

# Proofs

## Junior Certificate Higher Level

### **Theorem 4** (Angle Sum 180)

The angles in any triangle add to  $180^\circ$ .

### **Theorem 6** (Exterior Angle)

Each exterior angle of a triangle is equal to the sum of the interior opposite angles.

### **Theorem 9**

In a parallelogram, opposite sides are equal, and opposite angles are equal.

### **Theorem 14** (Pythagoras)

In a right-angle triangle the square of the hypotenuse is the sum of the squares of the other two sides.

### **Theorem 19**

The angle at the centre of a circle standing on a given arc is twice the angle at any point of the circle standing on the same arc.

## Leaving Certificate Higher Level

### **Theorem 11**

If three parallel lines cut off equal segments on some transversal line, then they will cut off equal segments on any other transversal.

### **Theorem 12**

Let  $\triangle ABC$  be a triangle. If a line  $l$  is parallel to  $BC$  and cuts  $[AB]$  in the ratio  $s:t$ , then it also cuts  $[AC]$  in the same ratio.

### **Theorem 13**

If two triangles  $\triangle ABC$  and  $\triangle A' B' C'$  are similar, then their sides are proportional, in order.

No Proofs are examinable at JCOL and LCOL. Students will be examined using problems that can be attacked using the theory.