



Free-Standing Mathematics Qualification
Advanced Level
June 2012

Working with Algebraic and Graphical Techniques **6991/2PM**

Unit 11

Preliminary Material

Data Sheet

To be opened and issued to candidates between
Friday 4 May 2012 and Friday 11 May 2012

REMINDER TO CANDIDATES

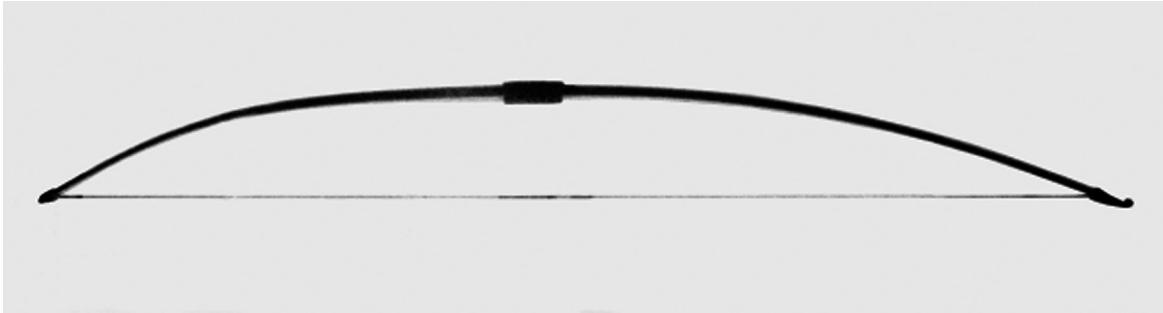
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A CLEAN COPY WILL BE MADE AVAILABLE.

Longbows

A longbow consists of a length of flexible wood connected by a string attached to its ends.

The curve of the wood can be modelled as a parabola.

A longbow is used to shoot arrows at a target.

**Radioactive iodine**

Radioactive iodine can be used to treat certain cancers.

It has a half-life of just over 8 days. This is the time taken for the mass of radioactive iodine to decay to half its original value.

Garden waste

The amount of garden waste, in tonnes, recycled by a local council is recorded.

The results for some months are shown.

Month	January	March	May	July	September	November
Amount (tonnes)	80	164	326	410	329	161

Aircraft drag

There are two types of drag on an aircraft when it flies.

Parasitic drag is generated by the body of the aircraft and is proportional to the square of the aircraft's speed.

Induced drag is generated by the lift on the aircraft wings and is inversely proportional to the square of the aircraft's speed.

At high speeds, the parasitic drag is the larger force.

At low speeds, the induced drag is the larger force.

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Aircraft drag: © Getty Images

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