Secret Codes Lesson #5: Using and Writing Coding Rules
Remember that throughout: A = 0, B = 1, C = 2, D = 3, E = 4, F = 5, G = 6, H = 7, I = 8, J = 9, K= 10, L = 11, M = 12, N = 13, O = 14, P = 15, Q = 16, R = 17, S = 18, T = 19, U = 20, V = 21, W =22, X = 23, Y = 24, Z = 25

- **Desmos**: Secret Codes -- Cipher Rules Period 1 Period 3 Period 4

- Consider the CODING RULE: $C = P + 10$, where C =Coded Value and P =Plaintext Value:
  - Draw an ARROW DIAGRAM that matches this RULE.
    Response:

  - Use this rule to code the message: GIFT Response:

  - Use this rule to decode the message: 28, 24, 12, 20 Response:

- A different SHIFT coding rule is such that $(13, 1)$ and $(24, 12)$ are on the graph that represents this rule. What is the CODING RULE that fits this process? Explain how you found your answer.
  Response:

- A STRETCH Cipher is represented by the CODING RULE: $C = 5P$ (that means $5 \cdot P$), where $C =$ Coded Value and P =Plaintext Value:
  - Draw an ARROW DIAGRAM that matches this RULE.
    Response:

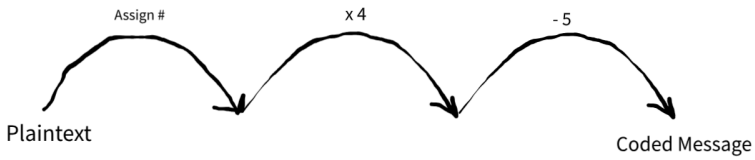
  - Use this rule to code the message: DOG Response:

  - Use this rule to decode the message: 5, 0, 85, 50 Response:

- A different STRETCH coding rule is such that $(5, 30)$ and $(12, 72)$ are on the graph that represents this rule. What is the CODING RULE that fits this process? Explain how you found your answer.
  Response:

This work was developed by Project Think and reflects our original thinking and design. We're happy to talk about how it might serve your context — please reach out to info@project-think.org before sharing or adapting it.

- The ARROW Diagram shows a new type of cipher.
  - Why would we call this a Combination of SHIFT and STRETCH Ciphers?
    Response:



  - Use the CODING RULE or ARROW DIAGRAM to DECODE the message: 11 39 15
    Show or explain your process.
    Response:

- Ray wrote the CODING RULE $C = 4(P - 5)$.
  - How is this CODING RULE different from the one above?
    Response:

  - How would the ARROW DIAGRAM change for Ray's rule?
    Response:

- **Code Breaking** is determining the CODING RULE that was used. It is often used when a common word or phrase is recognized in a message.
  - The word "THE" is the most commonly used word in the ENGLISH language. It is determined that a coding process was used so that THE is coded as 25 13 10. What CODING RULE was used? How do you know?
    Response:

  - Use this CODING RULE to DECODE the message:
    28 13 6 25 7 10 12 14 19 24 28 14 25 13 25, 10 19 9 24 28 14 25 13 25 6 19 9 14 24 11 26 17 17 20 11 25?
    Response:

- A different coding process is used so that THE is coded as 57 21 12.
  - What CODING RULE was used? How do you know?
    Response:

  - Use this CODING RULE to DECODE the message: 0 57 12 0 45 42 57!!

This work was developed by Project Think and reflects our original thinking and design. We're happy to talk about how it might serve your context — please reach out to info@project-think.org before sharing or adapting it.

Response:

This work was developed by Project Think and reflects our original thinking and design. We're happy to talk about how it might serve your context — please reach out to info@project-think.org before sharing or adapting it.