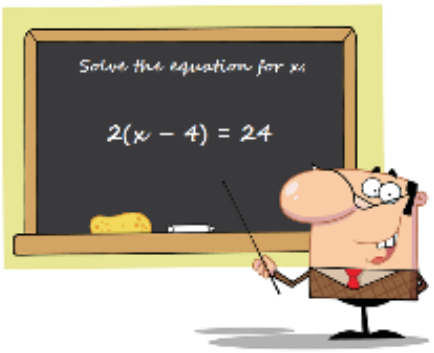
Y9 Unit 6 Overview- Algebra- Solving equations

Test window: 22nd June 2020 – 3rd July 2020

Target grade for tests:

You will learn about:

- Solving simultaneous equations
- Congruence
- Conjecturing



You will be able to:

- Solve, in simple cases, two linear simultaneous equations in two variables algebraically
- Derive an equation (or two simultaneous equations), solve the equation(s) and interpret the solution
- Find approximate solutions to simultaneous equations using a graph
- 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

Lesson Overview

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
- Interpret the solution to a pair of simultaneous equations

CONJECTURING

- Know the criteria for triangles to be congruent (SSS, SAS, ASA, RHS)
- Identify congruent triangles
- Use known facts to form conjectures about lines and angles in geometrical situations
- Use known facts to derive further information in geometrical situations
- Test conjectures using known facts
- Know the structure of a simple mathematical proof
- Use known facts to create simple proofs
- Explain why the base angles in an isosceles triangle must be equal
- Explain the connections between Pythagorean triples

Key Words

Refer to http://studymaths.co.uk/glossary.php for definitions of the key words

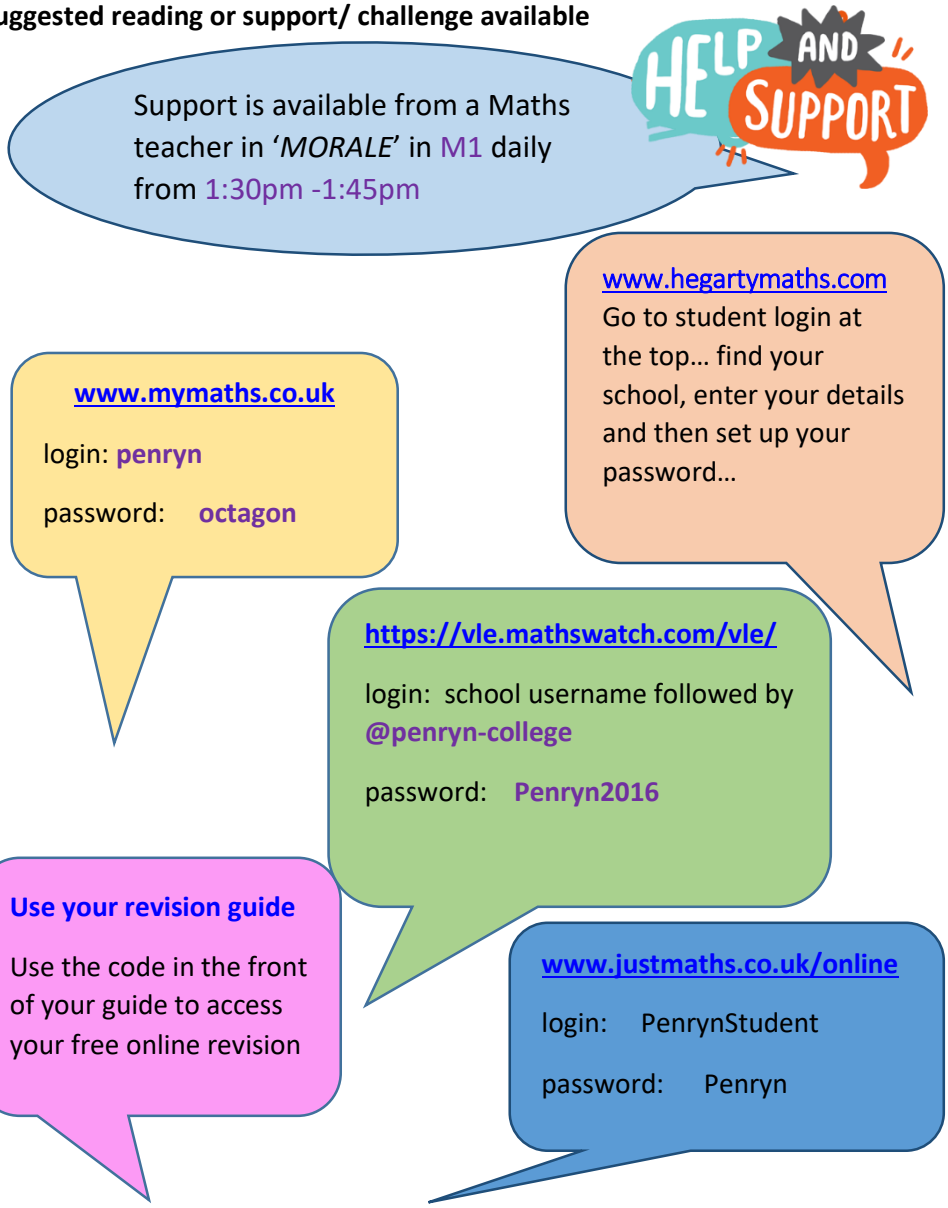
Equation
Simultaneous equation
Variable
Manipulate
Eliminate
Solve
Derive
Interpret

Congruent, congruence
Similar (shapes), similarity
Hypotenuse
Conjecture
Derive
Prove, proof
Counterexample

Notation

Notation for equal lengths and parallel lines
SSS, SAS, ASA, RHS
The 'implies that' symbol (⇒)

Suggested reading or support/ challenge available



Cross curricular

SMSC:

1.1 Exploring, understanding and respecting cultural diversity e.g. exploration of different methods of multiplication (Chinese, Russian).
3.1 Developing personal qualities and using social skills (regular paired/ group work communication).
3.2 Participating, cooperating and resolving conflicts (paired/group activities).
4.2 Experiencing fascination, awe and wonder of mathematics.
4.4 Using imagination and creativity in learning

Literacy:

Verbal communication of understanding using key words in the correct context.
Development of written communication of methods and strategies to problem solve.

NAC:

Research	Note-making	Group work & discussion	Memorisation	Precision & accuracy	Independence	Reflection