

27. B.

This is kind of tricky. There's a long way and a slightly shorter way of doing it. The long way is as follows:

Let the cost of lunch = x .

Mon morning	20
Mon 5pm	$27-x$
Tues 5pm	$34-2x$
Weds 5pm	$41-3x$
Thurs 5pm	$48-4x$
Fri 5pm	$55-5x$
Mon 5pm	$62-6x$

We know that Tim can't afford lunch on Tuesday morning, which means $62-6x < x$ (ie: The number of tokens he currently has is less than the cost of lunch). Solving this inequality tells us that $x > 8.85$.

On Monday 8th, Tim could afford lunch. This means that the number of tokens he had that morning (the same as what he had at 5pm on Friday night) is greater than the cost of lunch. So $55-5x > x$. Solving this tells us that $x < 9.11$. It's obvious from both inequalities that $x=9$.

So how many tokens does Tim have on Tuesday (when he can't afford lunch)? $62-6*9 = 62-54 = 8$.

Tues morning	8
Tues 5pm	15
Weds 5pm	$15+7-9 = 13$
Thurs 5pm	11
Fri 5pm	9
Mon 5pm	7
Tues afternoon	CANT AFFORD LUNCH

So the second time Tim cannot get a free meal will be Tuesday.

Is there a quicker method to do this? We know Tim has lunch on 6 working days before he can't afford it for the first time. The cost of lunch must be greater than 7 tokens, or else he would always be able to afford the next day's lunch. So it takes him 6 days to lose enough tokens to not be able to afford lunch on Tuesday 9th.

Let's say the deficit is 1 token (ie: lunch costs 1 token more than he gets daily, so it costs 8 tokens). After 6 days, Tim would be down to 14 tokens, which is more than enough for lunch on the Tuesday. So it can't be 8 tokens. What about 9 tokens (a deficit of 2)? After 6 days, he's down to 8 tokens, which is indeed less than he needs for lunch that day. So we know that lunch must cost 9 tokens, and can repeat the method we used in the second table to work out which day of the week he next can't afford lunch on.