

## Y11 Unit 4 Overview-Presenting data, solving inequalities and congruency

Target grade for tests:

You will learn about:

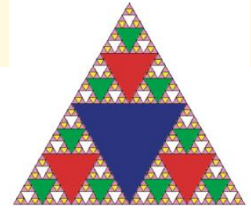
- Presenting data
- Simultaneous equations
- Triangles and congruency

You will be able to:

- Interpret and construct tables, charts and diagrams, including tables and line graphs for time series data and know their appropriate use
- Draw estimated lines of best fit; make predictions
- Know correlation does not indicate causation; interpolate and extrapolate apparent trends whilst knowing the dangers of so doing
- Solve simultaneous equations
- Use graphs to solve equations
- Solve problems involving simultaneous equations
- Understand and use the concepts and vocabulary of inequalities
- Solve linear inequalities in one variable and represent the solution set on a number line
- Use the basic congruence criteria for triangles (SSS, SAS, ASA, RHS)
- Apply angle facts, triangle congruence, similarity and properties of quadrilaterals to conjecture and derive results about angles and sides, including Pythagoras' Theorem and the fact that the base angles of an isosceles triangle are equal, and use known results to obtain simple proofs

$$(1) 8x + 2y = 46$$

$$(2) 7x + 3y = 47$$



### Lesson Overview

#### PRESENTATION OF DATA

- Construct graphs of time series
- Interpret graphs of time series
- Construct and interpret compound bar charts
- Interpret a wider range of non-standard graphs and charts
- Understand that correlation does not indicate causation
- Interpret a scatter diagram using understanding of correlation
- Construct a line of best fit on a scatter diagram
- Use a line of best fit to estimate values
- Know when it is appropriate to use a line of best fit to estimate values

#### SOLVING EQUATIONS

- Understand that there are an infinite number of solutions to the equation  $ax + by = c$  ( $a \neq 0$ ,  $b \neq 0$ )
- Understand the concept of simultaneous equations
- Find approximate solutions to simultaneous equations using a **graph**
- Understand the concept of solving simultaneous equations by elimination\*
- Target a variable to eliminate
- Decide if multiplication of one equation is required
- Decide whether addition or subtraction of equations is required
- Add or subtract pairs of equations to eliminate a variable
- Find the value of one variable in a pair of simple simultaneous equations
- Find the value of the second variable in a pair of simple simultaneous equations
- Solve two linear simultaneous equations in two variables in very simple cases (no multiplication required)
- Solve two linear simultaneous equations in two variables in simple cases (multiplication of both equations)
- Derive and solve two simultaneous equations

### Key Words

#### Refer to

<http://studymaths.co.uk/glossary.php>  
for definitions of the key words

Categorical data, Discrete data  
Continuous data, Grouped data  
Axis, axes  
Time series  
Compound bar chart  
Scatter graph (scatter diagram, scattergram, scatter plot)  
Bivariate data  
(Linear) Correlation  
Positive correlation, Negative correlation  
Line of best fit  
Interpolate  
Extrapolate  
Trend

#### Notation

Correct use of inequality symbols when labelling groups in a frequency table

Equation  
Simultaneous equation  
Variable  
Manipulate  
Eliminate  
Solve  
Derive  
Interpret

Congruent, congruence  
Similar (shapes), similarity

<ul style="list-style-type: none"> <li>• Interpret the solution to a pair of simultaneous equations</li> </ul> <p><b>CONJECTURING</b></p> <ul style="list-style-type: none"> <li>• Know the criteria for triangles to be congruent (SSS, SAS, ASA, RHS)</li> <li>• Identify congruent triangles</li> <li>• Use known facts to form conjectures about lines and angles in geometrical situations</li> <li>• Use known facts to derive further information in geometrical situations</li> <li>• Test conjectures using known facts</li> <li>• Know the structure of a simple mathematical proof</li> <li>• Use known facts to create simple proofs</li> <li>• Explain why the base angles in an isosceles triangle must be equal</li> <li>• Explain the connections between Pythagorean triples</li> </ul>					<p>Hypotenuse Conjecture Derive Prove, proof Counterexample</p> <p><b>Notation</b> Notation for equal lengths and parallel lines SSS, SAS, ASA, RHS The 'implies that' symbol (<math>\Rightarrow</math>)</p>	
Research	Note-making	Group work & discussion	Memorisation	Precision & accuracy	Independence	Reflection