Maths

KS2 Calculation Policy

SUBJECT LEAD: HANNAH PERKINS

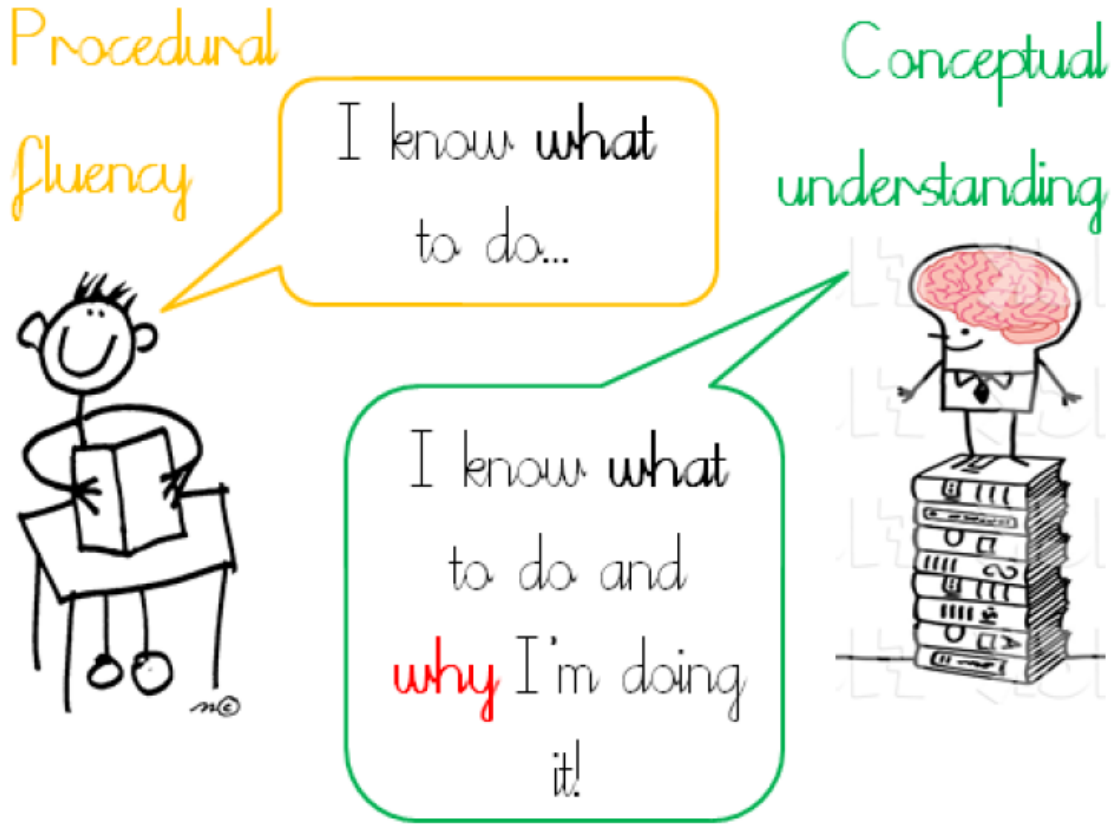
Aims

- Priorities and scheme of work
- A mastery approach
- Concrete materials and written calculations
- How to support your child at home

Priorities

- To raise and maintain standards in maths across the school in line with national age expectations
- To promote learning environments to enrich and support teaching and learning of maths.
- To ensure high achievers are appropriately challenged in all lessons.

What is a **mastery** approach?



What is a **mastery** approach?

- It requires systematic thinking.
- It involves being able to explain a procedure to another child.

Convince me!

Explain why.

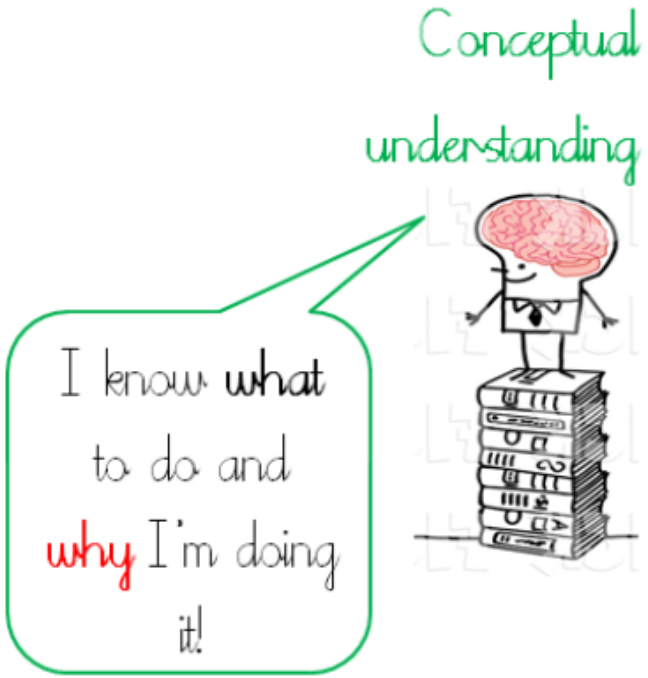
Odd one out.

Do you agree?

True or false?

Prove it!

What do you notice?

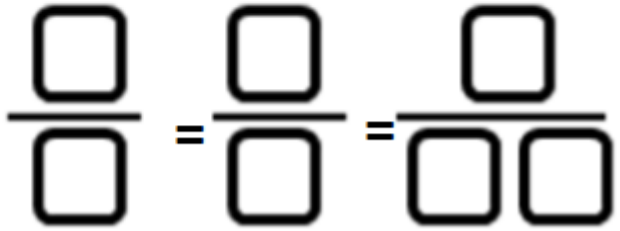


What is a **mastery** approach?

Harry says, "6/8 is always the same as 3/4"
Is he correct? Explain your answer using diagrams and sentences.

Use these numbers to complete these blanks:

1, 2, 4, 4, 8, 8, 6,



Schemes of work

The White Rose overviews...

 have number at their heart. A large proportion of time is spent reinforcing number to build competency

 ensure students have the opportunity to stay together as they work through the schemes as a whole group

 provide plenty of opportunities to build reasoning and problem solving elements into the curriculum.

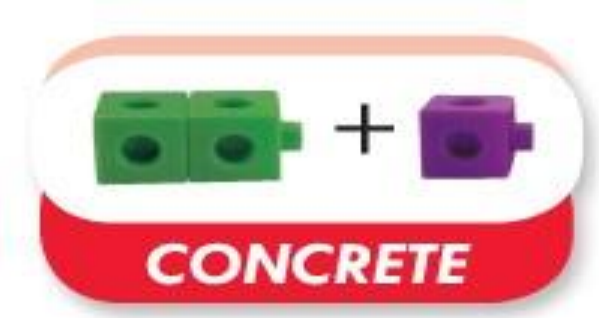
Year 4 – Yearly Overview

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12
Autumn	Number – Place Value				Number- Addition and Subtraction			Measurement - Length and Perimeter	Number- Multiplication and Division			Consolidation
Spring	Number- Multiplication and Division			Measurement - Area	Fractions				Decimals			Consolidation
Summer	Decimals		Measurement- Money		Time	Statistics		Geometry- Properties of Shape			Geometry- Position and Direction	Consolidation

CPA Approach

The CPA approach is a pathway of clear progression to achieve and strengthen this mathematical fluency.

Concrete

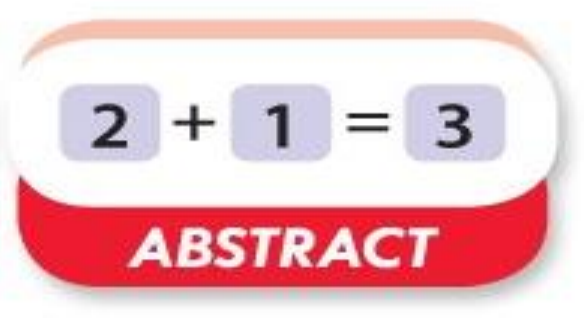


Children should have the opportunity to use concrete objects and manipulatives to help them understand what they are doing.

Pictorial

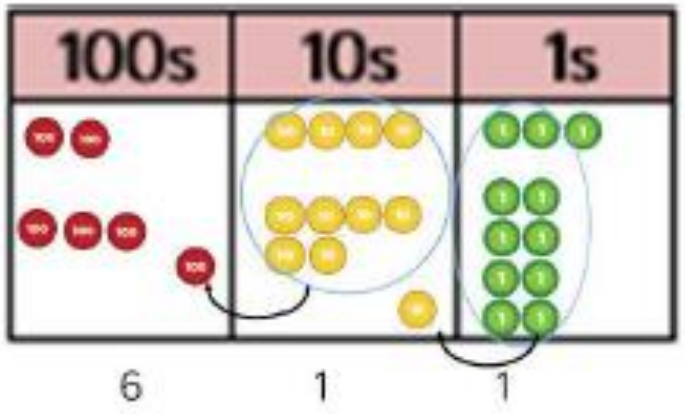
Pictorial representations build on children's understandings of concrete materials and allows children to develop this These representations can then be used to help reason and solve problems.

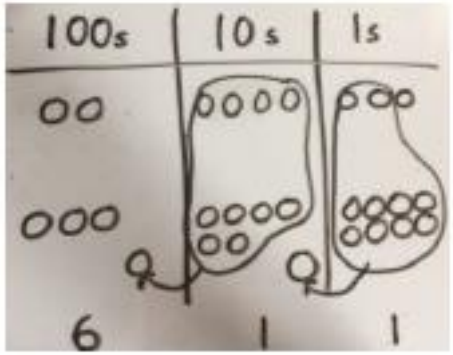
Abstract



The abstract stage should run alongside and after the concrete - pictorial stage (enables pupils to read mathematical statements and show their understanding)

CPA – Concrete → Pictorial → Abstract

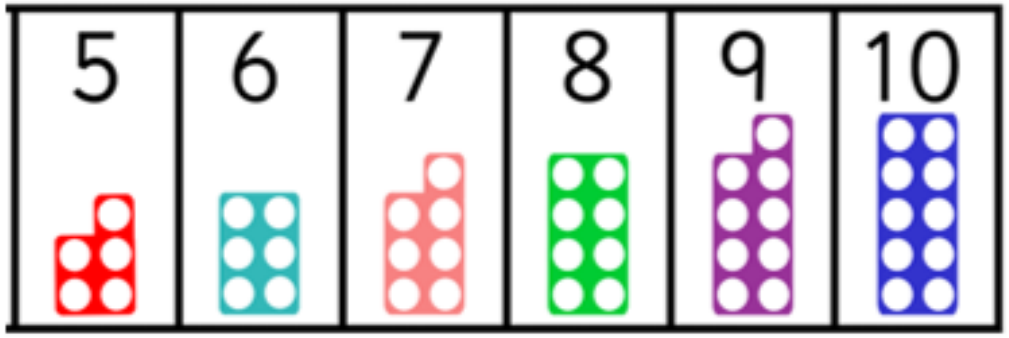




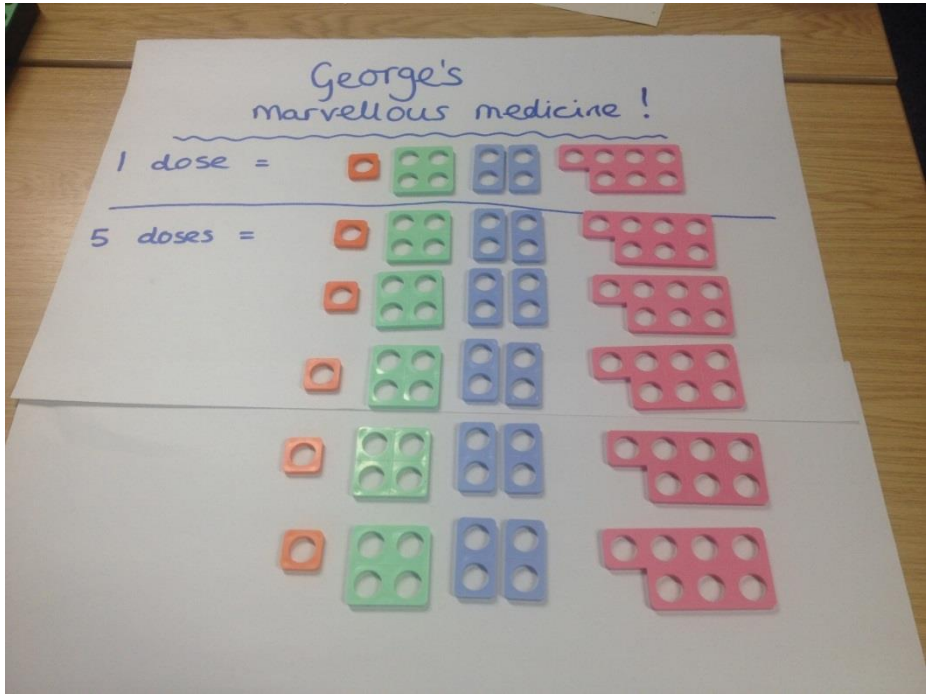
$$\begin{array}{r} 243 \\ +\,368 \\ \hline 611 \\ \hline 1\ \ 1 \end{array}$$

Concrete Materials

Early Years



Upper KS2



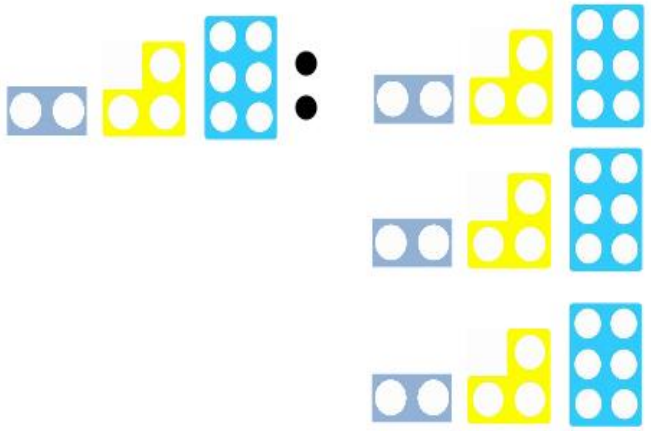
Numicon

George is testing out his marvellous medicine on himself and his Grandma in a ratio of **1:3 doses**.

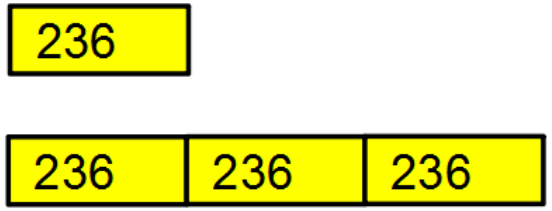
If one dose is 236ml, how many ml of medicine does his Grandma take?

Use your Numicon to solve this.

Numicon



Concrete

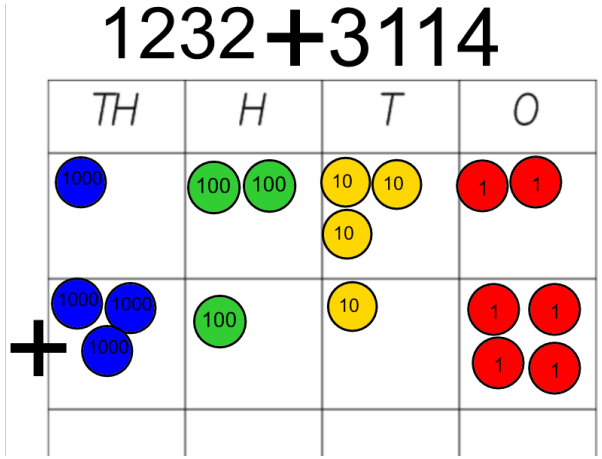


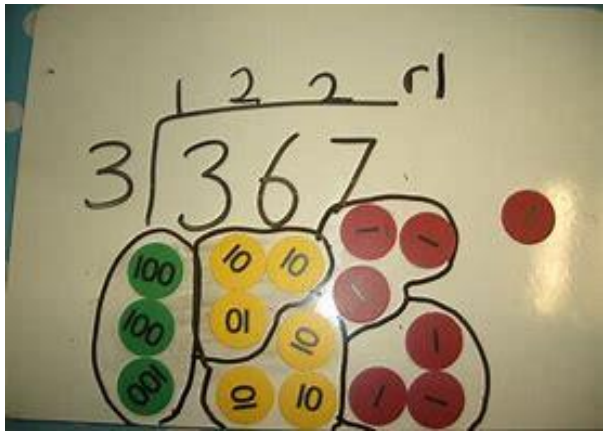
Pictorial

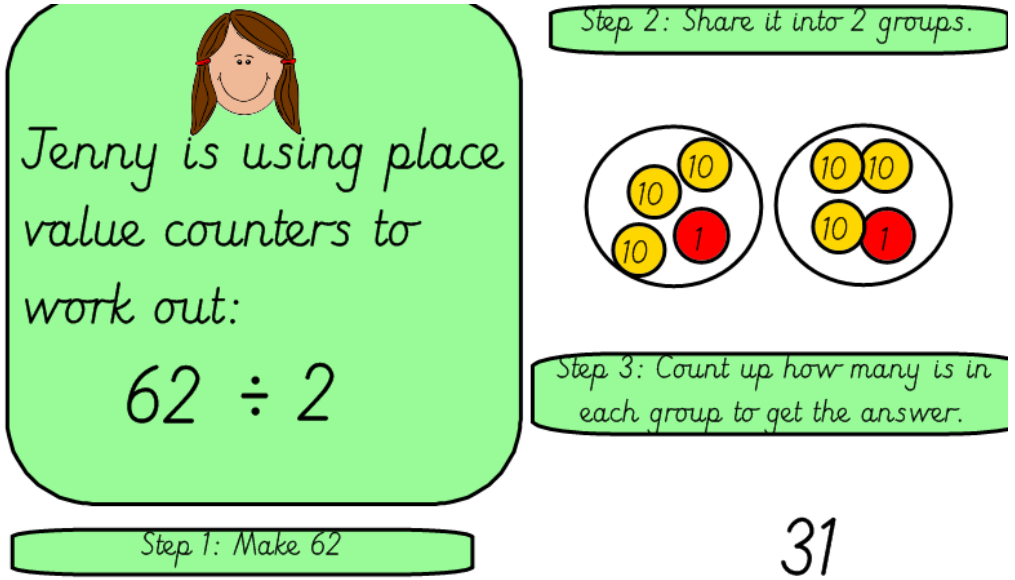
$$\begin{array}{r} 236 \\ \times \quad 3 \\ \hline 708 \\ \hline 1\ 1 \end{array}$$

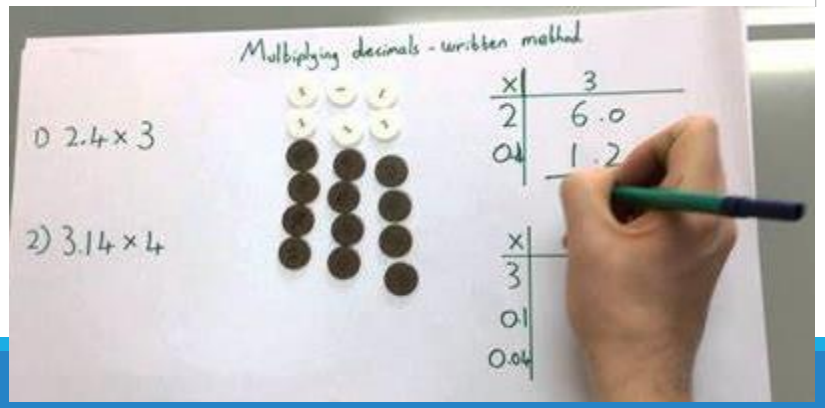
Abstract

Place Value Counters









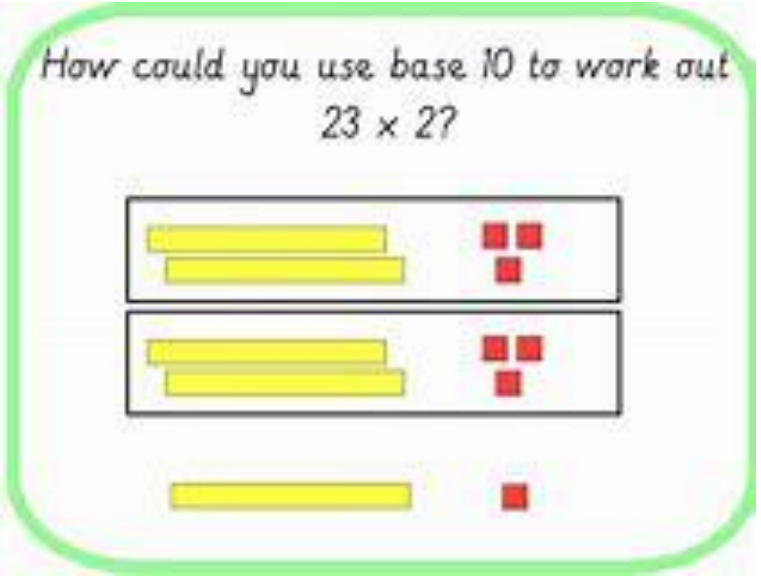
Place Value Counters

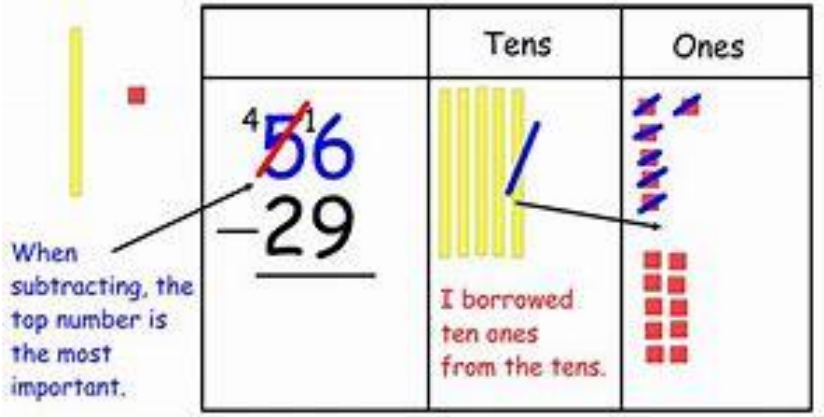
Solve these division questions using the place value counters and grid to help you.

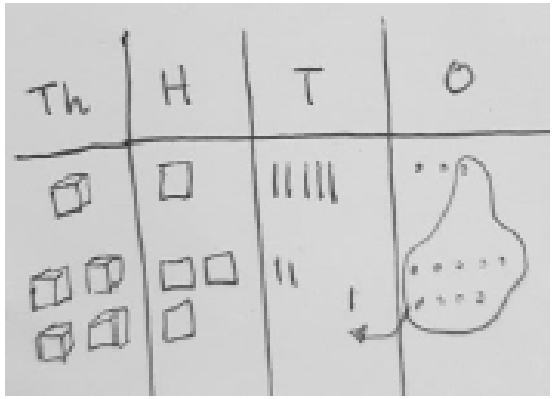
Can you spot any problems?

36 ÷ 3 42 ÷ 3 66 ÷ 3 92 ÷ 3

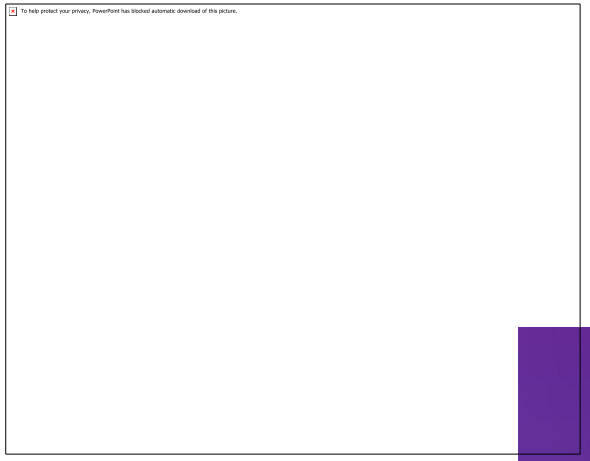
Dienes

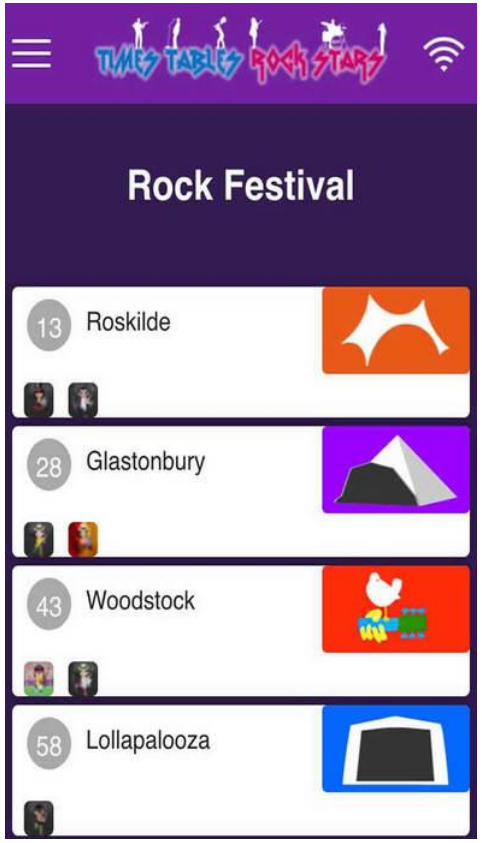

How could you use base 10 to work out
23 × 27


Tens
Ones
When subtracting, the top number is the most important.
I borrowed ten ones from the tens.


Th
H
T
O

Times Table Rockstars





How to help your child at home

- Play times tables games.
- Play mental maths games including counting in different amounts, forwards and backwards.
- Encourage opportunities for telling the time.
- Encourage opportunities for counting coins and money e.g. finding amounts or calculating change when shopping.
- Look for examples of 2D and 3D shapes around the home.
- Identify, weigh or measure quantities and amounts in the kitchen or in recipes.
- Play games involving numbers or logic, such as dominoes, card games, draughts or chess.
- Draw place value grids on pieces of paper and use pieces of pasta etc. to represent digits