Just-in-Time Maths

Vignette

10

Assessment

THE LEARNER FIRST™

Pre requisites for giving OTJs

In a range of meaningful contexts students will be engaged in thinking mathematically and statistically. They will solve problems and model situations that require them to....

What is thinking mathematically?

In a range of meaningful contexts students will be engaged in thinking mathematically and statistically. They will solve problems and model situations that require them to....

These processes are accessible to all ākonga

Exploring
Questioning
Conjecturing
Explaining
Proving
Justifying
Generalising

Conceptual Understanding

Adaptive Reasoning

What types of problems?

In a range of meaningful contexts students will be engaged in thinking mathematically and statistically. They will solve problems and model situations that require them to....

A certain type of question leads to certain type of thinking

Ex se

Application

Open ended

Unfamiliar

meaningful situations are translated into mathematical language/symbols/representations and the solutions and solution pathways evaluated and communicated

Kaiako exploring ways to “assess on the run’

Mathematics Framework

Multiplicative thinking

This progression combines elements from both the multiplicative and proportional domains of the Number Framework. However, as with additive thinking, the sets of exemplars are not a direct match to the stages of the Number Framework. This progression focuses on students' ability to think multiplicatively as they solve multiplication, division, and proportional problems involving an extended range of whole numbers, decimals, fractions, ratios, and percentages, and in a range of contexts.

1st 2nd 3rd 4th 5th 6th 7th 8th 9th

Download all PDFs from this set

5th signpost

5 illustrations for the All context View as:

What are the big ideas behind the illustration set?

The students use their known multiplication basic facts and place-value knowledge to solve multiplication and division problems involving single-digit multipliers or divisors.

Dragon teeth Core

James uses his place value knowledge to partition the 2-digit number in this problem. He understands that he can use his known multiplication facts, including his knowledge of multiples of ten, to solve this problem. He is able to recombine numbers and explain his solution. Open full illustration

Tennis balls Core

Mari uses her knowledge of known multiplication facts to solve this division problem. She understands the context of the problem, the commutative property of multiplication and checks that her solution answers the problem. Open full illustration

Kaiako exploring balanced approaches

Mathematics Framework

5th signpost

1 of 5 illustrations for the All context

View as:

What are the big ideas behind the illustration set?

The students use their known multiplication basic facts and place-value knowledge to solve multiplication and division problems involving single-digit multipliers or divisors.

Dragon teeth

Download PDF for this illustration Core

Annotation

James uses his place value knowledge to partition the 2-digit number in this problem. He understands that he can use his known multiplication facts, including his knowledge of multiples of ten, to solve this problem. He is able to recombine numbers and explain his solution.

Problem: Dragon teeth

The teacher shows this problem to the student and reads it with him as required:

There are three dragons. Each dragon has 21 teeth. How many teeth are there altogether?

Student response

James:	There are 63 teeth.
Teacher:	Tell me how you did that.
James:	I know that 21 is just 20 and 1. So I said 3 x 20 and that's 60 because 3 x 2 is 6. Then I added 3 because it's really just 3 x 1. So it's 63.
Teacher:	Why did you do it that way?
James:	Well I know that 20 is 10 x 2. So when I am 'timesing' a number with zero on the end I can just use the simple thing I know and make it 10 times bigger.

End of Level 3 – Multiplicative Thinking Milestone 5

The students use their known multiplication basic facts and place-value knowledge to solve multiplication and division problems involving single-digit multipliers or divisors.

There are 3 dragons. Each dragon has 21 teeth. How many teeth are there altogether?

How did you do it?

I know that 21 is just 20 and 1. So I said 3 x 20 and that's 60 because 3 x 2 is 6. Then I added 3 because it's really just 3 x 1. So it's 63.

Why did you do it that way?

Well, I know that 20 is 10 x 2. So when I am 'timesing' a number with zero on the end I can just use the simple thing I know and make it 10 times bigger.

There are 40 relay teams competing in the interschool sports. Altogether there are 120 competitors. How many are in each team?

How did you do it?

Well, I thought, what I would times the 40 by to get 120? When I looked at the numbers while you were reading, the 4 and the 12 jumped out at me kind of like the zeros weren't there. I know 4 x 3 = 12, so I figured that 40 x 3 would be 120.

What do you know that helped you?

Well, I just know 4 x 3 and I know how to times by 10. The 40 is really just 4 x 10 and the 120 would be 12 x 10. It's kind of neat really to use your tables like that. I know that I can go 40 times 3 is 120.

End of Level 3 – Multiplicative Thinking Milestone 5

The students use their known multiplication basic facts and place-value knowledge to solve multiplication and division problems involving single-digit multipliers or divisors.

Farmer Croft is shifting 125 dairy cows to another paddock. 25 of them have already gone through the gate. What fraction is this of the herd?

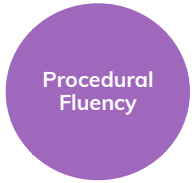
How did you do it?

Well I thought 10 x 10 is 100 and I know that's like 5 times 20. And there's 25 more to make 125. Straight way I knew that's 5 times 5. So I can see that the five twenties and the five fives is 5 lots of 25, making 125. So another way to say that is that 25 is one fifth of 125.

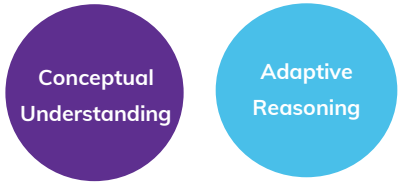
Why did you do it that way?

Well I just know my tables and I know that something in five equal parts is the same as saying it's in fifths.

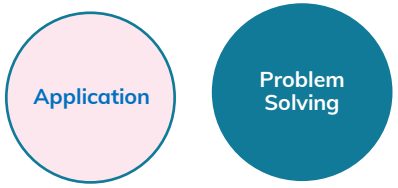
Asking how will elicit evidence on



Asking why will elicit evidence on



The application (transparent) problem will go some way towards



One example of a school's 2022 cycle

	Term 1	Term 2	Term 3	Term 4
Data for learning				
Learning Progressions + Rapid Routine snapshots	Target all strands and use questions to frame group inquiries and observe groups ARBs are providing ideas for creating and analysing Rapid Routines			
Data for records				
PATMaths	●			
JAM (Y4)e-asTTle (Y5)	Number ●	Measure ●	Number ●	Measure ●
Individual Problem task		NZMaths (data) ●		NZMaths (shape) ●
*GloSS	Used individually on those ākonga where more diagnosis is needed			
Track dispositions	Ākonga track their own learning against key competencies*			

A summary of how we can assess maths knowledge

Recall of facts, definitions, terminology Calculating with appropriateness and accuracy Manipulate expressions and equations to find solutions Use equipment appropriately when exploring maths ideas	Procedural Fluency
Explain why and how procedures (above) work Recognise varied representations of concepts Transfer procedures to different problem and contexts Interpret mathematical information	Conceptual Understanding
Investigate problem situations (authentic) Find and use with justification, a mathematical model Devise and use problem solving strategies to explore maths Design investigations and plan their approaches	Problem Solving
Explain their thinking when justifying their strategies/solutions Compare and contrast related ideas and explain their choices Interpret information and results in context Use words and symbols to describe and generalise patterns.	Adaptive Reasoning
Recognise that new or challenging learning may be initially hard Work together in groups or pairs to solve maths problems Use self awareness to monitor progress and identify strengths Identifies maths as relevant, meaningful and accessible	Productive Disposition

NZ Maths – A balanced approach starts here

Procedural Fluency

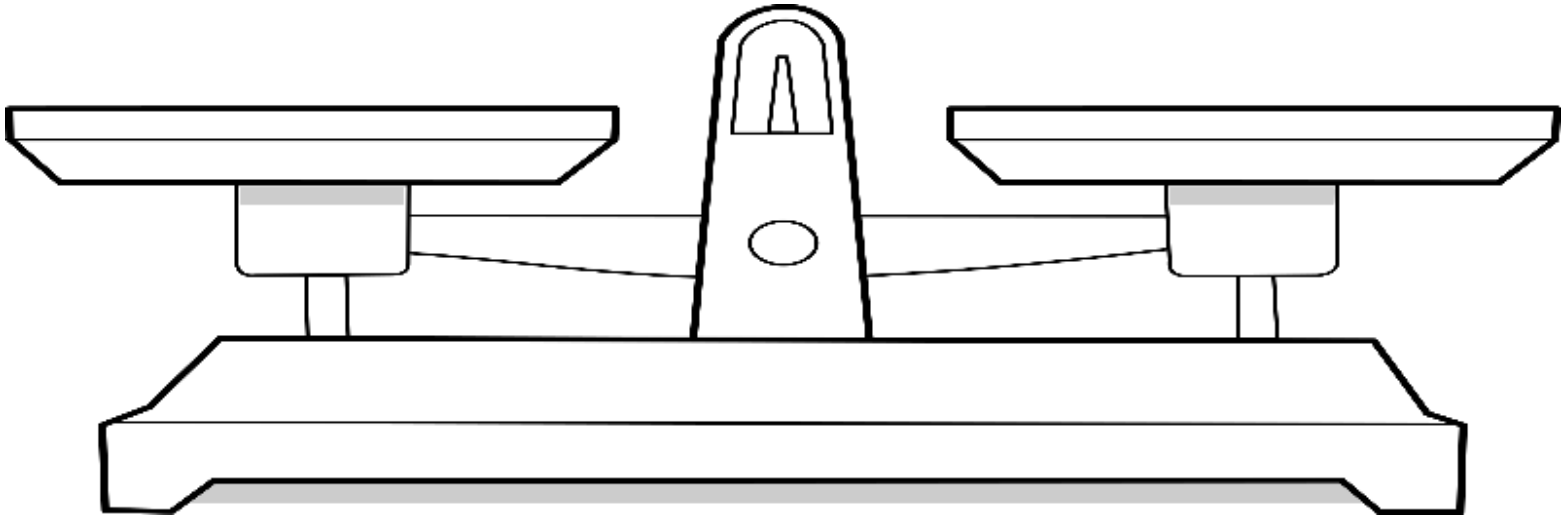
Conceptual Understanding

Practice and deepen
Describe and connect

Adaptive Reasoning

Problem Solving

Explore and evaluate
Explain and communicate



Application

Open ended

Exercise

Unfamiliar

Mātauranga
Tataiako

Productive Disposition

Effective Pedagogies
Key Competencies