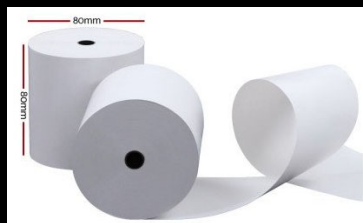# Developing maths concepts with receipt roll

Tierney Kennedy

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Overview

Developing a metre-long number line

- Relative size and place value
- Money
- Fractions, decimals and percentage
- Length and perimeter, capacity and unit conversion
- Probability

Developing shorter line segments

- Time and clocks
- Pie charts and bar graphs
- Angles
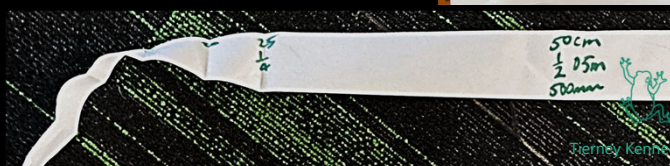- Multistep and worded problems
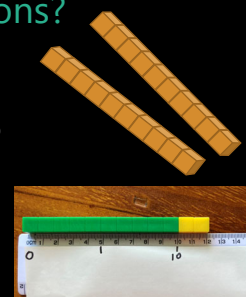- Proportions

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Making a ruler

Start with a metre-long strip for each child, representing 0-100.

What are the key positions?

• Fold in half for 50

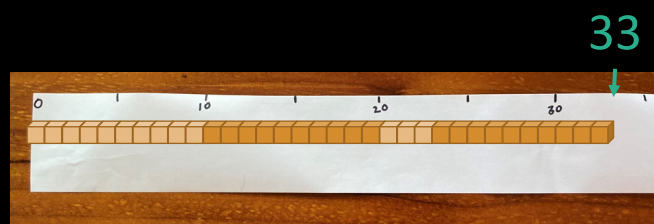• Fold in quarters for 25

• …then what?

• Fold in fifths from 25?

50cm
½ 05m
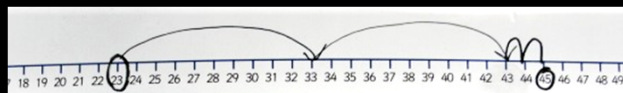500mm

3

Operations

• Consider blocks along the line

33

• 23 + 22

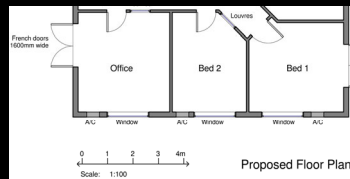18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49

• Regrouping, subtracting...

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Concepts shown

- 100 centimetres in a metre
- Place value and relative size to 100 (10 tens, 2 fifties, 4 twenty-fives...)
- Simple fractions and dividing
- Estimating for roughly how big
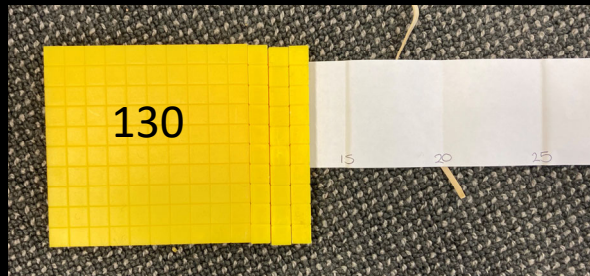- 100 cents in a dollar
- Percentage
- Scales on maps and plans

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Extending to 1000

Now the strip represents 0-1000

- Each 10 becomes 100...

130

- Place value: 10 hundreds = 1000
- Regrouping and operations

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0-1000 concepts

Measurement concepts:

• Length and unit conversion (mm, cm, m)

• Perimeter and circumference

• Capacity (mL, L) – link to MAB

• Mass (g, kg, mg)

• Energy
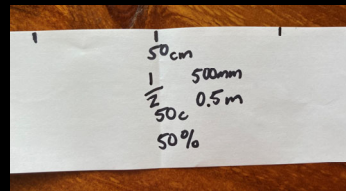
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0-1 concepts

The line also shows 0-1

• Folded in half to show 50cm… so we could write ½

• We also folded to show ¼ and ¾

• We also worked out the tenths… 50cm is $^5/_{10}$

• We can write 50cm as 0.5m, so half is also 0.5 or 0.50

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0-1 continued

0-1 also represents

- How to convert fractions to decimals making use of the money link…

- What is ¼ of a dollar?
25 cents
25 percent… ¼ is 25%
25 cents is $0.25… ¼ is 0.25

- Probability, including sum of all to 1

0	100	200	300	400	500	600	700	800	900	1000	mm
	10	20	30	40	50	60	70	80	90	100	cm, cents in $
	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1	m, chance
	1/10	2/10	3/10	4/10	5/10	6/10	7/10	8/10	9/10	1	tenths
	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%	percentage
		1/5		2/5		3/5		4/5		1	fifths
			¼		½			¾		1	halves and quarters

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Shorter segments

Start with a 36cm long strip…

It can be bent to form a circle…

- 0-12 for a clock

- 0-360 for angles, including compass points and Longitude

- 0-24 (every 1.5cm) for time zones, with Greenwich at 0.
UTC+1 at 1.5cm… international date line in the middle.
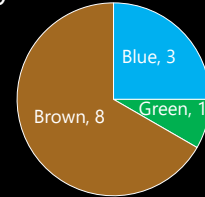
- Note the link to days in a year

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Circle concepts

Start with 2cm per child...

- 8 children had brown eyes
- 3 had blue
- 1 had green

Blue, 3
Green, 1
Brown, 8

- Bend to form a pie graph
- Fractions are shown in a circle including equivalence
- The fractions add to 1
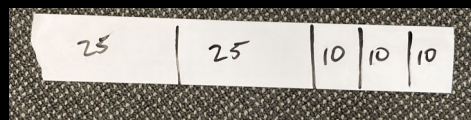- Tear into strips to form a bar graph

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Multistep problems

Start with a strip as the "whole"

Jenny spent $80 altogether on 2 shirts and 3 skirts. Each skirt cost $10. How much was each shirt?

- Start with the strip representing the whole amount
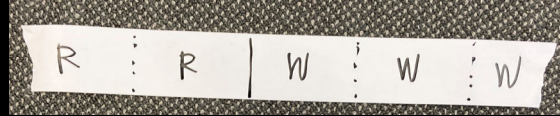- Which parts do we know?
- What is left? What do we do with that?

| 25 | 25 | 10 | 10 | 10 |

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Proportions

Start with a strip as the "whole"

A recipe calls for 3 parts of water for every 2 parts of rice...

R	R	W	W	W

Chloe has $3 for every $2 that Dan has.

• Altogether they have $20

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Thanks everyone

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