1. Identify the correct sum of $3\frac{3}{8} + \left(-2\frac{1}{6}\right)$.

   A. $1\frac{5}{24}$ C. $1\frac{1}{14}$

   B. $5\frac{13}{24}$ D. $-1\frac{5}{24}$

$$3\frac{3}{8}^{\times 3} - 1\frac{3}{6}^{\times 4}_{\times 4}$$

$$\frac{81}{24} - \frac{52}{24}$$

$$\frac{29}{24}$$

2. What are the x- and y-intercepts of $-2x - 5y = 20$?

   A. $x = 10$ and $y = -4$
   B. $x = -10$ and $y = -4$
   C. $x = -10$ and $y = 4$
   D. $x = 10$ and $y = 4$

y int.
let x=0

$$-2(0) - 5y = 20$$
$$\frac{-5y}{-5} = \frac{20}{-5}$$
$$y = -4$$

x int
y=0

$$\frac{-2x - 5(0)}{-2} = \frac{20}{-2}$$
$$x = -10$$

Learning Goals

1. Construct and interpret a curve of best fit for a given set of data.

2. To determine whether a curve or a line, best models the data in a scatter plot.

3. To use the curve of best fit to extrapolate or interpolate.

6.3 - Curves of Best Fit

Sometimes a curve represents the trend in a scatter plot better than a line.

Example One

Ashley and Chris are studying the motion of a pendulum. Chris says that the pendulum will swing in the same way, no matter how long it is. Ashley is not so sure. They did an experiment to see whether the length of a pendulum affects its period, which is how long it takes to go back and forth once.
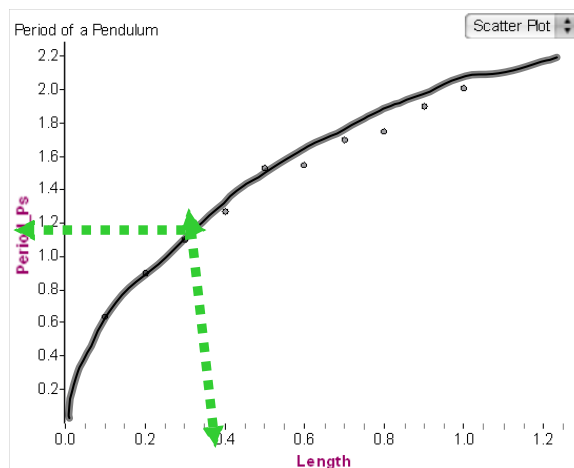
1. What makes more sense to draw, a curve of best fit or a line of best fit? Sketch this in the graph above.
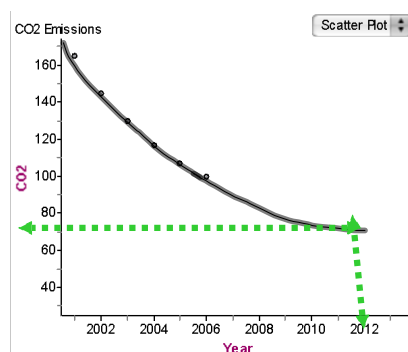
   Curve

2. What is the period when the length is 0.38m? What do we call this estimation process?

   When the length is at 0.38m the Period is 1.2

Example Two

To help protect the environment, a steel factory is thinking about setting new standards for its carbon dioxide (CO_2) emissions. By 2012, the factory wants to emit less than 70 tonnes of CO_2 per year. If it does not change its practices, is this goal realistic?
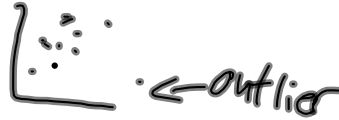Hint: You will have to extrapolate.

No, the goal is not realistic because based on the curve of best fit, the emissions are above 70 tonnes in 2012

6.4 - Reasoning About Data

Outlier - a data point that is separated from the rest of the points on a graph.


Conjecture - a guess or prediction based on limited evidence.

<u>Note</u>: The larger the number of observations made, the more likely you will see a definite trend.

Example One

Michael is researching global climate change. Because of what they have heard in the news, they think that the concentration of CO_2 in the atmosphere is increasing. They read in a report that, by 2015, the atmospheric concentration of CO_2 will be above 385 parts per million (ppm). Look at the graph to verify or reject the report's conjecture.
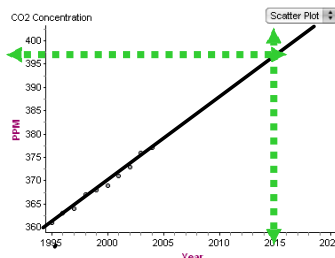
Michael's conjecture is correct because at 2015 the CO_2 concentration is above 385 ppm.

Example Two

Jordan thinks that people with higher income donate more money to charities. He graphed his data. Does the data support Jordan's conjecture?

← outlier
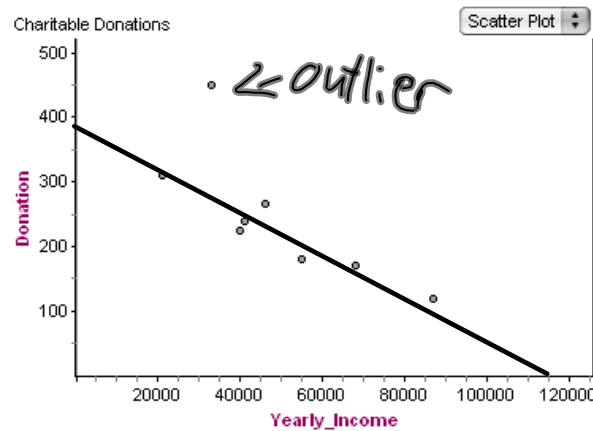
No, Jordan's conjecture is not correct, because as their salary increases, they actually donate less.

Example Three

Teresa hypothesizes that a student's average mark in grade 9 is related to his or her age. Analyze the data to see if it supports her conjecture.
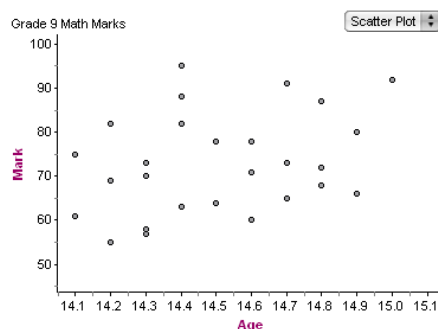
Teresa's conjecture is incorrect because there is no trend.

<u>Complete</u>:   <u>Section 6.3</u> p. 349 - 350 #2, 3, 5.
    <u>Section 6.4</u> p. 361 #1, 2.