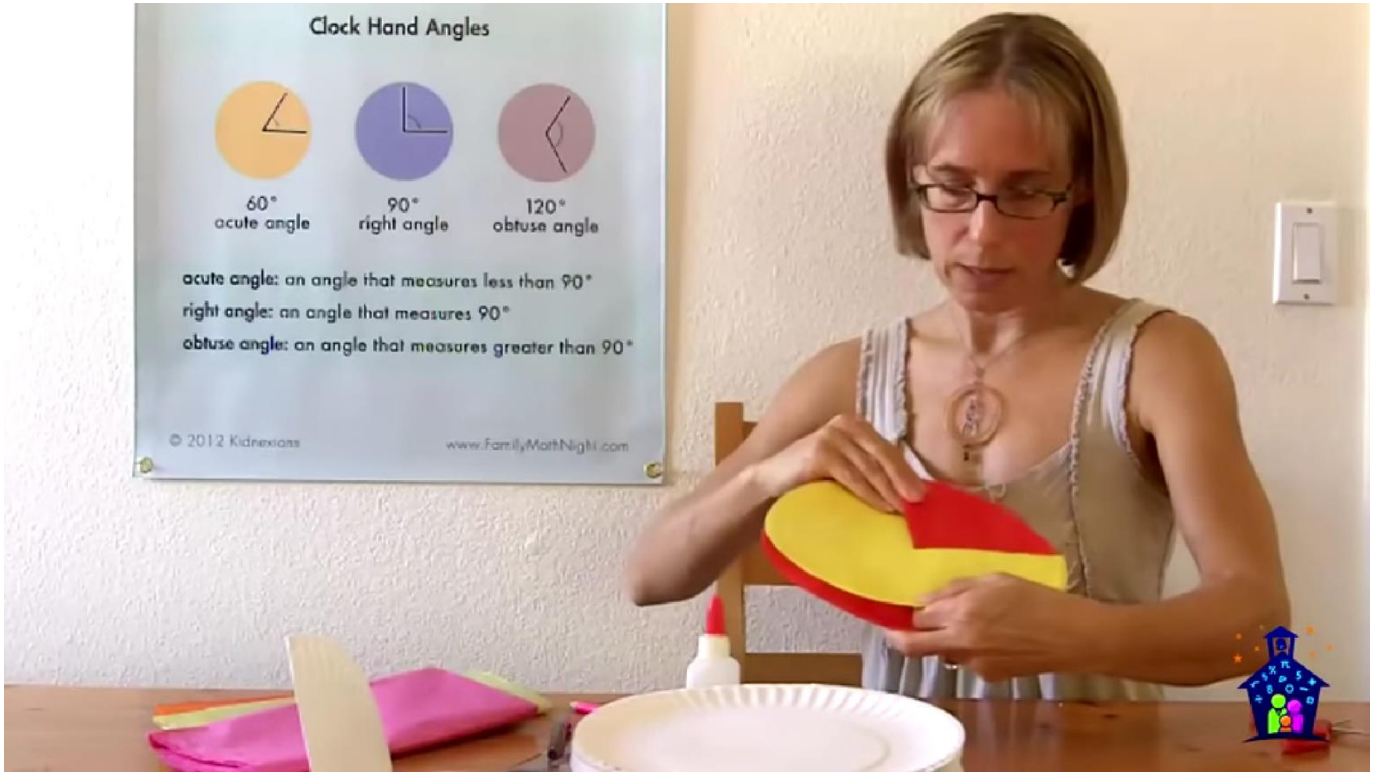
Geometry



Common error:

Diagrams are not labelled accurately

Geometry

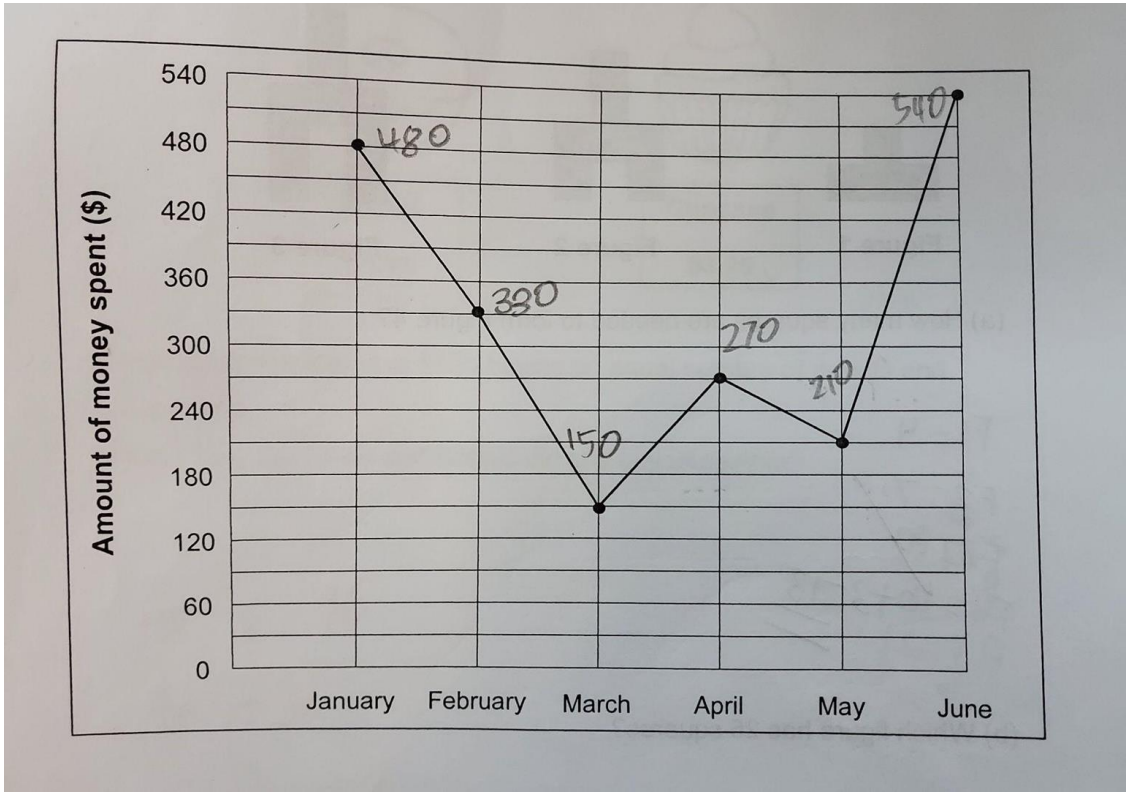


https://youtu.be/1frjfNj5dMc

Data Analysis

- ✓ Once you read/interpreted the scales wrongly, subsequent questions will be answered wrongly.
- ✓ Is the question asking for a category or a value?

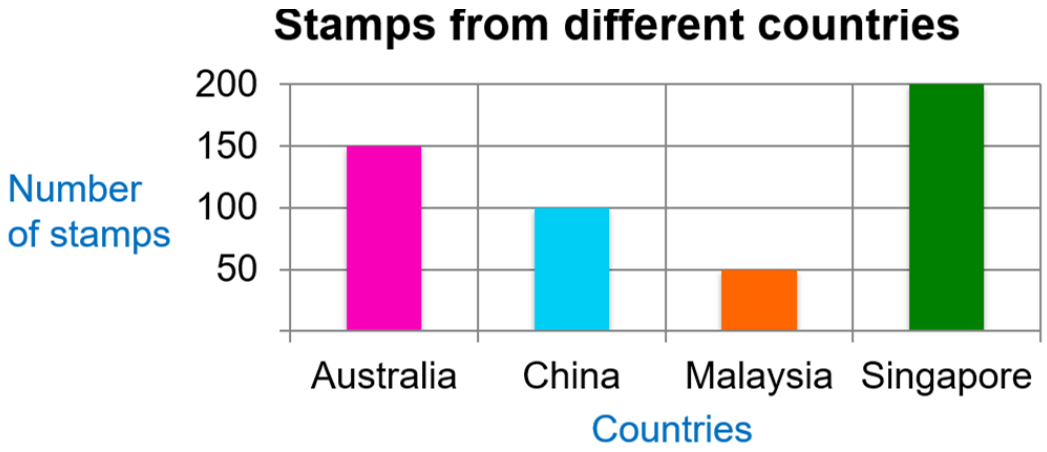
Data Analysis



Recommended :

Analyze the data before answering the questions. Indicate the value in the graph and know the value of each minor scale

Data Analysis



c) Lionel has thrice as many [Australia] stamps as Malaysia stamps.

d) How many more Singapore stamps than Australia stamps are there?

200 – 150 = 50

There are [50] more Singapore stamps than Australia stamps.

How can you help?

- Remind them to **check for reasonableness** of answers as well as accuracy.
- Ensure that they **present** their work **logically** and **accurately.**
- Teach them to **check** their work and spot their own mistakes.
- Go through the **STEP process.**

We want to hear from you