



EXTENDED REALITY

Activity Pack

EXTENDED REALITY

Extended Reality, often shortened to XR, covers three different technologies which you may have already heard of: Augmented Reality (AR), Virtual Reality (VR), and Mixed Reality (MR). All of these technologies create immersive digital experiences and can provide some really exciting opportunities to interact with environments you haven't seen before!

Let's explore each technology:

Augmented Reality (AR)

Augmented Reality enhances the real world with digital information such as text or animations overlaid on a screen. To experience AR, you may have to wear a pair of AR glasses or use a smartphone or tablet. One of the most well-known examples of AR is the Pokémon GO game that overlays Pokémon onto the real world.

Another great example are Snapchat filters that allow you to make it look like you're wearing glasses, a beard, or silly hats. The great thing about AR is that you can still see what is going on around you in the real world and are less likely to bump into something (although you should still take care and be aware of your surroundings when experiencing AR). However, AR is reliant on your location and what your camera can see.

Virtual Reality (VR)

Virtual Reality puts you into a fully simulated, 360-degree, digital environment. This helps trick you into thinking you are really in that artificial world. For this experience, you have to wear a VR headset, which can come in many different shapes and sizes. When VR first burst onto the scene, it was used mostly for gaming.

But now there are lots of people using VR for training and many other applications across different industries such as construction, engineering, and healthcare! VR tends to be the most effective of the three technologies for putting people into an environment or location that they haven't been in before. This allows them to better prepare for an upcoming trip or practise a certain procedure before doing it in real life. However, when in VR you are mostly cut off from the real world which can be problematic at times.

Mixed Reality (MR)

Mixed Reality (MR) merges the real world and the virtual world together and is therefore a bit of AR and VR all mixed into one. It is where virtual objects can interact with real-life objects in your physical location.

The downside is that it does require a lot more processing power than VR or AR and is therefore the least well known/used currently but could prove to be extremely exciting in the future!

We'd love to see pictures of you all getting involved with the activities. Show us your new cardboard VR headsets! Did you find any other cool 360-degree videos?

Email these to us at computerscience@bt.com stating your school and key stage.



Links

Teacher Links:

- Introduction to Virtual, Augmented and Mixed Reality <<https://tinyurl.com/bdf7chk7>>

Find Out More:

- Urban Tech Creative <<https://tinyurl.com/yc5nkxs9>>
- Are Immersive Technologies the Future of Human Interactions <<https://tinyurl.com/hu588ff3>>
- From Holograms To Augmented Reality <<https://tinyurl.com/4zxtr9wx>>
- Creative Media <<https://tinyurl.com/yn26tab7>>

Have A Go:

- Virtual School Trips <<https://tinyurl.com/4u845zub>>
- Google AR & VR <<https://tinyurl.com/mu7v6bun>>
- Roll-a-Ball <<https://tinyurl.com/23zurky5>>
- Google Earth VR <<https://tinyurl.com/yem4jxzj>>
- Learn Code & Start VR Projects <<https://tinyurl.com/58xcdj5s>>

Kit List

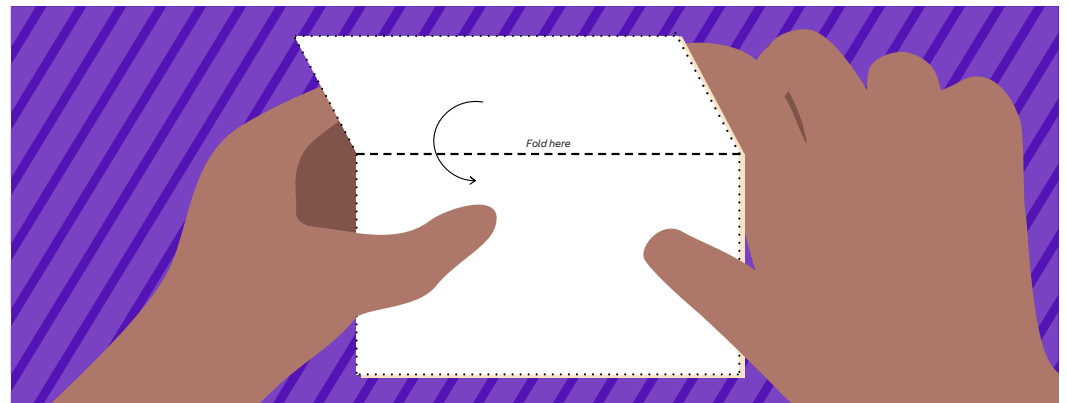
- Cardboard (shoe box or box packaging)
- Printed Templates 1 - 5 (pages ER7-9)
- Scissors
- Printer
- Paper
- Velcro
- Pen or pencil
- Sellotape
- Glue
- Ruler

Instructions:

1. Print out Template 1 (on page ER7) onto some A4 paper.
2. Cut out Template 1 using scissors.
3. Attach Template 1 to some cardboard with glue or Sellotape so you can use it to cut around.



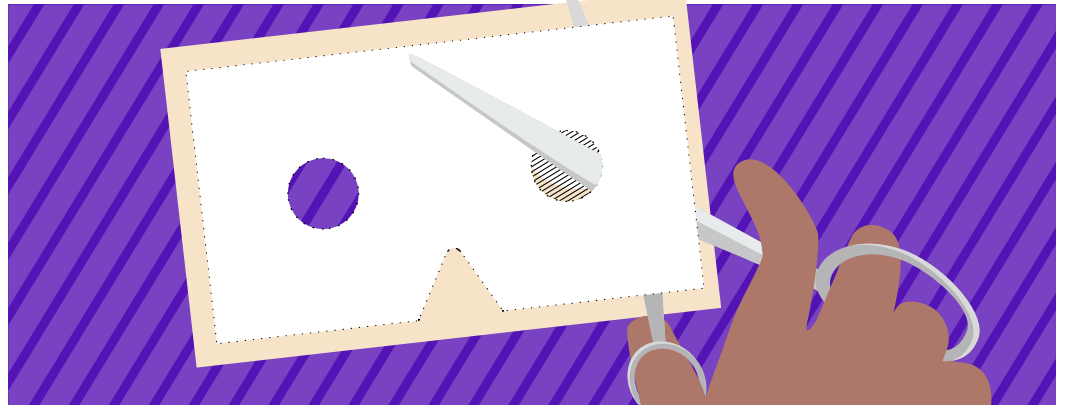
4. Place a ruler along the hashed line of Template 1 and bend the cardboard over it to create a crease.



5. Print and cut out Template 2 (on page ER8) – there are three parts to this template.
6. Attach each part of Template 2 to some cardboard with glue or Sellotape so you can use them to cut around.
7. Print and cut out Template 3 (on page ER9).
8. Attach Template 3 to some cardboard with glue or Sellotape so you can use it to cut around.
9. Print and cut out Template 4 (on page ER9).
10. Attach Template 4 to some cardboard with glue or Sellotape so you can use it to cut around.

11. Print and cut out Template 5 (on page ER7).

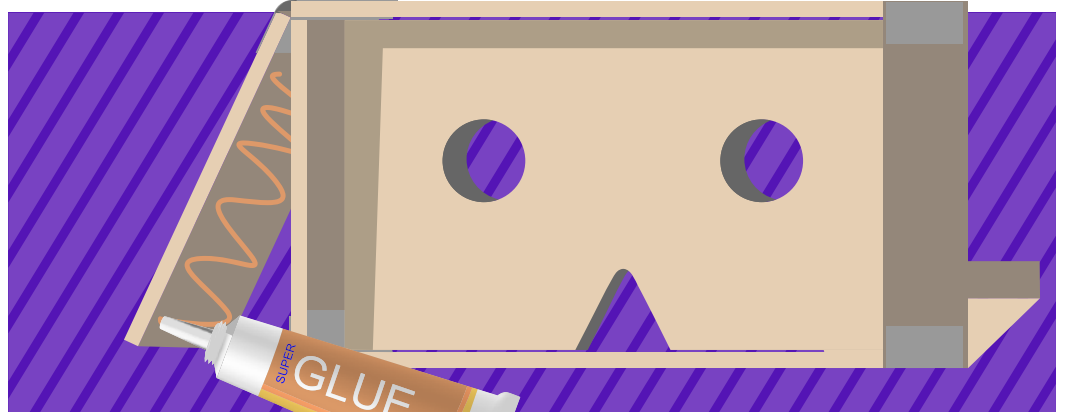
12. Attach Template 5 to some cardboard with glue or Sellotape so you can use it to cut around.



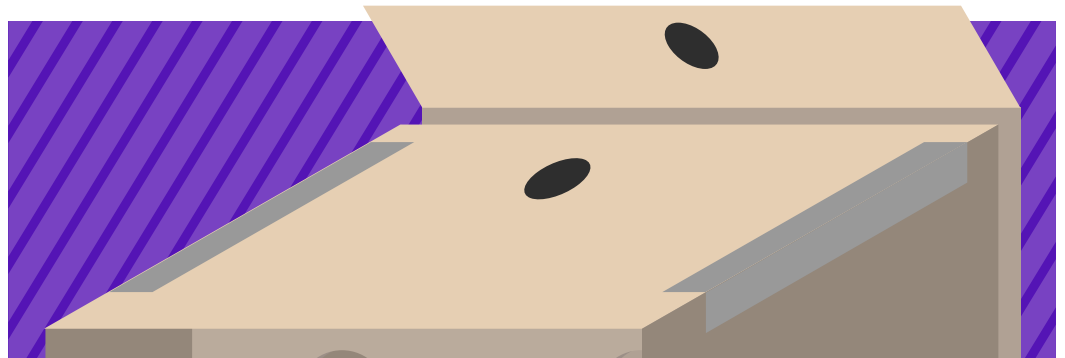
13. Using Sellotape, attach all of the pieces together like this:



14. Glue these two pieces of the cardboard together to give it the headset-like shape (you could alternatively use tape for this step):



15. Attach a small piece of Velcro to the top of the headset and the other side of the Velcro on the lid:



Kit List

- Cardboard VR glasses (from Activity 1)
- Smartphone

Instructions:

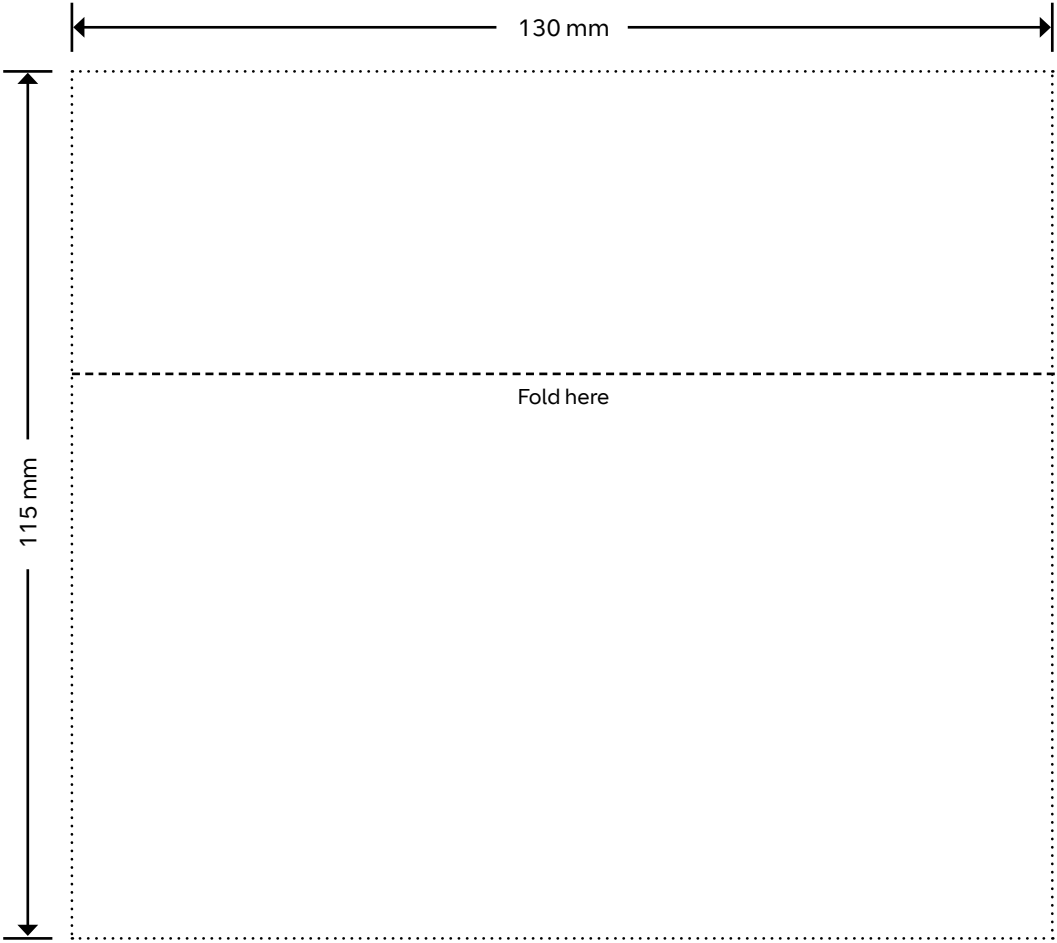
1. Make sure you have a smartphone that fits in your new cardboard VR headset.
2. Load up the [360° VR Spacewalk Experience](#) on the smartphone.
3. Undo the Velcro on your VR headset and place your smartphone in the front of the cardboard VR glasses, with the screen facing the eyeholes.
4. Close the VR glasses by sticking the Velcro back together.
5. Hold the VR headset up to your eyes and immerse yourself in a VR Spacewalk experience – look around you, what can you see?



6. Try out some other 360-degree videos to explore more immersive, virtual worlds!

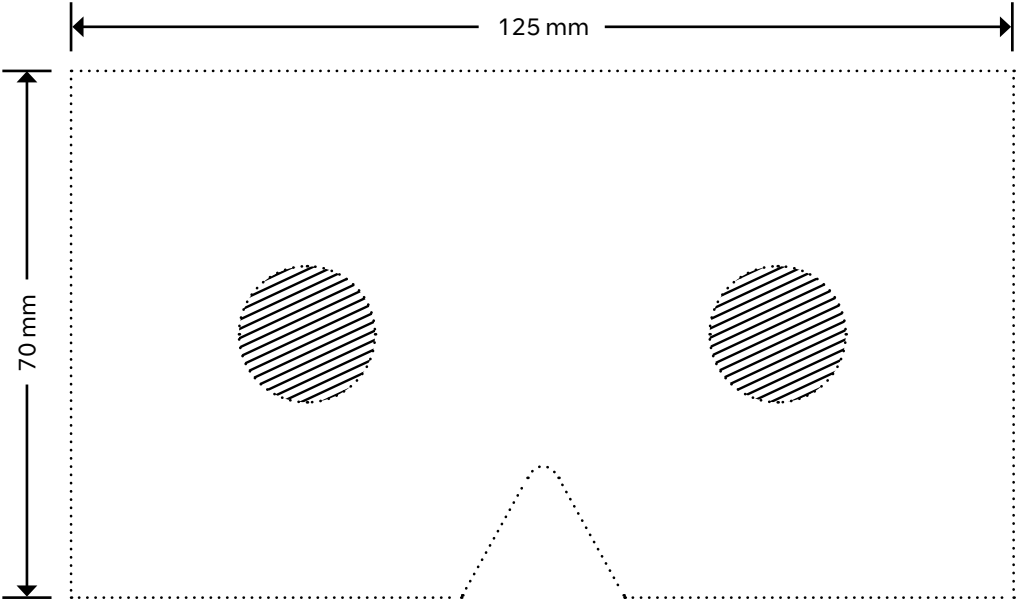
TEMPLATES

Template 1



Cut along the dotted lines

Template 5



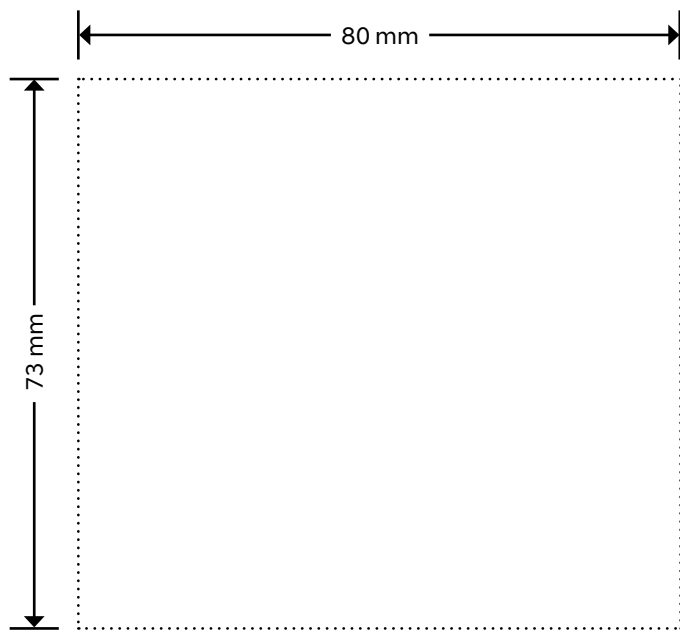
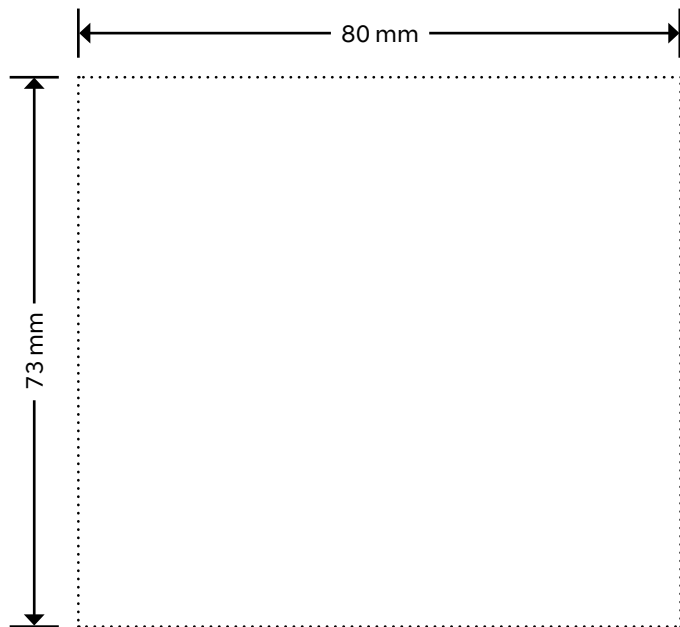
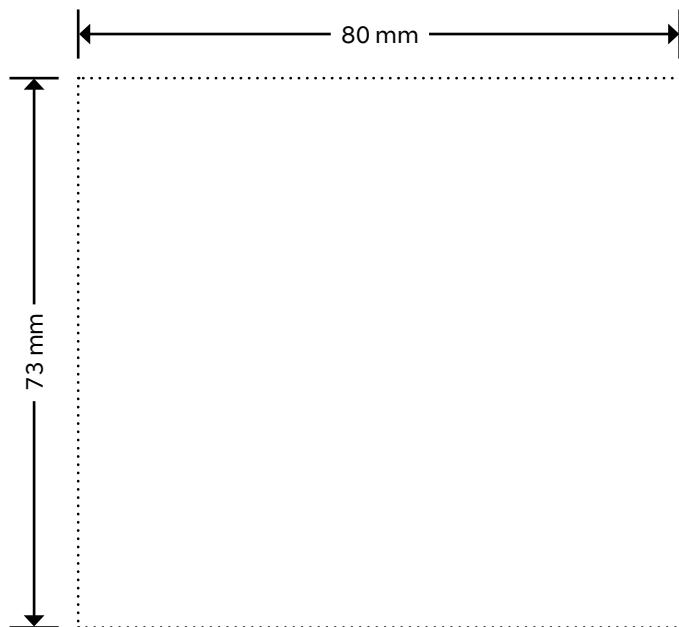


TEMPLATES



Cut along the dotted lines

Template 2

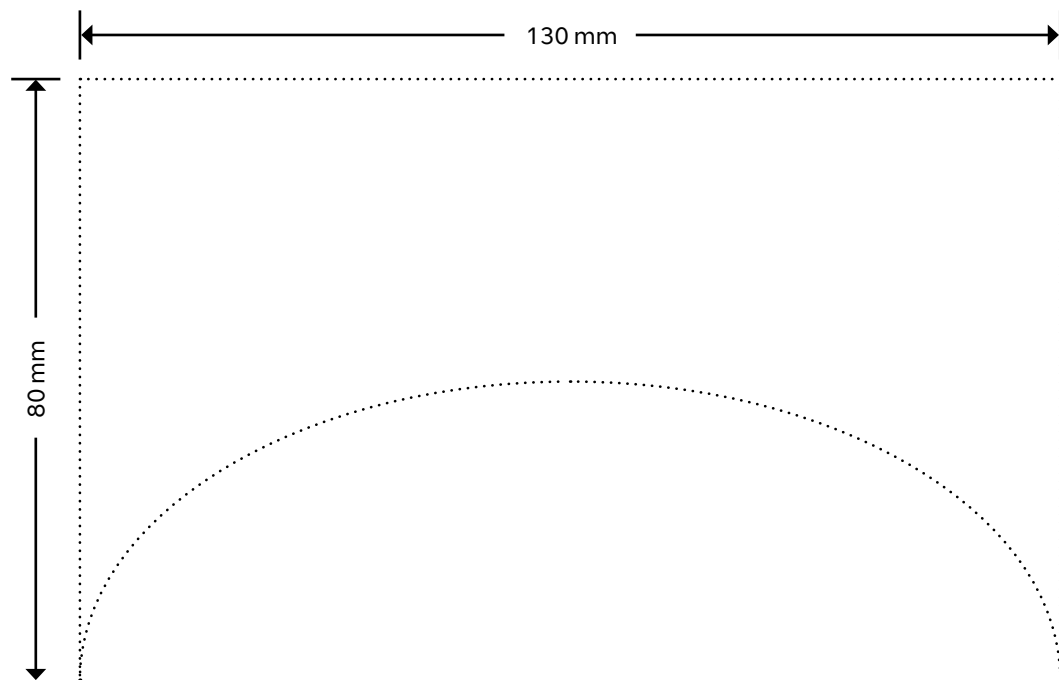


TEMPLATES



Cut along the dotted lines

Template 3



Template 4

