

# Background Tutorial - Session One

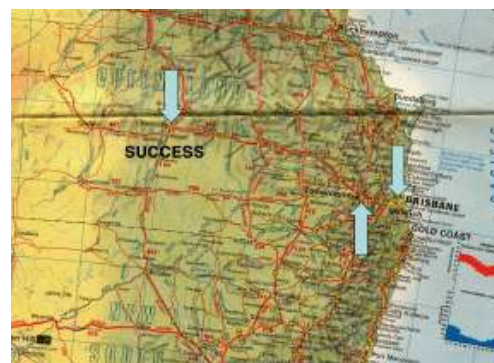
## THE MATHEMATICS EXPRESS

The train is the student. The movement of the train along the tracks represents the student's progress in Math/s. You can see the dedicated teacher in red a jacket inspecting the tracks, for if there are any rails missing, or if the rails are not fixed well to the sleepers, then the student is likely to be derailed. The journey is not an easy one for some students.



## GETTING UP THE RANGE CAN BE TOUGH

The journey begins at birth (on the coast at Brisbane, Queensland, Australia) and continues until the student arrives at Success (Charlottesville, about 800 km/500 mi inland). The toughest part of the trip is their formal schooling (puffing up the Great Dividing Range to reach Toowoomba). It takes effort on the part of the train to negotiate the steep ascent.



## SPRING BLUFF STATION

Part way up the range is Spring Bluff Station. It is a very pretty station, especially during the Carnival of Flowers. Every train must pass through this station to get to Toowoomba at the top of the range. There is no other way to get to Success.



## CONFIDENCE LEADS TO SUCCESS

Students are never successful in Math/s unless they are confident. Many students are stuck on the range below Confidence and never get any farther. They are discouraged and have negative attitudes towards Math/s. Many are derailed because they have not been taught the basics, these students have gaps in their knowledge and understanding. Some, have not been lead small steps at a time but have been expected to travel too quickly up the range.



## MANY STUDENTS ARE IN THE DARK

There are a number of tunnels to encounter on the way up the range. All students at one time or another find themselves in the dark about some aspect of math/s. This is not the place for them to stop. They should be encouraged to move forward until they 'see the light' at the end of the tunnel. Notice the maintenance vehicle. It is vital that teachers are vigilant in ensuring the track is safe for students to proceed.



## NEARING THE TOP

Even after students may be confident, there is still effort needed to get to the top of the range. There will be new concepts to grapple with, new skills to master, but having passed through Confidence, their attitude will be positive and the needed effort will be applied.



## AT THE TOP OF THE RANGE

The view west from Blue Mountain Heights, where the railway line crosses the range, is very scenic. Success, in reality, is not several hundred kilometres/miles beyond the horizon, it is not a destination. It is a process, a series of bends and grades that are negotiated successfully. Success is often determined by the attitudes of the students themselves, of teachers and other influential people in the students' lives.



## MOVING WEST

Once the range is crossed the railway line winds down to the Darling Downs. Even so there are still some upgrades and sharper curves that slow progress. But once the battle is won on the range it is smooth sailing to Charlieville. On the horizon, to the right, you will notice a bluff. That is Mt Kingsthorpe. Let's go out there and have a look around.



## THE BUNYA MOUNTAINS

Looking to the north from Mt Kingsthorpe you can see the Bunya Mountains. It is worth visiting the Bunya Mountains National Park with its rainforest walks, water falls, huge Bunya Pine and Hoop Pine trees, its bird and animal life, chalet type accommodation and beautiful views. Have I made the idea attractive? Unless teachers and parents make Math/s attractive through their own positive attitudes, students may never really want to visit the place.



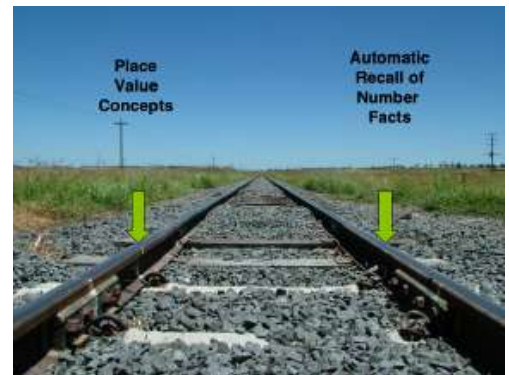
## TRACKING WEST

Can you see the larger white building to the upper left of the township of Kingsthorpe? The railway line to Charlieville passes in front of it. You might be able to trace the track from the lower left of the photograph on the edge of town, passing in front of the white building then through cultivated paddocks toward the horizon. Let's go down to the railway crossing near the white building and have a close look at the tracks.



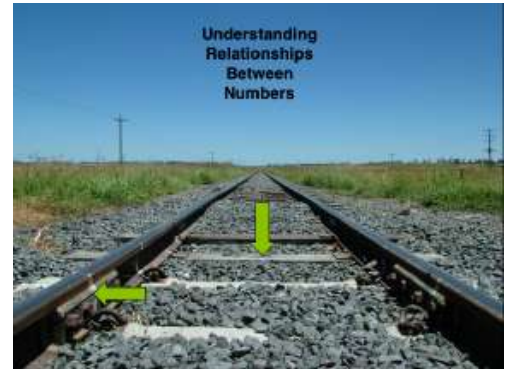
## WHAT ARE THE TRACKS?

Trains don't go anywhere unless they are on tracks. So students don't go anywhere in Math/s unless all the tracks are there. That means that students need to understand and be proficient in all the concepts relating to place value, and have automatic recall of all the basic number facts. These cannot be neglected if students are to be confident in Math/s.



## WHAT ARE THE SLEEPERS ARE RAIL JOINING PLATES?

These represent the student's ability to see and understand the relationships between numbers. If students can have this under their belt it will be to them another confidence builder. If students do not have this ability it is a bit like being able to boot up a computer without being able to operate any software.



## WHAT ARE THE SPIKES AND BOLTS?

What good is it to have rails, sleepers and joining plates unless they are secured by spikes and bolts? The train will still be derailed when the rails moved under the pressure of the train. Just so with students. Drill and practice, or consolidation, is vital if the concepts, skills, knowledge and understandings are to be retained and easily recalled.



## SESSION TWO

We have mentioned four aspects that build mathematical confidence in students:

1. Understanding place value concepts
2. Automatic recall of all basic number facts
3. Understanding relationships between numbers
4. Drill and practice (consolidation).

These will be dealt with in some detail in Session Two. It is confidence, or the lack thereof, that determines attitude.