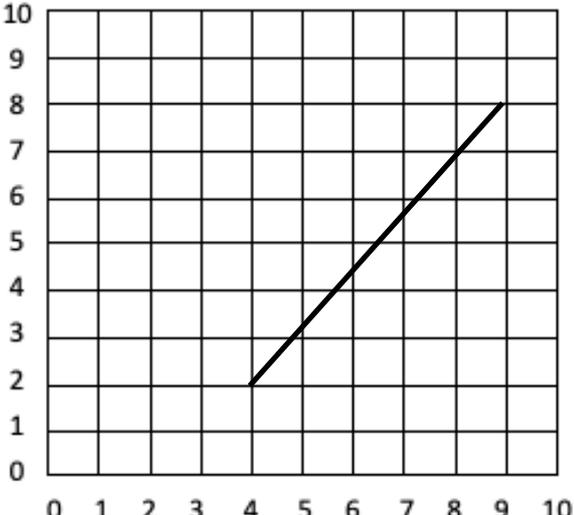
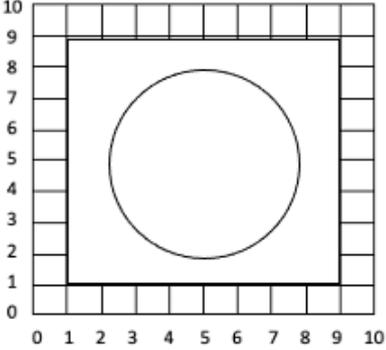
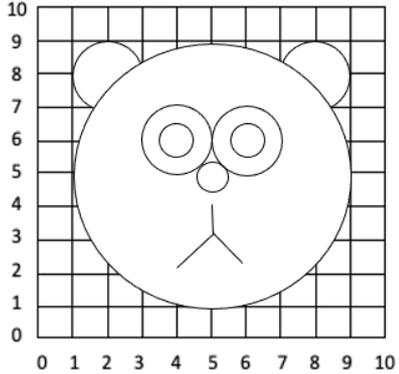


Vector graphics [U1_L1]

Question	Answer	Notes
1	<ul style="list-style-type: none"> TICK KEYWORDS 	
2	Include any three of the following: <ul style="list-style-type: none"> A starting point An end point The type of line Any curves or angles Line and fill colours. 	
3	Include any three of the following: <ul style="list-style-type: none"> Ability to be scaled without losing quality. Small file size Easily edited Ideally suited for geometric shapes. 	
4	Include any two of the following: <ul style="list-style-type: none"> 2D and 3D animation Gaming Advertising. 	
5		
6	End: X8, Y3 Fill colour: grey	
7	2	

Question	Answer	Notes / Marks
8_Q1	Dot to dot	
8_Q2	False	
8_Q3	Resolution	
8_Q4	Scaling	
8_Q5	Coordinates	

Creating a vector graphic [U1_L2]

Question	Answer	Notes
1	<ul style="list-style-type: none"> TICK KEYWORDS 	
2	<ul style="list-style-type: none"> A vector graphic can be plotted using a series of coordinates in a similar style to a dot-to-dot image. 	
3		
4	Shape 2: X1,Y5 X1,Y6 X9,Y6 X9,Y5	
5		

Question	Answer	Notes / Marks
6_Q1	Radius	
6_Q2	Scratch	
6_Q3	False	
6_Q4	Centre	
6_Q5	Plotter	

Bitmaps [U1_L3]

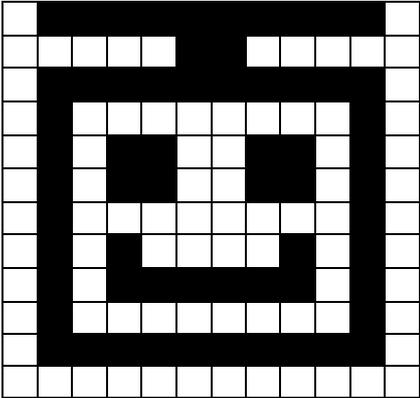
Question	Answer	Notes
1	<ul style="list-style-type: none"> TICK KEYWORDS 	
2	<ul style="list-style-type: none"> A bitmap is an image file made up of dots, or pixels. 	
3	<ul style="list-style-type: none"> A bitmap is an <u>image</u> file made up of dots or <u>pixels</u>. Each pixel can be a different <u>colour</u> and the more pixels, the more <u>detailed</u> the image. 	
4	<ul style="list-style-type: none"> Pixel = Short for picture elements Resolution = Relates to the number of pixels within an image Gradient = Describes the change from one colour to another 	
5	<ul style="list-style-type: none"> The higher the number of pixels, the higher the quality of the image or photo. 	
6	<ul style="list-style-type: none"> Increasing the physical size of any bitmap will reduce the resolution, lowering the <u>quality</u> of the image. 	
7	Include three of any of the following: <ul style="list-style-type: none"> BMP, JPG, GIF, TIFF, PNG, PICT 	

Question	Answer	Notes / Marks
8_Q1	Camera	
8_Q2	DXF	
8_Q3	Gradient	
8_Q4	Pixels per inch	
8_Q5	8K	

Vectors vs Bitmaps [U1_L4]

Question	Answer	Notes																		
1	<ul style="list-style-type: none"> TICK KEYWORDS 																			
2	Include any three of the following: <ul style="list-style-type: none"> File size Quality of image Scaling Use of colour. 																			
3	<table border="1"> <thead> <tr> <th>Statement</th> <th>Bitmap</th> <th>Vector</th> </tr> </thead> <tbody> <tr> <td>Generally smaller file sizes.</td> <td></td> <td>✓</td> </tr> <tr> <td>Can be resized without losing quality.</td> <td></td> <td>✓</td> </tr> <tr> <td>More suitable for high quality digital photos.</td> <td>✓</td> <td></td> </tr> <tr> <td>Difficult to create gradients.</td> <td></td> <td>✓</td> </tr> <tr> <td>Image quality will drop if stretched.</td> <td>✓</td> <td></td> </tr> </tbody> </table>		Statement	Bitmap	Vector	Generally smaller file sizes.		✓	Can be resized without losing quality.		✓	More suitable for high quality digital photos.	✓		Difficult to create gradients.		✓	Image quality will drop if stretched.	✓	
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	More suitable for high quality digital photos.	✓																		
	Difficult to create gradients.		✓																	
Image quality will drop if stretched.	✓																			
4	Include any of the following: <ul style="list-style-type: none"> Vectors: <ul style="list-style-type: none"> Illustrator Inkscape Vectr Bitmaps: <ul style="list-style-type: none"> Photoshop GIMP Paint.net 																			
5	<table border="1"> <thead> <tr> <th>Scenario</th> <th>Bitmap</th> <th>Vector</th> </tr> </thead> <tbody> <tr> <td>Creating a new sports logo that incorporates lots of geometric shapes.</td> <td></td> <td>✓</td> </tr> <tr> <td>An outdoor adventure magazine is showing images of mountain ranges.</td> <td>✓</td> <td></td> </tr> <tr> <td>A new computer operating system would like a background of flowing liquids and colour effects.</td> <td>✓</td> <td></td> </tr> <tr> <td>A new children's cartoon character, made from simple lines, will need to be advertised on posters of many different sizes.</td> <td></td> <td>✓</td> </tr> </tbody> </table>		Scenario	Bitmap	Vector	Creating a new sports logo that incorporates lots of geometric shapes.		✓	An outdoor adventure magazine is showing images of mountain ranges.	✓		A new computer operating system would like a background of flowing liquids and colour effects.	✓		A new children's cartoon character, made from simple lines, will need to be advertised on posters of many different sizes.		✓			
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6	<ul style="list-style-type: none"> Examples should meet the criteria specified in this and earlier sections. 																			
Question	Answer	Notes / Marks																		
7_Q1	Moviemaker																			
7_Q2	True																			
7_Q3	Dots per inch																			
7_Q4	300 dpi																			
7_Q5	Converting a vector to a bitmap.																			

Binary and pixels [U1_L5]

Question	Answer	Notes																																																																																																																																																												
1	<ul style="list-style-type: none"> TICK KEYWORDS 																																																																																																																																																													
2	<ul style="list-style-type: none"> All computer data must be converted to binary in order to be understood. 																																																																																																																																																													
3	<table border="1" style="border-collapse: collapse; text-align: center;"> <tr><td>1</td><td>0</td><td>0</td><td>1</td></tr> <tr><td>0</td><td>0</td><td>1</td><td>0</td></tr> <tr><td>0</td><td>1</td><td>0</td><td>0</td></tr> <tr><td>1</td><td>0</td><td>0</td><td>1</td></tr> </table>	1	0	0	1	0	0	1	0	0	1	0	0	1	0	0	1																																																																																																																																													
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6	<div style="display: flex; align-items: center; justify-content: space-around;">  <table border="1" style="border-collapse: collapse; text-align: center;"> <tr><td>0</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td><td>0</td></tr> <tr><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>1</td><td>1</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>0</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td><td>0</td></tr> <tr><td>0</td><td>1</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>1</td><td>0</td></tr> <tr><td>0</td><td>1</td><td>0</td><td>1</td><td>1</td><td>0</td><td>0</td><td>1</td><td>1</td><td>0</td><td>1</td><td>0</td><td>0</td></tr> <tr><td>0</td><td>1</td><td>0</td><td>1</td><td>1</td><td>0</td><td>0</td><td>1</td><td>1</td><td>0</td><td>1</td><td>0</td><td>0</td></tr> <tr><td>0</td><td>1</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>1</td><td>0</td></tr> <tr><td>0</td><td>1</td><td>0</td><td>1</td><td>0</td><td>0</td><td>0</td><td>0</td><td>1</td><td>0</td><td>1</td><td>0</td><td>0</td></tr> <tr><td>0</td><td>1</td><td>0</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td><td>0</td><td>1</td><td>0</td><td>0</td></tr> <tr><td>0</td><td>1</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</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>1</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td><td>0</td></tr> <tr><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td></tr> </table> </div>	0	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	1	0	1	1	0	0	1	1	0	1	0	0	0	1	0	1	1	0	0	1	1	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	1	0	1	0	0	0	0	1	0	1	0	0	0	1	0	1	1	1	1	1	1	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
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Question	Answer	Notes / Marks
7_Q1	Cannot be resized	
7_Q2	True	
7_Q3	All of the above.	
7_Q4	False	
7_Q5	1-bit	

Colour depth and binary representation [U1_L6]

Question	Answer	Notes																																				
1	<ul style="list-style-type: none"> TICK KEYWORDS 																																					
2	<ul style="list-style-type: none"> Colour depth is the number of colours an image can contain, represented by the number of bits per pixel. 																																					
3	<ul style="list-style-type: none"> The greater the number of bits, the more colours can be shown in that individual pixel. 																																					
4	<table border="1"> <thead> <tr> <th>Number of bits per pixel</th> <th>Number of possible colours</th> </tr> </thead> <tbody> <tr><td>1</td><td>2</td></tr> <tr><td>2</td><td>4</td></tr> <tr><td>3</td><td>8</td></tr> <tr><td>4</td><td>16</td></tr> <tr><td>5</td><td>32</td></tr> <tr><td>6</td><td>64</td></tr> <tr><td>7</td><td>128</td></tr> <tr><td>8</td><td>256</td></tr> </tbody> </table>	Number of bits per pixel	Number of possible colours	1	2	2	4	3	8	4	16	5	32	6	64	7	128	8	256																			
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5	<table border="1"> <thead> <tr> <th colspan="2">Binary</th> <th>Colour</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>0</td> <td>White</td> </tr> <tr> <td>0</td> <td>1</td> <td>Light grey</td> </tr> <tr> <td>1</td> <td>0</td> <td>Dark grey</td> </tr> <tr> <td>1</td> <td>1</td> <td>Black</td> </tr> </tbody> </table>	Binary		Colour	0	0	White	0	1	Light grey	1	0	Dark grey	1	1	Black																						
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7	<ul style="list-style-type: none"> It gets much longer. 																																					

Question	Answer	Notes / Marks
8_Q1	four	
8_Q2	True	
8_Q3	512	
8_Q4	24-bit	
8_Q5	True	

Digital image properties [U1_L7 & 8]

Question	Answer	Notes
1	<ul style="list-style-type: none"> TICK KEYWORDS 	
2	<ul style="list-style-type: none"> Pixel size = Number of pixels in total in the image. Dimension = Height and width in pixels. Resolution = Number of pixels in one square inch. Colour depth = The number of colours each pixel can show. 	
3	<ul style="list-style-type: none"> File size = Pixels \times Colour depth 	
4	<ul style="list-style-type: none"> $36 \times 2 = 72$ bits 	
5	<ul style="list-style-type: none"> $42 \times 1 = 42$ bits 	
6	<ul style="list-style-type: none"> $144 \times 2 = 288$ 	
7	<ul style="list-style-type: none"> The larger the number of pixels, the larger the file size. 	

Question	Answer	Notes / Marks
8_Q1	120	
8_Q2	24	
8_Q3	Inch	
8_Q4	Bits	
8_Q5	False	

Binary addition [U1_L9 & 10]

Question	Answer	Notes
1	<ul style="list-style-type: none"> TICK KEYWORDS 	
2	<ul style="list-style-type: none"> Rule one: $0 + 0 = 0$ Rule two: $1 + 0 = 1$ Rule three: $1 + 1 = 10$ (binary for 2) Rule four: $1 + 1 + 1 = 11$ (binary for 3) 	
3	<pre> 1 0 1 1 0 1 0 1 ----- 1 0 0 0 1 1 1 1 </pre>	
4	<pre> 0 1 0 1 1 0 1 1 0 0 1 0 1 1 0 1 ----- 1 0 0 0 1 0 0 0 1 1 1 1 1 1 1 </pre>	
5	<ul style="list-style-type: none"> If an 8-bit binary addition exceeds 255, the sum cannot be carried out. 	
6	<ul style="list-style-type: none"> Red = 110000 Green = 001100 <pre> 110000 001100 ----- 111100 = Yellow </pre>	
7	<ul style="list-style-type: none"> Blue = 000011 Red = 110000 <pre> 000011 110000 ----- 110011 = Magenta </pre>	

Question	Answer	Notes / Marks
8_Q1	2	
8_Q2	1	
8_Q3	256	
8_Q4	16	
8_Q5	False	

End of Unit Typical 4 Mark Questions

Question	Key points to look for in answer	Notes
1	<ul style="list-style-type: none">• As the logo needs to include a photo, it should be created using bitmap software.• Reasons:<ul style="list-style-type: none">○ Bitmap is much better for photos.○ Can produce much higher resolution.○ High resolution○ Commercial resolution of 300dpi can be created in bitmaps.	
2	<ul style="list-style-type: none">• $20 \times 10 = 200$• $200 \times 3 = 600$• File size = 600 bits	

Bits, Bytes and Nibbles [U2_L1]

Question	Answer	Notes																				
1	<ul style="list-style-type: none"> TICK KEYWORDS 																					
2	<ul style="list-style-type: none"> To store computer information or be able to read and write to storage media. 																					
3	<ul style="list-style-type: none"> Internal hard drive = Non-removable storage inside a computer Flash drive = Used to transport files from one computer to another Memory cards = Used to add storage to smartphones and cameras External hard drive = Used to add additional storage to computers 																					
4	<ul style="list-style-type: none"> 1 byte = 8 bits 4 bits = 1 nibble 2 nibbles = 1 byte 																					
5	<table border="1"> <thead> <tr> <th>Word</th> <th>Bytes</th> <th>Nibbles</th> <th>Bits</th> </tr> </thead> <tbody> <tr> <td>cat</td> <td>3</td> <td>6</td> <td>24</td> </tr> <tr> <td>bubble</td> <td>6</td> <td>12</td> <td>48</td> </tr> <tr> <td>elephant</td> <td>8</td> <td>16</td> <td>64</td> </tr> <tr> <td>skateboard</td> <td>10</td> <td>20</td> <td>80</td> </tr> </tbody> </table>	Word	Bytes	Nibbles	Bits	cat	3	6	24	bubble	6	12	48	elephant	8	16	64	skateboard	10	20	80	
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bubble	6	12	48																			
elephant	8	16	64																			
skateboard	10	20	80																			
6	<ul style="list-style-type: none"> File size in bytes = (pixels x colour depth)/8 																					
7	<ul style="list-style-type: none"> 10 x 5 = 50 File size = (50 x 4)/8 File size = 200/8 File size = 25 bytes 																					

Question	Answer	Notes / Marks
8_Q1	False	
8_Q2	Memory card	
8_Q3	Floppy disc	
8_Q4	10	
8_Q5	True	

Storage capacity [U2_L2]

Question	Answer	Notes												
1	<ul style="list-style-type: none"> TICK KEYWORDS 													
2	Include any two of the following: <ul style="list-style-type: none"> Digital photos Emails Documents Music and video files 													
3	<ul style="list-style-type: none"> 1 kibibyte = 1024 bytes 1 mebibyte = 1024 kibibytes 1 gibibyte = 1024 mebibytes 													
4	<ul style="list-style-type: none"> 1 kilobyte = 1000 bytes 1 megabyte = 1000 kilobytes 1 gigabyte = 1000 megabytes 													
5	<ul style="list-style-type: none"> Base 2 allows the calculation of binary bits Base 10 allows the calculation of bytes 													
6	<table border="1"> <thead> <tr> <th>File</th> <th>bytes</th> <th>kibibytes (KiB)</th> </tr> </thead> <tbody> <tr> <td>Text</td> <td>2048</td> <td>2</td> </tr> <tr> <td>Vector graphic</td> <td>512</td> <td>0.5</td> </tr> <tr> <td>Spreadsheet</td> <td>5120</td> <td>5</td> </tr> </tbody> </table>	File	bytes	kibibytes (KiB)	Text	2048	2	Vector graphic	512	0.5	Spreadsheet	5120	5	
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7	<table border="1"> <thead> <tr> <th>File</th> <th>kibibytes (KiB)</th> <th>bytes</th> </tr> </thead> <tbody> <tr> <td>Image</td> <td>10</td> <td>10240</td> </tr> <tr> <td>Audio</td> <td>6</td> <td>6144</td> </tr> <tr> <td>Video</td> <td>100</td> <td>102400</td> </tr> </tbody> </table>	File	kibibytes (KiB)	bytes	Image	10	10240	Audio	6	6144	Video	100	102400	
File	kibibytes (KiB)	bytes												
Image	10	10240												
Audio	6	6144												
Video	100	102400												

Question	Answer	Notes / Marks
8_Q1	1024	
8_Q2	False	
8_Q3	International Electrotechnical Commission	
8_Q4	True	
8_Q5	Yobibyte	

Binary and Denary [U2_L3]

Question	Answer	Notes																																				
1	<ul style="list-style-type: none"> TICK KEYWORDS 																																					
2	<ul style="list-style-type: none"> Base 2: 0,1 Base 10: 0,1,2,3,4,5,6,7,8,9 																																					
3	<ul style="list-style-type: none"> 10^6 = Millions 10^4 = Tens of thousands 10^2 = Hundreds 																																					
4	<table border="1"> <thead> <tr> <th>Power</th> <th>10^6</th> <th>10^5</th> <th>10^4</th> <th>10^3</th> <th>10^2</th> <th>10^1</th> <th>10^0</th> </tr> </thead> <tbody> <tr> <td></td> <td>Millions</td> <td>Hundreds of thousands</td> <td>Tens of thousands</td> <td>Thousands</td> <td>Hundreds</td> <td>Tens</td> <td>Ones</td> </tr> <tr> <td>1974</td> <td>0</td> <td>0</td> <td>0</td> <td>1</td> <td>9</td> <td>7</td> <td>4</td> </tr> <tr> <td>650456</td> <td>0</td> <td>6</td> <td>5</td> <td>0</td> <td>4</td> <td>5</td> <td>6</td> </tr> </tbody> </table>	Power	10^6	10^5	10^4	10^3	10^2	10^1	10^0		Millions	Hundreds of thousands	Tens of thousands	Thousands	Hundreds	Tens	Ones	1974	0	0	0	1	9	7	4	650456	0	6	5	0	4	5	6					
Power	10^6	10^5	10^4	10^3	10^2	10^1	10^0																															
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129	1	0	0	0	0	0	0	1																														
6	<ul style="list-style-type: none"> $161 = 10100001$ $37 = 100101$ $240 = 11110000$ 																																					
7	<ul style="list-style-type: none"> $01010100 = 84$ $11011011 = 219$ $11100011 = 227$ 																																					

Question	Answer	Notes / Marks
8_Q1	False	
8_Q2	Fingers	
8_Q3	64	
8_Q4	Switches	
8_Q5	Transistors	

Creating a 'power of' calculator [U2_L4]

Question	Answer	Notes
1	<ul style="list-style-type: none"> TICK KEYWORDS 	
2	<ul style="list-style-type: none"> Scratch is a visual programming application that uses blocks to create algorithms. It is designed for sharing algorithms with other uses. 	
3	<ul style="list-style-type: none"> Ask = Asks the user to type in a value Say = Displays a message on screen Join = Concatenates two strings 	
4	<ul style="list-style-type: none"> A variable assigns a name to a value or string. 	
5	<ul style="list-style-type: none"> Line 1: Asks the user to enter the first number and saves it as an integer. Line 2: Asks the user to enter the power and saves it as an integer. Line 3: the ** symbol is the power operator Line 1 = 2, line 2 = 4, Output = 16 	

Question	Answer	Notes / Marks
6_Q1	True	
6_Q2	Forum	
6_Q3	Sprites	
6_Q4	Naming convention	
6_Q5	8	

Internet Bandwidth [U2_L5]

Question	Answer	Notes														
1	<ul style="list-style-type: none"> TICK KEYWORDS 															
2	<ul style="list-style-type: none"> The amount of data than can be sent in one second. 															
3	<ul style="list-style-type: none"> 3 bytes = 24 bits 8 bits = 1 byte 2 mebibytes = 2048 kibibytes 															
4	<ul style="list-style-type: none"> File transfer speed = File size / Bandwidth 															
5	<table border="1"> <thead> <tr> <th rowspan="2">File</th> <th colspan="2">Time to download (Seconds)</th> </tr> <tr> <th>Bandwidth = 2MiB</th> <th>Bandwidth = 10MiB</th> </tr> </thead> <tbody> <tr> <td>8 MiB Email attachment</td> <td>4 Seconds</td> <td>0.8 Seconds</td> </tr> <tr> <td>10 MiB Audio file</td> <td>5 Seconds</td> <td>1 Second</td> </tr> <tr> <td>100 MiB Video clip</td> <td>50 Seconds</td> <td>10 Seconds</td> </tr> </tbody> </table>	File	Time to download (Seconds)		Bandwidth = 2MiB	Bandwidth = 10MiB	8 MiB Email attachment	4 Seconds	0.8 Seconds	10 MiB Audio file	5 Seconds	1 Second	100 MiB Video clip	50 Seconds	10 Seconds	
File	Time to download (Seconds)															
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8 MiB Email attachment	4 Seconds	0.8 Seconds														
10 MiB Audio file	5 Seconds	1 Second														
100 MiB Video clip	50 Seconds	10 Seconds														
6	<ul style="list-style-type: none"> Bottleneck occurs when too many users are accessing the same network. It will cause all users to only be able to use the slowest bandwidth available on the network. 															
7	<ul style="list-style-type: none"> 5 MiB/s 															

Question	Answer	Notes / Marks
8_Q1	Bits per second	
8_Q2	False	
8_Q3	25	
8_Q4	Mebibytes	
8_Q5	True	

Creating a bandwidth calculator [U2_L6]

Question	Answer	Notes
1	<ul style="list-style-type: none"> TICK KEYWORDS 	
2	<ul style="list-style-type: none"> When 'Flag' is clicked = Start the program running Set = Assign a value to a variable Ask and wait = Wait until an input is responded to 	
3	<ul style="list-style-type: none"> fileSize bandwidth transferTime 	
4	<ul style="list-style-type: none"> Being the same means that the file transfer speed will be calculated in seconds. Line 3: / is the divide operator Line 1 = 20, Line 2 = 4, Output = The resulting file transfer speed is 5 seconds 	
5	<ul style="list-style-type: none"> A test table allows the designer to check the functionality of a program through a series of tests. 	

Question	Answer	Notes / Marks
6_Q1	Seconds	
6_Q2	False	
6_Q3	Retest	
6_Q4	Comma	
6_Q5	Actual result	

Compression [U2_L7 & 8]

Question	Answer	Notes																		
1	<ul style="list-style-type: none"> TICK KEYWORDS 																			
2	<ul style="list-style-type: none"> Compression is the reduction of the file size of any type of computer file. 																			
3	Include any three of the following: <ul style="list-style-type: none"> Attaching documents to emails Computer storage Transferring files on portable devices Speeding up downloads 																			
4	<ul style="list-style-type: none"> Lossy compression <u>deletes</u> part of the file, <u>reducing</u> the file size, but when the file is <u>decompressed</u>, the deleted parts cannot be restored. Lossy compression is never used for <u>text files</u> as characters would be lost, but it is often used for <u>image</u> and <u>sound</u> files. 																			
5	<ul style="list-style-type: none"> Lossy compression removes data that cannot be restored, lossless compression allows the original file to be restores exactly as it was. 																			
6	<table border="1"> <thead> <tr> <th>Scenario</th> <th>Lossy</th> <th>Lossless</th> </tr> </thead> <tbody> <tr> <td>A customer database of personal details.</td> <td></td> <td>✓</td> </tr> <tr> <td>A wedding album of photos.</td> <td></td> <td>✓</td> </tr> <tr> <td>A music album recording in a studio.</td> <td></td> <td>✓</td> </tr> <tr> <td>Adding an audio clip to a social network site.</td> <td>✓</td> <td></td> </tr> <tr> <td>A snapshot sent within an instant message app</td> <td>✓</td> <td></td> </tr> </tbody> </table>	Scenario	Lossy	Lossless	A customer database of personal details.		✓	A wedding album of photos.		✓	A music album recording in a studio.		✓	Adding an audio clip to a social network site.	✓		A snapshot sent within an instant message app	✓		
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A snapshot sent within an instant message app	✓																			
7	Settings: <ul style="list-style-type: none"> Colour depth Resolution Image size 																			

Question	Answer	Notes / Marks
8_Q1	TXT	
8_Q2	True	
8_Q3	Resolution	
8_Q4	False	
8_Q5	True	

Run Length Encoding [U2_L9 & 10]

Question	Answer	Notes																																
1	<ul style="list-style-type: none"> TICK KEYWORDS 																																	
2	<ul style="list-style-type: none"> Run length encoding is a lossless compression method. 																																	
3	Required: <ul style="list-style-type: none"> Image height and width Colour depth 																																	
4	<table border="1"> <thead> <tr> <th>Original string</th> <th>Size in bytes</th> <th>RLE version</th> <th>New size in bytes</th> </tr> </thead> <tbody> <tr> <td>wbbbbw</td> <td>6</td> <td>1w4b1w</td> <td>6</td> </tr> <tr> <td>bbwwbb</td> <td>6</td> <td>2b2w2b</td> <td>6</td> </tr> <tr> <td>bbwwbb</td> <td>6</td> <td>2b2w2b</td> <td>6</td> </tr> <tr> <td>bbbbbb</td> <td>6</td> <td>6b</td> <td>2</td> </tr> <tr> <td>bbwwbb</td> <td>6</td> <td>2b2w2b</td> <td>6</td> </tr> <tr> <td>bbwwbb</td> <td>6</td> <td>2b2w2b</td> <td>6</td> </tr> <tr> <td>Total file size</td> <td>36</td> <td></td> <td>32</td> </tr> </tbody> </table>	Original string	Size in bytes	RLE version	New size in bytes	wbbbbw	6	1w4b1w	6	bbwwbb	6	2b2w2b	6	bbwwbb	6	2b2w2b	6	bbbbbb	6	6b	2	bbwwbb	6	2b2w2b	6	bbwwbb	6	2b2w2b	6	Total file size	36		32	
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Total file size	36		32																															
5	<ul style="list-style-type: none"> Your version should follow the rules set in Q4. 																																	

Question	Answer	Notes / Marks
6_Q1	False	
6_Q2	6	
6_Q3	2	
6_Q4	1	
6_Q5	True	

End of Unit Typical 4 Mark Questions

Question	Key points to look for in answer	Notes
1	<ul style="list-style-type: none">• Examples of typical storage:• Photos = typically megabytes• Videos = typically gigabytes• Documents = typically megabytes• Music = typically megabytes• However, this means a family will need gigabytes or terabytes	
2	<ul style="list-style-type: none">• RLE analyses a data string and looks for repeated characters. These repeated characters can then be compressed.• The sequence AAAAABBBCCCC would compress to 5A3B4C	

Computer hardware [U3_L1]

Question	Answer	Notes																
1	<ul style="list-style-type: none"> TICK KEYWORDS 																	
2	<ul style="list-style-type: none"> Hardware is a physical object we can pick up. Software is the programs we install on a computer. 																	
3	Include any three of the following: <ul style="list-style-type: none"> Desktop Laptop Tablet Smartphone Phablet Or any other related device. 																	
4	<ul style="list-style-type: none"> Central processing unit = The brain of the computer, it carries out all processing. Memory = The short-term memory, it stores program data and the results from calculations. Power supply unit= Provides the correct power supply to all components. Hard drive = The main storage device, storing the operating system. 																	
5	<ul style="list-style-type: none"> The motherboard is the main circuit board that all other devices are connected to. 																	
6	<table border="1"> <thead> <tr> <th>Scenario</th> <th>Video card</th> <th>Hard drive</th> <th>CPU</th> </tr> </thead> <tbody> <tr> <td>Playing the latest 3D computer game.</td> <td style="text-align: center;">✓</td> <td></td> <td></td> </tr> <tr> <td>Carrying out complex numerical modelling.</td> <td></td> <td></td> <td style="text-align: center;">✓</td> </tr> <tr> <td>Organising family files and images.</td> <td></td> <td style="text-align: center;">✓</td> <td></td> </tr> </tbody> </table>	Scenario	Video card	Hard drive	CPU	Playing the latest 3D computer game.	✓			Carrying out complex numerical modelling.			✓	Organising family files and images.		✓		
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Question	Answer	Notes / Marks
7_Q1	False	
7_Q2	Mouse	
7_Q3	Brain	
7_Q4	RAM	
7_Q5	Raspberry Pi	

Wearable technology [U3_L2]

Question	Answer	Notes															
1	<ul style="list-style-type: none"> TICK KEYWORDS 																
2	<ul style="list-style-type: none"> Wearable technology describes any internet connected, wearable device that is carried or worn on the person without the need to hold in your hand. 																
3	Include any three of the following: <ul style="list-style-type: none"> Smartwatch Smart jewellery Smart glasses Smart clothing Smart trainers 																
4	<ul style="list-style-type: none"> AR/VR = replacing everything we see via a headset or adding additional information to our field of view. Fitness tracking = Monitoring location, movement, and the health of the wearer Payments = Making contactless payments without the need for cash or a credit card. Communication = Messaging and social network notifications. 																
5	<ul style="list-style-type: none"> Because if the battery doesn't last a full day, users may not want to wear it. 																
6	<table border="1"> <thead> <tr> <th>Statement</th> <th>Benefit</th> <th>Drawback</th> </tr> </thead> <tbody> <tr> <td>New technology is often very expensive.</td> <td></td> <td>✓</td> </tr> <tr> <td>Video games could be more interactive.</td> <td>✓</td> <td></td> </tr> <tr> <td>Our location is being shared online more often.</td> <td></td> <td>✓</td> </tr> <tr> <td>Health problems could be spotted.</td> <td>✓</td> <td></td> </tr> </tbody> </table>	Statement	Benefit	Drawback	New technology is often very expensive.		✓	Video games could be more interactive.	✓		Our location is being shared online more often.		✓	Health problems could be spotted.	✓		
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Video games could be more interactive.	✓																
Our location is being shared online more often.		✓															
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7	Include any three of the following: <ul style="list-style-type: none"> Smart lenses Health monitors Footwear T-shirts Implanted devices 																

Question	Answer	Notes / Marks
8_Q1	Augmented reality	
8_Q2	Every day	
8_Q3	Text messaging	
8_Q4	Headset	
8_Q5	True	

Logo design [U3_L3]

Question	Answer	Notes									
1	<ul style="list-style-type: none"> TICK KEYWORDS 										
2	<ul style="list-style-type: none"> A logo is an original graphic that represents a product, brand or service. 										
3	Include any two of the following: <ul style="list-style-type: none"> New physical product New virtual product New game New film or tv programme New band Business Political party Charity 										
4	Include any three of the following: <ul style="list-style-type: none"> The name A colour scheme A choice of fonts Suitable imagery or graphics 										
5	<ul style="list-style-type: none"> Construction = Will the logo be made using bitmaps or vectors? Transferability = Can the logo be easily transferred to other documents or products? Content = What must be included in the design and is there an existing house style? Text or graphic based = Does the full name need to be included or its initials? Are there images already associated with the brand 										
6	Include any two of the following: <ul style="list-style-type: none"> Might be transferred to multiple documents, both physical and online Might appear on different devices Resizing may require different filetypes 										
7	<table border="1"> <thead> <tr> <th>Graphic</th> <th>Advantage</th> <th>Disadvantage</th> </tr> </thead> <tbody> <tr> <td>Bitmap</td> <td>High quality photos can be used</td> <td>Cannot be made larger without losing quality</td> </tr> <tr> <td>Vector</td> <td>Can be made any size, big or small</td> <td>Cannot high quality create photos.</td> </tr> </tbody> </table>	Graphic	Advantage	Disadvantage	Bitmap	High quality photos can be used	Cannot be made larger without losing quality	Vector	Can be made any size, big or small	Cannot high quality create photos.	
Graphic	Advantage	Disadvantage									
Bitmap	High quality photos can be used	Cannot be made larger without losing quality									
Vector	Can be made any size, big or small	Cannot high quality create photos.									
Question	Answer	Notes / Marks									
8_Q1	A homework project										
8_Q2	False										
8_Q3	An address										
8_Q4	Bitmap										
8_Q5	Vector										

Introduction to spreadsheets [U3_L4]

Question	Answer	Notes												
1	<ul style="list-style-type: none"> TICK KEYWORDS 													
2	<ul style="list-style-type: none"> A spreadsheet is a document that allows the entering of numerical data into rows and columns that can be analysed, sorted, or used to complete calculations. 													
3	Include any three of the following: <ul style="list-style-type: none"> Finance School data analysis Presenting data Recording results 													
4	Include any three of the following: <ul style="list-style-type: none"> Cell-based layout Tables Multiple worksheets Formulas and functions Charts or graphs 													
5	<ul style="list-style-type: none"> Text = Changing the size, colour, font and style of text Border = Changing the lines around the edge of each cell Alignment = Text can be aligned to the centre or to a specific corner of a cell Cell merging = Cells can be merged together into one 													
6	<table border="1"> <thead> <tr> <th>Data type</th> <th>Example</th> </tr> </thead> <tbody> <tr> <td>Number</td> <td>1.25</td> </tr> <tr> <td>Currency</td> <td>\$9.99</td> </tr> <tr> <td>Percentage</td> <td>75%</td> </tr> <tr> <td>Date</td> <td>04/05/1977</td> </tr> <tr> <td>Time</td> <td>07:30:00</td> </tr> </tbody> </table>	Data type	Example	Number	1.25	Currency	\$9.99	Percentage	75%	Date	04/05/1977	Time	07:30:00	
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7	<ul style="list-style-type: none"> Currency Date 													

Question	Answer	Notes / Marks
8_Q1	Adobe Acrobat	
8_Q2	True	
8_Q3	Merge	
8_Q4	Worksheet	
8_Q5	False	

Spreadsheet formulas and functions [U3_L5]

Question	Answer	Notes																																										
1	<ul style="list-style-type: none"> TICK KEYWORDS 																																											
2	<ul style="list-style-type: none"> formulas and functions allow calculations to be carried out and the modelling of potential scenarios and asking what if questions about the data. 																																											
3	<table border="1"> <thead> <tr> <th></th> <th>A</th> <th>B</th> <th>C</th> <th>D</th> <th>E</th> </tr> </thead> <tbody> <tr> <th>1</th> <td></td> <td></td> <td>C1</td> <td></td> <td></td> </tr> <tr> <th>2</th> <td>A2</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <th>3</th> <td></td> <td></td> <td>C3</td> <td></td> <td>E3</td> </tr> <tr> <th>4</th> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <th>5</th> <td></td> <td></td> <td>C5</td> <td>D5</td> <td></td> </tr> <tr> <th>6</th> <td>A6</td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>		A	B	C	D	E	1			C1			2	A2					3			C3		E3	4						5			C5	D5		6	A6					
	A	B	C	D	E																																							
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-	Minus																																											
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5	<ul style="list-style-type: none"> MAX = Displays the highest value in the range of cells MIN = Displays the lowest value in the range of cells SUM = Displays the total of all the values in the range of cells AVERAGE = Displays the average value of all the values in the range of cells 																																											
6	D1: 18 D2: 21 D3: 2 D4: 1 E5: 13 E6: 3.25 E7: 1 E8: 6																																											

Question	Answer	Notes / Marks
7_Q1	False	
7_Q2	A range of cells	
7_Q3	Horizontally	
7_Q4	True	
7_Q5	Battleships	

Spreadsheet modelling [U3_L6]

Question	Answer	Notes																																																																																				
1	<ul style="list-style-type: none"> TICK KEYWORDS 																																																																																					
2	<ul style="list-style-type: none"> It allows the user to change variables in a spreadsheet to recreate a real situation or predict the result of a situation or scenario. 																																																																																					
3	Include any two of the following: <ul style="list-style-type: none"> Profit or loss Home decorating budget Student grade predictions Or any other sensible solution. 																																																																																					
4	<table border="1"> <thead> <tr> <th></th> <th>A</th> <th>B</th> <th>C</th> <th>D</th> <th>E</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Month</td> <td>New members</td> <td></td> <td></td> <td></td> </tr> <tr> <td>2</td> <td>Jan</td> <td>3</td> <td></td> <td></td> <td></td> </tr> <tr> <td>3</td> <td>Feb</td> <td>3</td> <td></td> <td></td> <td></td> </tr> <tr> <td>4</td> <td>Mar</td> <td>4</td> <td></td> <td></td> <td></td> </tr> <tr> <td>5</td> <td>Apr</td> <td>4</td> <td></td> <td></td> <td></td> </tr> <tr> <td>6</td> <td>May</td> <td>5</td> <td></td> <td></td> <td></td> </tr> <tr> <td>7</td> <td>Jun</td> <td>5</td> <td></td> <td>Potential total</td> <td>=SUM(B2:B13)</td> </tr> <tr> <td>8</td> <td>Jul</td> <td>5</td> <td></td> <td>Annual target</td> <td>150</td> </tr> <tr> <td>9</td> <td>Aug</td> <td>10</td> <td></td> <td>Members needed</td> <td>=E8-E7</td> </tr> <tr> <td>10</td> <td>Sep</td> <td>15</td> <td></td> <td>Average</td> <td>=AVERAGE(B2:B13)</td> </tr> <tr> <td>11</td> <td>Oct</td> <td>10</td> <td></td> <td>Lowest</td> <td>=MIN(B2:B13)</td> </tr> <tr> <td>12</td> <td>Nov</td> <td>25</td> <td></td> <td>Highest</td> <td>=MAX(B2:B13)</td> </tr> <tr> <td>13</td> <td>Dec</td> <td>30</td> <td></td> <td></td> <td></td> </tr> </tbody> </table>		A	B	C	D	E	1	Month	New members				2	Jan	3				3	Feb	3				4	Mar	4				5	Apr	4				6	May	5				7	Jun	5		Potential total	=SUM(B2:B13)	8	Jul	5		Annual target	150	9	Aug	10		Members needed	=E8-E7	10	Sep	15		Average	=AVERAGE(B2:B13)	11	Oct	10		Lowest	=MIN(B2:B13)	12	Nov	25		Highest	=MAX(B2:B13)	13	Dec	30				
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13	Dec	30																																																																																				
5	<ul style="list-style-type: none"> B9, E7, E9, E10 																																																																																					
6	<ul style="list-style-type: none"> The goal seek function will adjust a variable until a desired outcome is created. 																																																																																					

Question	Answer	Notes / Marks
7_Q1	Money generated	
7_Q2	Budget	
7_Q3	True	
7_Q4	Goal seek	
7_Q5	Alignment	

Environmental impact of technology [U3_L7]

Question	Answer	Notes						
1	<ul style="list-style-type: none"> TICK KEYWORDS 							
2	<ul style="list-style-type: none"> Material choice = "I never knew this phone had gold in it!" Energy use = Mum, I need more plug sockets in my room!" Electronic waste = "I can't believe last year's model is now updated – I want the new one!" 							
3	Include any three of the following: <ul style="list-style-type: none"> gold, silver, copper, palladium, chromium, oil, lead, cadmium, and mercury. 							
4	Include any three of the following: <ul style="list-style-type: none"> Charging more and more devices Powering homes, satellites, mobile phone communication towers and infrastructure 							
5	Include any three of the following: <ul style="list-style-type: none"> Perfectly usable devices are thrown away and not recycled Rare and toxic materials can leak into the ground Thrown away electronics end up in landfill sites and people risk their life to salvage them. 							
6	Include any two from each column. <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 33%;">Material choices</th> <th style="width: 33%;">Energy use</th> <th style="width: 33%;">Electronic waste</th> </tr> </thead> <tbody> <tr> <td> <ul style="list-style-type: none"> Reduce the need for rare elements and focus on artificial replacements. Recycle the materials used to manufacture devices. Reduce the size and thickness of devices. </td> <td> <ul style="list-style-type: none"> Create more efficient batteries than need charging less and last longer. Focus on renewable energy sources such as solar and wind. Produce energy efficient devices that will hibernate to save power when not in use. </td> <td> <ul style="list-style-type: none"> Create collection and recycling points for damaged devices. Find new users around the world for unwanted devices. Improve the upgradability of devices, such as adding memory, rather than replacing them. </td> </tr> </tbody> </table>	Material choices	Energy use	Electronic waste	<ul style="list-style-type: none"> Reduce the need for rare elements and focus on artificial replacements. Recycle the materials used to manufacture devices. Reduce the size and thickness of devices. 	<ul style="list-style-type: none"> Create more efficient batteries than need charging less and last longer. Focus on renewable energy sources such as solar and wind. Produce energy efficient devices that will hibernate to save power when not in use. 	<ul style="list-style-type: none"> Create collection and recycling points for damaged devices. Find new users around the world for unwanted devices. Improve the upgradability of devices, such as adding memory, rather than replacing them. 	
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7	<ul style="list-style-type: none"> Unwanted devices are traded in, money given to the owner to put towards a new device and the old device is given to a new user or recycled. 							

Question	Answer	Notes / Marks
8_Q1	Sand	
8_Q2	True	
8_Q3	True	
8_Q4	Gas	
8_Q5	Upgradability	

Presenting data in an informative way [U3_L8]

Question	Answer	Notes
1	<ul style="list-style-type: none"> TICK KEYWORDS 	
2	<ul style="list-style-type: none"> A chart or graph presents data a visual way that is easy to read and analyse. 	
3	<ul style="list-style-type: none"> Pie = Ideal for showing individual parts of a whole or percentages Line = Ideal for showing changing values over time Bar/column = Displays the value of a range of similar items against the same quantity Scatter = Displays two sets of data to see if there is a connection between them 	
4	<ul style="list-style-type: none"> Chart 1 = Pie Chart 2 = Line Chart 3 = Scatter Chart 4 = Bar/column 	
5	<ul style="list-style-type: none"> An infographic is a document designed to convey information in a visually interesting and straightforward way. 	
6	Include any three of the following: <ul style="list-style-type: none"> Marketing Historical events Government leaflets Educational material 	
7	Include any three of the following: <ul style="list-style-type: none"> Text Charts or graph Diagrams Timelines House style 	

Question	Answer	Notes / Marks
8_Q1	Pie	
8_Q2	Bar/column	
8_Q3	True	
8_Q4	Timelines	
8_Q5	True	

Surveys and questionnaires [U3_L9]

Question	Answer	Notes																					
1	<ul style="list-style-type: none"> TICK KEYWORDS 																						
2	Include any two of the following: <ul style="list-style-type: none"> New product launches New government rules Evaluating existing products 																						
3	Include any three of the following: <ul style="list-style-type: none"> In person Virtually in person, via video or audio link Online via a website Via text message or app As a written document to complete 																						
4	<ul style="list-style-type: none"> Audience = Are you talking to the right people and will they be interested in the topic? Confusion = Are the questions over-complicated and could they result in poor responses? Language = Are any questions written in a clear, simple way using words suitable for all? Sample size = Are the right number of people being consulted? 																						
5	<ul style="list-style-type: none"> Making sure leading questions are not being used to give a specific answer or response that suits those collecting the data. 																						
6	<table border="1"> <thead> <tr> <th>Statement</th> <th>Qualitative</th> <th>Quantitative</th> </tr> </thead> <tbody> <tr> <td>Interviews</td> <td>✓</td> <td></td> </tr> <tr> <td>Yes/No questions</td> <td></td> <td>✓</td> </tr> <tr> <td>Multiple choice</td> <td></td> <td>✓</td> </tr> <tr> <td>Group discussions</td> <td>✓</td> <td></td> </tr> <tr> <td>Observations</td> <td>✓</td> <td></td> </tr> <tr> <td>Star or number rating</td> <td></td> <td>✓</td> </tr> </tbody> </table>	Statement	Qualitative	Quantitative	Interviews	✓		Yes/No questions		✓	Multiple choice		✓	Group discussions	✓		Observations	✓		Star or number rating		✓	
Statement	Qualitative	Quantitative																					
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Multiple choice		✓																					
Group discussions	✓																						
Observations	✓																						
Star or number rating		✓																					

Question	Answer	Notes / Marks
7_Q1	Interview	
7_Q2	The number of people questioned	
7_Q3	Leading question	
7_Q4	Quantitative data	
7_Q5	False	

Advanced spreadsheet functions [U3_L10]

Question	Answer	Notes
1	<ul style="list-style-type: none"> TICK KEYWORDS 	
2	<ul style="list-style-type: none"> The COUNT function counts the number of values there are in a range of cells. 	
3	<ul style="list-style-type: none"> The COUNTIF function is used to count the number of values in a range of cells that meet a specific criteria. 	
4	<ul style="list-style-type: none"> D1 = 5 It doesn't include the title of the list. 	
5	<ul style="list-style-type: none"> D1 = 1 =COUNTIF(A2:A6,"Bagel") 	
6	Include any three of the following: <ul style="list-style-type: none"> The colours used The style of text The language used The type of chart used, these are discussed earlier in this section The graphical presentation, either 2D or 3D 	

Question	Answer	Notes / Marks
7_Q1	COUNTIF	
7_Q2	False	
7_Q3	Comma	
7_Q4	Vertically	
7_Q5	False	

End of Unit Typical 4 Mark Questions

Question	Key points to look for in answer	Notes
1	<p>Any two of the following:</p> <ul style="list-style-type: none"> ● Know the target audience - Your idea needs to appeal to them, what are their interests? ● Construction - Will the logo be made using bitmaps or vectors? Each has its advantages and disadvantages as discussed in the Year 8 book. ● Theme - What is the theme of your product or service, is it meant to be fun, informative, or linked directly to a style? ● Transferability - can the logo be easily transferred to other documents or products or different sizes and shapes? This also includes electronic versions: websites, apps, social media pages. ● Content - What must be included in the design and is there an existing house style? ● Text or graphical based - Does the full name need to be included or its initials? Are there images already associated with the brand that need to be included? 	
2	<ul style="list-style-type: none"> ● Qualitative data: surveys are questionnaires with open ended questions <ul style="list-style-type: none"> ○ Examples: what is your favourite feature? What is the worst feature? ● Quantitative data: these are close-ended questions with specific answer choices, designed to count and analyse afterwards. <ul style="list-style-type: none"> ○ Examples: Rate on a scale of 1-5, Yes or no questions, how many hours do you spend online? 	

Social media [U4_L1]

Question	Answer	Notes																					
1	<ul style="list-style-type: none"> TICK KEYWORDS 																						
2	Include any three of the following: <ul style="list-style-type: none"> Chatting Meeting at events Talking to new people with similar interests Playing games or watching films Sharing photos and videos 																						
3	Include any four of the following: <ul style="list-style-type: none"> Instant messaging Blogging Media sharing Networking Gaming 																						
4	<ul style="list-style-type: none"> Profile = Personal information about the user, their interests and hobbies Friend requests = Other users wanting to connect to your profile and content Followers = Users that are interested in reading all of your posts Targeted advertising = Based on your profiles, sponsored content is sent to you and place on your page 																						
5	<ul style="list-style-type: none"> A blog contains time-stamped entries, like a diary. A static site doesn't really change from day to day. 																						
6	<table border="1"> <thead> <tr> <th>Statement</th> <th>Advantages</th> <th>Disadvantages</th> </tr> </thead> <tbody> <tr> <td>Ability to chat with family and friends around the world.</td> <td>✓</td> <td></td> </tr> <tr> <td>Many social networks are free to use.</td> <td>✓</td> <td></td> </tr> <tr> <td>Fake news and biased opinion</td> <td></td> <td>✓</td> </tr> <tr> <td>Social interaction if living in a remote area.</td> <td>✓</td> <td></td> </tr> <tr> <td>Cyberbullying.</td> <td></td> <td>✓</td> </tr> <tr> <td>Lack of privacy and personal information being shared with other sites and advertisers.</td> <td></td> <td>✓</td> </tr> </tbody> </table>	Statement	Advantages	Disadvantages	Ability to chat with family and friends around the world.	✓		Many social networks are free to use.	✓		Fake news and biased opinion		✓	Social interaction if living in a remote area.	✓		Cyberbullying.		✓	Lack of privacy and personal information being shared with other sites and advertisers.		✓	
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Social interaction if living in a remote area.	✓																						
Cyberbullying.		✓																					
Lack of privacy and personal information being shared with other sites and advertisers.		✓																					
7	<ul style="list-style-type: none"> Cyberbully is the use of any Internet technology to send rude, mean or unsuitable messages to another person. 																						

Question	Answer	Notes / Marks
8_Q1	Internet relay chat	
8_Q2	Post	
8_Q3	True	
8_Q4	False	
8_Q5	Diary	

What makes a good spreadsheet [U4_L2]

Question	Answer	Notes
1	<ul style="list-style-type: none"> TICK KEYWORDS 	
2	Include any three of the following: <ul style="list-style-type: none"> Make it easy to follow for the reader, is it clear which data has been processed and why? Using clear headings for tables Using colours and formatting to highlight key area Avoid over-crowding a worksheet, information can be spread of multiple sheets. 	
3	Include any three of the following: <ul style="list-style-type: none"> Text formatting Text alignment Use of borders Use of colours and fills 	
4	<ul style="list-style-type: none"> Design should be similar to that in textbook: <div style="border: 1px solid black; padding: 10px; margin: 10px 0;"> <div style="border: 1px solid black; padding: 5px; display: flex; justify-content: space-between; align-items: flex-start;"> <div style="flex: 1;"> <p>What is your favourite type of computer game?</p> <p>1: Action</p> <p>2: Platform</p> <p>3: Racing</p> </div> <div style="flex: 0.2; border: 1px solid black; width: 40px; height: 30px;"></div> </div> <div style="border: 1px solid black; padding: 5px; display: flex; justify-content: space-between; align-items: flex-start; margin-top: 5px;"> <div style="flex: 1;"> <p>How much would you spend on a new game?</p> </div> <div style="flex: 0.2; border: 1px solid black; width: 40px; height: 30px;"></div> </div> </div>	
5	<ul style="list-style-type: none"> Again, the spreadsheet should look similar in style to the example in the textbook. 	
6	<ul style="list-style-type: none"> A salary model, it might include important costs that if edited may spoil the spreadsheet. 	
7	<ul style="list-style-type: none"> A template is a list of predesigned spreadsheets for different purposes. They can be used as a starting point. 	

Question	Answer	Notes / Marks
8_Q1	Border	
8_Q2	Quantitative	
8_Q3	False	
8_Q4	Protect sheet	
8_Q5	Templates	

Knowledge, data and information [U4_L3]

Question	Answer	Notes																												
1	<ul style="list-style-type: none"> TICK KEYWORDS 																													
2	<ul style="list-style-type: none"> Data = a value that, on its own, has no meaning Information = data that has meaning Knowledge = making use of new information 																													
3	<table border="1"> <thead> <tr> <th>Statement</th> <th>Knowledge</th> <th>Data</th> <th>Information</th> </tr> </thead> <tbody> <tr> <td>"This device isn't popular, let's change the design."</td> <td>✓</td> <td></td> <td></td> </tr> <tr> <td>1024</td> <td></td> <td>✓</td> <td></td> </tr> <tr> <td>Movie downloads = 120,000</td> <td></td> <td></td> <td>✓</td> </tr> <tr> <td>99%</td> <td></td> <td>✓</td> <td></td> </tr> <tr> <td>"Based on this evidence, Python seems the best choice."</td> <td>✓</td> <td></td> <td></td> </tr> <tr> <td>Prices have increased by 20% this year.</td> <td></td> <td></td> <td>✓</td> </tr> </tbody> </table>	Statement	Knowledge	Data	Information	"This device isn't popular, let's change the design."	✓			1024		✓		Movie downloads = 120,000			✓	99%		✓		"Based on this evidence, Python seems the best choice."	✓			Prices have increased by 20% this year.			✓	
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4	<ul style="list-style-type: none"> The examples should follow the same style as in the textbook table. 																													
5	<ul style="list-style-type: none"> Primary data is information you have collected yourself Secondary data is information that has already been collected that you are using. 																													
6	<table border="1"> <thead> <tr> <th>Examples</th> <th>Primary</th> <th>Secondary</th> </tr> </thead> <tbody> <tr> <td>Interviewing friends in your classroom</td> <td>✓</td> <td></td> </tr> <tr> <td>Downloading data from a statistics website</td> <td></td> <td>✓</td> </tr> <tr> <td>Going to the library to do research</td> <td></td> <td>✓</td> </tr> <tr> <td>Video recording an important event live on your smartphone</td> <td>✓</td> <td></td> </tr> </tbody> </table>	Examples	Primary	Secondary	Interviewing friends in your classroom	✓		Downloading data from a statistics website		✓	Going to the library to do research		✓	Video recording an important event live on your smartphone	✓															
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Video recording an important event live on your smartphone	✓																													
7	<ul style="list-style-type: none"> Answers might include: Primary: Interviewing someone on the high-street Secondary: Watching relevant films or tv shows 																													

Question	Answer	Notes / Marks
8_Q1	True	
8_Q2	Sound recorder	
8_Q3	False	
8_Q4	Archive video	
8_Q5	False	

Sorting and filtering a spreadsheet [U4_L4]

Question	Answer	Notes																											
1	<ul style="list-style-type: none"> TICK KEYWORDS 																												
2	<ul style="list-style-type: none"> The sort function allows data to be sorted either alphabetically or numerically in an ascending or descending order. 																												
3	<ul style="list-style-type: none"> Because if the heading is selected it can be included in the sort. 																												
4	<ul style="list-style-type: none"> The filter tool allows only data to be displayed that meets certain criteria. 																												
5	<table border="1"> <thead> <tr> <th></th> <th>A</th> <th>B</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Money spent</td> <td></td> </tr> <tr> <td>2</td> <td>\$2.00</td> <td></td> </tr> <tr> <td>3</td> <td>\$8.20</td> <td></td> </tr> <tr> <td>4</td> <td>\$8.50</td> <td></td> </tr> <tr> <td>5</td> <td>\$12.00</td> <td></td> </tr> <tr> <td>6</td> <td>\$18.00</td> <td></td> </tr> <tr> <td>7</td> <td>\$32.00</td> <td></td> </tr> <tr> <td>8</td> <td>\$45.00</td> <td></td> </tr> </tbody> </table>		A	B	1	Money spent		2	\$2.00		3	\$8.20		4	\$8.50		5	\$12.00		6	\$18.00		7	\$32.00		8	\$45.00		
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2	6	Sneaker																											
3	6	Boot																											
4	6	Basketball																											
7																													
8																													
7	<ul style="list-style-type: none"> A trend is a pattern that can be observed in one or more data sources. 																												

Question	Answer	Notes / Marks
8_Q1	Ascending	
8_Q2	True	
8_Q3	65, 13, 12, 11	
8_Q4	Funnel	
8_Q5	False	

Design techniques for an online advertisement [U4_L5 & L6]

Question	Answer	Notes															
1	<ul style="list-style-type: none"> TICK KEYWORDS 																
2	<ul style="list-style-type: none"> Unlike paper-based advertising in a magazine, newspaper or leaflet, online advertising is often targeted at specific users, a target audience with an interest in the product. 																
3	Include any three of the following: <ul style="list-style-type: none"> Attention grabbing The name of the product A special offer related to it Images of the product or people using it. 																
4	Include any three of the following: <ul style="list-style-type: none"> Website pages, on any size of device Social media pages Adverts within applications or games (in-app) 																
5	Include any three of the following: <ul style="list-style-type: none"> The size of the advert Does an image of the product need to be included? What text, heading and price information is required. Can a template be used? 																
6	<table border="1"> <thead> <tr> <th>Examples</th> <th>Suitable</th> <th>Not suitable</th> </tr> </thead> <tbody> <tr> <td>Stand out from the rest of the web page</td> <td></td> <td>✓</td> </tr> <tr> <td>Choose a small range of colours</td> <td>✓</td> <td></td> </tr> <tr> <td>Consider the colour theme of the product</td> <td>✓</td> <td></td> </tr> <tr> <td>Colours change every few seconds</td> <td></td> <td>✓</td> </tr> </tbody> </table>		Examples	Suitable	Not suitable	Stand out from the rest of the web page		✓	Choose a small range of colours	✓		Consider the colour theme of the product	✓		Colours change every few seconds		✓
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	Stand out from the rest of the web page		✓														
	Choose a small range of colours	✓															
	Consider the colour theme of the product	✓															
Colours change every few seconds		✓															
7	<ul style="list-style-type: none"> Controls the number of advertisements to be displayed or completely turns them off. 																

Question	Answer	Notes / Marks
8_Q1	Pixels	
8_Q2	False	
8_Q3	All of the above	
8_Q4	Template	
8_Q5	True	

What makes a good chart [U4_L7 & L8]

Question	Answer	Notes																									
1	<ul style="list-style-type: none"> TICK KEYWORDS 																										
2	<ul style="list-style-type: none"> Pie chart: used to show individual parts of a whole, ideal for percentages. Line graph: shows the changing value over time. Bar/Column chart: displays the value of a range of similar items against the same quantity, ideal for comparing prices. Scatter graph: displays two sets of data to see if there a connection between them. 																										
3	<table border="1"> <thead> <tr> <th>Scenario</th> <th>Pie Chart</th> <th>Line Graph</th> <th>Bar/Column chart</th> <th>Scatter graph</th> </tr> </thead> <tbody> <tr> <td>Battery charge time for different devices at different ages.</td> <td></td> <td></td> <td></td> <td>✓</td> </tr> <tr> <td>The proportion of users on different operating systems.</td> <td>✓</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Comparing the prices of similar smart watches.</td> <td></td> <td></td> <td>✓</td> <td></td> </tr> <tr> <td>The number of devices recycled over the last ten years.</td> <td></td> <td>✓</td> <td></td> <td></td> </tr> </tbody> </table>	Scenario	Pie Chart	Line Graph	Bar/Column chart	Scatter graph	Battery charge time for different devices at different ages.				✓	The proportion of users on different operating systems.	✓				Comparing the prices of similar smart watches.			✓		The number of devices recycled over the last ten years.		✓			
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4.	Percentages for each response, or a particular question, can be visually represented in a clear way.																										

Question	Answer	Notes / Marks
5_Q1	3D Graphics	
5_Q2	Key	
5_Q3	Wizard	
5_Q4	Percentages	
5_Q5	True	

Designing an infographic [U4_L9 & L10]

Question	Answer	Notes																									
1	<ul style="list-style-type: none"> TICK KEYWORDS 																										
2	An infographic is designed to convey text, data and information in a visually interesting and straightforward way that grabs the attention of the reader.																										
3	<table border="1"> <thead> <tr> <th>Scenario</th> <th>Text</th> <th>Diagram</th> <th>Timeline</th> <th>Chart</th> </tr> </thead> <tbody> <tr> <td>The development of each generation of mobile phone.</td> <td></td> <td></td> <td>✓</td> <td></td> </tr> <tr> <td>The internal workings of a modern smartphone.</td> <td></td> <td>✓</td> <td></td> <td></td> </tr> <tr> <td>The impact of the smartphone on society.</td> <td>✓</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Users of smartphones over the last decade.</td> <td></td> <td></td> <td></td> <td>✓</td> </tr> </tbody> </table>	Scenario	Text	Diagram	Timeline	Chart	The development of each generation of mobile phone.			✓		The internal workings of a modern smartphone.		✓			The impact of the smartphone on society.	✓				Users of smartphones over the last decade.				✓	
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The internal workings of a modern smartphone.		✓																									
The impact of the smartphone on society.	✓																										
Users of smartphones over the last decade.				✓																							
4	Include any three of the following: <ul style="list-style-type: none"> Use word-processing or presentation software you are familiar with. Create charts and graphs in spreadsheet software and copy them into another document. Use an online infographic creator, they have ready-made templates that you can simply add text and charts to. Use desktop publishing software 																										

Question	Answer	Notes / Marks
8_Q1	True	
8_Q2	Portrait	
8_Q3	Code editor	
8_Q4	True	
8_Q5	Pictogram	

End of Unit Typical 4 Mark Questions

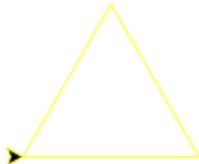
Question	Key points to look for in answer	Notes
1	<ul style="list-style-type: none"> ● The sort function allows data to be sorted either alphabetically or numerically in an ascending or descending order. <ul style="list-style-type: none"> ○ Examples: Showing voting or population data (or any suitable topic) in order. ● The filter tool allows only data to be displayed that meets certain criteria. <ul style="list-style-type: none"> ○ Examples: Selecting a specific a topic from survey results (or similar example). 	
2	<ul style="list-style-type: none"> ● Locations: <ul style="list-style-type: none"> ○ Website pages, on any size of device ○ Social media pages ○ Adverts within applications or games (in-app) ● Tips: <ul style="list-style-type: none"> ○ Attention grabbing ○ The name of the product ○ A special offer related to it ○ Images of the product or people using it. ○ Consider the size of the advert ○ Does an image of the product need to be included? ○ What text, heading and price information is required. ○ Can a template be used? 	

Algorithms and turtle programming [U5_L1 & L2]

Question	Answer	Notes																						
1	<ul style="list-style-type: none"> TICK KEYWORDS 																							
2	<ul style="list-style-type: none"> An algorithm is a step-by-step series of logical instructions. 																							
3	<table border="1"> <thead> <tr> <th>Command</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>name = turtle.Turtle()</td> <td>Used to name the drawing turtle, for example, marker</td> </tr> <tr> <td>Import turtle</td> <td>Instructs Python to open the turtle drawing module</td> </tr> <tr> <td>fd(distance in pixels)</td> <td>Forward by a distance in pixels</td> </tr> <tr> <td>bk(distance in pixels)</td> <td>Backward by a distance in pixels</td> </tr> <tr> <td>rt(turn angle)</td> <td>Turn right by defined degrees</td> </tr> <tr> <td>lt(turn angle)</td> <td>Turn left by defined degrees</td> </tr> <tr> <td>penup()</td> <td>Lift up the pen, so no line is drawn when moved</td> </tr> <tr> <td>pendown()</td> <td>Lower the pen, so lines can be drawn</td> </tr> <tr> <td>pensize(size in pixels)</td> <td>Sets the size of the drawing turtle</td> </tr> <tr> <td> pencolor(size in pixels)</td> <td>Sets the colour of the drawing turtle</td> </tr> </tbody> </table>	Command	Description	name = turtle.Turtle()	Used to name the drawing turtle, for example, marker	Import turtle	Instructs Python to open the turtle drawing module	fd(distance in pixels)	Forward by a distance in pixels	bk(distance in pixels)	Backward by a distance in pixels	rt(turn angle)	Turn right by defined degrees	lt(turn angle)	Turn left by defined degrees	penup()	Lift up the pen, so no line is drawn when moved	pendown()	Lower the pen, so lines can be drawn	pensize(size in pixels)	Sets the size of the drawing turtle	pencolor(size in pixels)	Sets the colour of the drawing turtle	
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4	<ul style="list-style-type: none"> floorPen = turtle.Turtle() = Create a new turtle called 'floorPen' floorPen.pencolour("red") = Set the pen colour to red floorPen.bk(90) = Reverses the pen 90 units floorPen.rt(90) = Turns the pen 90 degrees to the right 																							
5	<ul style="list-style-type: none"> Shape as below: 																							
6	<p>See: Y8_U5_L1-2_Simple02.py</p> <pre>#Simple Shape 2 import turtle floorPen = turtle.Turtle() floorPen.pencolor("Green") floorPen.lt(135) floorPen.fd(200) floorPen.rt(90) floorPen.fd(200) floorPen.rt(90) floorPen.fd(200) floorPen.rt(90) floorPen.fd(200)</pre>																							

Question	Answer	Notes / Marks
7_Q1	Centre	
7_Q2	rt(180)	
7_Q3	pencolor("blue")	
7_Q4	True	
7_Q5	True	

Sequencing and iteration algorithms [U5_L3 & L4]

Question	Answer	Notes
1	<ul style="list-style-type: none"> TICK KEYWORDS 	
2	<ul style="list-style-type: none"> Sequencing: a logical series of instructions, one followed by another from start to finish. Iteration: the use of loops or repeated actions until a specified point is reached. 	
3	<ul style="list-style-type: none"> See: Y8_U5_L3-4_Q3.py <pre>print("This is a smile :)") print("This means sad :(") print("This is a big smile :D")</pre>	
4	<ul style="list-style-type: none"> See: Y8_U5_L3-4_Q4.py <pre>for letter in ("VERTICAL"): print(letter)</pre>	
5	<pre>#Iteration 1 import turtle marker = turtle.Turtle() marker.pencolor("red") for line in range(4): marker.fd(75) marker.lt(90)</pre>	
6	<ul style="list-style-type: none"> Shape as below: 	

Question	Answer	Notes / Marks
7_Q1	Iteration	
7_Q2	Sequencing	
7_Q3	An indentation	
7_Q4	6	
7_Q5	Reduce the number of lines	

Programming errors [U5_L5]

Question	Answer	Notes								
1	<ul style="list-style-type: none"> TICK KEYWORDS 									
2	<ul style="list-style-type: none"> If a computer program comes across a problem, or error, it just stops. It doesn't have the ability to solve its own errors, this is why error checking any program is so important. 									
3	<ul style="list-style-type: none"> Logic error: a fault with the design of the program itself, this means the program may run but produce an incorrect output. Syntax error: a mistake within a program that causes the program to stop running. Syntax errors are normally mistakes made by the programmer. 									
4	Include any three of the following: <ul style="list-style-type: none"> Check functions are spelt correctly. Check sentence case, especially in functions and variables. Check characters and symbols. Check indentation, especially after an IF statement Proofread a printed copy by hand. 									
5	<table border="1"> <tbody> <tr> <td>Logic error 1:</td> <td>Incorrect number for octagon</td> </tr> <tr> <td>Logic error 2:</td> <td>Incorrect angle for octagon</td> </tr> <tr> <td>Syntax error 1:</td> <td>Incorrectly spelt "green"</td> </tr> <tr> <td>Syntax error 2:</td> <td>Incorrectly spelt "marker"</td> </tr> </tbody> </table> <p>Y8_U5_L5_Errors01-CORRECT.py</p>	Logic error 1:	Incorrect number for octagon	Logic error 2:	Incorrect angle for octagon	Syntax error 1:	Incorrectly spelt "green"	Syntax error 2:	Incorrectly spelt "marker"	
Logic error 1:	Incorrect number for octagon									
Logic error 2:	Incorrect angle for octagon									
Syntax error 1:	Incorrectly spelt "green"									
Syntax error 2:	Incorrectly spelt "marker"									

Question	Answer	Notes / Marks
6_Q1	Incorrect angle within a graphic	
6_Q2	True	
6_Q3	Syntax error	
6_Q4	True	
6_Q5	Debugging	

Using lists in a Python program [U5_L6]

Question	Answer	Notes
1	<ul style="list-style-type: none"> TICK KEYWORDS 	
2	<ul style="list-style-type: none"> A list within Python is simply a group of objects, separated by a comma and held within square brackets. 	
3	Include any two of the following: <ul style="list-style-type: none"> Objects can be of any data type. Objects can be accessed by index, as used in Year 7. The first object is at position 0, the next 1. The list is mutable, this means it can be edited and re-ordered as required 	
4	<ul style="list-style-type: none"> See: Y8_U5_L6_Q5.py <pre>names = ["Joanna","Amos","Fletcher","Raya"] values = [161,47,13,15] floats = [7.34, 4.65, 12.45, 2.1]</pre>	
5	<ul style="list-style-type: none"> del highScore[1] highScore += [250] 	
6	<ul style="list-style-type: none"> See: Y8_U5_L6_Q6.py <pre>import random days = ["Monday", "Tuesday", "Wednesday", "Thursday", "Friday", "Saturday", "Sunday"] print(random.choice(days))</pre>	
7	<ul style="list-style-type: none"> A computer-generated random number. It is suitable for programs like the one on this page but is not truly random. 	

Question	Answer	Notes / Marks
8_Q1	Quotation mark	
8_Q2	0	
8_Q3	Delete the second in a list	
8_Q4	Import random	
8_Q5	True	

Use of selection in an algorithm [U5_L7]

Question	Answer	Notes
1	<ul style="list-style-type: none"> TICK KEYWORDS 	
2	<ul style="list-style-type: none"> Selection is used within an algorithm when a question is asked, and a response is required. 	
3	Include any three of the following: <ul style="list-style-type: none"> Yes or no True or false A calculation using arithmetic or relational operators A text-based response A value from a sensor 	
4	<pre> graph TD Start([Start]) --> EnterPIN[Enter PIN] EnterPIN --> IsPINCorrect{Is the PIN Correct?} IsPINCorrect -- No --> EnterPIN IsPINCorrect -- Yes --> OpenSmartphone[Open smartphone] OpenSmartphone --> Stop([Stop]) </pre>	
5	<ul style="list-style-type: none"> IF: To query a variable and carry out an action if met ELSE: To carry out an action if the query is has not been met. 	
6	<ul style="list-style-type: none"> > Greater than < Less than >= Greater than or equal to <= Less than or equal to 	
7	<ul style="list-style-type: none"> See: Y8_U5_L7_Q7.py <pre> size = int(input("What size are you?")) if size <= 9: print("Welcome to our shop") else: print("Maybe try again next week") </pre>	

Question	Answer	Notes / Marks
8_Q1	Input or output	
8_Q2	Diamond	
8_Q3	2	
8_Q4	Colon	
8_Q5	THEN	

Creating a simple chatbot [U5_L8]

Question	Answer	Notes														
1	<ul style="list-style-type: none"> TICK KEYWORDS 															
2	<ul style="list-style-type: none"> A chatbot is a computer program designed to simulate a two-way conversation between a real person and itself. 															
3	<table border="1"> <thead> <tr> <th>Number</th> <th>Annotation</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Import random and time functions</td> </tr> <tr> <td>5</td> <td>The user's response is converted to lowercase</td> </tr> <tr> <td>6</td> <td>This message is given when there is a response other than yes</td> </tr> <tr> <td>3</td> <td>A delay is used to make it seem like the chatbot is thinking</td> </tr> <tr> <td>4</td> <td>A random drink is chosen from the chatDrink list</td> </tr> <tr> <td>2</td> <td>User's name is saved as variable name</td> </tr> </tbody> </table>	Number	Annotation	1	Import random and time functions	5	The user's response is converted to lowercase	6	This message is given when there is a response other than yes	3	A delay is used to make it seem like the chatbot is thinking	4	A random drink is chosen from the chatDrink list	2	User's name is saved as variable name	
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3	A delay is used to make it seem like the chatbot is thinking															
4	A random drink is chosen from the chatDrink list															
2	User's name is saved as variable name															
4	<ul style="list-style-type: none"> Text-based messages Text-to-voice based systems 															
5	<ul style="list-style-type: none"> Display a friendly welcome message Ask questions of the user and respond to the answers Include acknowledgement of user responses in their own responses. 															
6	<ul style="list-style-type: none"> The Turing test was created to challenge the ability of a computer to simulate a real person in questioning. 															

Question	Answer	Notes / Marks
7_Q1	1950s	
7_Q2	Restaurant	
7_Q3	Artificial intelligence	
7_Q4	time.sleep()	
7_Q5	Exactly equal to	

Sub programs in an algorithm [U5_L9]

Question	Answer	Notes															
1	<ul style="list-style-type: none"> TICK KEYWORDS 																
2	<ul style="list-style-type: none"> To remove repetitive tasks from a larger algorithm, saving time and lines of code. 																
3	Include any three of the following: <ul style="list-style-type: none"> It will be given a unique name It is a self-contained program or module It can be used in one or more programs. It can be called upon as and when required in the same program Once the sub program has been run, the main program will continue 																
4	Include any three of the following: <ul style="list-style-type: none"> The camera on your smartphone The mathematical functions on your scientific calculator The cooking programs in a microwave The Wi-Fi settings on a games console Any other realistic example 																
5	<table border="1"> <thead> <tr> <th>Subprogram description</th> <th>Procedures</th> <th>Functions</th> </tr> </thead> <tbody> <tr> <td>Reset a stopwatch variable to zero</td> <td>✓</td> <td></td> </tr> <tr> <td>Add the current date to a document</td> <td></td> <td>✓</td> </tr> <tr> <td>Open a pin entry screen</td> <td></td> <td>✓</td> </tr> <tr> <td>Display a user warning message</td> <td>✓</td> <td></td> </tr> </tbody> </table>	Subprogram description	Procedures	Functions	Reset a stopwatch variable to zero	✓		Add the current date to a document		✓	Open a pin entry screen		✓	Display a user warning message	✓		
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Add the current date to a document		✓															
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6	<ul style="list-style-type: none"> Potential answer: See: Y8_U5_L9_Q6.py <pre>def randomNumber(): number = random.randint(0, 9) return number</pre>																
7	<ul style="list-style-type: none"> Potential answer: See: Y8_U5_L9_Q7.py <pre>#four digit PIN import random def randomNumber(): number = random.randint(0, 9) return number print("This program will generate you a new for digit PIN") print("Your new PIN number is:") digit1 = randomNumber() digit2 = randomNumber() digit3 = randomNumber() digit4 = randomNumber() print(digit1,digit2,digit3,digit4)</pre>																
Question	Answer	Notes / Marks															
8_Q1	False																
8_Q2	Subroutine																
8_Q3	def name():																
8_Q4	False																
8_Q5	Function																

Creating a missing word game [U5_L10]

Question	Answer	Notes
1	<ul style="list-style-type: none"> TICK KEYWORDS 	
2	Include any five of the following: <ul style="list-style-type: none"> Using sequence, selection and iteration algorithms Create and process variables Using lists to store multiple objects Using sub programs to remove repetitive lines of code Using arithmetic and relational operators to compare variables Resolving syntax and logic errors 	
3	<ul style="list-style-type: none"> See the following file for a potential answer: Y8_U5_L10_Q3-Q6.py 	

End of Unit Typical 4 Mark Questions

Question	Key points to look for in answer	Notes
1	<ul style="list-style-type: none"> Sequencing: a logical series of instructions, one followed by another from start to finish. Iteration: the use of loops or repeated actions until a specified point is reached. Iteration can be used to create a triangle by repeating the creation of one side and a turning angle three times. 	
2	<ul style="list-style-type: none"> A list within Python is simply a group of objects, separated by a comma and held within square brackets. Examples: <ul style="list-style-type: none"> names = ["Raffi", "Bond", "Lizzo", "Risto"] numbers = [435, 87, 7613, 1665] 	

Surveillance technology [U6_L1]

Question	Answer	Notes										
1	<ul style="list-style-type: none"> TICK KEYWORDS 											
2	<table border="1"> <thead> <tr> <th>Technology</th> <th>Example of surveillance</th> </tr> </thead> <tbody> <tr> <td>Smartphone</td> <td>Using positional data and GPS to track position, intercepting messages.</td> </tr> <tr> <td>USB stick</td> <td>Installing spyware to look at files and communications.</td> </tr> <tr> <td>Digital cameras</td> <td>Combined with facial recognition technology and event location data within photos.</td> </tr> <tr> <td>GPS equipment</td> <td>Tracking the position of anyone with GPS equipment.</td> </tr> </tbody> </table>	Technology	Example of surveillance	Smartphone	Using positional data and GPS to track position, intercepting messages.	USB stick	Installing spyware to look at files and communications.	Digital cameras	Combined with facial recognition technology and event location data within photos.	GPS equipment	Tracking the position of anyone with GPS equipment.	
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Digital cameras	Combined with facial recognition technology and event location data within photos.											
GPS equipment	Tracking the position of anyone with GPS equipment.											
3	<ul style="list-style-type: none"> By adding an individual as a friend, their online activities, other friends and location can be analysed. 											
4	<p>Include any three of the following:</p> <ul style="list-style-type: none"> Monitoring the number of emails being sent. Observing the times a user logs on and off. Analysing cloud-based documents to see when they have been worked on. Observing group chats and messaging. Watching video call meetings. 											
5	<table border="1"> <thead> <tr> <th>Scenario</th> <th>Potential surveillance</th> </tr> </thead> <tbody> <tr> <td>Tracking a person across a city or town.</td> <td> <ul style="list-style-type: none"> Face recognition using CCTV Smartphone tracking via mobile phone network tower or GPS from apps. </td> </tr> <tr> <td>Intercepting messages.</td> <td> <ul style="list-style-type: none"> Intercepting emails and messaging apps. Installing spyware on one person's device. </td> </tr> <tr> <td>Looking at someone's computer files.</td> <td> <ul style="list-style-type: none"> Installing spyware or hacking online document folders. </td> </tr> </tbody> </table>	Scenario	Potential surveillance	Tracking a person across a city or town.	<ul style="list-style-type: none"> Face recognition using CCTV Smartphone tracking via mobile phone network tower or GPS from apps. 	Intercepting messages.	<ul style="list-style-type: none"> Intercepting emails and messaging apps. Installing spyware on one person's device. 	Looking at someone's computer files.	<ul style="list-style-type: none"> Installing spyware or hacking online document folders. 			
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Looking at someone's computer files.	<ul style="list-style-type: none"> Installing spyware or hacking online document folders. 											
6	Software that can record the keystrokes, documents and Internet history can be recorded and examined.											

Question	Answer	Notes / Marks
7_Q1	Digital camera	
7_Q2	Global positioning system	
7_Q3	Intercept	
7_Q4	True	
7_Q5	Find out why the game might need access to your location.	

Types of software [U6_L2]

Question	Answer	Notes																								
1	<ul style="list-style-type: none"> TICK KEYWORDS 																									
2	<ul style="list-style-type: none"> Application = Programs we use on a day-to-day basis Operating system = The link between hardware and software Utility = Software that supports the operating system 																									
3	<table border="1"> <thead> <tr> <th>Application</th> <th>Operating system</th> <th>Utility</th> </tr> </thead> <tbody> <tr> <td>Web design</td> <td>Windows based systems</td> <td>Anti-virus/malware</td> </tr> <tr> <td>Graphic</td> <td>Apple based systems</td> <td>Disk-defragmentation</td> </tr> <tr> <td>Image-editing</td> <td>Linux based systems</td> <td>Back-up</td> </tr> <tr> <td>Video games</td> <td></td> <td>Compression</td> </tr> <tr> <td>Video editing</td> <td></td> <td>Encryption</td> </tr> <tr> <td>Computer Aided Design (CAD)</td> <td></td> <td>Formatting tools</td> </tr> <tr> <td>Office based: word processing, spreadsheet, presentation or databases</td> <td></td> <td></td> </tr> </tbody> </table>	Application	Operating system	Utility	Web design	Windows based systems	Anti-virus/malware	Graphic	Apple based systems	Disk-defragmentation	Image-editing	Linux based systems	Back-up	Video games		Compression	Video editing		Encryption	Computer Aided Design (CAD)		Formatting tools	Office based: word processing, spreadsheet, presentation or databases			
Application	Operating system	Utility																								
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Image-editing	Linux based systems	Back-up																								
Video games		Compression																								
Video editing		Encryption																								
Computer Aided Design (CAD)		Formatting tools																								
Office based: word processing, spreadsheet, presentation or databases																										
4	Include any four of the following: <ul style="list-style-type: none"> Presentation Spreadsheet Work processing Database Email Calendar 																									
5	<table border="1"> <thead> <tr> <th>Scenario</th> <th>Application</th> <th>Operating system</th> <th>Utility</th> </tr> </thead> <tbody> <tr> <td>A virus needs to be removed from a computer</td> <td></td> <td></td> <td>✓</td> </tr> <tr> <td>A new computer has been purposed and has no installed software of any kind.</td> <td></td> <td>✓</td> <td></td> </tr> <tr> <td>A spreadsheet needs to be created for a new business.</td> <td>✓</td> <td></td> <td></td> </tr> </tbody> </table>	Scenario	Application	Operating system	Utility	A virus needs to be removed from a computer			✓	A new computer has been purposed and has no installed software of any kind.		✓		A spreadsheet needs to be created for a new business.	✓											
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6	Include any three of the following: <ul style="list-style-type: none"> Smart speakers Smart watches Modern cars with in-car entertainment Smart televisions Any similar devices 																									
7	<ul style="list-style-type: none"> Open source software has been written to be freely shared, distributed and edited by anyone as no cost. 																									

Question	Answer	Notes / Marks
8_Q1	Operating system	
8_Q2	True	
8_Q3	True	
8_Q4	Utility	
8_Q5	True	

Operating systems [U6_L3]

Question	Answer	Notes																									
1	<ul style="list-style-type: none"> TICK KEYWORDS 																										
2	Include any three of the following: <ul style="list-style-type: none"> Install applications, games from other creators. Install printers, microphone, webcams or any other peripheral device we wish to add. Update our security settings to keep save online. Check that internal components are running effectively. 																										
3	<ul style="list-style-type: none"> User interface = On-screen display that allows the user to interact with the computer, move the mouse and see applications. Memory management = Allocating memory space to programs and data Peripherals = Allows applications to interact with devices connected to the computer Multi-tasking = Allows two or more applications to run at the same time Security = Monitoring and controlling access to programs and data and preventing any unauthorised access. 																										
4	Include any three of the following: <ul style="list-style-type: none"> smartphones tablets smart speakers games consoles televisions 																										
5	<ul style="list-style-type: none"> GUI allows the user to move a cursor around the screen and interact with icons and menus. CLI is text only, all commands are entered via keyboard commands. 																										
6	<table border="1"> <thead> <tr> <th>Task</th> <th>GUI</th> <th>CLI</th> <th>Dialogue</th> <th>Gesture/touch</th> </tr> </thead> <tbody> <tr> <td>Clicking and dragging files and folders</td> <td>✓</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Asking a smart speaker for a radio station</td> <td></td> <td></td> <td>✓</td> <td></td> </tr> <tr> <td>Swiping through digital photos</td> <td></td> <td></td> <td></td> <td>✓</td> </tr> <tr> <td>Programming an old computer from the 1970s.</td> <td></td> <td>✓</td> <td></td> <td></td> </tr> </tbody> </table>	Task	GUI	CLI	Dialogue	Gesture/touch	Clicking and dragging files and folders	✓				Asking a smart speaker for a radio station			✓		Swiping through digital photos				✓	Programming an old computer from the 1970s.		✓			
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Question	Answer	Notes / Marks
8_Q1	Multi-tasking	
8_Q2	Graphics card	
8_Q3	Smart speaker	
8_Q4	True	
8_Q5	Gesture/touch	

Utility programs [U6_L4]

Question	Answer	Notes																																								
1	<ul style="list-style-type: none"> TICK KEYWORDS 																																									
2	<ul style="list-style-type: none"> Utility software includes functions that the operating systems may not include but are useful in running the computer, often in the background. 																																									
3	<ul style="list-style-type: none"> Security = Preventing unauthorised access to your computer. Disk organisation = Ensures files are organised and disks are correctly formatted. Maintenance = Keeping an eye on system updates, running back-ups. 																																									
4	Include any two of the following: <ul style="list-style-type: none"> CPU speed Memory use Hard drive capacity 																																									
5	<table border="1"> <thead> <tr> <th>Software</th> <th>Security</th> <th>Disk organisation</th> <th>Maintenance</th> </tr> </thead> <tbody> <tr> <td>Anti-virus</td> <td>✓</td> <td></td> <td></td> </tr> <tr> <td>Disk defragmentation</td> <td></td> <td>✓</td> <td></td> </tr> <tr> <td>Back-up</td> <td></td> <td></td> <td>✓</td> </tr> <tr> <td>Firewall</td> <td>✓</td> <td></td> <td></td> </tr> <tr> <td>System clean-up</td> <td></td> <td></td> <td>✓</td> </tr> <tr> <td>Compression</td> <td></td> <td>✓</td> <td></td> </tr> <tr> <td>Encryption</td> <td>✓</td> <td></td> <td></td> </tr> <tr> <td>Disk formatting</td> <td></td> <td>✓</td> <td></td> </tr> <tr> <td>System information</td> <td></td> <td></td> <td>✓</td> </tr> </tbody> </table>	Software	Security	Disk organisation	Maintenance	Anti-virus	✓			Disk defragmentation		✓		Back-up			✓	Firewall	✓			System clean-up			✓	Compression		✓		Encryption	✓			Disk formatting		✓		System information			✓	
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System information			✓																																							
6	<ul style="list-style-type: none"> New computer viruses and computer updates are created every day and so software must also be set to auto update as often as possible in order to be protective. 																																									

Question	Answer	Notes / Marks
7_Q1	True	
7_Q2	Third party	
7_Q3	Encryption	
7_Q4	True	
7_Q5	Firewall	

Internet hardware [U6_L5]

Question	Answer	Notes																									
1	<ul style="list-style-type: none"> TICK KEYWORDS 																										
2	Any two of each: <ul style="list-style-type: none"> Wired: Router, Games console, Desktop computer, switch, smart tv Wireless: Smartphone, tablet, laptop, smart speaker Note: many wired devices are also wireless compatible as well.																										
3	<table border="1"> <thead> <tr> <th>Hardware</th> <th>Switch</th> <th>Wireless Access Point (WAP)</th> <th>Network Interface Card (NIC)</th> <th>Modem</th> </tr> </thead> <tbody> <tr> <td>Provides a connection for wireless devices to the local network.</td> <td></td> <td>✓</td> <td></td> <td></td> </tr> <tr> <td>Connects directly to the router and directs data to and from specific devices.</td> <td>✓</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Allows a computer or laptop to connect to a wired or wireless network</td> <td></td> <td></td> <td>✓</td> <td></td> </tr> <tr> <td>Converts the data from the internet into a form your network can understand and vice-versa.</td> <td></td> <td></td> <td></td> <td>✓</td> </tr> </tbody> </table>	Hardware	Switch	Wireless Access Point (WAP)	Network Interface Card (NIC)	Modem	Provides a connection for wireless devices to the local network.		✓			Connects directly to the router and directs data to and from specific devices.	✓				Allows a computer or laptop to connect to a wired or wireless network			✓		Converts the data from the internet into a form your network can understand and vice-versa.				✓	
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4	<ul style="list-style-type: none"> Modem and router 																										
5	<ul style="list-style-type: none"> Packet header = Information about where the data is from, where it is going and its position in the message. Packet body = Part of the actual message data. Packet footer = This signals the end of the data packet and checks the packet is complete. 																										
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Question	Answer	Notes / Marks
8_Q1	False	
8_Q2	Access the Internet	
8_Q3	Service	
8_Q4	True	
8_Q5	Header	

Wireless communications technology [U6_L6]

Question	Answer	Notes																
1	<ul style="list-style-type: none"> TICK KEYWORDS 																	
2	<ul style="list-style-type: none"> Wireless communication technology allows data to be transmitted and received between compatible devices without the need for a wired connection. 																	
3	Include any two of the following: <ul style="list-style-type: none"> Home wireless networks Schools and offices Shops and leisure facilities 																	
4	Include any two of the following: <ul style="list-style-type: none"> Contactless payments Transferring personal information between devices Checking into an event 																	
5	Include any two of the following: <ul style="list-style-type: none"> Wireless headphones and speakers Wireless keyboards and mice Game control controllers 																	
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Question	Answer	Notes / Marks
8_Q1	NFC	
8_Q2	Monitor	
8_Q3	Ethernet	
8_Q4	NFC	
8_Q5	True	

The Internet and the World Wide Web [U6_L7]

Question	Answer	Notes																									
1	<ul style="list-style-type: none"> TICK KEYWORDS 																										
2	<ul style="list-style-type: none"> The Internet: is the network of inter-connected networks all around the world. The World Wide Web: is how we view web pages today using HTML and web browsers. 																										
3	<ul style="list-style-type: none"> HTML (Hyper Text Mark-up Language) is the programming language used to create content that can be viewed and interacted with using a web browser on any compatible device. 																										
4	<ul style="list-style-type: none"> Correct order: <ul style="list-style-type: none"> Web address typed in Web browser accesses internet via modem, router and ISP Web browser asks DNS server about web address DNS server searches for an IP address that matches the web address DNS server sends IP address to browser Web browser opens website located at IP address 																										
5	<ul style="list-style-type: none"> The reason we have word based website addresses is because they are much easier to remember than an IP address. 																										
6	<table border="1"> <thead> <tr> <th>Description</th> <th>IP Address</th> <th>ISP</th> <th>DNS Server</th> <th>Web server</th> </tr> </thead> <tbody> <tr> <td>An international naming service that links internet addresses with an IP address.</td> <td></td> <td></td> <td>✓</td> <td></td> </tr> <tr> <td>A network connected computer server that stores website files.</td> <td></td> <td></td> <td></td> <td>✓</td> </tr> <tr> <td>A company that provides access to the Internet to homes, schools and workplaces.</td> <td></td> <td>✓</td> <td></td> <td></td> </tr> <tr> <td>An identifying address assigned to every network connected device.</td> <td>✓</td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	Description	IP Address	ISP	DNS Server	Web server	An international naming service that links internet addresses with an IP address.			✓		A network connected computer server that stores website files.				✓	A company that provides access to the Internet to homes, schools and workplaces.		✓			An identifying address assigned to every network connected device.	✓				
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An identifying address assigned to every network connected device.	✓																										
7	<ul style="list-style-type: none"> Hosting describes the process of running a website on a web server. The server hosts the website. 																										

Question	Answer	Notes / Marks
8_Q1	Hypertext mark-up language	
8_Q2	IP address	
8_Q3	False	
8_Q4	Domain Name System	
8_Q5	Web browser	

Surveillance ethics [U6_L8 & L9]

Question	Answer	Notes																											
1	<ul style="list-style-type: none"> TICK KEYWORDS 																												
2	Include any three of the following: <ul style="list-style-type: none"> To help solve crime To prevent terrorism To solve financial crimes To increase personal safety To confirm our identity To keep us safe online 																												
3	Include three any of the following: <ul style="list-style-type: none"> Shopping suggestions New social media connections Increased shopping security 																												
4	Include any thee of the following: <ul style="list-style-type: none"> Spotting criminals with CCTV Intercepting criminal messages Spotting criminal activity online Improved ID cards cannot be faked. 																												
5	Include any three of the following: <ul style="list-style-type: none"> Is it legal for to be observed 24 hours a day? Is it OK for others to eavesdrop on my conversations? What is happening to all the data about me? Can I ask to see who is observing me? What if I don't want to be observed? Why can't my Internet searches be private? I haven't done anything wrong, so why am I being observed? Is surveillance worth losing our freedom? Do I want someone to know geolocation information at all times? 																												
6	<table border="1"> <thead> <tr> <th>Statement</th> <th>For</th> <th>Against</th> </tr> </thead> <tbody> <tr> <td>Increased security and data protection</td> <td>✓</td> <td></td> </tr> <tr> <td>More secure online shopping and banking</td> <td>✓</td> <td></td> </tr> <tr> <td>Lack of freedom</td> <td></td> <td>✓</td> </tr> <tr> <td>People may be incorrectly charged with a crime</td> <td></td> <td>✓</td> </tr> <tr> <td>Governments must keep up with criminals</td> <td>✓</td> <td></td> </tr> <tr> <td>Concerns about data sharing</td> <td></td> <td>✓</td> </tr> <tr> <td>Being able to stop criminal activity and cyberattacks.</td> <td>✓</td> <td></td> </tr> <tr> <td>Information being used without our permission</td> <td></td> <td>✓</td> </tr> </tbody> </table>	Statement	For	Against	Increased security and data protection	✓		More secure online shopping and banking	✓		Lack of freedom		✓	People may be incorrectly charged with a crime		✓	Governments must keep up with criminals	✓		Concerns about data sharing		✓	Being able to stop criminal activity and cyberattacks.	✓		Information being used without our permission		✓	
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Question	Answer	Notes / Marks
7_Q1	Cheaper products	
7_Q2	Hobbies and interests	
7_Q3	True	
7_Q4	Smartphone	
7_Q5	True	

Data breaches and cybercrime [U6_L10]

Question	Answer	Notes										
1	<ul style="list-style-type: none"> TICK KEYWORDS 											
2	<ul style="list-style-type: none"> A data breach is the access of stored data without the permission of those holding it. 											
3	Any three of the following: <ul style="list-style-type: none"> Username and passwords Credit cards details Personal details Social network content Cloud-based documents 											
4	Include any three of the following: <ul style="list-style-type: none"> Crashing a website so it cannot be accessed Spreading a computer virus to damage multiple computers Causing an online service to become unusable Gaining access to a system and stealing data stored within it Tricking users to give up personal information using email or messaging scams 											
5	<ul style="list-style-type: none"> This is an email designed to look like an organisation we know and it asks the user to click and update their details. When clicked it will use a fake site to steal information. Links within emails should never be clicked. 											
6	<table border="1"> <thead> <tr> <th>Information stolen</th> <th>Potential consequences</th> </tr> </thead> <tbody> <tr> <td>Username and password</td> <td>Accounts can be accessed and possible personal data or even money stolen from accounts.</td> </tr> <tr> <td>Personal details, including date of birth</td> <td>Accounts could be setup in your name to carry out criminal activity</td> </tr> <tr> <td>Credit card details</td> <td>Purchases can be made or money withdrawn without permission.</td> </tr> </tbody> </table> <p>Any other similar consequence is acceptable.</p>	Information stolen	Potential consequences	Username and password	Accounts can be accessed and possible personal data or even money stolen from accounts.	Personal details, including date of birth	Accounts could be setup in your name to carry out criminal activity	Credit card details	Purchases can be made or money withdrawn without permission.			
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7	<table border="1"> <thead> <tr> <th>Weakness</th> <th>Prevention</th> </tr> </thead> <tbody> <tr> <td>Poor password protection</td> <td>Create strong passwords and do not share with anyone.</td> </tr> <tr> <td>Use of portable storage devices</td> <td>Do not share with anyone, avoid plugging into computers you do not know.</td> </tr> <tr> <td>Unpatched, or poorly updated, software</td> <td>Update regularly, if possible activates auto updates.</td> </tr> <tr> <td>Messages that can be intercepted and read.</td> <td>Don't use unsecure messaging systems, avoid sharing important or private info via message.</td> </tr> </tbody> </table>	Weakness	Prevention	Poor password protection	Create strong passwords and do not share with anyone.	Use of portable storage devices	Do not share with anyone, avoid plugging into computers you do not know.	Unpatched, or poorly updated, software	Update regularly, if possible activates auto updates.	Messages that can be intercepted and read.	Don't use unsecure messaging systems, avoid sharing important or private info via message.	
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Messages that can be intercepted and read.	Don't use unsecure messaging systems, avoid sharing important or private info via message.											

Question	Answer	Notes / Marks
8_Q1	True	
8_Q2	ljef453&EF2	
8_Q3	USB stick	
8_Q4	Eavesdropping	
8_Q5	Delete it	

End of Unit Typical 4 Mark Questions

Question	Key points to look for in answer	Notes
1	<ul style="list-style-type: none"> • Include any two or the following: <ul style="list-style-type: none"> ○ Use of cameras and facial recognition: Many of these are connected to the internet and combined with facial recognition technology, our movements can be logged and tracked. ○ Smartphone and smartwatch data: network tower and GPS positions are used for apps and services. Assessing this information can reveal the owners exact location. ○ Spyware: by installing special software, the keystrokes, documents and internet history can be recorded and examined. It is also possible to access the users webcam without permission. ○ Intercepting messages: if the messaging services of an individual are known, it is possible to hack and see messages being sent and received. ○ Social media sites: by adding an individual as a friend, their online activities, other friends and location can be analysed. ○ Hardware: If it can be easily replaced, an external drive, memory stick, printer or any other device plugged into a computer can be adapted to spy on a computer. ○ Internet service providers: if required most law enforcement agencies can access the Internet history. 	
2	<ul style="list-style-type: none"> • NFC is a short range wireless technology with a range of only a few centimetres. It allows data to be communicated between two devices placed next to each other. • A smartwatch might use it for: <ul style="list-style-type: none"> ○ Contactless payments ○ Entry through smart gates ○ Sharing contact information. 	