Codebreaking (Xlwvyivzprmt)

1. Can you figure out what the code below says? Does it spell something? When you solve the code, you'll have used a key. A key is the tool codebreakers use to decode and encode messages. If you're really stuck (even with the clue above), scroll to the end of this document for two more clues.

   Szev blf tlg dszg rg gzpvh gl nzpv blfi ldm xlwv? Urmw lfg dszg z dsvvo xrksvi rh! Blf'oo mvvw hlnv xziw, z kvm, hxrhhlih zmw z hkorg krm. Szev z ollp lmormv uli dsvvo xrksvi gvnkozgvh blf xzm fhv. Blf'oo mvvw gsrh uli gsv mvcg Xszoovmtv, zmw gl svok blf, z xofv! Jfvvm'h = Tfrwy

2. Thousands of young women worked at Bletchley Park during World War II, helping to solve codes and making a huge contribution to the war effort. Research famous codes or codebreakers from the past, then showcase your chosen codebreaker or code to share what you've found out. Here are a few to inspire you:
   - RBUJSXBUO FQHA
   - SETURHUQAUHI
   - JXU UDYWCQ SETU
   - UBYPURUJX VHYUTCQD
   - QTQ BELUBQSU
3. Create your own code and challenge others to crack it. Try mixing letters, numbers and symbols in your code, or use a polyalphabetic cipher, which combines multiple alphabets. Why not test your codebreaking skills at an escape room or create your own mini version?

Engineering

1. Transportation engineers make public transport safer and smarter. Go on a journey. Maybe explore your route to school or do a walk with your unit. Work out what would make the journey better. Think about what different people need (families, cars, wheelchair users, dog walkers, etc) and what features you could add or improve (cycle lanes, paths, crossings, lighting, public transport). Make something to show how you would improve your route, e.g. a model, map, animation or video.
2. Civil engineers design and build structures like bridges and buildings. Use recycled materials to build a sturdy bridge. Look up different styles of bridges for inspiration. When you've built it, test it like an engineer by using heavy, unbreakable items to see how strong it is. If it doesn't work, try to improve it.
3. Mechanical engineers design and build machines, like cars and engines. Build a junk race car, using a cardboard tube as the body. Think about size, wheels, stability and speed to make the best junk race car you can. Build a ramp and test your creation, then make improvements and test it again! A mechanical engineer would run these experiments many times. Ready? Race! Hold a race or do time trials to see the fastest time you can get.

Fixing

1. Fix something you wear. For example, sew on a button, mend a rip or hem a pair of trousers. Then, put together a sewing kit which you could use for future repairs.
2. Fix something which moves. Pick a transport method (e.g. bike, car, scooter, tractor, boat) and find out about five common repairs. Try out at least one of them, e.g. top up the oil in a car or pump up the tyres on a bike.
3. Fix something at home. Create a maintenance guide for your home – include testing the smoke alarms, common maintenance and how to turn off gas, electricity and water. Then, demonstrate a skill you would need as a homeowner, such as putting up a picture frame, changing a drawer handle or fixing a squeaky hinge.

Happy habits

1. Pick one of your routines and next time you do it write down everything you do. It could be your morning, bedtime or weekend routine. Then, pick a new habit to add to your routine – e.g. skincare, relaxation, reading or learning to juggle. If you're not sure what to add, ask someone else about their routines for inspiration. Try out your new habit at different times in your routine over the next few days to figure out where it fits best.
2. Pick a small way to help someone else every day. You could help around the house, compliment someone or send a nice message to a friend. Add this habit into your routine by thinking of it as a 'kindness moment'. Make a note of each time you do your new habit for a week and think about how it makes you feel.
3. Create something that helps you track your new and old habits – e.g. a bullet journal, tracker on your phone, habit poster, points system or a calendar! Reward yourself for keeping up with your routine.

Interior designer

1. Plan and design your dream room. It could be a bedroom, library, music room, plant room, cinema room or something else! Make a floor plan with accurate measurements and add doors, windows and furniture. Look online or in magazines for layouts, colour schemes and decorative items you love.
2. Using your floor plan as a guide, create a mini model of your room in a shoe box (or similar), making furniture and decorations out of scrap materials or Lego. Here are some interior design tips:
    - Personal touches: make the design unique.
    - Lighting: think about coloured lighting, mood lighting and lamps.
    - Layout and flow: does your space have clear pathways or a focal point?
    - Textiles: experiment with rugs, sheets, pillows and curtains.
    - Colour scheme: what colours work well together? How do the colours make you feel?
    - Aesthetic: how do you want it to look and feel? Do you want a certain vibe?

3. What would you add or change in your own bedroom or space? Take a 'before' picture of your space, then transform it! Ask an adult at home for permission first! When you're done, take an 'after' picture to see the difference. You could:
    - Rearrange your furniture.
    - Look up and try out some Feng Shui tips.
    - Make some decorations and decide where to display them.
    - Make small changes like tidying the space, creating something to hold back the curtains or rearranging your favourite things.

Investigating

1. Make your own detective kit and use it to investigate the evidence people leave around your home every day. Gather at least two types of evidence - e.g. dust for fingerprints, take photos, collect hair fibres or make plaster casts of shoe prints.
2. Perform two science experiments to explore the world around you. There are lots of ideas online, or you could try some of these:
    - Extracting DNA from fruit
    - Colour chromatography
    - ‘Catching’ air pollution using paper plates and Vaseline
    - Creating a robot arm
    - Growing crystals
    - Making a lava lamp
3. Look at how different media sources (e.g. TV, newspapers, social media) report differently on exactly the same news story. Then, investigate a local news story and report on it.

Saver

1. Create something to show how you usually use your time each week. Then, find space to add in three new things and try to stick to your new schedule for a week:
    - Do something new (up to 2hrs)
    - Learn a new skill (up to 2hrs)
    - Go somewhere new (for as long/short a time as you like)
2. Think about the money you spend and the money your family spends on you. Total up how much is spent on you in a week (food, clothes, getting around, treats, etc.). Then, make a list of simple ways you could save money. Try out your new budget – can you stick to it for a whole week?
3. Look at your home’s electricity meter at the start and end of a week and work out how much electricity was used. Then, make a list of ways to save electricity. Repeat the experiment, trying to save as much electricity as possible. Did you use less electricity the second time?

Upcycling

1. Make a small, useful item out of upcycled materials.

2. Upcycle a large object to save it from a life in the bin. You could upcycle an old piece of furniture, or something from your recycling bin.
3. Create ten top tips for upcycling and share them with others to inspire them to have a go.

Clue 1: A = Z   Clue 2: Search for ATBASH