Lollipops answers

Answer to Seventeen Camels paradox

The explanation resides in Abdullah's will, as the proportions specified only add up to 17/18 of his herd, and to that extent is flawed, as (17/18) x 17 isn't a whole number (and who wants to inherit fractional camels ?). Fortunately, Muhammad spotted a win-win quick-fix that kept everybody happy !

Answer to Four equals Five paradox

This is a very deceptive paradox indeed, which depends on the two-valuedness of square roots. As Michael Caine would say, not everybody knows that.

Just because $a^2 = b^2$, it doesn't necessarily follow that a = b. It could equally well be the case that a = -b, and both possibilities have to be considered.

In this instance, the first possibility has to be rejected, as it's obviously wrong, and the second possibility gets the cigar or coconut.

- (4 – 4½) does indeed equal -(5 – 4½), as they have the common value of -½ !

Answer to Gold Chain problem

Three only ! This is another illustration that any number can be replicated as the sum of suitable powers of two (ie 1, 2, 4, 8, 16 and 32 in this case).

The traveller numbers the links from one end of the chain, and then cuts open the 5^{th}, 14^{th} and 31^{st} links. That gives him four pieces of chain, respectively 4, 8, 16 and 32 links long, and 3 cut links (which can be regarded as a 1-link piece of chain plus a 2-link virtual piece of chain).

On the first three days the traveller pays the landlord, day by day, the three cut links.

On the fourth day, the traveller pays the landlord the 4-link piece of chain, and gets back the three cut links as change.

These he pays, day by day, till the eighth day, when he pays the 8-link piece of chain, and gets back the three cut links and the 4-link piece of chain as change.

These he pays gradually, as before, till the sixteenth day, when he pays the 16-link piece of chain, and gets back the three cut links, the 4-link piece of chain and the 8-link piece of chain as change.

These he pays gradually, as before, till the thirty-second day, when he pays the 32-link piece of chain, and gets back the three cut links, the 4-link piece of chain, the 8-link piece of chain and the 16-link piece of chain as change.

These he pays gradually, as before, till the sixty-fourth day, when he receives his funds, settles the bill in cash, and gets back the three cut links, the 4-link piece of chain, the 8-link piece of chain, the 16-link piece of chain and the 32-link piece of chain !

Answers to Alphametic(al) problems

http://www.cadaeic.net/alphas.htm
https://prepinsta.com/cryptarithmetic/tips-and-tricks-and-shortcuts/

```
  S E N D
  M O R E
M O N E Y
```

=>

```
  9 5 6 7
  1 0 8 5
1 0 6 5 2
```

```
  C R O S S
  R O A D S
D A N G E R
```

=>

```
  9 6 2 3 3
  6 2 5 1 3
1 5 8 7 4 6
```

```
      A
  M E R R Y
    X M A S
T U R K E Y
```

=>

```
      2
  9 7 4 4 5
    6 9 2 8
1 0 4 3 7 5
```