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

Demonstrated by the following outcomes:* Identify what one-off production is.
* Identify some advantages and disadvantages of one-off production.
* Describe one-off production to enable future comparisons.
 | This 1 hour session is the 1st of a unit of 10 lessons exploring scales of production, specifically one-off, batch, mass and continuous; this session introduces these methods and begins to explore one-off 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 1-2 - One-off production PowerPoint
* Scales of Production Student Workbook
* Engineer’s Blue
* Pillar Drill
* Letter Punches

Per Student: * Steel Ruler
* Try-Square
* Junior Hacksaw
* Flat File
* Metal Vice
* Emery Cloth
* Ball-Pein Hammer
* 30x50mm mild steel sheet
 | *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 the video at http://www.youtube.com/watch?v=DTWnQDAhp9kThey need to list the items that they see, giving a typical number produced. |
| **3 Introduction**  | **6 Follow up session**  |
| 10 minutesThe four scales of production (as specified one-off/jobbing production, batch production, mass production & continuous production) are introduced making reference to the examples shown, and others from the video stating typical numbers produced and comparing with student own ideas from the video. | Students continue the one-off manufacture of their charity key ring in the next lesson in the unit. |
|  **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 one-off production, including advantages and disadvantages of the method.5 minutesReview of production method, one off product - charity key ring is introduced as being a one-off as each student will need to produce one, they will all differ slightly and they will need a high level of skill to make one.15 minutesDemonstration of how to produce a small steel tag, including:* Shearing steel sheet to the correct size.
* Finishing edges of the steel sheet using files so they are safe.
* Bluing and marking hole position.
* Punching and drilling hole to correct diameter.
* Marking guidelines for lettering.
* Stamping lettering.

Students may begin producing keyring. |