LEARNER GUIDE

A line as a relationship

Straight Lines and Connected Representations. A short guide to walk beside you — read as much or as little as helps. *Connection before curriculum. Always.*

What this lesson is about

A straight line is one relationship wearing five costumes: a story in words, a table of values, a set of coordinates, an equation, and a graph. In this lesson you drag two sliders — m and c — and watch all five change together, so you can feel that they are not five separate things but one relationship shown five ways. You meet the equation $y = mx + c$, where c is the y-intercept (the value of y when $x = 0$) and m is the steady step. The question you are exploring is: can a line tell the same story as an equation, a table and a graph?

What you are learning to notice

- That one linear relationship can appear as a story, a table, coordinates, an equation and a graph.
- That you can move from any one of these to another.
- That in $y = mx + c$, the number c is the y-intercept (the value of y when $x = 0$) and m is the step added each time.
- That equal steps in x give equal steps in y — which is what makes the line straight.

Moving through it, one step at a time

In One Line, Five Costumes, drag m and c and watch the story, table, coordinates, equation and graph update together. In Step the Story, press Next step to move along the line and see the same step happen every time. In Match the Representation, read a table or story and choose the equation that fits. Then Model the Story — set m and c so a line fits a real situation like a gym fee or a phone tariff. There is no rush; use the coordinate grid on the Scratchpad to plot and draw.

A gentle reminder

You can pause. You can return. You do not need to complete everything in one sitting.

If you get stuck

Getting stuck is part of doing mathematics, not a sign that something is wrong. There is support built into the lesson, and using it is a strong move:

- **Reconnection Routes** — if an earlier idea feels shaky (reading and plotting coordinates, substituting a value into a simple rule, and reading a table of values), open a short recap and return whenever you are ready.
- **Socratic prompt** — a question to nudge your thinking.
- **Hint** — a little more help with the step in front of you.
- **Check** — try an answer and see how you are doing; a wrong try is useful information.
- **Worked solution** — a full model to compare your thinking against.

How the worked solution unlocks

The worked solution unlocks after you use the Socratic prompt, use the hint, and check two answers. Those steps are the learning — the worked solution is there to confirm your thinking, not to replace it.

Using support is part of learning. It is not cheating.

Recording your thinking

You can show your working in whatever way suits you today — the on-screen Scratchpad, paper, a spoken explanation, or a photo of a sketch. There is no single right format. If you do not finish everything in one sitting, that is completely fine: what you have done is information for your next step, never a failure.

Before you begin

Settle into a comfortable pace and take the steps one at a time. If your attention drifts, pause and come back — the lesson will keep your place. When you are ready, begin.

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