

Exercises linear modelling

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1 Exercises

Below, variables are printed in **bold**. For each research statement, identify which variable is the dependent variable, and which variable is the independent variable.

1. The effect of **income** on **health**
2. **Stock value** is affected by **inflation**
3. **Size** is influenced by **weight**
4. **Shoe size** is predicted by **sex**
5. The less you **drink** the more **thirsty** you become
6. The more **calories** you eat, the more you **weigh**
7. **Weight** is affected by **food intake**
8. **Weight** is affected by **exercise**
9. **Food intake** is predicted by **time of year**
10. There is an effect of **exercise** on **heart rate**
11. **Inflation** leads to higher **wages**
12. **Unprotected sex** leads to **pregnancy**
13. **HIV-infection** is caused by **unprotected sex**
14. The effect of **alcohol intake** on **driving performance**
15. **Sunshine** causes **growth**

Answers:

1. **income** independent, **health** dependent.

2. **Stock value** dependent, **inflation** independent
3. **Size** dependent, **weight** independent
4. **Shoe size** dependent, **sex** independent
5. **drink** independent, **thirsty** dependent
6. **calories** independent, **weigh** dependent
7. **Weight** dependent, **food intake** independent
8. **Weight** dependent, **exercise** independent
9. **Food intake** dependent, **time of year** independent
10. **exercise** independent, **heart rate** dependent
11. **Inflation** independent, **wages** dependent
12. **Unprotected sex** independent, **pregnancy** dependent
13. **HIV-infection** dependent, **unprotected sex** independent
14. **alcohol intake** independent, **driving performance** dependent
15. **Sunshine** independent, **growth** dependent

2 Exercises

1. For Figures 1, 2 and 3, give the linear equations for the relationship between x and y .
2. Try to sketch the straight line for the equation $y = 1 - 2x$

2.1 Answers

The equations are

1.
$$y = 3 - 1x \tag{1}$$

2.
$$y = 1.5 - 0.5x \tag{2}$$

3.
$$y = -2 + 0.33x \tag{3}$$

4. The straight line for $y = 1 - 2x$ is presented in Figure 4.

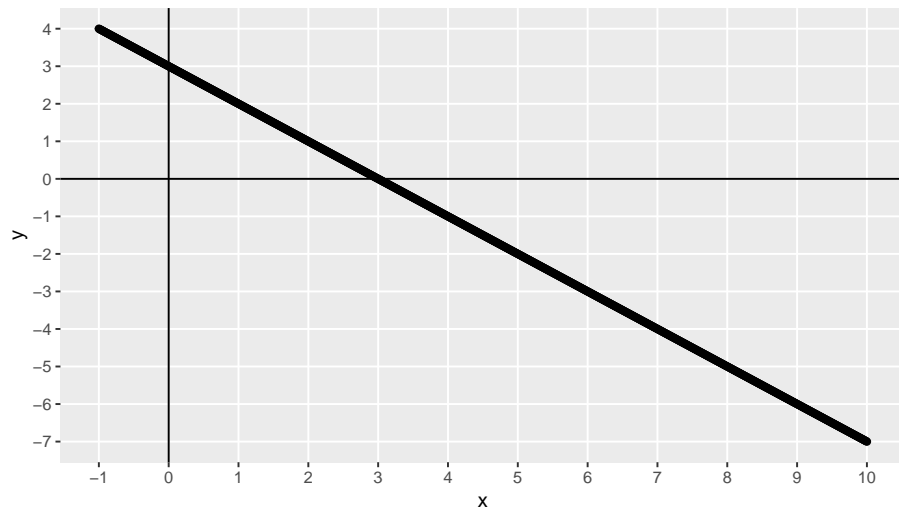


Figure 1: Straight line example.

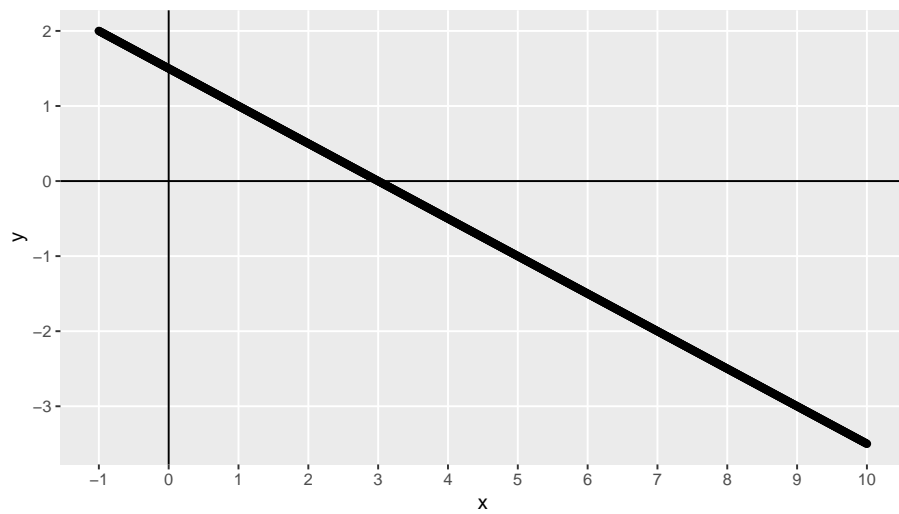


Figure 2: Straight line example.

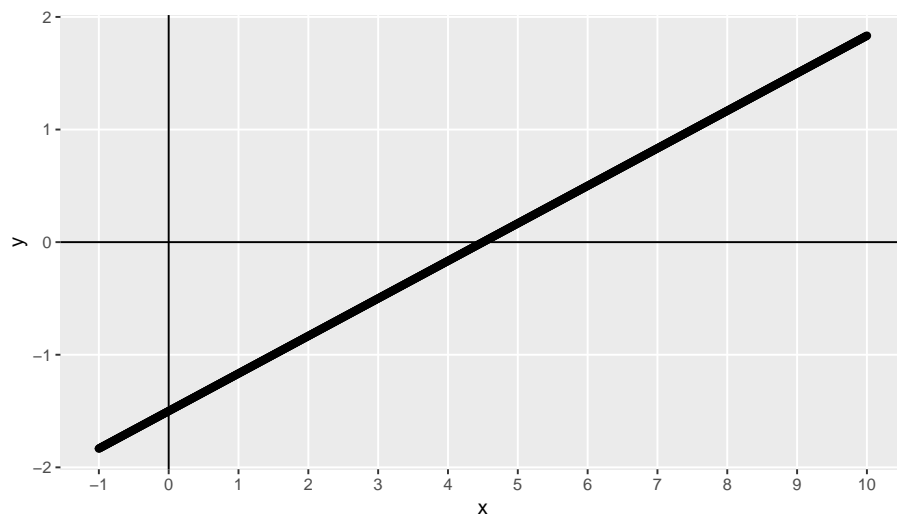


Figure 3: Straight line example.

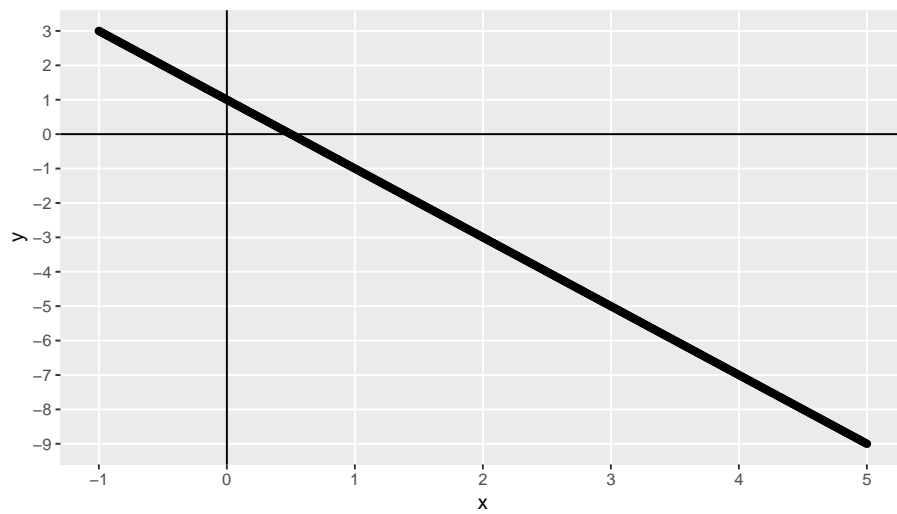


Figure 4: Straight line with based on $y=1-2x$.