Calendar

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Salesman: "Ma'am, this vacuum cleaner will cut your work in half."
Customer: "Terrific! Give me two of them."

Class Discussion

John Conway's Doomsday algorithm: `http://blog.tanyakhovanova.com/ 2009/06/the-2009s-doomsday-is-saturday/`. The 2015's Doomsday is Saturday. Astronomical year.

Warm-up

Exercise 1. In a rectangular array of people, which will be taller, the tallest of the shortest people in each column, or the shortest of the tallest people in each row?

Exercise 2. Complete each phrase as shown in the first bullet.

- 26 l. of the a. = 26 letters of the alphabet
- 7 w. of the a. w. = ?
- 1001 A. N. = ?
- 12 s. of the z. = ?
- 52 c. in a d. = ?
- 52 w. in a y. = ?
- 88 p. k. = ?
- 13 s. on the A. f. = ?
- 200 d. for p. g. in m. = ?

- 8 s. on a s. s. = ?
- 29 d. in F. in a l. y. = ?
- 5 d. in a z. c. = ?
- 1000 w. a p. i. w. = ?
- 99 b. of b. on the w. = ?

Calendar

Exercise 3. What days are the following dates of 2015? October 7, November 11, July 29, January 25, January 7.

Exercise 4. Are months the same length in every country? How many different month lengths are possible in Boston?

Exercise 5. How many Fridays the 13th are possible in one year?

Exercise 6. How often on average a month has 5 Fridays, 5 Saturdays and 5 Sundays?

Exercise 7. In the US the date is written starting with the month followed by the day. In Europe it is the other way around. How many days in a year are ambiguous if you are not sure which style they are written in?

Exercise 8. In some year a particular day of the month was never a Sunday. What day could that be?

Challenge Problems

Exercise 9. You have 6 coins weighing 1, 2, 3, 4, 5 and 6 grams that look the same, except for their labels. The number (1, 2, 3, 4, 5, 6) on the top of each coin should correspond to its weight. How can you determine whether all the numbers are correct, using the balance scale only twice?

Exercise 10. Three people check into a hotel. They pay $30 to the manager and go to their room. The manager finds out that the room rate is $25 and gives $5 to the bellboy to return. On the way to the room the bellboy reasons that $5 would be difficult to share among three people so he pockets $2 and gives $1 to each person.

Now each person paid $10 and got back $1. So they paid $9 each, totalling $27. The bellboy has $2, totalling $29. Explain the paradox.