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| **Scales of Production (Charity Keyrings)** | **AGE 14-16 (vocational ability)** |
| **Objectives**  | **Background**  |
| * To understand the scale of engineering production: continuous.

Demonstrated by the following outcomes:* Identify what continuous production is.
* Identify some advantages and disadvantages of continuous production.
* Describe continuous production to enable future comparisons.
 | This 1 hour session is the 9th of a unit of 10 lessons exploring scales of production, specifically one-off, batch, mass and continuous; this session introduces and begins to explore continuous production in more detail. |
| **The Big Questions** | **Curriculum Links**  |
| * What are scales of production?
* What types of products are produced at each scale?
* Why is one production scale sometimes preferable?
 | Pearson BTEC Level 1/Level 2 First Award in EngineeringUnit 1: The Engineered WorldLearning aim A: Know about engineering processes used to produce modern engineered productsTopic A3: Scales of productionCharacteristics and advantages/disadvantages of the following scales of production used in engineering manufacture:● one-off/jobbing production● batch production● mass production● continuous production. |
| **Unit Summary** |  |
| * This unit of work is a series of 10 lessons to allow students to develop knowledge of scales of production mainly through focused practical tasks. Students produce various key ring products as a live brief to raise money for charity (Children in Need).
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| **(Title)** | **AGE 11-14** |

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| **1 Resources**  | **5 Plenary**  |
| * Scales of Production 9-10 - Continuous production PowerPoint
* Scales of Production Student Workbook

Continuous Production Equipment:* PCs with CAD software
* Laser cutter (or other CAM as available)

Mass production equipment (optional) | *5 minutes*As practical work has taken place students need to ensure:* All work is stored safely and is identifiable.
* All tools are returned to the correct places.
* The workshop is left appropriately clean and tidy.
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| **2 Starter**  |
| 5 minutesStudents watch a demonstration of continuous production in a drinks factory: <https://www.youtube.com/watch?v=2DlZlCbpg0Q>  |
| **3 Introduction**  | **6 Follow up session**  |
| 10 minutesStudents discuss how mass and continuous production may differ, based on the 2 video clips they have viewed. A recap of the 4 scales of production (as specified one-off/jobbing production, batch production, mass production & continuous production) is given. | Students produce their own CAD design for a charity keyring to be laser cut. |
|  **4 Activity** |  |
| 5 minutesStudents are given opportunity to be given written facts about the production type, using an appropriate method for the individual ability. This is broken into the basic advantages and disadvantages.15 minutesStudents produce a written description of continuous production, including advantages and disadvantages of the method.5 minutesReview of production method, continuous product - charity key ring is introduced, this will be produced by students individually using CAD/CAM.15 minutesDemonstration of how to produce small continuously produced acrylic keyring, including:* Setting up drawing to correct material size.
* Using appropriate tools to produce design.
* Adding detailing such as a hole for the keyring to the correct diameter.

Some students may continue their production line mass production with the view that they will transition their production to continuous (CAM) production if there is enough market demand for the higher volume that can be produced using continuous production. |