

Electricity Bill

Alex sat down to pay his bills for the month and realised that the bi-monthly (once every 2 months) electricity bill payment was due this month. His electricity consumption over the billing period was 465 units. The table below shows the tariff for his electricity consumption:

First 100 units are free of cost		
Consumption above 100 units and upto 200 units bi-monthly	Energy charges after Government's subsidy (Rs./unit)	Fixed charges for two months after Government's subsidy (Rs.)
First 100 units	0	0
101 - 200 units	1.50	20.00
Consumption above 200 units and upto 500 units bi-monthly	Energy charges after Government's subsidy (Rs./unit)	Fixed charges for two months after Government's subsidy (Rs.)
First 100 units	0	0
101 - 200 units	2.00	30.00
201 - 500 units	3.00	
Consumption above 500 units bi-monthly	Energy charges after Government's subsidy (Rs./unit)	Fixed charges for two months after Government's subsidy (Rs.)
First 100 units	0	0
101 - 200 units	3.50	50.00
201 - 500 units	4.60	
Above 500 units	6.60	

Question 1: Based on the tariff, how much does Alex have to pay? Show your working and calculation clearly.

Question 2: Which of the following is the correct formula to calculate the bill for consumption above 500 units?

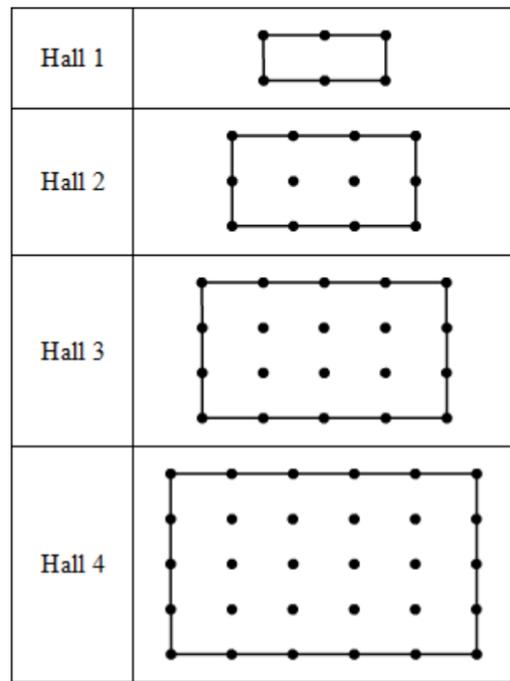
- A. $6.60x - 1420$
- B. $6.60x + 5080$
- C. $6.60x - 1520$
- D. $6.60x + 1420$

Question 3: In the previous billing cycle, Alex paid a bill of Rs.1115. What was his electricity consumption during that billing period? Explain how you arrived at your answer and show your working clearly.

UNIT 01 : Banquet Hall

Here is a bird's eye view of the possible sizes of a banquet hall from Ancient Rome.

The hall is made of pillars and wall sections. The pillars are represented as dots and the wall sections are represented using line segments.



Question 1: Complete the following table:

Hall Number	Number of pillars (dots)	Number of wall sections (lines)
1	6	6
2	12	10
3		
4		
5		

Question 2: Two of the courtiers Zieus and Julius deduced a formula to calculate the number of pillars for the banquet hall mentioned above where 'n' is the Hall number

- (a) Zieus's formula is $n(n+1)$
- (b) Julius's formula is $(n+1)(n+2)$

Who deduced the correct formula?

UNIT 01 : ELECTRICITY BILL

Content Category: Quality

Context: Personal

1) Full Credit: 2 Rs 1025

Working of bill for 465 units

$$= 100 \text{ free units} + 100 \text{ units @Rs } 2/\text{unit} + 265 \text{ units @ Rs } 3/\text{unit} + \text{Rs } 30.00$$

$$= 0 + 200 + 795 + 30 = 1025$$

No Credit: Any other answer or missing answer

2) Full Credit: 2 Option C. $6.60x - 1520$

Total bill charges =

No Credit: Any other answer or missing answer

3) Full Credit: 2 495 units

Since Alex's electricity bill is lesser than Rs.1130 which is the amount he would pay for 500 units and greater than 170 (the amount he would pay for 200 units), his consumption must be between 200 and 500 units. This can be modelled by the equation $3x - 370 = 1115$ which gives $x = 495$. Therefore, Alex consumed 495 units during the previous billing period. (Accept other reasonable explanations) **No Credit:** Any other answer or missing answer

UNIT 01: BANQUET HALL

Content Category: Change & Relationship

Context: Occupational

1) Full Credit:

Hall number	Number of pillars	Numbers of walls
3	20	14
4	30	18
5	42	22

No Credit: Any other answer or missing answer

2) Full Credit: Option B- Julius's formula

No Credit: Any other answer or missing answer