Lesson Plan: The Importance of Codes and Ciphers in Computing Science

Objective: Students will understand the basic concept of codes and ciphers and their importance in computing science. They will learn how to create and decode simple ciphers.

Introduction

1. **Greeting and Warm-Up:**

   - Welcome the students and ask if they know what a code or cipher is.

   - Explain that codes and ciphers are ways to keep information secret or to send messages that only certain people can understand.

2. **Discussion:**

   - Briefly talk about how codes and ciphers are used in everyday life (e.g., secret messages, online security).

   - Mention that even Santa might use codes to keep his naughty and nice list secret!

Main Activity (30 minutes)

1. **Explaining Simple Ciphers:**

   - Introduce the concept of a simple substitution cipher (e.g., shifting letters by a certain number of places in the alphabet).

   - Show an example on the whiteboard (e.g., A becomes C, B becomes D, etc., if we shift by 2). This is called a Ceasar Cipher.

     More lesson content here - [Types of encryption - Encryption - Edexcel - GCSE Computer Science Revision - Edexcel - BBC Bitesize](#)

2. **Interactive Practice:**

   - Give students a few words to encode and decode using the substitution cipher.

   - Walk around the room to help students who might be struggling.

3. **Christmas-Themed Activity:**

   - Hand out the worksheet with a Christmas-themed code to crack (see below for details).

   - Explain that they need to decode the message to find out a special Christmas message from Santa.

Conclusion

Review:

   - Go over the answers to the worksheet together. (Hello, Santa is coming to town. Jingle Bells. Rudolph. Elf. Sleigh)

   - Discuss why codes and ciphers are important and how they help keep information safe.

Christmas-Themed Code Cracking Worksheet

Instructions: Decode the following Christmas message using the substitution cipher where each letter is shifted by 3 places (A becomes D, B becomes E, etc.).

Encoded Messages:

- KHOOR, VDQWD LV FRPLQJ WR WRZQ!
- MLQJOH YHOOV
- UXGROSK
- HOI
- VOHLJK

Hint: Use the tips below to help you decode the message:

A -> D

B -> E

C -> F

X -> A

Y -> B

Z -> C

Now create your own Christmas themed Ciphers for your friends.