Mathematics Workbook - Stage 1

Name:

Class:

Overview

We hope you will be having some fun with these mathematics activities – getting sweaty brains, thinking hard and feeling successful when you solve a problem, develop more confidence or understand something better. Many of these activities are games and investigations that you can play with your family, friends and classmates. Have fun and think deeply!

Most of these tasks have a video and some have downloadable resources to support your learning. You can find these using the digital student resource link on the Learning from home, K-6 support – mathematics page.

https://sites.google.com/education.nsw.gov.au/get-mathematical-stage-1/stage-1-home

Activity 1

Today we have 1 task. We will the opportunity to deepen our understanding of patterns, exploring growing and shrinking patterns.

Resources – device to view videos, colour pencils/ markers

Staircase pattern

View video Staircase pattern 1 – Part 1
https://sites.google.com/education.nsw.gov.au/get-mathematical-stage-1/targeted-teaching/staircase-pattern

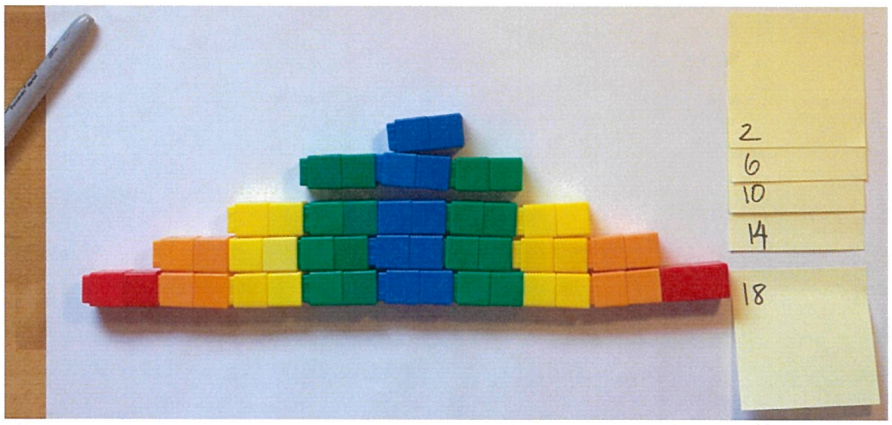
Draw the staircase pattern we've made in the video, continuing it down the other side.

View video Staircase pattern 1 – part 2
https://sites.google.com/education.nsw.gov.au/get-mathematical-stage-1/targeted-teaching/staircase-pattern

If you like, build the model. Then draw what the staircase will look like if we continue building it up and down the other side, using twos.

View video Staircase pattern 1 – part 3
https://sites.google.com/education.nsw.gov.au/get-mathematical-stage-1/targeted-teaching/staircase-pattern

How many blocks are there altogether? Use diagrams to record the thinking you did to work out the solution.



Reflection

Can you find any growing or shrinking patterns at home or at school? Draw the patterns you find.

Talk about what you have discovered and learnt about today with someone at home.

Activity 2

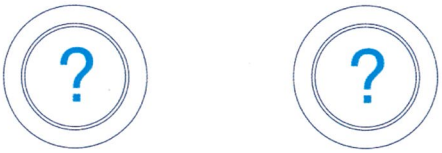
Today we have 3 tasks. We are going to explore different ways of thinking about numbers to help us better understand how numbers work. We will look at using a pan balance to investigate mass. We are also going to have a closer look at growing and shrinking patterns.

Resources – device to view videos, colour pencils/ markers, collection of objects like blocks or unfix cubes

Introducing rekenreks

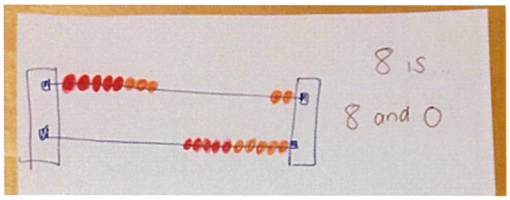
View video Introducing rekenreks
https://sites.google.com/education.nsw.gov.au/get-mathematical-stage-1/targeted-teaching/introducing-rekenreks

Mum gave us some baby carrots for a snack. There were 8 in total. Some carrots were on my brother's plate and some carrots were on my plate.



My plate My brother's plate

Use a rekenrek to imagine your thinking then draw pictures to record your thinking; for example:



How many carrots were on my plate?

How many carrots were on my brother's plate?

Show as many solutions as you can think of.

Balancing numbers 1

(Inspired by the work of Dan Meyer)

View video Balancing numbers 1 – part 1
https://sites.google.com/education.nsw.gov.au/get-mathematical-stage-1/targeted-teaching/balancing-numbers-1

What do you notice?

What do you wonder?

View video Balancing numbers 1 – part 2
https://sites.google.com/education.nsw.gov.au/get-mathematical-stage-1/targeted-teaching/balancing-numbers-1

How many more bears are needed to make the scale balance?

(How many bears are equivalent in mass to The Hulk?)

What's an estimate that's way too high?

What's an estimate that's way too low?

What's an estimate that you think is reasonable?

View video Balancing numbers 1 – part 3
https://sites.google.com/education.nsw.gov.au/get-mathematical-stage-1/targeted-teaching/balancing-numbers-1

Create a drawing to represent the problem: How many bears are equivalent in mass to The Hulk?

Staircase pattern follow-up

View video Staircase pattern 1 part 4
https://sites.google.com/education.nsw.gov.au/get-mathematical-stage-1/targeted-teaching/staircase-pattern-follow-up

Use objects, like blocks to create a new staircase structure.

Draw and describe the things you notice from the staircase structure you have made.

Explain the growing and shrinking patterns you can see inside your staircase.

Reflection

Share the drawings that you created as a mathematician. Talk to a family member or friend about the information you have shared in your mathematical drawings.

Activity 3

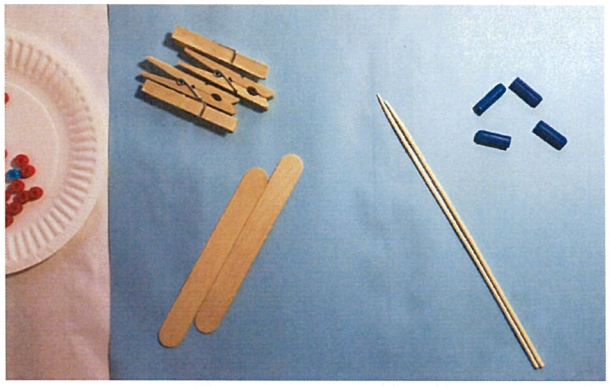
Today we have 3 tasks. With the help of an adult we are going to create a rekenrek! The Hulk is back and we will estimate and investigate mass using a pan balance.

Resources – device to view videos, glue (wood glue or hot glue), 4 pegs, 10 red beads and 10 blue beads (or 10 of any 2 colours you like), 2 paddle pop sticks, 2 kebab sticks, 4 wall plugs, figurines like LEGO mini figs or teddy bears, and an adult.

How to make a rekenrek

With an adult collect:

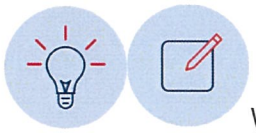
- glue (wood or hot glue)
- 4 pegs
- 10 red beads and 10 blue beads (or 10 of any 2 colours you like)
- 2 paddle pop sticks
- 2 kebab sticks
- 4 wall plugs



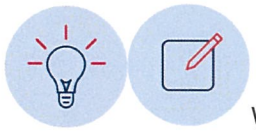
View video How to make a rekenrek with an adult and together make your own rekenrek. https://sites.google.com/education.nsw.gov.au/get-mathematical-stage-1/targeted-teaching/how-to-make-a-rekenrek

Balancing numbers 2

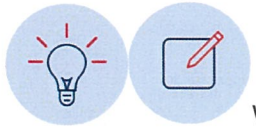
View video Balancing numbers 2 – part 1
https://sites.google.com/education.nsw.gov.au/get-mathematical-stage-1/targeted-teaching/balancing-numbers-2



What's an estimate that's way too high?

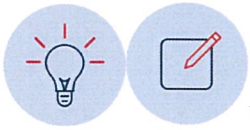


What's an estimate that's way too low?

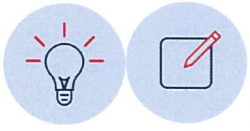


What's a reasonable estimate?

View video Balancing numbers 2– part 2
https://sites.google.com/education.nsw.gov.au/get-mathematical-stage-1/targeted-teaching/balancing-numbers-2

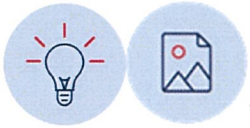


What would you do to solve this problem? Share your thinking with a fellow mathematician or write down your ideas.



Revise your estimate: how many paddle pop sticks are needed to balance the mass of The Hulk?

View video Balancing numbers 2– part 3https://sites.google.com/education.nsw.gov.au/get-mathematical-stage-1/targeted-teaching/balancing-numbers-2



What do you think will happen to the balance scale?

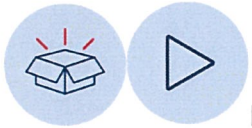
Draw a picture to communicate your thinking.

View video Balancing numbers 2– part 4 https://sites.google.com/education.nsw.gov.au/get-mathematical-stage-1/targeted-teaching/balancing-numbers-2

What can we say about the mass of The Hulk, the collection of bears and the collection of paddle pop sticks?

Handfuls: thinking multiplicatively

View video Handfuls: thinking multiplicatively https://sites.google.com/education.nsw.gov.au/get-mathematical-stage-1/contexts-for-practise/handfuls-thinking-multiplicatively



Play handfuls - thinking multiplicatively using groups of twos (with LEGO mini figs) and with fours (with bears).

Record your thinking about your games.

Reflection

What's something you feel more confident with today?

Activity 4

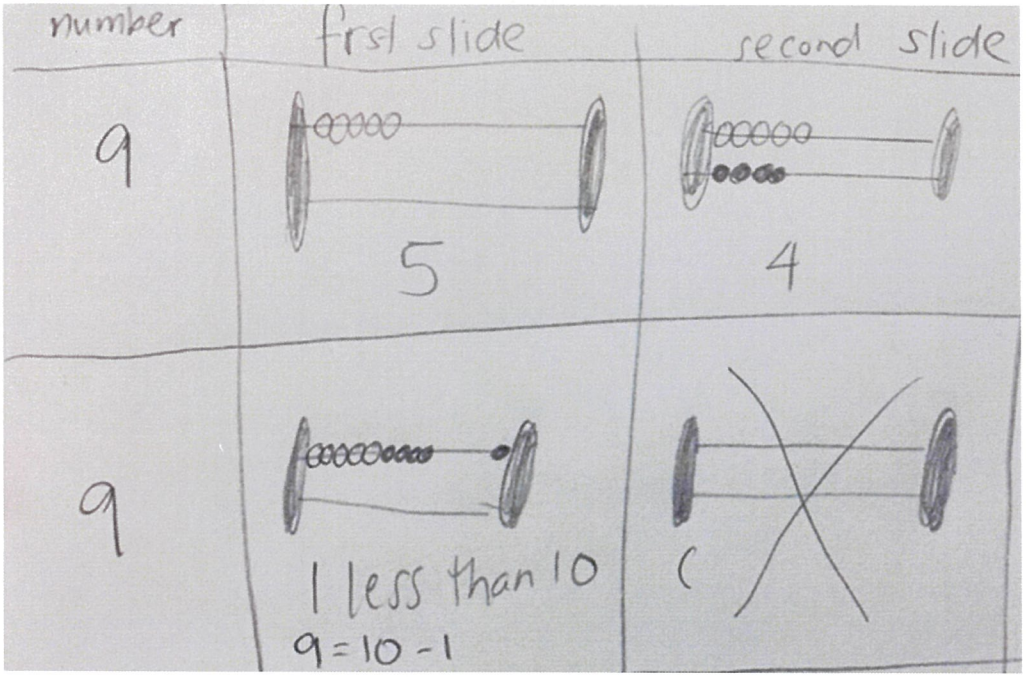
Today we have 3 tasks. We will use our rekenrek to imagine and explore numbers within numbers and other important number relationships. We will also make our own tangram.

Resources –device to view videos, pencil, your rekenrek, set of numeral cards 0-20, colour pencils/ markers, counters for tokens (you could you use dried pasta), 1 square sheet of paper, pair of scissors

Rekenrek 1

View video Rekenreks 1 https://sites.google.com/education.nsw.gov.au/get-mathematical-stage-1/targeted-teaching/rekenreks-1. Make sure you are ready to use your mathematical imagination and you have the rekenrek you made.

Draw pictures to show how you can make 9, 6 and 13 in just 1 or 2 slides. Think of two different ways for each number. For example:



Draw your two different ways for each number.

Rekenrek duel: level 2

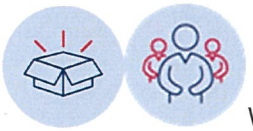
View video Rekenrek duel: level 2.
https://sites.google.com/education.nsw.gov.au/get-mathematical-stage-1/contexts-for-practise/rekenrek-duel-level-2

Collect your resources, your rekenrek, a set of numeral cards 0-20, colour pencils/ markers, counters for tokens (you could you use dried pasta) and play Rekenrek duel: level 2!

Record your games.

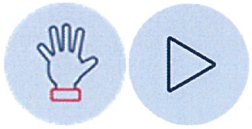
How to make a tangram

View video How to make a tangram https://sites.google.com/education.nsw.gov.au/get-mathematical-stage-1/targeted-teaching/how-to-make-a-tangram



With an adult collect:

- pair of scissors
- 1 square sheet of paper (View video on how to make a square https://sites.google.com/education.nsw.gov.au/get-mathematical-stage-1/targeted-teaching/how-to-make-a-square)



View video How to make a tangram with an adult and together make your own tangram.

Reflection

You might have had a sweaty brain today whilst playing Rekenrek duel: level 2. Your brain might also have felt excited! Draw a picture to show what your brain was thinking as you tried to move the beads in just 1 or 2 slides.

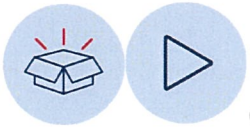
Activity 5

Today we have 3 tasks. We will use our tangram pieces to complete puzzles, learn a new game where we think multiplicatively and explore doubles and near-doubles on our rekenreks.

Resources – device to view videos, pencil, your rekenrek, 10-frame cards cut up, spinner in appendix, paperclip, pen, counters for tokens for example dried pasta, collection of figurines with 2 legs or teddy bears.

Rekenrek noticing doubles and near doubles

View video Rekenreks 2 https://sites.google.com/education.nsw.gov.au/get-mathematical-stage-1/targeted-teaching/rekenreks-2



Collect the resources to play Rekenreks double and near doubles.

Record your game.

For each game

View video For each game https://sites.google.com/education.nsw.gov.au/get-mathematical-stage-1/contexts-for-practise/for-each-game

Play the For each game.

How to play

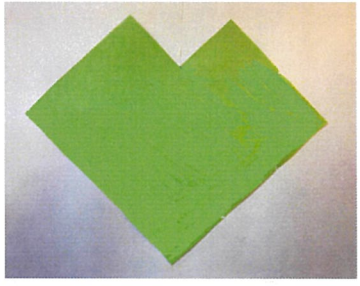
Make a spinner with 4, 6, 8, 10, 12, and 14.
Spin the spinner to determine how many legs you need in total.
Imagine and then collect the number of figurines you need to make that many legs.
The player with the most figurines each round wins a token.
The first person to win 5 tokens wins the game.

Another way to play:

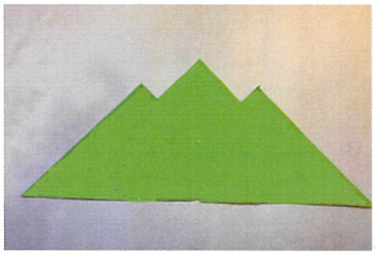
Use teddy bears instead of the figurines and find out how many teddy bears are needed to have that many paws. You could also use toy cards, trains, other animal figures or pictures of animals.

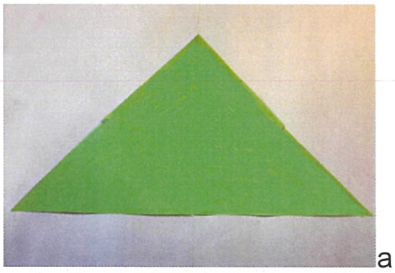
Tangram puzzle challenge

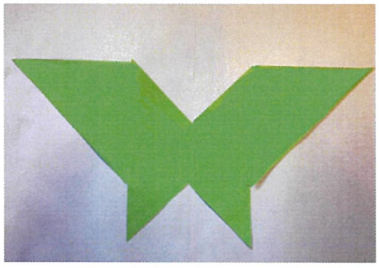
Using all the pieces of your Tangram, try creating these formations!


a heart


a tree


a mountain


a big triangle

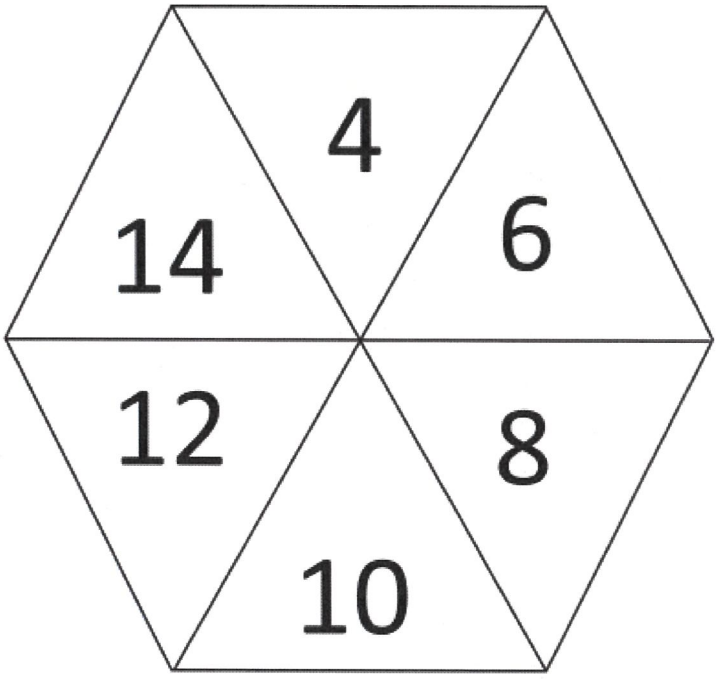

a butterfly

Reflection

List 2 things about your learning made you feel good today?

Appendix

Spinners for day 9 & 10 for each game



Tens frames