

# Graphing Lines

**Talk to a Teacher**

**<http://spoken-tutorial.org>**

**National Mission on Education through ICT**

**<http://sakshat.ac.in>**

**Spoken Tutorial Team**

**IIT Bombay**

**10 November 2017**



# Learning Objectives



# Learning Objectives

# We will demonstrate,



# Learning Objectives

We will demonstrate,

- ▶ **Graphing Lines**, an interactive PhET simulation



# Pre-requisites



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- ▶ **Learner should be familiar with topics in high school mathematics**



# System Requirement



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- ▶ **Ubuntu Linux OS v 14.04**





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- ▶ **Java v 1.7**



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- ▶ **Ubuntu Linux OS v 14.04**
- ▶ **Java v 1.7**
- ▶ **Firefox Web Browser v 53.02.2**



# Learning Goals



# Learning Goals

**Using this simulation we will learn,**



# Learning Goals

Using this simulation we will learn,

- ▶ **About Cartesian coordinate system**



# Learning Goals

Using this simulation we will learn,

- ▶ About **Cartesian coordinate system**
- ▶ **How to calculate the slope of a graphed line**



# Learning Goals

Using this simulation we will learn,

- ▶ About **Cartesian coordinate system**
- ▶ How to calculate the slope of a graphed line
- ▶ To save the plotted lines



# Learning Goals





# Learning Goals

- ▶ How to change the slope and intercept of the line



# Learning Goals

- ▶ How to change the slope and intercept of the line
- ▶ How changing variables in a linear equation will affect the line



# Linear Equation



# Linear Equation

- ▶ An equation with two variables,  $x$  and  $y$  is a **linear equation**

$$y = mx + b$$



# Linear Equation

- ▶ An equation with two variables,  $x$  and  $y$  is a **linear equation**  
 $y = mx + b$
- ▶ **Slope signifies rate of change of  $y$  value with respect to  $x$  value**



# Linear Equation

- ▶ An equation with two variables,  $x$  and  $y$  is a **linear equation**  
 $y = mx + b$
- ▶ Slope signifies rate of change of  $y$  value with respect to  $x$  value
- ▶ **y-intercept is  $y$  value when  $x=0$**



# PhET Simulation Link



# PhET Simulation Link

<https://phet.colorado.edu>





# Assignment



# Assignment

**As an assignment,**



# Assignment

**As an assignment,**

- ▶ **Find when slope is zero and when it is undefined**



# Assignment

**As an assignment,**

- ▶ Find when slope is zero and when it is undefined
- ▶ Give an explanation



# Summary



# Summary

We have learnt

- ▶ About **Graphing Lines**, an interactive PhET simulation



# Summary I

Using this simulation we have learnt,

- ▶ About **Cartesian coordinate system** with x and y axes
- ▶ How to calculate the slope of a graphed line
- ▶ To save the plotted lines



# Summary II

- ▶ How to change the slope and intercept of the line
- ▶ How changing variables in a linear equation will affect the line





# Assignment



# Assignment

**As an assignment,**



# Assignment

As an assignment,

- ▶ Using **Slope-Intercept** screen, find when the value of slope is 1



# Assignment

As an assignment,

- ▶ Using **Slope-Intercept** screen, find when the value of slope is 1
- ▶ Using **Point-Slope** screen, find in which quadrants slope is positive



# About the Spoken Tutorial Project

- ▶ Watch the video available at [http://spoken-tutorial.org/What\\_is\\_a\\_Spoken\\_Tutorial](http://spoken-tutorial.org/What_is_a_Spoken_Tutorial)
- ▶ It summarises the Spoken Tutorial project



# About the Spoken Tutorial Project

- ▶ Watch the video available at [http://spoken-tutorial.org/What\\_is\\_a\\_Spoken\\_Tutorial](http://spoken-tutorial.org/What_is_a_Spoken_Tutorial)
- ▶ It summarises the Spoken Tutorial project
- ▶ If you do not have good bandwidth, you can download and watch it



# Spoken Tutorial Workshops

## The Spoken Tutorial Project Team

- ▶ Conducts workshops using spoken tutorials
- ▶ Gives certificates to those who pass an online test
- ▶ For more details, please write to [contact@spoken-tutorial.org](mailto:contact@spoken-tutorial.org)



# Forum for specific questions

- ▶ Do you have questions in **THIS Spoken Tutorial?**
- ▶ Please visit  
<http://forums.spoken-tutorial.org>
- ▶ Choose the minute and second where you have the question
- ▶ Explain your question briefly
- ▶ Someone from our team will answer them





# Acknowledgements

- ▶ This project is partially funded by  
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National Mission on Teachers and  
Teaching**



# Acknowledgements

- ▶ **Spoken Tutorial Project is a part of the Talk to a Teacher project**
- ▶ **It is supported by the National Mission on Education through ICT, MHRD, Government of India**
- ▶ **More information on this Mission is available at**

<http://spoken-tutorial.org/NMEICT-Intro>

