**Lesson Plan**

**Grade 9 Academic** **Lesson: 35**

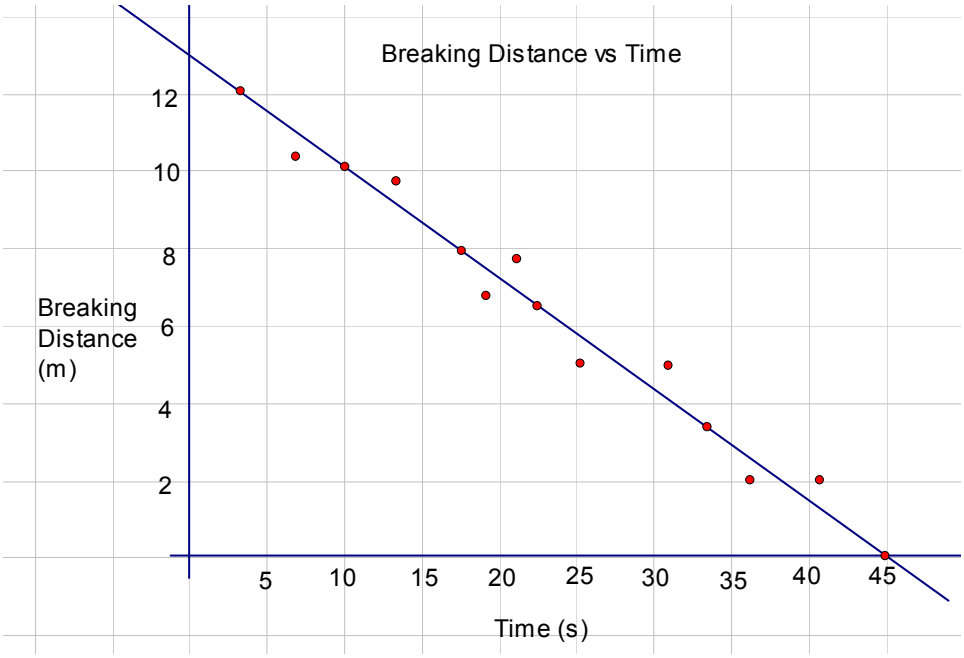
**Unit/Chapter: Investigating Relationships** **Topic: Lines of Best Fit**

---

- ***homework check:*** **NPM 9 p. 326 # 3 – 10**

- ***note:*** **Lines of Best Fit**

We use lines or curves of best fit to make predictions for values that are not recorded in the table. Predictions can be made from the graph or by using an equation. The equation would model the line or curve of best fit. To write the equation of the line of best fit, identify any two points on the line and use inverse operations to solve for unknown values. For example,




*strong negative correlation
*time is continuous

**Step 1:** identify two points that are on the line
$A(10,10)$ and $B(45,0)$ are on the line

**Step 2:** write the equation of the relationship

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$
$$= \frac{0 - 10}{45 - 10}$$
$$= \frac{-10}{35}$$
$$= \frac{-2}{7}$$

$$y = mx + b$$
$$y = \frac{-2}{7}x + b$$
$$0 = \frac{-2}{7}(45) + b$$
$$\frac{90}{7} = b$$
$$y = \frac{-2}{7}x + \frac{90}{7}$$

**Step 3:** use the equation to make predictions
What is the breaking distance at 18s?
*time is on the x axis, let x = 18 and substitute

$$y = \frac{-2}{7}x + \frac{90}{7}$$
$$y = \frac{-2}{7}(18) + \frac{90}{7}$$
$$y = \frac{-36}{7} + \frac{90}{7}$$
$$y = \frac{54}{7}$$
$$y = 7.7m$$

**Step 4:** How long does it take the car reaches 4.2 m?
*distance is on the y axis, let y = 4.2 and substitute

$$y = \frac{-2}{7}x + \frac{90}{7}$$
$$4.2 = \frac{-2}{7}x + \frac{90}{7}$$
$$4.2(7) = \left(\frac{-2}{7}x\right)(7) + \left(\frac{90}{7}\right)(7)$$
$$29.4 = -2x + 90$$
$$29.4 - 90 = -2x$$
$$-60.6 = -2x$$
$$\frac{-60.6}{-2} = \frac{-2x}{-2}$$
$$x = 30.3s$$

***homework assignment:*** **NPM 9 p. 337 #2, 4, 5, 6, 9**