Year 7 DT Home Learning 2

Name: Class:

Task: In DT, CAD/CAM has become a big part of our subject and how it allows us to create such high quality final pieces. Read the information below and complete the questions.

CAD (computer-aided design) is the use of computer-based software to aid in design processes. CAD software is frequently used by different types of engineers and designers. CAD software can be used to create two-dimensional (2-D) drawings or three-dimensional (3-D) models.

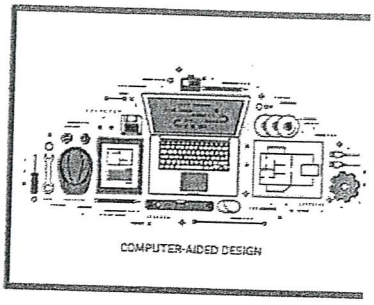
The purpose of CAD is to optimize and streamline the designer's workflow, increase productivity, improve the quality and level of detail in the design, improve documentation communications and often contribute toward a manufacturing design database. CAD software outputs come in the form of electronic files, which are then used accordingly for manufacturing processes.

CAD is often used in tandem with digitized manufacturing processes. CAD/CAM (computer-aided design/computer-aided manufacturing) is software used to design products such as electronic circuit boards in computers and other devices.

Who uses CAD?
Computer-aided design is used in a wide variety of professions. CAD software is used heavily within various architecture, arts and engineering projects. CAD use cases are specific to industry and job functions. Professions that use CAD tools include, but are not limited to:

Architects	Engineers	City planners	Graphic designers	Animation illustrators	Drafters	Fashion designers
Interior designers	Exterior designers	Game designers	Product designers	Industrial designers	Manufacturers	CAD benefits

Compared to traditional technical sketching and manual drafting, the use of CAD design tools can have significant benefits for engineers and designers:



Lower production costs for designs;
Quicker project completion due to efficient workflow and design process;
Changes can be made independent of other design details, without the need to completely re-do a sketch; Higher quality designs with documentation (such as angles, measurements, presets) built into the file; Clearer designs, better legibility and ease of interpretation by collaborators, as handmade drawings are not as clear or detailed;
Use of digital files can make collaborating with colleagues more simple; and
Software features can support generative design, solid modeling, and other technical functions.
CAD software/tools
A number of CAD tools exist to assist designers and engineers. Some CAD tools are tailored to fit specific use cases and industries, such as industrial design or architecture. Other CAD software tools can be used to support a variety of industries and project types. Some widely-used CAD tools are:

MicroStation (offered by Bentley Systems)	AutoCAD (offered by Autodesk)	CorelCAD	IronCAD	CADTalk	SolidWorks	Onshape
Catia	LibreCAD	OpenSCAD	Vectorworks	Solid Edge	Altium Designer	2D Design

Computer Aided Design

Positives	Negatives
-This can be more accurate than hand-drawn designs and it reduces human error.	-Initial costs are high as the software can be expensive although there are free software packages.
-Existing ideas can be modified which would save time for the user.	-A PC is required to do this. Which is a further expense
-Ideas can be saved and edited easily which saves time and it makes it cheaper to modify as you go along.	-Staff need to be trained to work on this software, which adds more to the final cost.
· Less storage space needed	- Computers can be Hacked and information stolen
Designs can be emailed across country or worldwide	-Files can become corrupted and unable to retrieve

Computer Aided Manufacture

Positives	Negatives
-The results are the same in large-scale manufacture.	-The software is very expensive itself so the initial cost is high.
-There are very high accuracy levels in large scale production.	-It can be slower than traditional methods for one-off or low-volume production.
-Production of low volume products is normally sped up.	-Staff need to be trained how to use the software and machinery, which tops up the costs.
-Can be faster and efficient	-Many staff will lose jobs as machines don't need break
-Can become more cost effective	



What is CAD and what is its primary purpose?

What types of models can CAD software create?

How does CAD software contribute to manufacturing processes?

List five professions that commonly use CAD software.

What are some benefits of using CAD tools compared to traditional technical sketching and manual drafting?

Name three specific CAD tools and the companies that offer them.

Give 3 positives and negative of CAD?

Positives	Negatives

Give 3 positives and negative of CAM?

Positives	Negatives

What is CAD/CAM, and how is it used?

Identify two industries or project types where specific CAD tools are tailored for use.

What is Humanism?



Introduction to Humanism: Humanism is a way of thinking that emphasizes the importance of human beings, their values, and their potential. It's not a religion but a philosophy that encourages people to think for themselves, use reason, and care for others. Humanists believe that people can improve their lives and the world through education, science, and compassion.

Key Ideas of Humanism:

1. **Human Potential**: Humanists believe that everyone has the potential to make their lives and the world better. They value education and personal growth.
2. **Reason and Science**: Humanists use reason, evidence, and scientific methods to understand the world and solve problems.
3. **Ethics and Morality**: Instead of following religious rules, humanists create their own sense of right and wrong based on reason and empathy.
4. **Respect for Others**: Humanists believe in treating all people with respect and dignity, supporting human rights and equality.
5. **Happiness and Fulfillment**: Humanists strive to live happy and meaningful lives, making the most of their time on Earth.

History of Humanism:

- **Ancient Origins**: Ideas of humanism can be traced back to ancient Greece and Rome with philosophers like Socrates and Cicero, who emphasized reason and ethics.
- **Renaissance Humanism**: During the Renaissance (14th-17th centuries), scholars in Europe revived the ideas of ancient Greece and Rome, leading to great advancements in art, literature, and science.
- **Modern Humanism**: In the 19th and 20th centuries, humanism evolved with thinkers promoting secularism (keeping religion separate from public affairs) and human rights.

Humanist Practices:

- **Education**: Humanists value education and lifelong learning.
- **Community and Volunteering**: Many humanists volunteer and participate in community service to help others.
- **Celebrations**: Humanists celebrate life events like births, marriages, and deaths with non-religious ceremonies focusing on human connections and achievements.

Famous Humanists:

- **Albert Einstein**: Known for his scientific contributions, Einstein also supported human rights and education.
- **Marie Curie**: A pioneer in the field of radioactivity, Curie valued scientific discovery and the betterment of humanity.
- **Carl Sagan**: An astronomer and science communicator, Sagan promoted the importance of science and reason in understanding the universe.

Home Learning - Read and use the information about Humanism to answer the questions below. You will be tested on these in the next lesson.

Write in full sentences:

1. What is humanism?

2. Why is humanism not considered a religion?

3. What do humanists believe about human potential?

4. How do humanists use reason and science?

5. How do humanists develop their sense of right and wrong?

6. What do humanists believe about treating others?

7. What is the goal of humanists in terms of happiness and fulfillment?

8. Name two ancient philosophers associated with early humanistic ideas.

9. Why is the Renaissance important in the history of humanism?

10. Give an example of a famous humanist and explain their contribution.

