

# Chapter 4 - Statistics

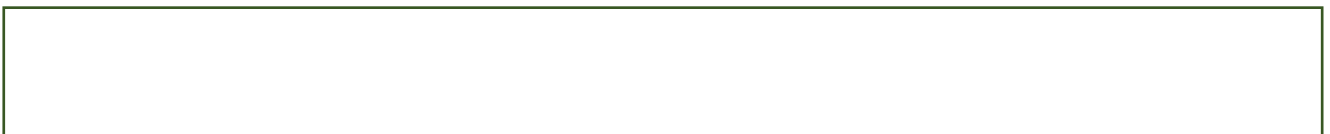
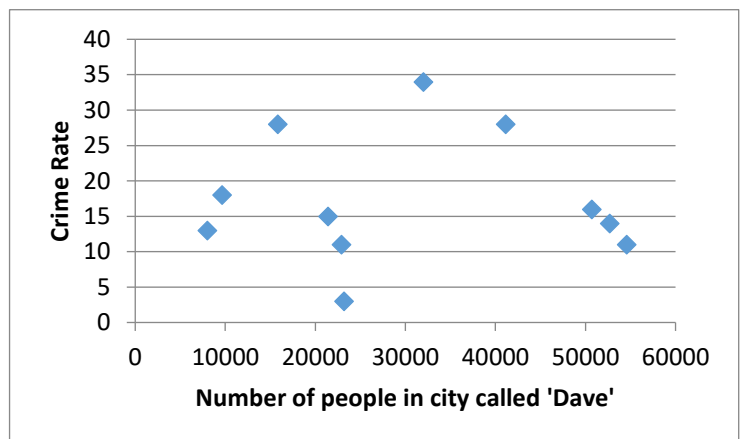
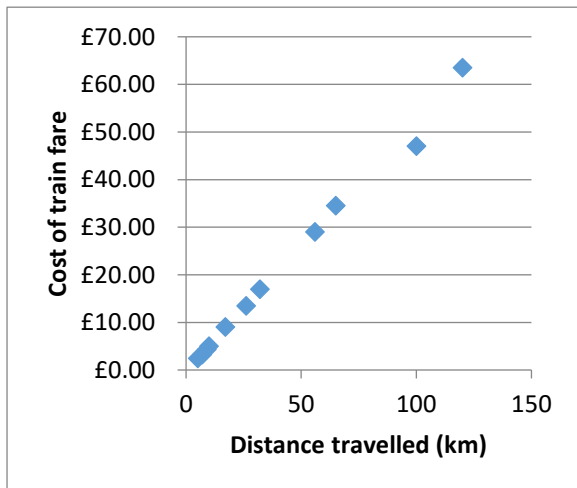
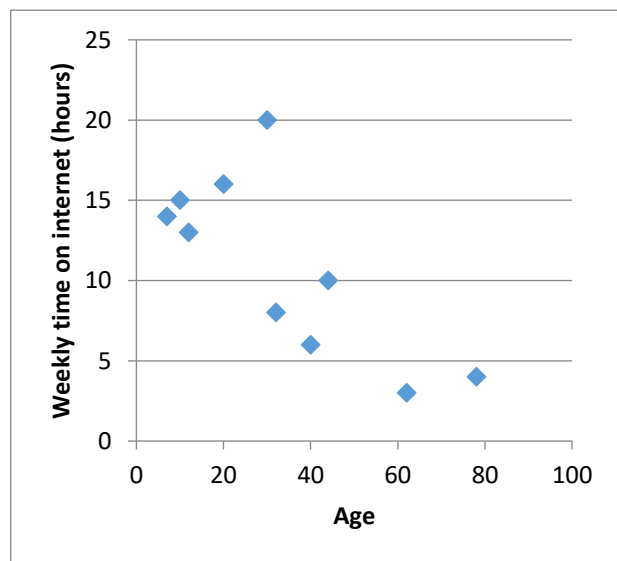
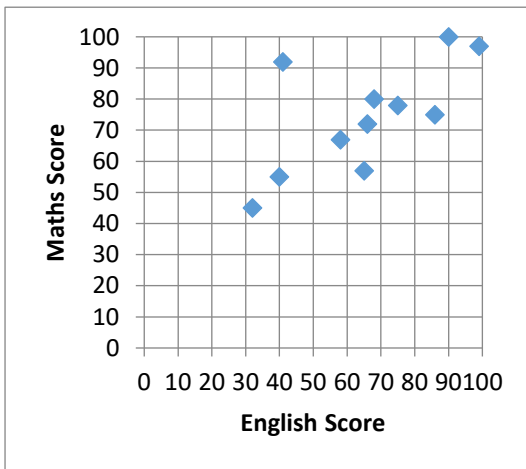
## Correlation

### Chapter Overview

1. Draw and interpret scatter diagrams
2. Interpret correlation
3. Interpret the coefficients of a regression line equation for bivariate data
4. Understand when you can use a regression line to make predications

Topics	What students need to learn:	
	Content	Guidance
<b>2</b> <b>Data presentation and interpretation</b> <i>continued</i>	2.2 <b>Interpret scatter diagrams and regression lines for bivariate data, including recognition of scatter diagrams which include distinct sections of the population (calculations involving regression lines are excluded).</b>  <b>Understand informal interpretation of correlation.</b>  <b>Understand that correlation does not imply causation.</b>	<b>Students should be familiar with the terms explanatory (independent) and response (dependent) variables.</b>  Use to make predictions within the range of values of the explanatory variable and the dangers of extrapolation. Derivations will not be required. Variables other than $x$ and $y$ may be used.  <b>Use of interpolation and the dangers of extrapolation. Variables other than <math>x</math> and <math>y</math> may be used.</b>  Change of variable may be required, e.g. using knowledge of logarithms to reduce a relationship of the form $y = ax^n$ or $y = kb^x$ into linear form to estimate $a$ and $n$ or $k$ and $b$ .  <b>Use of terms such as positive, negative, zero, strong and weak are expected.</b>

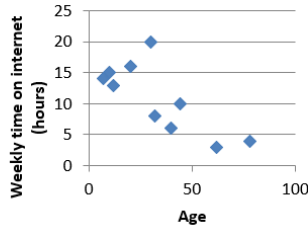
## Recap on Correlation



## Important Correlation Concepts

### Important Point 1

To **interpret** the correlation between two variables is to give a worded description in the context of the problem.



- State the correlation shown.
- Describe/interpret the relationship between age and weekly time on the internet.

### Important Point 2

[Textbook] Two variables have a **causal relationship** if a change in one variable directly causes a change in the other. Just because two variables show correlation it does not necessarily mean that they have a causal relationship.

Hideko was interested to see if there was a relationship between what people earn and the age which they left education or training. She says her data supports the conclusion that more education causes people to earn a lower hourly rate of pay. Give one reason why Hideko's conclusion might not be valid.

