

Weekly Challenge #1: Answers

Welcome to the Count on Us Secondary Challenge's first weekly *School's Out* challenge! We will set an activity every week using elements from the rounds of the challenge. This one uses algebra and coding, the final round. First make sure you know all about coding and decoding with a Caesar Cipher. Don't use online tools for decoding - you cannot do this in the Count on Us Challenge!

Welcome to the Algebra/Coding Round Institutions.

Use the solution of each equation as the offset to decode the following message. Then answer the question in each case. You are welcome to look things up to find the answers.

1. $8x - 53 = 5x - 32$ $x = 7$ So, we use offset **7**

PU DOPJO SVUKVU IVYVBNO PZ ZA. AOVTHZ'Z OVZWPAHS?

In which London borough is St. Thomas's hospital? Answer = Lambeth

2. $2^x - 3 = 13$ $x = 4$ So, we use offset **4**

ALMGL FIPKMER GMXC KIXW XVEMRW JVSQ WX. TERGVEW?

Which Belgian city gets trains from St. Pancras? Answer = Brussels

3. $x^2 - 20x + 120 = 2x - 1$ $x = 11$ So, we use offset **11**

HSLE TD ZY ESP ZAAZTEP DTOP ZQ ESP ESLXPD QCZX NTEJ SLWW?

What is on the opposite side of the Thames from city hall? Answer = The Tower of London

4. $\frac{70}{2x-1} = 2$ $x = 18$ So, we use offset **18**

OZSL TMKAFWKK AK DDGQV'K GX DGFVGF AFNGDNWV AF?

What business is Lloyd's of London involved in? Answer = Reinsurance or underwriting

5. $1, 1, 2, 3, \dots, \dots, x$ $x = 13$ So, we use offset **13**

VA JUNG LRNE JNF GUR FPVRAPR ZHFRHZ SBHAQRQ?

In what year was the Science Museum founded? Answer = 1857

6. $13x - 233 = 2x - 2$ $x = 21$ So, we use offset **21**

RCVO DN OCZ APGG, GZBVG IVHZ JA DHKZMDVG XJGGZBZ GJIYJI?

What is the full, legal name of Imperial College London? Answer = Imperial College of Science, Technology and Medicine.