



QA Number Patterns Worksheet



QI. Find the missing term in the sequence.

- 1) 1, 6, 11, __, 21, ...
- 2) $1/3, 1/5, 1/7, _, 1/11, 1/13, \dots$
- 3) 1, 1, 2, 3, 5, 8, __, 21,
- 4) 2, 4, 8, __, 32,
- 5) 300, 281, 262, __, 224, ...

QII. Answer the following.

1) Find the next 2 terms of the sequence.

- a) 5, 12, 26, 54, 110,
- b) 3, 4, 6, 10, 18, 34, ...

2) If the 1st of March is a Saturday, list all the dates of Saturdays in March

3) The price of Sandwiches with cheese and sandwiches with extra toppings are listed below.

Sandwich number	No of slices	Price of Sandwich with cheese	Price with extra topping
1	4	50	57
2	8	100	112
3	12	150	167
4	16	-	-
5	20	-	-
6	24	-	-

- a) Write the pattern rule for the price with cheese.
- b) What is the pattern for the price with toppings.
- c) What is the price of 6 sandwiches with extra toppings.

QIII) Find the next 2 terms of the sequence.

- 1) 1, 3, 5, 11, 21, 43, 85, ...
- 2) 1, 2, 6, 24, 12, 4, 1, 2, ...
- 3) 10, 6, 11, 7, 12, 8, 13,
- 4) 6, 13, 34, 97,





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Solutions:

QI.

1) $6 - 1 = 5$, $11 - 6 = 5$ and so on.

Each term is obtained by adding 5 to the preceding term. Missing number is $11 + 5 = 16$.

2) $1/9$ (Denominators are odd numbers, 3, 5, 7...)

3) $8 + 5 = 13$ (Each term starting from third is obtained by adding the preceding two terms)

4) 16 (Each term after the first is obtained by multiplying the preceding term by 2)

5) $262 - 19 = 243$ (Each term after the first is obtained by subtracting 19 from the preceding term)

QII.

1) a) 222, 446 (To obtain any term, multiply the preceding term by 2 and add 2. Thus, next two terms, $110 \times 2 + 2 = 222$ and $222 \times 2 + 2 = 446$)

b) 66, 130 (To obtain any term, multiply the preceding term by 2 and subtract 2. Thus, next two terms, $34 \times 2 - 2 = 66$ and $66 \times 2 - 2 = 130$)

2) 1st, 8th, 15th, 22nd and 29th
(Add 7 to get the next term)

3) a) Price of sandwiches with cheese, 50, 100, 150... _____ (1)

Start with 50. To get any term from second term onwards add 50 to the preceding term

b) Price of sandwiches with topping, 57, 112, 167...

Start with 57. To get any term from second term onwards add 55 to the preceding term

c) To find the price of 6 sandwiches with topping

Look at the pattern in the last column and find the 6th term.

57, 112, 167, ..., ..., ...

57, (57 + 55), (112 + 55), (167 + 55), (322 + 55), (377 + 55)

Answer: 432

QIII.

1) 1, 3, 5, 11, 21, 43, 85...

The term next to 85 is $85 \times 2 + 1 = 171$

The term next to 171 is $171 \times 2 - 1 = 341$



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(Rule: First term is 1, the second term = first term $\times 2 + 1 = 1 \times 2 + 1 = 3$, third term = second term $\times 2 - 1 = 3 \times 2 - 1 = 5$, fourth term = third term $\times 2 + 1 = 5 \times 2 + 1 = 11$ and so on).

2) 1, 2, 6, 24, 12, 4, 1, 2...

The required terms are $2 \times 3 = 6$ and $6 \times 4 = 24$

(Rule: To get second, third and fourth terms, multiply the preceding terms by 2, 3 and 4 respectively. Thus, second term = $1 \times 2 = 2$, third term = $2 \times 3 = 6$ and fourth term = $6 \times 4 = 24$.

To get the next three terms divide the preceding terms by 2, 3, 4 respectively, then multiply by 2, 3, 4 and so on).

3) 10, 6, 11, 7, 12, 8, 13....

Next two terms are $13 - 4 = 9$ and $9 + 5 = 14$

(Rule: Second term is first term $- 4 = 10 - 4 = 6$

third term = second term $+ 5 = 6 + 5 = 11$

fourth term = third term $- 4 = 11 - 4 = 7$

fifth term = fourth term $+ 5 = 7 + 5 = 12$ and so on.

Thus alternatively, Any term = Preceding term $- 4$ or Preceding term $+ 5$)

4) 6, 13, 34, 97....

Second term - first term = $13 - 6 = 7$

Third term - second term = $34 - 13 = 21 = 3 \times 7$

Fourth term - third term = $97 - 34 = 63 = 3 \times 21$

Fifth term - fourth term = $3 \times 63 = 189$, Fifth term = fourth term $+ 189 = 97 + 189 = 286$

Sixth term - fifth term = $3 \times 189 = 567$, Sixth term = fifth term $+ 567 = 286 + 567 = 853$

QIV.

Case Study Based Question

1) Sequence of window seats, 1, 5, 6, 10, 11, 15, 16, 20, 21.... (Excluding the last row seats of the bus).

Rule: Start with 1, $1 + 4 = 5$, $5 + 1 = 6$, $6 + 4 = 10$, $10 + 1 = 11$ and so on.

2) Sequence of middle seats 4, 9, 14, 19,.....(Excluding the last row seats of the bus).

Rule: Start with 4, $4 + 5 = 9$, $9 + 5 = 14$, $14 + 5 = 19$ and so on.

In other words, starting from 4, add 5 to every number to get next number in the sequence.

3) b) Middle Seat

4) False. 35 is a window seat.

5) Rahul has to move two rows ahead to sit beside his sister Isha.