



MATH WITH MR DJ

GRADE 8 · FUNCTIONS

MODELLING WITH A LINEAR FUNCTION

Today's goal: I can construct a function to model a linear relationship between two quantities, determine the rate of change and initial value of the function from a description, from two values, or from a table or graph and interpret the rate of change and initial value in terms of the situation it models.



Tan



Digit



Blaze



Pi



Two readings

1 40 litres after 2 minutes.

2 100 litres after 8 minutes.

TURN & TALK

Neither of those is the starting amount.



The rate is PER unit

1 Gained 60 litres...

2 ...over 6 minutes. So 10 a minute.

REMEMBER

60 is a difference. 10 is a rate.



BIG IDEA 2

Now work **BACK** to the start

- 1 At 2 minutes it held 40.
- 2 Two minutes earlier: $40 - 20 = 20$.

REMEMBER

$b = 20$, not 40. Nothing said “start”.



BIG IDEA 3

The model

1 $y = 10x + 20$

2 Check: $10(8) + 20 = 100. \checkmark$

REMEMBER

Always test it on BOTH readings.



BIG IDEA 4

Say what it means

1 $m = 10$: gains 10 litres every minute.

2 $b = 20$: held 20 litres before we started.

REMEMBER

Numbers with units and a noun. Not just letters.



BIG IDEA 5

Falling situations

1 Phone: 74% at 1 hour, 56% at 4 hours.

2 Rate -6 an hour, started at 80%.



Remember

- 1 Rate = difference PER unit.
- 2 Initial value = the amount at $x = 0$, worked back to.
- 3 Then say what each means.



Pick your pepper!

**◀◀ MEDIUM**

A plant is 12 cm after 2 weeks and 24 cm after 5 weeks. Find the rate of growth.

#1 on your practice sheet

**◀◀◀ SPICY**

Interpret both numbers in your model, in words, with units.

#6 on your practice sheet

How's it going?



3 • Got it!

I could teach it



2 • Almost

One more example, please



1 • Not yet

I need some help

NOW YOU!

Practice sheet: everyone does Mild & Medium, then climb the peppers.

Stuck? Look back at Mr DJ's example at the top of the sheet.

Need it again? Step-by-step videos on YouTube @MathWithMrDJ

Brain break: 3 new daily puzzles at puzzles.mathwithmrdj.com

