Problem of the Week
Problem A and Solution
Babysitting Bonus

Problem

Anya agrees to look after her younger brother every day for 1 hour before dinner. Her parents agree to pay her \$15 per week, starting in September. If she does a spectacular job, her parents agree that on the first Monday of each month she will get a raise of \$2 per week. So far, Anya has done a spectacular job.

Anya's parents have a monthly household budget. In the budget, they estimate how much they will be spending on different things each month. Determine the first month when her parents should estimate spending more than \$100 per month for paying Anya to babysit. Justify your answer.

Solution

We will estimate how much Anya earns in each month by approximating that there are 4 weeks in one month. The estimated monthly earnings are summarized in the table below.

Month	Earnings per Week	Estimated Earnings per Month
September	\$15	$4 \times \$15 = \$60$
October	$\$15 + \$2 = \$17$	$4 \times \$17 = \$68$
November	$\$17 + \$2 = \$19$	$4 \times \$19 = \$76$
December	$\$19 + \$2 = \$21$	$4 \times \$21 = \$84$
January	$\$21 + \$2 = \$23$	$4 \times \$23 = \$92$
February	$\$23 + \$2 = \$25$	$4 \times \$25 = \$100$
March	$\$25 + \$2 = \$27$	$4 \times \$27 = \$108$

Using these estimations, Anya's parents should budget more than \$100 per month starting in March.

NOTE: There is a possibility that either December or January will have five Mondays. (During a leap year, there could possibly be five Mondays in February.) In this case, Anya's parents would be paying her more than \$100 for babysitting during that month. However, the budget is an estimation of expenses, so it is reasonable for them to start budgeting more than \$100 for Anya's babysitting starting in March.