

PRIME AND COMPOSITE NUMBERS

Class: VII, Mathematics

(F⁺)

SOLUTIONS

TEACHING TASK

01. Conceptual

Ans: D

02. $\{2, 3, 5, 7, 11, 13, 17, 19\}$ total = 8

Ans: B

03. 97

Ans: D

04. 24

Ans: C

05. 173

Ans: B

06. $5 = 2 + 3$

Ans: C

07. Conceptual

Ans: B

08. $(3, 5), (5, 7), (11, 13), (17, 19), (29, 31), (59, 61), (71, 73)$

Ans: A

09. $(23, 29)$

Ans: C

10. Conceptual

Ans: D

11. Conceptual

Ans: B

12. $2 \times 3 \times 5 = 30$

Ans: C

13. Conceptual

Ans: C

14. $4 + 6 + 8 + 9 = 27$

10 + 17

Ans: .

15. Conceptual

Ans: A, B, D

16. Conceptual

Ans: A, C, D



17.	Conceptual	Ans: A, C, (2)
18.	<u>Statement I:</u> True <u>Statement II:</u> True	Ans: A
19.	<u>Statement I:</u> True <u>Statement II:</u> False	Ans: C
20.	<u>Statement I:</u> False <u>Statement II:</u> True	Ans: D
21.	<u>Statement I:</u> False <u>Statement II:</u> True	Ans: D
22.	Conceptual	Ans: A
23.	Conceptual	Ans: B
24.	$100 = 59 + 41$	Ans: A
25.	2	Ans: 2
26.	1	Ans: 1
27.	$2 + 4 = 6$	Ans: 6
28.	$\{73, 79\}, \cancel{83}, \cancel{89},$	Ans: 2
29.	a) 24 b) 75 c) 23 d) 49.	

- 30 a) prime number
 b) composite number
 c) sieve of Eratosthenes
 d) Fundamental th. of Arithmetic
 Ans: 3, 2, 1, 4

LEARNER'S TASK

CUQ'S

01.	Conceptual	Ans: A
02.	Conceptual	Ans: A
03.	Conceptual	Ans: A
04.	Conceptual	Ans: D
05.	Conceptual	Ans: D
06.	Conceptual	Ans: D
07.	Conceptual	Ans: B
08.	Conceptual	Ans: A
09.	Conceptual	Ans: A
10.	Conceptual	Ans: D
11.	Conceptual	Ans: D
12.	$1 + 99 = 100$	Ans: A
13.	2	Ans: C
14.	Conceptual	Ans: D

JEE MAINS LEVEL

17 (4)
17

01. $2+3+5+7+11=28$

02. Conceptual

Ans: B

03. Factors of 51 = $\{1, 3, 17, 51\}$

Ans: C

04. Conceptual

Ans: A

05. factors of 43 = $\{1, 43\}$

Sum $1+43=44$

Ans: B

06. Conceptual

Ans: A

07. Conceptual

Ans: C

08. Conceptual

Ans: B

09. $2+2+1=5$

Ans: C

10. $2367 + 3592 + 4572 = \text{---} \text{II odd}$

Ans: B

11. $7868 \times 78, 963 \times 4578$

$\text{---} (8) \times \text{---} (3) \times \text{---} (8) = \text{---} (2)$

Ans: B

12. Conceptual: 21

Ans: B

13. Sum of prime numbers b/w 30 and 40.

$31+37=68$

Ans: B

14. $a-b=1$

Ans:

Since $a^2-b^2=(a+b)(a-b)$

Since a^2-b^2 is a prime number, then either $a+b$ or $a-b$ is 1.

case (i) If $a-b=1$, then $a+b = \text{prime no.}$

$a^2-b^2 = 1 \times (a+b) = a+b, \text{ prime no.}$



Ques 15 If $a-b \neq 1$

If $a-b > 1$, then $a-b$ & $a+b$ are both greater than 1, meaning $a^2 - b^2$ is no longer a prime number, since it has more than two factors. (5)

15. $a^2 + b^2 + 2ab = (a+b)^2$, which is a perfect square

A) $a+b=6 \Rightarrow (a+b)^2 = 36$ Not prime

B) $a+b=5 \Rightarrow (a+b)^2 = 25$, Not prime

C) $a+b=7 \Rightarrow (a+b)^2 = 49$, Not prime Ans: D

16. 53

Ans: C

17. A) $k=1 \Rightarrow 2^k + 1 = 2^1 + 1 = 3 \checkmark$

$k=2 \quad 2^2 + 1 = 4 + 1 = 5 \checkmark$

Ans: A

18. Conceptual

Ans: B

19. Conceptual

Ans: B

20. Conceptual

Ans: D

21. Conceptual

Ans: A

22. Conceptual

Ans: D

23. factors of 63 = $\{1, 3, 21, 9, 7, 63\}$

Ans: B

24. Statement I: False

Statement II: True

Ans: D

25. Statement I: True; Statement II: True

Ans: A



26. Statement I: $15 = 2 + 3 + 5 + 7$ (True) (6)

Statement II: $3p + 2q = 59$. (False)

We can not find prime numbers p & q Ans: C

27. A) factors $20 = \{1, 2, 5, 4, 10, 20\} \rightarrow 6$

B) factors $6 = \{1, 2, 3, 6\} \rightarrow 4$

C) factors $15 = \{1, 3, 5, 15\} \rightarrow 4$

D) factors $1 = \{1\}$

$3 = \{1, 3\}$

Ans: A, B, C

28. $84 = 2^2 \times 3 \times 7$

$$\begin{array}{r} 2 \overline{) 84} \\ 2 \overline{) 42} \\ 3 \overline{) 21} \\ 7 \end{array}$$

Ans: B

29. 4, 6, 8

$4-1, 6-1, 8-1 = 3, 5, 7 \rightarrow$ prime nos

Ans: B

30. 11

Ans: 11

31. 0

Ans: 0

32. $37 + 73 = 110$

Ans: 37

33. $2 \times 3 \times 5 \times 7 \times 11 = 2310$

Ans: 2310

34 a) Yes

b) No

c) 2

d) ~~an alg~~ Conceptual

Ans: 8, 5, 9, P

35 a) 4)

b) (3, 5), (5, 7), (11, 13), (17, 19), (29, 31), (41, 43)
total = 6

17
24
41

c) $2 + 3 + 5 + 7 + 11 + 13 = 41$

d) —

Ans: 9, P, 9, —

⇒ THE END ←