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title: "Equations of Straight Line Graphs - Part 2"

author: "Type your name here"

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

output: html_document

```{r setup, include=FALSE}

knitr::opts_chunk$set(echo = TRUE)

library(tidyverse)

```

KS3: Plotting and finding the equations of straight line graphs (y=mx+c) - Part 2

Lesson objectives

Plotting and finding the equations of straight line graphs y=mx+c

Success criteria

* Plot a straight line graph y = mx+c

* Plot straight line graphs y = mx+c with different intercepts

* Plot a straight line graph y = mx+c with a negative gradient

* Find the equations of straight line graphs

Keywords

* slope

* gradient

* intercept

* x-axis

* y-axis

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.

```{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_point () +
  geom_line (col='red')+
  geom_vline (xintercept = 0, col='black')+
  geom_hline (yintercept = 0, col='black')

```

Worked Example 2

We will now see what happens when you change the intercept c to a negative value.
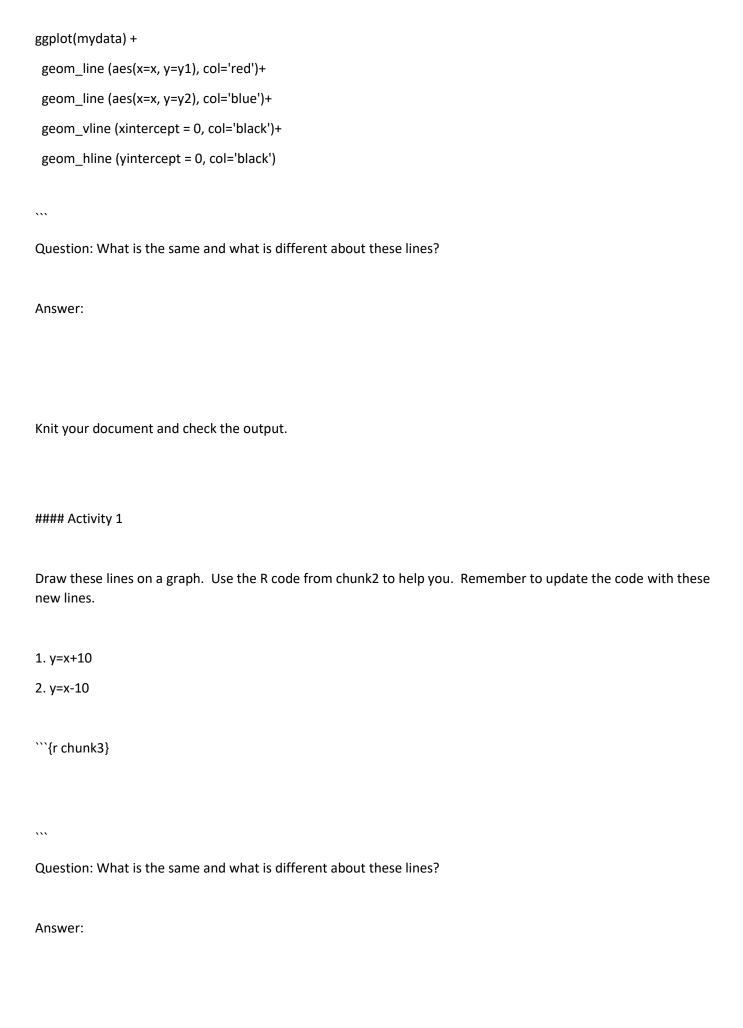
1. y=3x+5
2. y=3x-5

Run the code in chunk2 by clicking on the little arrow on the right of the code chunk.

```{r chunk2}
x <- seq(-4, 4) # sequence from -4 to 4
y1 <- 3*x+5
y2 <- 3*x-5
mydata <- tibble (x,y1,y2,y)
```

```
ggplot(mydata) +

  geom_line (aes(x=x, y=y1), col='red')+

  geom_line (aes(x=x, y=y2), col='blue')+

  geom_vline (xintercept = 0, col='black')+

  geom_hline (yintercept = 0, col='black')
```
```

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


Answer:




Knit your document and check the output.




#### Activity 1


Draw these lines on a graph.  Use the R code from chunk2 to help you.  Remember to update the code with these new lines.


1. y=x+10

2. y=x-10


```{r chunk3}



```

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

Answer:

Activity 2

Now we will investigate m (the gradient). Draw these lines on a graph. Use R code from chunk2 to help you.

Run the code and knit the document.

1. y=-2x+5

2. y= 2x+5

```{r chunk4}



```

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

Answer:

Activity 3 Answer the following questions

```{r chunk5 questions, echo=FALSE}
cat ("Q1 In the equation y=mx+c, what happens when you change c?")
cat ("Q2 What happens when you change m?")
```

Write your answers here\
Q1:

Q2:

Activity 4: Work out the equation from a line graph

Write down the equations of the following four lines on the graph below.

Knit the document to get a good view of the graph.

```{r chunk6, echo=FALSE}
x <- seq(-10, 10)
y <- x
ggplot() +
 aes(x,y)+
 geom_blank()+
 geom_abline(slope=1, intercept=0, col='red')+
 geom_abline(slope=-1, intercept=2.5, col='cyan')+
 geom_abline(slope=2, intercept=10, col='blue')+
 geom_abline(slope=0, intercept=5, col='orange')+
 geom_vline (xintercept=0, col='black')+
 geom_hline (yintercept=0, col='black')

```

Write your answers here

Cyan line:

Red line:

Blue line:

Orange line:

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

THE END