Computing Year 3

Essential Knowledge

By the end of this unit children will

Pupils who are **secure** will be able to:

- Recognise that a network is two or more devices connected and its purpose.
- Identify key components that make up the school's network.
- Explain the difference between wired and wireless connections.
- Recognise that files are saved on a server.
- Understand the role of the server in a network when requesting a website.
- Identify parts of a website's journey to reach your computer.
- Recognise that routers connect to send information.
- Understand that data is broken into packets
- objects

Vocabulary

device
file
internet
network
network switch
packet data
router
server
the cloud
user
wi-fi
wired
wireless
wireless access point

Intention

- Learning about the purpose of routers.
- Understanding the role of the key components of a network.
- Understanding that websites and videos are files that are shared from one computer to another.
- Learning about the role of packets.
- Understanding how networks work and their purpose.
- Identifying the key components within a network, including whether they are wired or wireless.
- Recognising links between networks and the internet.
- Learning how data is transferred

Key Objectives-
Key Objectives – Networks
This topic introduces the children to the concept of networks, allowing them to better understand how devices communicate. From identifying components, children learn how information is shared and deepen their understanding by exploring lots of examples of real world networks. As well as building this conceptual understanding, children develop other computing skills by creating an animation, video, poster and map

- Understand computer networks, including the internet; how they can provide multiple services, such as the World Wide Web, and the opportunities they offer for communication and collaboration
- Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information
- Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts

Session 1 Focus: To understand what a network is and to create an informative poster

Success criteria:

- I know that a network joins things together
- I can recognise networks can be wired or wireless
- I can explain the purpose of a network
- I can give my poster a clear title
- I can include information on what a network is and why we use them
- I can select appropriate pictures, colours and designs

This topic will include plenty of vocabulary-based activities and it is important that we constantly model the correct vocabulary and encourage pupils to use it when answering questions.

Show the children an image of two laptops connected with a line, like this:

Or to give more context, ask: Why would it be useful if my computer was connected to another teacher's? Give them time to talk about this with a partner and then share as a class. (To share information, share resources.)

They may say "To send messages to each other" and this is possible, but it's unlikely you have a program to do this on your laptop. Most messaging programs use the internet and it's important that the children recognise that the internet and a network are not the same thing.

Session 2

Focus: To recognise the key components of a network

Success criteria:

- I can name the key parts of network
- I can identify which components are connected
- I can explain which connections are wired or wireless

Before the lesson, ensure you know the locations of all the parts of your school network, planning a route beforehand which passes each of these things:

- network switch
- wireless access points
- server
- any other networked items, eg: printers and photocopiers

Firstly, ask children to explain what a network is and what it's for. Explain that, as a class, they're going to go on a 'network safari' around school. Get them into groups of two or three and hand out the floor plans, making sure they understand where they currently are. Explain that they will mark the key parts of a network onto their floor plans.

They should take cameras/tablets with them to take photos of devices that they think are connected to the school network, such as: laptops, tablets, desktops, printers, photocopiers, server, network

Session 3

Focus: To understand how information moves around a network

Success criteria:

- I can explain what a server does
- I can suggest what a server is connected to
- I can discuss the journey of a file

It can be useful to film this activity to show the children next week as a reminder of how the network role play worked.

Ask for volunteers to be each part of the network, explaining that they can be a certain part of the network if they can tell you what it does. If you have been able to gather old network components, give them these to hold; if not, hand them a print out of the device they are representing.

Hand out the completed network maps from last lesson to the rest of the class, making sure that they also have a counter.

Once all the roles have been handed out, get the children at the front to use the ethernet cables (or string) to connect themselves together at the front of the room. Children who are not part of the network should be 'checking' whether they agree. Ask them for a thumbs down/up if they think they're correctly connected before you then feedback to those who created the network.

	Now ask the same question but about different devices: a printer and a photocopier. A network doesn't just connect computers together, but other devices too. Again, it's best to have photos of things that are within your school that the children may have seen.  Ask: Why is it useful to have these devices connected? What would you do if they weren't connected? (If the computer wasn't connected to the printer or photocopier, it wouldn't be able to print anything.) If you're on a wireless connection, point out to pupils that there are no wires connecting your laptop to the printer, yet you can still print. Ask the children to discuss and then mention wireless technology. Your computer is connected to wifi, as is the printer and so they do not need wires. **This does not require the internet to work; if the internet is turned off, you'll still be connected to the network.** Hand out the *Networks Sorting Activity* to each table and ask them to discuss the images and definitions. Ask pupils to sort them into three separate groups: **Network, Wireless** and **Device**. Get them to find appropriate definitions and images to match each of these words, warning them that all groups may not have the same number of pictures or definitions associated with them.	switch, wireless access points, etc. As they're looking at each device, they should note whether it is connected with wires (not just the electrical, but the ethernet wires – usually coloured and head into the wall/ceiling). This will help the children later when discussing wireless/wired. Also discuss where each device connects to (see resource for an example network map). Once back in the classroom, the children share the photos they have taken with another group and discuss what they think the purpose of each device on the network is. Bring the class together and share a set of photos you've taken. Start with the devices that the children will be most familiar with and discuss each in turn. Ask: What is it called? What is it for? How does it connect to the network? Is it wireless or wired? Refer to *Network Devices Answers* to help children answer these questions. **Network Map** Pupils are going to create a map of the school's network today. If they have used tablets, model how to use PicCollage to add the network device photos onto the page and how to add text to name them. When each of the components in the network have been named, get them to draw lines connecting the devices in the way that	When everyone is correctly positioned like the network maps you made in Lesson 2, explain that this activity will teach them about the journey of a file. Tell the rest of the class that they will show the journey of the file using the counter and completed network map as it is shown in front of them. Start by giving a plain piece of A4 paper to the child who is the server – this represents the file that has been saved on the server. Now ask for another volunteer to role play how they would get the file from the laptop. What do they think happens? The child should wirelessly travel to the access point, then follow the wires to the network switch. When they get to the network switch, they should ask which wire leads to the server and then follow that wire to the server. When they get there, ensure they first send a request – ask the server: Can I have the file that's saved on you? Then, when the server says yes, pass the file (piece of paper) to the child to return. Repeat this a few times with different children and asking key questions to the rest of the class. If children are confident, request that they get the headteacher's 'secret file' from the server. When the child asks the server for it, the server should ask for a password, then they must go back to the laptop to request the password, before

	A brief definition of each: • network – one or more devices connected together • wireless – a connection that doesn't need wires • device – technology; more than just computers, eg: printers Although the images and definitions were added with one of these terms in mind, as long as children can use sound logic to justify why they put them in a specific group, they can sort them in this way. Eg: having a mobile phone in wireless because it doesn't need wires to connect. Explain to children that they will be making a poster demonstrating their understanding of what networks are and why they are used. We have used the software Canva for this lesson. This does require you to create a class account and gives children access to one another's work. If this is something you would prefer not to do, we suggest Sketch.io as a good alternative. Whilst it doesn't feature templates as Canva does, it doesn't require a log in. If using Sketch.io, the pupils will need to save their work to the school network as there is no save functionality within the program. Model logging in to Canva via the website www.canva.com or through the app. Canva is a graphic design platform with a huge selection of premade templates, making it easy to create professional looking posters, leaflets and other documents or designs. Demonstrate how to select the 'Poster' option and talk through the basics for how to use Canva if this is the first time they've used it (see teacher video). Ask children to suggest what they will need to include in their poster for it to be considered successful, eg: a clear title, information on what networks are and what they're used for, appropriate pictures, colours or designs.	they think they're connected, using a key (such as dotted lines for wireless and solid lines for wired). Remember that everything connects to the server via the network switch, although wireless items will connect to a wireless access point first then the wireless access point connects to the network switch. The server is the central hub of the network. Show children the completed network map you created before the lesson. Get them to check their connections are in the correct places and change them if not. Also check the wired/wireless connections. **For pupils needing extra support:** Create a matching sheet of words to pictures to begin with – which they can then use to copy the spellings/words when creating their map. **For pupils working at greater depth:** Include the function of each device alongside their map	returning with the password allowing them to get the file (or not). Show the children the *File's Journey Animation which shows* a file being retrieved. If you use Google Drive, the children could access the network map they created in Lesson 2 to use as a 'stage' for their own Scratch project. The other icons used in the example are free icons, but the children could easily draw their own sprites. Ask children to decompose what they will need to do to make their own version of the example project above. Share their ideas to make a class algorithm. They should be something like: Set the backdrop as a network map. Create sprites for ? and document icon. Place ? near the laptop and document icon near the server. Move ? to server via router and network switch. Speech ? request file. File moves to laptop via network switch and router. Get children to work in pairs or small groups and use this as their algorithm to create the project with their own drawings and photos. Get children to rewatch the example project before checking their own, to make sure that it covers everything it should. **For pupils needing extra support:** Provide

	Children create a poster explaining what a network is to someone who doesn't know. Ask the children to score their posters against the agreed success criteria, encouraging them to think how they would add to it. Explain that they can use Canva at home, and could use it to create posters or other documents about anything they want: lego, clothes, star wars, football, food, etc. You could offer to display their work at school. **Pupils needing extra support:** If creating a glossary, allow them to stick in the pictures and definitions used in the *Sorting Activity*. Focus on what a network is over other success criteria. **Pupils working at greater depth:** Should explain clearly what a network is and why they're useful in their posters, as well as using appropriate images and layout.		them with algorithm and blocks to match together. **Pupils working at greater depth:** Should show what would happen if someone wanted to print something from the laptop to the photocopier, including what would happen if the printer ran out of paper.
Session 4 **Focus:** To recognise networks in the real world **Success criteria:** • I can recognise real world networks • I can explain that networks share information • I can suggest what information is being sent If you filmed the activity from Lesson 3, play this to the children to remind them how information moves around a network. Explain that so far we've been talking about the school network, but actually networks	**Session 5** **Focus:** To recognise the link between networks and the internet **Success criteria:** • I understand that networks are everywhere • I can suggest that the internet allows networks to be connected • I know that the internet uses phone lines Ask the children to remind you: • how the school network works, what devices are there, how are they connected together, etc. • about the key components, eg: wireless access points, server and network switch, and to recognise most of these things are connected by		

are all around us. On each table, put a copy of *Network Situations* (or an A3 sheet with pictures of real world networks). Ask the children to write their answers to the following questions around the picture: What computers/devices are in this network? How does it work? How do people use it? What information could be being sent through the wires? You could rotate the sheets around for other groups to look at/add to, or have each group focusing on one real world network before sharing their ideas with the rest of the class. Children are going to role play the different real world networks. Explain to the children that, just like last lesson, they are going to take on the roles of different parts of the network. **Model the traffic light role play with a group of five children:** Show the Role-Play Card and decide which children in the group are going to be which parts of the network. Then explain that the 'spare' person will make sure the network is working correctly. As you read through the steps the children should act them out, eg:	wires. Then ask how they think the internet works. Often children will suggest that the internet is stuff transmitted wirelessly through the air (the use of the term 'the cloud' does not help this analogy) or that it's via satellites. Whilst you can use satellites for internet access, it's a long way to space and back so the connection is incredibly slow! After they've theorised for a bit, show them the submarine cable map showing all the wires that are under the sea that allow different countries to connect to the internet. Spend some time looking at this together and answering questions. Explain that this is just sea cables, so landlocked countries do also have internet through wires, but they're just not on this map. You can also talk about the fact that some countries, those with more traffic, have more connections that others. Explain that the first wire under the sea was laid in 1858, but the internet wasn't invented until 1969. Ask them to think about why we had cables under the sea before the internet and return to it later. (In the 1800s the wires were used to send morse code telegraphs across the Atlantic. The under sea cables were then replaced by telephone wires in the 1950s. This became the basis for our early internet connections which used phone lines.) Ask for some volunteers to come and be your school network as you have done before. Gather them on one side of the room and put up a 'UK' sign near them to show that this is where our school network is. Then, ask for another group to be the school network in a school in America and get them to stand on the other side of the room with a 'USA' sign. Explain that these two networks are really useful for teachers to able to share their work with other people at		

You: Person pressed the button Child pretends to press a button near a person who is a traffic light **You:** Information sent to the lights to get ready to stop, countdown The child that is the information goes from the person where the button was pressed to the other traffic light to tell them to count down ready to stop **You:** Lights stop Traffic light children say "Lights red" **You:** Lights countdown five, four, three, two, one Traffic light children say "Five, four, three, two, one" **You:** Lights go Traffic light children say "Lights green" Explain that each group will have a different real world network to role play and that the person checking the network is working correctly can also read the role play card. Set off each of the groups running through their cards and spend time checking that they are following the instructions correctly. After the children have had time to have multiple goes at their scenario, bring them back together to document what they have learned. Using an app such as PicCollage, or Google Slides, children should use a photo of the network they were role playing (on a tablet, children could take a photo of *Network Situations* resource from the first task).	their school, but wouldn't it be even better if these two schools could share lesson ideas and work together? How could they do this if they're thousands of miles away? Tell the story of the *Invention of the Internet* using the resource. Now return to the school networks that you have in the classroom. You want to connect them, but how? Use the telephone line! Now pretend to plug whoever the router is into the wall as a phone line. Explain that this plug goes into the wall, out of the building and underground, connecting together anyone who has a home phone. Do the same to the network on the other side of the classroom. Now, using the phone lines, the two can share information. At this point, the children may have some questions about ethics, eg: what happens if they deleted someone's files on the other school in America? etc. This is a really good conversation to have, as laws and rules evolve as technology does and we have to learn what it is and isn't ok to do. Networks can now protect what comes in and out (with things such as firewalls and antivirus software) so that people can't damage your network accidentally or on purpose! The children are going to make a video explaining how the internet is a network of networks (lots of networks connected together). They could do this in groups using their friends as two networks and explaining how they are connected via the wires or independently using photos of the network components. They can use the *Planning Sheet* to think about how their group will show the school network or submarine cables (top row) and what they will say (bottom row), eg: how they work or how they connect us to the other school's network. The children will then share their videos at the end of the lesson. Randomly select children to share their videos and discuss		

They then label it showing how information is passed around it. Children share their network creation with someone who did a different role play to them. They should explain their own to each other and each ask a question about the one that they did not know. Highlights any examples you have seen that are particularly clear and share with the class. **Pupils needing extra support:** If real world networks are too abstract, work as part of a guided group with adult support, using the school network with the pictures and string that you looked at as a group last time, and make a table model of the school network. Work through traffic light role play with reading support. **Pupils working at greater depth:** Should add in other variables to their network, such as more traffic lights, the supermarket, updating the database as well as the till, the drive-thru, passing information to the cooks and food packers, different transactions at the bank..	two things they did well and one thing they would change to make it better (two stars and a wish). **Pupils needing extra support:** Take children to find the wireless access points in school and follow the wire into the wall, then talk about where it goes after that. **Pupils working at greater depth:** Start thinking about what you should and shouldn't do if you can get onto someone else's network.		

Pupils with secure understanding indicated by: Recognising that a network is two or more devices connected and showing this information in a poster which combines text and images.

Naming different devices within the network, particularly: server, wireless access point, network switch; identifying some of the connections and understanding that connections can be wired or wireless.

Recognising that files are saved on a server and that files travel through wireless and wire connections rather than travelling directly.

Recognising places where networks are used, discussing devices that are in the network and showing some understanding that information moves through a network.

Explaining that networks can be connected to the internet via a phone line and recognising that wires go under the sea to connect other countries.

Pupils working at greater depth indicated by: Explaining why networks are used and what they're used for as well as justifying their colour/font/size choices in their poster.

Explaining the role of the device within the network.

Applying their understanding of retrieving files from server to other information exchanges within the network.

Suggesting other aspects of the network and how they work.

Suggesting safety procedures that might have to be put in place when sharing your network with others, eg: monitoring what comes in and out.

Computing – Journey into a computer

Key Objectives – • Understanding what the different components of a computer do and how they work together. • Drawing comparisons across different types of computers. • Using decomposition to explain the parts of a laptop computer. • Explaining the purpose of an algorithm **Key Knowledge** • To know the roles that inputs and outputs play on computers. • To know what some of the different components inside a computer are e.g. CPU, RAM, hard drive, and how they work together.	**Session 1** **Focus:** To recognise basic inputs and outputs. **Success Criteria:** I can identify some inputs and outputs. I can recall that a computer follows instructions. I can explain what the computer is doing. Link: Sketchpad – this is an external website and we do not have control over its content – please check before showing it to the children. Hand out a piece of A4 paper to the children and explain that they need to do a simple drawing of the object that you call out.Ask them to draw a keyboard, a mouse and a	**Session 2** **Focus**: To identify the components inside a laptop. **Success Criteria:** I can recognise a laptop's inputs and outputs. I can recall that a laptop is made up of many parts. I can explain the purpose of some parts. Arrange the children into pairs and hand out a piece of A4 paper. Ask the children: • What peripherals does a laptop have?	**Session 3** **Focus**: To understand the purpose of computer parts. **Success criteria:** I can explain that a computer is made up of many parts. I can suggest the purpose of each part. I can follow an algorithm. Display the Presentation: Fact tennis and arrange the children into pairs. Children may recall: • The CPU (Central Processing Unit) is the brain of a computer that deals with

• To know what a tablet is and how it is different from a laptop/desktop computer.	screen. Ask the children to compare their drawings with those of the other children on their tables. Some children may have drawn an on-screen keyboard which would be found on a tablet, or have drawn a trackpad mouse as opposed to a desktop computer mouse. Display the Presentation: Inputs and outputs. Presentation: Inputs and outputs Display the images of a keyboard, mouse and screen and introduce the terms input and output (see Teacher knowledge). Ask the children to look at their pictures and decide which they think is an input and which they think is an output. Ensure that the desktop computer is on and connected to the screen (this could be an interactive whiteboard or just a monitor), but do not plug in the keyboard and the mouse. Explain to the children that you want to type a presentation. Ask the children: • If you want to create a presentation, how does the computer open the program? (By using the mouse to select it.) Demonstrate talking to the computer and it not responding, Ask the children how to make it work. When they suggest the mouse, connect it and show how it opens programs, explaining that the mouse is an input device. Inform the children you want to write about inputs and outputs and ask how to get the computer to write. Demonstrate talking and using the mouse ineffectively. When they suggest the keyboard, connect it, show it	Give them time to discuss and draw some ideas before sharing with the rest of the class. The children should suggest a keyboard, mouse/touchpad and screen, but they may also suggest a camera, microphone and speakers. Main event Explain to the children that they are going explore deeper into the laptop. Inform them that we are no longer just thinking about peripherals but what actually makes the laptop work. Give the children time to mind map – do they know anything else that is inside a laptop? They may suggest wires, a battery or a fan- these are great ideas as they have started to decompose what they already know that makes the laptop work. Hand out the Activity: Paper laptop (one each). Explain to the children that they are going to be making their own laptops by cutting out the pieces and sticking them inside so that it will work. Children can begin to create their laptops, encouraging them to discuss the parts with their partners as they go. Once they have finished, ask the children what they think each of these parts does. Display the Presentation: Inside a laptop. Presentation: Inside a laptop	all the data it receives from input and output devices as well as programs run within the computer. • The GPU (Graphics Processing Unit) is a piece of hardware that is used to help generate 2D and 3D images for programs such as games. • Information sorted within ROM (Read Only Memory) can be read and not edited. • The RAM (Random Access Memory) is a piece of hardware that allows data to be recalled or stored within a computer. Attention grabber Hand out the children's paper laptops from the last lesson. Ask the children to identify both the CPU and GPU and to show their partner where they are. Ask the children to look at the connections between these parts and to think about the following: • Do they work separately? (No, because there is a line which connects them to each other.) • What would happen if one of the parts wasn't working properly? (The computer would not work properly.) Ask the children to share their ideas with the class. Main event

	working and confirm it's an input device. Ask the children about the screen: • Does the screen give the computer instructions. Explain that the screen doesn't instruct the computer, but shows results of our typing or clicking, making it an output. Discuss that touch screens also serve as inputs, replacing the mouse and keyboard. Main event Display the Presentation: Input and output role play. Presentation: Input and output role play Explain to the children that they are going to role-play how the computer sends and receives messages from input devices to output devices. Display slide 1 and ask for seven volunteers to play the roles of a computer (x1), keyboard (x1), mouse (x1), screen (x1) and data (x3) (see Teacher knowledge). Display slides 2 and 3, repeating the actions performed on the screen (opening presentation software and typing something) using the children to demonstrate what happens (see Teacher knowledge). Explain to the children that all of this is happening inside the computer. Inform the children that the computer doesn't know how to read or write, so the messages being sent through the wires match what is happening on the screen. Open the link: Sketchpad and demonstrate the basic functionality to the children. Explain to the children that	Display slide 1 and explain that the hard drive is the memory. Ask the children why computers need to remember things. Explain that we don't want them to lose files that are saved such as special photos and videos. Remind children that in Lesson 1: Inputs and outputs, they were sending messages everywhere. Explain that this is a bit like the job of the RAM, which sends messages to the hard drive telling it what it needs to remember. Display slide 2 and explain the following definitions: • CPU – is the processor. It's very smart and fast at calculating things and bossy, telling the other components what to do. • Hard Drive – is slow, but keeps good care of your pictures and games. • RAM – remembers all immediate things and runs between the CPU and the hard drive but it forgets everything once the computer is shut down. • ROM – remembers all the important things and stuff that you don't want to accidentally remove or have disappear when the computer is shut down. • GPU – shows things on the computer screen, but has a bad memory and needs help from ROM and RAM. Wrapping up	Display the Presentation: Following instructions. Presentation: Following instructions Display the images on slide 1 of a GPU and a CPU. Explain to the children that they are going to complete an unplugged activity to find out what it's like to be these two specific parts of the computer. Display slide 2 and remind the children of their definitions. Inform the children that to do this, they are going to follow instructions and make pictures, just as the CPU does. Place a large piece of paper on each table and a selection of different coloured felt tip pens. Discuss what an algorithm is and refer to other units the children have studied, such as 'Algorithms unplugged' or 'Programming: Scratch Jr'. Explain that each person on the table will follow their own algorithm and together they will create a giant piece of artwork. Inform the children that they will all end up drawing on/over/near each other's work, so they need to work together as a team. Hand out the Activity: Algorithm cards (pre-cut- one set per table) on each table. Explain that each child will select a card from the set which features simple instructions. Give the instruction "Run" to notify the children to follow whatever their card says. Give the instruction "End" to notify the children to stop. Explain that they are in an infinite loop

	they will be creating a poster explaining inputs and outputs. Invite the children back together and ask them to swap devices and share their posters with another pair. Ask the children to peer assess the posters against the criteria. Allow some time for each pair to give feedback to each other before discussing the different forms of input and output mentioned in the poster.	Hand out the Activity: Definition cards and the pieces of string. Explain to the children that they should use the string to match the parts of their laptops to the definitions. Once they have finished, the children should check with their partners to see if they matched the definitions and parts correctly. **Pupils needing extra support** Should complete the *Activity: Paper laptop* (support). **Pupils working at greater dept** Should write an explanation of how each part works.	until they are told to stop. Once they have been told to "Stop", the children move around the table one space and repeat the process with the same instruction. Wrapping up Invite the class back together and ask the children: • Which parts of the computer did you act as today? (CPU and GPU.) • What do those parts do? (CPU gives instructions and GPU displays the instructions on the screen.) • Why were you following an algorithm? (To show how both parts work together in a computer.) **For pupils needing extra support** Should use their paper laptop from Lesson 2: Building a paper laptop to allow simpler identification of the parts of a computer. **Pupils working at greater depth** Should be encouraged to make links with the unplugged activity and the 'real' transition that takes place in a computer.
Session 4 **Focus:** To understand the purpose of computer parts. **Success criteria:** I can explain that a computer is made up of	**Session 5** **Focus**: To decompose a tablet computer. **Success criteria**: I can recall that a tablet is a computer. I can compare similarities and differences across different types of computer.		

many parts. I can suggest the purpose of each part. I can use a QR code. Recap and recall Display the Presentation: Quizmaster and hand out whiteboards and pens. Presentation: Quizmaster Allow children some time to quiz their classmates. Questions may include: • What is the function of the CPU? (The CPU deals with all the data it receives from input and output devices.) • What is the function of the GPU? (The GPU takes the instructions from the CPU. It then processes the instructions to form images on the screen.) • How do both of these work together? (The GPU has to take the instructions from the CPU; otherwise, it would be unable to form images.) Attention grabber Watch the video HP 630 laptop disassembly, which shows a laptop being taken apart. Note: the video is over 9 minutes long. It may be helpful to skip forward.	I can identify the components within a tablet. Ask the children what activities they can do on a tablet. Explain that activities such as playing 'Temple Run' or Minecraft' etc. are the same thing – they count as 'playing games'. Hand out the whiteboards and pens. Set the children a challenge to write down as many different things that a tablet can be used for as possible in two minutes (set a visual timer if possible). Share the children's answers and then discuss what a tablet must have inside it to do those things, for example, it can take photos so there must be a camera. Display the Presentation: Features of a tablet. Presentation: Features of a tablet Ask the children to identify which are inputs and which are outputs (a touchscreen is both an input and an output). Questions • What does a tablet do? (A tablet can do everything that a computer or a laptop can do, except it is smaller.) • What's the difference between a tablet and a laptop? (A tablet is handheld and a lot smaller than a laptop therefore making it more accessible and mobile.) • What inputs can you recognise? (Buttons.) • Are there any outputs? (The screen, the speaker.) • What's inside a tablet? (The same components as a laptop however they look different because of the size.)		

Ask the children: Questions • What parts do you recognise in the video? • What is memory for? (To store data, files, etc.) • Why do computers have memory? (Without memory, a computer would not be able to function as it would not be able to process information.) Main event Display the Presentation: Computer memory Display slide 1 and hand out the children's paper laptops from lesson 2 and ask them to identify the ROM and RAM. Explain that they will be taking part in an unplugged activity where they become the memory of a computer. Inform the class that there are two activities to complete, so half of the class will work on one activity while the other will work on the second before swapping over. Activity 1: Pairs game Display slide 2 and explain that computers must be organised and remember where everything is and when it was put there. Arrange the children into pairs and hand out a set of cards from the Activity: Memory game (one between two). Demonstrate shuffling the cards and laying them out in a four-by-four grid. Explain that players take	Main event Hand out the children's paper laptops from Lesson 2 and discuss the parts inside (see Teacher knowledge). Ask the children to discuss which of these components they think are also inside a tablet. Display the Presentation: Inside a tablet. Presentation: Dismantling a tablet Display slide 1 and explain that a tablet has the same components as a laptop, however they look a little different. Go through the components informing the children that the hard drive is referred to as 'storage' in a tablet and the ROM and RAM are called 'memory'. Hand out the Activity: Inside a tablet (one each) and inform the children that they will create their own tablet. Display slide 2 and go through the Resource: Tablet components explaining to the children that they can draw symbols to represent the components. Wrapping up Invite the children back together to share their tablets with each other. Ask the children: • If you could create a new feature for a tablet what would it be? Invite the children to share their ideas with the class. Watch the video using the link: iFixit - Taking apart a tablet where the process of disassembling an iPad can be seen.		

turns turning over two cards; if the cards match, the player keeps the cards. If the cards do not match, the cards are turned back over (and the players need to try to remember what and where the cards were). Repeat until all the cards have been claimed and the winner is the player with the most pairs. Activity 2: Memory scavenger hunt This activity can be completed with or without devices with QR code scanners. Using devices with QR code scanners Place the QR codes from page two of the Activity: Scavenger hunt clues around the classroom before the activity (see Teacher knowledge). Hand out page three of the Activity: Scavenger hunt clues (one each) and show slide 3. Explain to the children that sometimes instructions saved in memory have to be retrieved first. Inform the children that there are some QR codes hidden around the classroom. Hand out the devices and demonstrate how to scan a QR code. Explain that once the code is scanned, it will then give them a clue. (The code will take them to a Google search page with the clue in the search box. The children do not need to click any links provided.) Demonstrate how to read the clue and ask the class what part of the computer the clue is referring to. Take feedback and once the computer part has been identified, write the answer next to the number on the answer sheet.	Ask the children to discuss: • Do you recognise any of the parts we have discussed in our lessons? • Can you name the function of the parts of the tablet? **Pupils needing extra support** Should complete the Activity: Inside a tablet (support) and stick the components from the Resource: Tablet components on their laptops. Could use their paper laptop from lesson 2 to support them with the understanding of some components. **Pupils working at greater depth** Should explain what the different parts of a tablet do and why they are important.		

If devices with QR scanners are unavailable Place the text clues from page one of the Activity: Scavenger hunt clues around the classroom before the activity (see Teacher knowledge). Hand out page three of the Activity: Scavenger hunt clues (one each). Explain to the children that sometimes instructions saved in memory have to be retrieved first. Inform the children that there are some written clues hidden around the classroom. Demonstrate locating a clue and ask the class what part of the computer the clue is referring to. Take feedback and once the computer part has been identified, write the answer next to the number on the answer sheet. **Pupils needing extra support** Could match the clues to the answers using the Activity: Scavenger Hunt Answers (support). **Pupils working at greater depth** Should be encouraged to explain connections between the different parts of the computer.			

Pupils with secure understanding indicated by: explaining that parts work together to make the laptop work and suggesting the role of some of the parts. suggesting parts of a computer and explaining what an algorithm is.

Pupils working at greater depth indicated by: giving a clear explanation of the link between activity and computer part

suggesting how the parts work together and what messages they send to each other.