The Loughborough MOOC experience



Janette Matthews



The Loughborough MOOC experience

- MOOCs
- FutureLearn
- Getting a grip on mathematical symbolism
 - Design and content
 - Feedback
- Our experience



FutureLearn





FutureLearn





FutureLearn platform

- Open
- Accessible
- Social interaction
- Course creator
- Developing facilities
- Course data
- Partnership



FutureLearn Platform components

- Video tutorials
- Onscreen articles
- Discussions
- Quizzes
- Tests
- Peer review
- Statements of participation/attainment



Loughborough courses



Getting a Grip on Mathematical Symbolism

Want to be an engineer or scientist? Lack mathematical confidence? Learn to think mathematically and explore essential concepts.





Course structure and navigation



INTRODUCTION TO WEEK 3: THE GRADIENTS AND VERTICAL INTERCEPT OF A STRAIGHT LINE

WEEK 3: THE GRADIENT AND VERTICAL INTERCEPT OF A STRAIGHT LINE

16 weeks ago



VIDEO

31

3.2

3.3

Introduction to week 3 and recap

Find out what you will be learning during week three. Recap on what you have learned so far.



Equation of a straight line passing through the origin This activity starts to explore how the equation of a line may be expressed.

- 2.15 MORE SOPHISTICATED SCALES VIDEO
- THE EQUATION OF A STRAIGHT LINE PASSING THROUGH THE ORIGIN VIDEO 2.16
- 2.17 EXERCISE: THE EQUATION OF A STRAIGHT LINE PASSING THROUGH THE ORIGIN ARTICLE
- 2.18 SOLUTION TO EXERCISE: EQUATION OF A STRAIGHT LINE PASSING THROUGH THE ORIGIN VIDEO
- 2.19 SEVERAL STRAIGHT LINES VIDEO
- 2.20 THE EQUATION OF A STRAIGHT LINE PASSING THROUGH THE ORIGIN QUIZ



The equation of a general straight line

We now look at equations of straight lines that do not necessarily pass through the origin.

- 2.21 THE EQUATION OF A GENERAL STRAIGHT LINE VIDEO
- 2.22 EXERCISE: THE EQUATION OF A GENERAL STRAIGHT LINE ARTICLE



THE EQUATION OF	A STRAIGHT LINE QUIZ	-

REVISITING THE EQUATION OF A STRAIGHT LINE ARTICLE



Finding the equation of a straight line

Now you will find out how to obtain the equation of a straight line from data points that have been plotted and joined to produce a straight line graph.



Course content

• Week 1

- Concepts of points lines and curves
- No mathematics
- Upload images (Flickr)

• Week 2

- Equations of a straight line
- Vertical intercept
- Gradient

• Week 3

Applications of equations of a straight line in science and engineering





10334347_10203181704456368_4433409199236579026_n

MOONCAT1964 + 4 MONTHS AGO

Articles



Spiegel by Jaume Plensa, 2010 Yorkshire Sculpture Park. How many mathematical symbols can you spot?

© mira66 CC-BY-NC-SA (www.flickr.com/photos/21804434@N02/5936376609)

Mathematical symbols

We have already seen that conventions are used in the fields of science and engineering for quantities. We have also been introduced to conventions that are used for naming particular mathematical concepts such as variables.



Exercises with worked video solutions

Exercise: Finding the equation of a line

Suppose an experiment has been performed, and pairs of values (x, y) have been found and plotted. Suppose the graph looks like the one shown below. Calculate the equation of the line in the form y = mx + c. Start by trying to find the value of c.





Quizzes with feedback

The equation of a straight line passing through the origin



Q2

The straight line with equation y = 3x

- must lie in the first quadrant
- slopes downwards as you look at it from the left to the right
- \bigcirc passes through the point (3, 1)
- passes through the origin
- lies in the second and fourth quadrants



Tony Croft (Educator)

This is not correct. We suggest you revisit the material provided in steps 2.16 and 2.19.



Video components

- Tutorials with animations
- Worked solutions to exercises
- Cameos with leading Loughborough academics



Discussion forum – Introduce yourself



Molly Williams

Follow 13 JUL

Follow 17 MAY

Follow 17 MAY

Follow 18 MAY

Follow 18 MAY

I am currently studying my AS levels and am starting a little late due to exams and courses i have been attending. I have an intrest in going on to study civil engineering and hope to improve my mathmatical knowledge for that and to help with my maths A level next year.



Tony Lawrence

Hello all, i've joined very late (you are all in week 3!), but I wanted to see what the whole MOOC world is all about. Although I have had a life-long interest in Maths, i'm sure there's some interesting new material here - and a different way of presenting the same.



Ewa Makowska

I would like to improve my English vocabulary in mathematics.



Patrick Scally

Engineering maths to HNC level a long time ago



Diana Catton

I have a son who is a maths nerd, studying three different maths A levels as well as physics and chemistry. I want to be able to continue talking to him about what he is doing!



Comments - types

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	- A
er.	
	100

Beatriz Zelaya y de la Parra

It took me some time to draw my graph since I hadn't done one in ages, and also some extra thinking to define the co-ordinates of each point. But it was worth the effort and I got them all correct.

Follow 11 MAY

Follow 10 MAY



Oguarabau Benson

A(2nd), B(1st), C(on -ve y-axis between 3rd and 4th, D(on +ve x-axis between 1st and 4th, E(3rd), F(1st), G(on y-axis between 1st and 2nd, H(on -ve x-axis between 2nd and 3rd I(1st)



Comments - supportive





Comments - supportive



Loughborough University

Participation data

	Loughborough ¹	FutureLearn ²
Learners	52%	56%
Active learners	82%	85%
Returning learners	47%	46%
Fully participating learners	25%	22%
Social learners	41%	38%

- 1. Getting a grip on mathematical symbolism 28/04/14 (reported 09/07/14)
- 2. FutureLearn average of first 21 courses (reported 27/05/14)



Who took the course ?

Gender	Loughbough	FutureLearn
Female	37%	58%
Male	63%	41%

Employment status	Loughbough	FutureLearn
Working full time	42%	49%
Working part time	14%	29%
Looking for work	7%	8%
In full time education	10%	11%
Retired	24%	
Not available for work	3%	13%

Education	Loughbough	FutureLearn
More than degree	25%	29%
Degree level	46%	24%
High school or less	29%	24%

Age	Loughbough	FutureLearn
Under 18	5%	4%
18 - 25	10%	12%
26 - 35	15%	20%
36 - 45	16%	17%
46 - 55	19%	20%
56 - 65	20%	17%
66 or over	15%	9%

Education mathematics	Loughbough
Secondary school to age 16	18%
Secondary school to age 18	15%
Further education eg. college	20%
Higher education eg university	45%



Confidence about learning mathematics



	Before ¹	After ²
Very confident	17%	35%
Confident	52%	58%
Not confident	27%	4%
Very anxious	4%	0.5%

- 1. FutureLearn Pre-course survey (n=809)
- 2. FutureLearn Post-course survey (n=383)



Comments from learners

Janet Harley

Follow 21 MAY

Wow I have learnt so much. If I had taken that quiz at the beginning of the course I probably would have scored less than 10 but after the excellent teaching I got a perfect 60 out of 60. Thank you for a really stimulating course. I took A level maths in 1980 and unfortunately only got a D grade. Since then I have only helped my children up to GCSE level. This has certainly wetted my appetite to study maths at a higher level. I absolutely loved it. The course I would really enjoy would be algebra and solving equations. Thank you again for a truly stimulating course, my first with Futurelearn. I will be back!



Beatriz Zelaya y de la Parra

Follow 22 MAY

Quite apart from a very well presented course and an excellent educator (thanks Prof Croft), the great advantage of the course is that you get the feeling that the lecturer is giving you a personal course and furthermore he is willing to repeat what he has said as many times as you need until things are clear. This will not, obviously, happen in the classroom and for those like me who were not quite confident gave us the chance to learn at our own pace thus increasing our confidence.



- Different model of teaching and learning
- A significant amount of work
- Challenges
- Role of educator/mentor
- Financial model
- Another MOOC!





- Second presentation 15 September 2014
- Register:
- https://www.futurelearn.com/courses/mathematicalsymbolism-2



