A picture containing logo

Description automatically generated

R Girls School

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title: "Equations of Straight Line Graphs - Part 1"

author: "write your name here"

date: "`r format(Sys.time(), '%d %B, %Y')`"

output: html\_document

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```{r setup, include=FALSE}

knitr::opts\_chunk$set(echo = TRUE)

library(tidyverse)

```

### KS3: Drawing and finding the equations of straight line graphs (y=mx+c)

### Lesson objectives

Plotting straight line graphs y=mx+c

### Success criteria

\* Plot a straight line graph y = mx+c

\* Compare graphs

### Keywords

\* slope

\* gradient = m

\* intercept = c

\* x-axis

\* y-axis

### Remember

Knit your document often to check the output.

Make sure you do a final knit at the end of the lesson

#### Worked Example 1

This is a worked example for you to follow.

We will show you how to plot the line graph for y=2x + 5.

Run the code by clicking on the little arrow to the right of the code chunk.

```{r chunk1 }

x <- seq(from=-4, to=4, by=1) # sequence the x-axis from -4 to 4

y <- 2\*x+5

mydata <- tibble (x,y)

ggplot(mydata) +

aes(x,y) +

geom\_line (col='red')+

geom\_vline (xintercept = 0, col='black')+

geom\_hline (yintercept = 0, col='black')

```

Now close the image by clicking on the X to the right of the graph

#### Activity1:

Write your own code to draw the following graphs.

Use code chunk1 from the example above to help you.

1. y = 2x (in code chunk2)

2. y = 3x + 10 (in code chunk3)

3. y = 5x + 2.5 (in code chunk4)

```{r chunk2}

```

```{r chunk3}

```

```{r chunk4}

```

#### Worked Example 2

Drawing more than one line on a graph helps us to compare the lines and see what is the same and what is different.

Here is a worked example for four different lines.

1. y=3x+0

2. y=3x+1

3. y=3x+2

4. y=3x+3

```{r chunk5}

x <- seq(-4, 4) # sequence from -4 to 4

y1 <- 3\*x+0

y2 <- 3\*x+1

y3 <- 3\*x+2

y4 <- 3\*x+3

mydata <- tibble (x,y1,y2,y3,y4)

ggplot(mydata) +

geom\_line (aes(x=x, y=y1), col='red')+

geom\_line (aes(x=x, y=y2), col='blue')+

geom\_line (aes(x=x, y=y3), col='green')+

geom\_line (aes(x=x, y=y4), col='grey') +

geom\_vline (xintercept = 0, col='black')+

geom\_hline (yintercept = 0, col='black')

```

Question: From the graph what looks the same and what looks different about these lines?

Answer:

#### Activity2:

Draw the following lines on a graph

1. y=1x+5

2. y=2x+5

3. y=3x+5

4. y=4x+5

Use code chunk5 from the example above to help you. Remember to update the R code with the new lines.

Run the code. Knit the document.

```{r chunk6}

```

Question: What is the same and what is different about the lines?

Answer:

KNIT YOUR DOCUMENT for the final time. This will be the version that your teacher marks.

#### The END