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* لتحميل كتب جميع المواد في جميع الفصول للـ الصف السادس اضغط هنا [grade6/ae/com.almanahj//:https](https://almanahj.com/ae/grade6)

للتحدث إلى بوت المناهج على تلغرام: اضغط هنا [bot_almanahj/me.t//:https](https://t.me/bot_almanahj)

Grade	6	Subject	DT	Lesson number	1	Week number	1										
Unit	1	Date	WC: 12 th January	Time	45 minutes	Page number	6-13										
Equipment required				Learning objectives													
Student book Activity book Computer				E1.1 Discuss content theft and methods for prevention. E1.2 List examples of public and private information. 1.1. Demonstrate an understanding of 3D design and 3D printing.													
Keywords				design, sketch, 3D, CAD, data encoding, 3D printer, 3D printing, CAM													
Starter/Introduction activity																	
Time: 10 minutes		<p>Start the lesson by explaining the E-safety topic and prompt students to discuss personal information in pairs.</p> <p>Activity 1 Complete Activity 1 by identifying public information, private information as well as how information can be stolen and protected from theft. Take answers from the group.</p> <p>Teacher answers { Examples below</p> <table border="1"> <thead> <tr> <th>Public information</th> <th>Private information</th> </tr> </thead> <tbody> <tr> <td>first name</td> <td>family name</td> </tr> <tr> <td>email address</td> <td>date of birth</td> </tr> <tr> <td>gender</td> <td>computer passwords</td> </tr> <tr> <td>allergies</td> <td>bank details</td> </tr> </tbody> </table> <p>Can you identify ways private information could be stolen? Phishing emails or messages Hacking Social engineering</p> <p>Can you identify ways to prevent information from being stolen? Never respond to phishing emails or messages. Choose a secure password to help prevent hacking. Avoid putting private information on social media and/or use account settings to stop strangers from accessing your information. }</p>						Public information	Private information	first name	family name	email address	date of birth	gender	computer passwords	allergies	bank details
Public information	Private information																
first name	family name																
email address	date of birth																
gender	computer passwords																
allergies	bank details																

Main

Time:
30 minutes

Move on and go through the Unit 1 overview, the keywords and learning outcomes for the unit. Introduce the concept of design.

Activity 2

Complete Activity 2 to identify changes to the design of the television. Take answers from the group. Then, go through the correct ones.

Teacher answers {

1950s TV	Current TV
Small screen	Big screen
External antenna	No antenna
Heavy	Lightweight
Takes a lot of space	Uses less space
Not pleasing to the eye	Pleasing to the eye
Glass / CRT screen	Plastic / LED or LCD screen

}



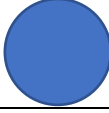

Move on and explain dimensions and 2D design.



Activity 3



















Complete Activity 3 to identify 2D shapes. Before the end of the lesson, take answers from the group. Then, go through the correct answers.

Activity 3 can be completed interactively. There is a link to the interactive version in the activity book on Al Diwan. You can also access the activity with this link: <https://bit.ly/2PKRLJU>

Teacher answers {

Shape	
Square	
Triangle	
Circle	
Rectangle	

	<p>Ellipse</p> 	
	<p>Pentagon</p> 	
}		
Plenary		
<p>Time: 5 minutes</p>	<p>Summarise lesson, recapping the learning objective(s) and the key vocabulary used. Question students to assess progress against the learning objectives and outcomes.</p>	
<p>Assessment focus</p>	<p>Students should understand the concept of design and be able to identify changes to the design of a common object. Students should develop their understanding of dimensions and how they are used in the design. Students should be aware of 2D design and be able to identify some 2D shapes that could be used in 2D designs.</p>	

Grade	6	Subject	DT	Lesson number	2	Week number	1																					
Unit	Date		Time		Page number																							
1	WC: 12 th January		45 minutes		13-17																							
Equipment required				Learning objectives																								
Student book Activity book Computer Stationery				1.1. Demonstrate an understanding of 3D design and 3D printing.																								
Keywords				shapes, 2D, 3D, sides, vertices, faces, edges, isometric																								
Starter/Introduction activity																												
Time: 10 minutes		<p>Start the lesson by reminding students about dimensions and 2D shapes.</p> <p>Activity 4 Complete Activity 4 to identify the number of sides and vertices for 2D shapes. Take answers from the group. Then, go through the correct ones.</p> <p>Teacher answers {</p> <table border="1"> <thead> <tr> <th>Shape</th> <th>Sides</th> <th>Vertices (angles)</th> </tr> </thead> <tbody> <tr> <td></td> <td>4</td> <td>4</td> </tr> <tr> <td></td> <td>3</td> <td>3</td> </tr> <tr> <td></td> <td>1</td> <td>0</td> </tr> <tr> <td></td> <td>4</td> <td>4</td> </tr> <tr> <td></td> <td>1</td> <td>0</td> </tr> <tr> <td></td> <td>5</td> <td>5</td> </tr> </tbody> </table> <p>}</p>						Shape	Sides	Vertices (angles)		4	4		3	3		1	0		4	4		1	0		5	5
Shape	Sides	Vertices (angles)																										
	4	4																										
	3	3																										
	1	0																										
	4	4																										
	1	0																										
	5	5																										
Main																												

Time:
30 minutes





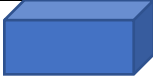
Move on and explain 3D design.

Activity 5

Complete Activity 5 to identify 3D shapes. Take answers from the group. Then, go through the correct answers.

Activity 5 can be completed interactively. There is a link to the interactive version in the activity book on Al Diwan. You can also access the activity with this link: <https://bit.ly/2puGK4G>

Teacher answers {

Shape
 Cube
 Pyramid
 Cylinder
 Hexagonal prism
 Rectangular prism

}

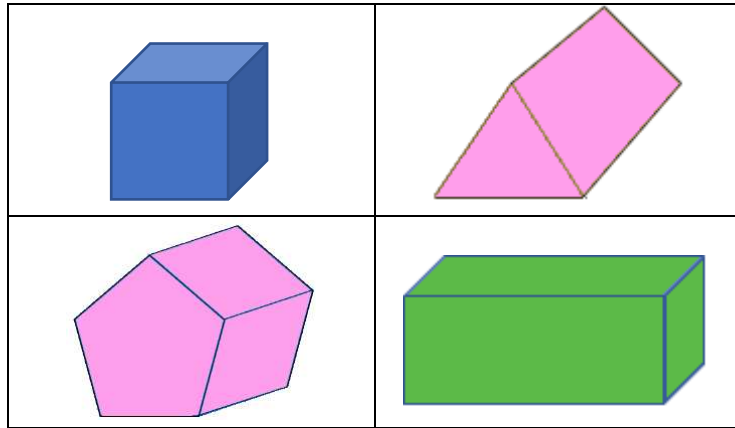
Move on and introduce sketching and the tools required. Then explain the types of sketching used in design (orthographic, isometric and perspective).

Activity 6

Complete Activity 6 to change 2D shapes into 3D shapes using some simple isometric sketching. Before the end of the lesson, take answers from the group. Then, go through the correct answers.

There is an opportunity here to either demonstrate sketching to the group or choose volunteers to demonstrate.

Teacher answers {



}

Plenary

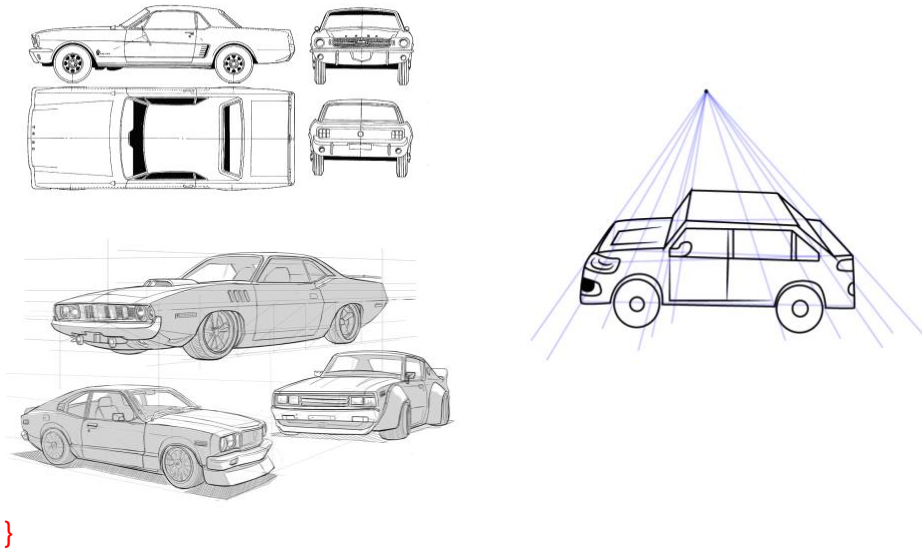
Time:
5 minutes

Summarise lesson, recapping the learning objective(s) and the key vocabulary used. Question students to assess progress against the learning objectives and outcomes.

Assessment focus

Students should further develop their understanding of 2D shapes. They should then become more familiar with 3D design and be able to identify some 3D shapes that could be used in 3D designs. Students should develop an understanding of sketching as a design tool and begin to use sketching to create some 3D shapes.

Grade	6	Subject	DT	Lesson number	3	Week number	1
Unit	1	Date	WC: 12 th January	Time	45 minutes	Page number	15-20
Equipment required				Learning objectives			
Student book Activity book Computer Stationery				1.1. Demonstrate an understanding of 3D design and 3D printing. 1.2. Recognise the different hardware and software used in 3D design and 3D printing.			
Keywords				sketching, orthographic, isometric, perspective, hardware, software, 3D design, binary, encode			
Starter/Introduction activity							
Time: 10 minutes		<p>Start the lesson by reminding students about the types of sketching used in design.</p> <p>Activity 7 Complete Activity 7 by sketching orthographic, isometric and one-point perspective designs for the same object. Encourage students to choose a simple object and, if required, give them a choice of three objects before they start the activity.</p> <p>There is an opportunity here to choose good examples of student work to show to the group.</p> <p>Teacher answers { Students can draw any object when practising the different types of sketching. Here are examples of 2D (orthographic), 3D (isometric) and perspective designs for cars:</p>					



Main

Time:
30 minutes

Move on and introduce 3D printing.

Activity 8

Complete Activity 8 by filling in the blanks to create a summary of 3D printing. Take answers from the group. Then, go through the correct answers.

Activity 8 can be completed interactively. There is a link to the interactive version in the activity book on Al Diwan. You can also access the activity with this link: <https://bit.ly/33g6ArB>

Teacher Answers {

There are two main ways to create 3D **objects**. These are traditional methods and 3D printing. 3D printing uses information from a 3D design file.

Many **materials** can be used when creating 3D objects, such as **plastic** and metal.

The UAE uses 3D technology. Sheikh Mohammed bin Rashid Al Maktoum said, "The future will depend on 3D **printing** technologies".

}

Move on and explain the hardware and software for 3D design. Then, introduce data encoding schemes. Before the end of the lesson, complete Activity 9.

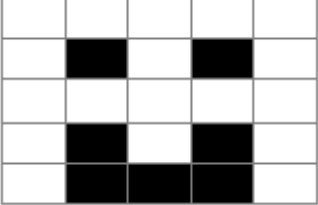
Activity 9

Complete Activity 9 by creating a simple image and then use binary to encode it.

Teacher answers {

Students can create any image. Shaded cells should be encoded with 1 and blank cells encoded with 0.

Here is the example from the student book:

Image	Binary code																									
	<table border="1" data-bbox="995 600 1315 804"> <tbody> <tr><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>0</td><td>1</td><td>0</td><td>1</td><td>0</td></tr> <tr><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>0</td><td>1</td><td>0</td><td>1</td><td>0</td></tr> <tr><td>0</td><td>1</td><td>1</td><td>1</td><td>0</td></tr> </tbody> </table>	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	1	0	1	0	0	1	1	1	0
0	0	0	0	0																						
0	1	0	1	0																						
0	0	0	0	0																						
0	1	0	1	0																						
0	1	1	1	0																						

}

Plenary

Time:
5 minutes

Summarise lesson, recapping the learning objective(s) and the key vocabulary used. Question students to assess progress against the learning objectives and outcomes.

Assessment focus

Students should further develop their sketching skills by creating orthographic, isometric and perspective designs for an object. Students should become aware of 3D printing as a technique to manufacture 3D objects and the hardware and software required. Students should understand that files are encoded in many formats and they should be able to encode a simple image using a binary format.

Grade	6	Subject	DT	Lesson number	1	Week number	2
Unit	Date		Time		Page number		
1	WC: 19 th January		45 minutes		20-23		
Equipment required				Learning objectives			
Student book Activity book Computer				1.2. Recognise the different hardware and software used in 3D design and 3D printing. 1.3. Explain the different parts of a 3D printer. 1.4. Identify multiple data encoding schemes. 1.5. Describe the encryption of information.			
Keywords				data encoding, encryption, hardware, software, 3D design, 3D printer, 3D printing			
Starter/Introduction activity							
Time: 10 minutes	<p>Start the lesson by reminding students about data encoding. Then, introduce encryption as another way to encode data. Use the example of a Caesar cipher to explain encryption in a simple way.</p> <p>Activity 10 Complete Activity 10 to decode and encode data and explain encryption. Take answers from the group. Then, go through the correct answers.</p> <p>Teacher Answers { Can you use the Caesar cipher table to decode "GHVL JQ"? DESIGN Can you use the Caesar cipher table to encode "PRINTING"? SULQWLQJ Can you use the Caesar cipher table to decode "HQFRGH"? ENCODE What is encryption? Encryption is converting data into code, so it cannot be accessed by people you cannot trust. }</p>						
Main							
Time: 30 minutes	Move on and explain the hardware and software for 3D design and the 3D print process. The video in the student book can be used as a supplementary explanation of 3D printing. Link for the video below:						



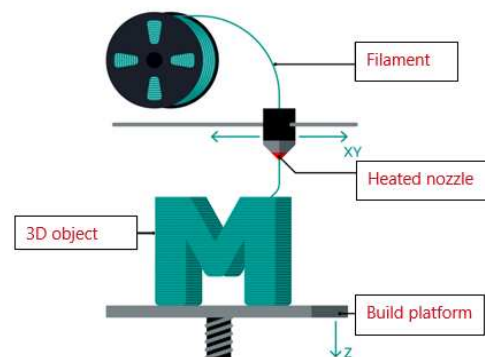
<https://bit.ly/1i6fHwe>

Activity 11

Complete Activity 11 to identify the parts of a 3D printer. Take answers from the group. Then, go through the correct answers.

Activity 11 can be completed interactively. There is a link to the interactive version in the activity book on Al Diwan. You can also access the activity with this link: <https://bit.ly/2C7vkq4>

Teacher answers {



}

Before the end of the lesson, complete Activity 12.

Activity 12

Complete Activity 12 to create a flowchart to explain the steps in 3D printing.

No teacher answers provided for open-ended activities.

Plenary

Time:
5 minutes

Summarise lesson, recapping the learning objective(s) and the key vocabulary used. Question students to assess progress against the learning objectives and outcomes.

Assessment focus

Students should understand that encryption can be used to encode information. They should use a cipher to encode and decode text. Students should develop their understanding of 3D printing and be able to identify the parts of a printer. Students should be able to explain the steps in the 3D printing process by creating a flowchart.

Grade	6	Subject	DT	Lesson number	2	Week number	2								
Unit	Date		Time		Page number										
1	WC: 19 th January		45 minutes		24-29										
Equipment required				Learning objectives											
Student book Activity book Computer				1.6 Compare the benefits of 3D design and printing against traditional techniques. 1.7 List the positive and negative aspects of computing technologies on everyday activities											
Keywords				3D design, 3D printing, impacts, technology											
Starter/Introduction activity															
Time: 10 minutes		<p>Start the lesson by reminding students about 3D design and 3D printing. Then, explain the benefits of 3D design and 3D printing compared to traditional methods.</p> <p>Activity 13 Complete Activity 13 to explain two benefits of 3D design and 3D printing. Take answers from the group. Then, go through the correct answers.</p> <p>Teacher answers {</p> <p>Benefits of 3D design</p> <table border="1"> <tr> <td>Stored electronically so can easily be changed or improved</td> </tr> <tr> <td>Stored electronically so easier to share and collaborate</td> </tr> <tr> <td>One design can show the height, width and depth of an object.</td> </tr> <tr> <td>Software can be used to calculate and assess design for real-world use, e.g. stress testing.</td> </tr> </table> <p>Benefits of 3D printing</p> <table border="1"> <tr> <td>Additive manufacturing with minimal waste of materials</td> </tr> <tr> <td>Scale and density of an object can be changed easily.</td> </tr> <tr> <td>Can be done at home. No requirement for specialist tools and skills</td> </tr> <tr> <td>Faster and requires less manual labour</td> </tr> </table> <p>}</p>						Stored electronically so can easily be changed or improved	Stored electronically so easier to share and collaborate	One design can show the height, width and depth of an object.	Software can be used to calculate and assess design for real-world use, e.g. stress testing.	Additive manufacturing with minimal waste of materials	Scale and density of an object can be changed easily.	Can be done at home. No requirement for specialist tools and skills	Faster and requires less manual labour
Stored electronically so can easily be changed or improved															
Stored electronically so easier to share and collaborate															
One design can show the height, width and depth of an object.															
Software can be used to calculate and assess design for real-world use, e.g. stress testing.															
Additive manufacturing with minimal waste of materials															
Scale and density of an object can be changed easily.															
Can be done at home. No requirement for specialist tools and skills															
Faster and requires less manual labour															
Main															
Time: 30 minutes		Move on and explain how technologies can impact our daily lives in positive and negative ways. Use the examples in the textbook to make the explanation clear.													

Activity 14

Complete Activity 14 to identify the positive and negative impacts of technology. Take answers from the group. Then, go through the correct answers.

Activity 14 can be completed interactively. There is a link to the interactive version in the activity book on Al Diwan. You can also access the activity with this link: <https://bit.ly/2ql8d8l>

Teacher answers {

Statement	Positive	Negative
You can work faster and achieve better results with tools, such as an Office package.	✓	
You can get fast access to information using the world wide web.	✓	
Not all information available with technology is accurate.		✓
Your verbal communication may not develop if you rely on technology		✓
You can communicate globally with telephones, email and social media.	✓	
You can have health problems, such as eye strain, muscular problems and sleeping problems when using technology.		✓
You can design and create new innovative objects with CAD and CAM	✓	
You can be isolated from family and friends when using technology.		✓

}

Move on and recap what students have learned using the Unit 1 summary.

Activity 15

If time permits, complete Activity 15 by discussing what the unit in pairs then explaining one thing learned in the unit.

No teacher answers provided for open-ended activities.

Before the end of the lesson, complete Activity 16.

	<p>Activity 16 Complete Activity 16 (quiz) to check student understanding of the unit. Take answers from the group and go through the correct ones.</p> <p>Activity 16 can be completed interactively. There is a link to the interactive version in the activity book on Al Diwan. You can also access the activity with this link: https://bit.ly/2NG7GWS</p> <p>Teacher answers { 1. Which is a 2D shape? (Square) 2. How many vertices on a hexagon? (Six) 3. What shapes are used in 3D design? (Flat and solid) 4. In 3D design software you can resize, cut new and join _____. (Shapes) 5. 3D design software is also called? (CAD software) }</p>
Plenary	
Time: 5 minutes	Summarise lesson, recapping the learning objective(s) and the key vocabulary used. Question students to assess progress against the learning objectives and outcomes.
Assessment focus	Students should be able to explain benefits of 3D design and 3D printing. Students should be able to identify positive and negative impacts of technology. Students should then demonstrate what they have learned by completing the end of unit quiz.

Grade	6	Subject	DT	Lesson number	3	Week number	2
Unit	Date		Time		Page number		
2	WC: 19 th January		45 minutes		30-36		
Equipment required				Learning objectives			
Student book Activity book Stationery				E2.1 Define identity theft. E2.2 Discuss known ways used by unethical people to steal personal information. 2.1 Use orthographic sketching and perspective drawing			
Keywords				app, interface, 3D design software, modules, 3D model, block tools, shape tools			
Starter/Introduction activity							
Time: 10 minutes	<p>Start the lesson in Unit 2 by explaining the E-safety topic and prompt students to discuss identity theft in pairs.</p> <p>Activity 1 Complete Activity 1 by identifying ways information can be stolen and explaining identity theft. Take answers from the group.</p> <p>Teacher answers { List three ways personal information could be stolen? Phishing, Hacking, Spyware, Scareware Explain identity theft. Identity theft is when an unethical person (a person you cannot trust) uses your personal information to pretend to be you; for example, taking out credit (e.g. bank loans) in your name. }</p>						
Main							
Time: 30 minutes	<p>Move on and go through the Unit 2 overview, the keywords and learning outcomes for the unit. Introduce advanced sketching (two-point perspective).</p> <p>The video in the student book can be used as a supplementary explanation for perspective drawing. Link for the video below:</p>						



<https://bit.ly/2MuXi3F>

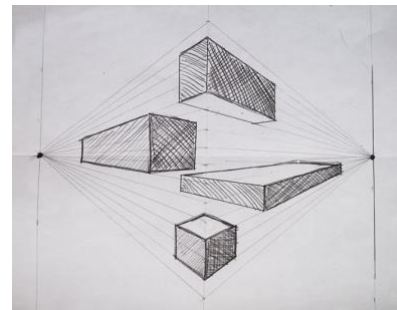
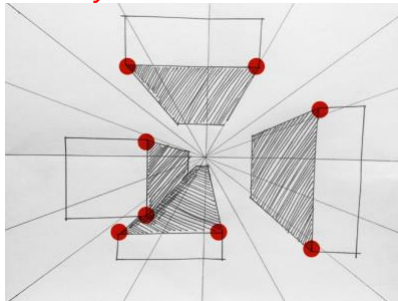
Activities 2, 3 and 4

Complete Activities 2, 3 and 4 by practising different types of sketching (orthographic, isometric and one-point and two-point perspective).

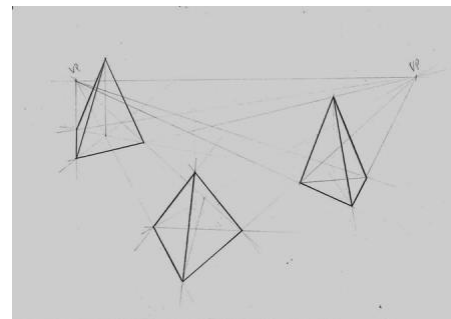
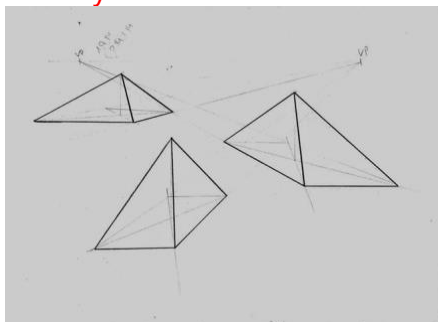
There are opportunities here for the teacher to demonstrate sketching and choose good examples of student work to show to the group

Before the end of the lesson, go through and share some correct answers with the group.

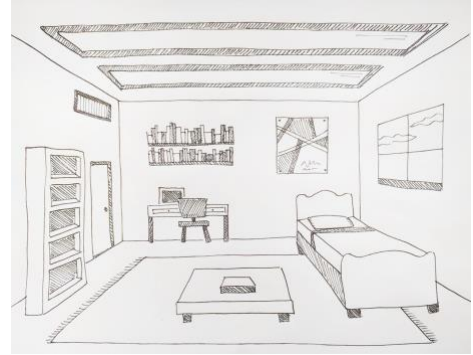
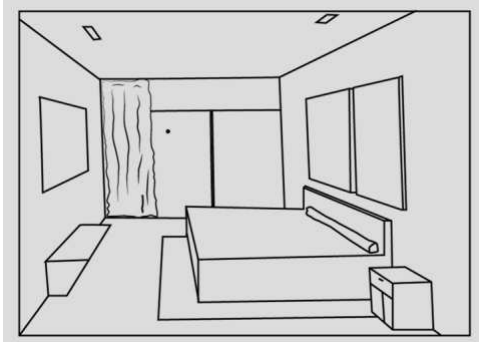
Teacher answer { Activity 2



Activity 3



Activity 4



}

Plenary

Time:
5 minutes

Summarise lesson, recapping the learning objective(s) and the key vocabulary used. Question students to assess progress against the learning objectives and outcomes.

Assessment focus

Students should understand advanced sketching techniques, such as using two-point perspective. Students should further develop their sketching skills by creating orthographic, isometric and one-point and two-point perspective designs for a range of objects.