Your notes

GCSE Engineering: revision notes

Practical engineering skills and the NEA

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Measuring and marking out

- Steel rules, try squares, scribers, odd-leg callipers and centre punches are used for marking out. Engineer's marking blue makes scribed lines easy to see on metal.
- **Vernier callipers** measure lengths, internal and external diameters and depths, often to 0.02 mm. **Micrometers** measure to 0.01 mm.
- A **tolerance** is the acceptable variation in a size. 50 ± 0.2 mm means any size from 49.8 mm to 50.2 mm is acceptable. Go/no-go gauges check sizes quickly.

Tools and equipment

- Hand tools: hacksaws, files, taps and dies, hand drills and soldering irons.
- Machines: pillar drills, centre lathes, milling machines, bandsaws, laser cutters and 3D printers.
- Choose the right tool, speed and cutting fluid for the material.

Health and safety

- **Risk assessments** identify hazards, who might be harmed, and control measures.
- PPE (personal protective equipment) includes goggles, aprons, welding masks and safety boots.
- Machines have guards and emergency stop buttons. **COSHH** regulations control hazardous substances, such as solvents. The Health and Safety at Work Act 1974 sets duties for employers and employees.

The NEA

- The NEA (non-exam assessment) is worth 60% of the GCSE; the written paper is worth 40%.
- Students respond to a brief set by AQA: analyse the brief, research, write a **specification**, develop designs with engineering drawings, plan production, make the product, test it and evaluate it against the **specification**.
- A production plan (such as a **Gantt chart**) sets out the order of tasks, tools, timings and quality checks.

Key terms

Vernier callipers	A measuring tool that measures to about 0.02 mm.
Micrometer	A precision measuring tool that measures to 0.01 mm.
Tolerance	The acceptable variation in a size.
PPE	Personal protective equipment.
Risk assessment	Identifying hazards and how to control them.
COSHH	Regulations controlling substances hazardous to health.
Gantt chart	A chart showing the order and timing of tasks.
Specification	A list of requirements a product must meet.

Quick questions

Cover the answers and test yourself: remembering is what makes it stick.

1. What does a tolerance of 50 ± 0.2 mm mean?
2. A part should be 50 ± 0.2 mm. It measures 50.3 mm. Is it acceptable?
3. Which tool measures to 0.01 mm?
4. What is engineer's marking blue used for?
5. What does PPE stand for?
6. What does COSHH cover?
7. What is a risk assessment?
8. What is a Gantt chart used for?

Answers

1. Any size from 49.8 mm to 50.2 mm is acceptable
2. No, it is too large
3. A micrometer
4. Making scribed lines easy to see on metal
5. Personal protective equipment
6. Substances hazardous to health
7. Identifying hazards and how to control them
8. Planning the order and timing of tasks

Your notes

What to do next

Practise 10 questions on this topic

Try 3 exam questions, with mark schemes

Read the lesson, one step at a time

Free revision for GCSE and KS3 at lycolearn.co.uk. Some notes are for one exam board only, and say so in brackets.

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