What's For Lunch?

Let's say that Lawrence High School has a lunch program that works on a rotation. On the first day of school, the menu is pizza, corn, and brownies. The next school day's menu is determined by replacing each item with the next one on the list. So, on the second school day, the menu is hamburgers, peas, and ice cream. When the bottom of a list is reached, the cooks start again at the top. So, on the fifth day of school, the menu is hot dogs, corn, and jello.

Main Dish	Vegetable	Dessert
Pizza	Corn	Brownies
Hamburgers	Peas	Ice Cream
Spaghetti	Carrots	Pudding
Tacos	Green Beans	Cookies
Hot Dogs		Jello
Mac & Cheese		

Modular arithmetic (the math that deals with remainders), developed by Johann Friederich Carl Gauss, can help us determine the menu for any given school day.

For example, on the 14th day of school the main dish will be hamburgers. We use the reminder obtained when 14 is divided by 6(the number of main dishes possible). The remainder is 2. Therefore, the main dish is the second item on the list, hamburgers.

1. What will the vegetable be on the 27th day of school?

2. What will the dessert be on the 64th day of school?

3. What will the complete lunch menu be on the 56th day of school?

4. What will the complete lunch menu be on the 85th day of school?

5. On which (list ALL possible days) of the first 50 school days will spaghetti be served?

6. On which (list ALL possible days) of the first 50 school days will green beans be served?

7. Will spaghetti and green beans ever be served together? Explain.

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For example, on the 14th day of school the main dish will be hamburgers. We use the reminder obtained when 14 is divided by 6(the number of main dishes possible). The remainder is 2. Therefore, the main dish is the second item on the list, hamburgers.

1. What will the vegetable be on the 27th day of school?

    Carrots

2. What will the dessert be on the 64th day of school?

    Cookies

3. What will the complete lunch menu be on the 56th day of school?

    Hamburger, Green Beans, Brownies

4. What will the complete lunch menu be on the 85th day of school?

    Pizza, Corn, Jello

5. On which (list ALL possible days) of the first 50 school days will spaghetti be served?

    3, 9, 15, 21, 27, 33, 39, 45

6. On which (list ALL possible days) of the first 50 school days will green beans be served?

    4, 8, 12, 16, 20, 24, 28, 32, 36, 40, 44, 48

7. Will spaghetti and green beans ever be served together? Explain.

    No, A school day cannot be odd <u>and</u> even.