LCM and HCF

1. Which one is the largest fraction among 5/7, 7/9 and 11/13?
(A) 5/7 **(B)** 7/9
(C) 11/13 **(D)** All are equal

2. What is the Highest Common Factor of 24, 40 and 120?
(A) 8 **(B)** 4
(C) 12 **(D)** 40

3. What is the LCM of 18/5 and 20/9?
(A) 60 **(B)** 12
(C) 30 **(D)** 180

4. Which fraction among 3/7, 4/11 and 5/8 is the smallest?
(A) 3/7 **(B)** 4/11
(C) 5/8 **(D)** All are equal

5. What is the Highest Common Factor of 3/4 and 12/13?
(A) 3/13 **(B)** 3/52
(C) 3/26 **(D)** 3/41

6. Which fraction among 3/11, 4/7 and 5/8 is the smallest?
(A) 3/11 **(B)** 4/7
(C) 5/8 **(D)** All are equal

7. Which of the following is true?
(A) $\frac{6}{7} > \frac{4}{5} > \frac{3}{4}$ **(B)** $\frac{4}{5} > \frac{6}{7} > \frac{3}{4}$
(C) $\frac{6}{7} > \frac{3}{4} > \frac{4}{5}$ **(D)** $\frac{3}{4} > \frac{4}{5} > \frac{6}{7}$

8. What is the least common multiple of 24, 48 and 72?
(A) 72 **(B)** 144
(C) 288 **(D)** 216

9. What is the LCM of 64 and 56?
(A) 448 **(B)** 488
(C) 484 **(D)** 408

10. What is the HCF of 6345 and 2160?
(A) 45 **(B)** 135
(C) 270 **(D)** 15

11. What is the LCM of 120 and 450?
(A) 2400 **(B)** 1800
(C) 3600 **(D)** 4800

12. What is the HCF of $2^3 \times 3^4$ and $2^5 \times 3^2$?
(A) $2^5 \times 3^3$ **(B)** $2^3 \times 3^4$
(C) $2^3 \times 3^2$ **(D)** $2^5 \times 3^4$

13. A is The highest common factor of $\frac{3}{4}$ and $\frac{9}{16}$,and least common multiple of $\frac{16}{5}$ and $\frac{4}{25}$ is B , then what is the value of A + B?
(A) $\frac{250}{81}$ **(B)** $\frac{70}{23}$
(C) $\frac{271}{80}$ **(D)** $\frac{260}{71}$

14. What is the maximum common factor (HCF) of $\frac{7}{16}, \frac{21}{32}$ and $\frac{49}{8}$?
(A) $\frac{7}{64}$ **(B)** $\frac{147}{32}$
(C) $\frac{147}{8}$ **(D)** $\frac{7}{32}$

15. What is the Least Common Multiple of all even numbers between 5 and 13?
(A) 120 **(B)** 90
(C) 180 **(D)** 60

16. If the Least Common Multiple of 56, 57 and 58 is K, then what will be the Least Common Multiple of 56, 57, 58 and 59?
(A) 177 K **(B)** 59 K
(C) 56 K **(D)** 57 K

17. If Least Common Multiple of 23 and 24 is A and Highest Common Factor of 23 and 24 is B, then what is the value of A + B?
(A) 451 **(B)** 551
(C) 553 **(D)** 452

18. What is the Highest Common Factor of 42, 168 and 210?
(A) 14 **(B)** 21
(C) 42 **(D)** 7

19. The product of two numbers is 6845, if the HCF of the number is 37, then the greater number is:
(A) 111 **(B)** 37
(C) 148 **(D)** 185

20. If x × y denotes HCF of x and y and x @ y denotes LCM of x and y, then the value of (72 × 84) @ 144 is:
(A) 144 **(B)** 504
(C) 210 **(D)** 420

Solution

1. **Answer: (C)**
So, 11/13 is the largest fraction
$\frac{5}{7} = 0.714, \frac{7}{9} = 0.777, \frac{11}{13} = 0.846$
Also we can solve it by equating the bases of these fractions.
LCM of 7, 9 & 13 = 819
$\frac{5}{7} = \frac{585}{819}, \frac{7}{9} = \frac{637}{819}, \frac{11}{13} = \frac{693}{819}$
Here also we can see 693/819 i.e. 11/13 is the largest fraction

2. **Answer: (A)**
HCF of 24, 40 & 120
$24 = 2 \times 2 \times 2 \times 3 = 2^3 \times 3^1$
$40 = 2 \times 2 \times 2 \times 5 = 2^3 \times 5^1$
$120 = 2 \times 2 \times 2 \times 3 \times 5 = 2^3 \times 3^1 \times 5^1$
So, HCF = $2^3 = 8$ (since that is common in all the numbers)

3. **Answer: (D)**
For finding the LCM of 2 fractions.
LCM =LCM of Numerators/HCF of Denominators
LCM = LCM of 18&20/HCF of 5&9=180/1=180

4. **Answer: (B)**
3/7=0.4284,4/11=0.3636,5/8=0.625
So smallest is 4/11
It can also be solved by making the denominators equal
LCM of 7, 11 & 8 = 616
$\frac{264}{616} = \frac{3}{7}, \frac{224}{616} = \frac{4}{11}, \frac{385}{616} = \frac{5}{8}$
When, based are equal, we can clearly see.
224/616 is the smallest i.e. 4/11

5. **Answer: (B)**
For fraction,
H.C.F = H.C.F of numerator/L.C.M of denominator
Numerators are 3 and 12
H.C.F of 3 and 12 = 3
Denominators are 4 and 13
L.C.M of 4 and 13 = 52
H.C.F = 3/52

6. **Answer: (A)**
3/11 = 0.27
4/7 = 0.57
5/8 = 0.625
We can observe that 3/11 has the minimum value.
∴ 3/11 is the smallest fraction among all

7. **Answer: (A)**
6/7 = 0.85
4/5 = 0.8
3/4 = 0.75
Here, 0.85 > 0.8 > 0.75
Hence, 6/7 > 4/5 > 3/4 is true.

8. **Answer: (B)**
Listing the prime factor of each number
$24 = 2 \times 2 \times 2 \times 3$
$48 = 2 \times 2 \times 2 \times 2 \times 3$
$72 = 2 \times 2 \times 2 \times 3 \times 3$
Multiply each factor the greatest number of times it occurs in any of the numbers.
48 has 4 2s, 72 has 2 3s. This gives us 144, the smallest number that can be divided evenly by 24, 48 and 72

9. **Answer: (A)**

2	64,56
2	32,28
2	16,14
	8,7

Required LCM = 2 × 2 × 2 × 8 × 7 = 448

10. Answer: (B)

HCF of 6345 and 2160

Factors of 6345 = 5 × 3 × 3 × 3 × 47

Factors of 2160 = 5 × 3 × 3 × 3 × 2 × 2 × 2 × 2

So , common factors = 5 × 3 × 3 × 3 = 135

11. Answer: (B)

5	120,450
2	24,90
3	12,45
3	4,15
4	4,5
5	1,5
	1,1

LCM = 5 × 2 × 3 × 3 × 4 × 5 = 1800

12. Answer: (C)

$A = 2^3 \times 3^4$

$B = 2^5 \times 3^2$

HCF of (A, B) = $2^3 \times 3^2$

13. Answer: (C)

$A = \frac{HCF\ (3,9)}{LCM\ (4,16)}$

$= \frac{3}{16}$

$B = \frac{HCF\ (16,4)}{LCM\ (5,25)}$

$= \frac{16}{5}$

So, $A + B = \frac{3}{16} + \frac{16}{5}$

$= \frac{15+256}{80}$

$= \frac{271}{80}$

14. Answer: (D)

HCF of $\left(\frac{p}{q}\right) = \frac{HFC\ of\ Numerator}{LCM\ of\ Denominator}$

HFC = $\frac{HCF\ (7,21,49)}{LCM(16,32,8)}$

HCF = $\frac{7}{32}$

15. Answer: (A)

Even number between 5 and 13 -: 6, 8, 10, 12

LCM (6, 8, 10, 12) = 120

16. Answer: (B)

LCM (56, 57, 58) = K

LCM (56, 57, 58, 59)

= $\underset{K}{\boxed{56, 57, 58}}\ \underset{59}{\boxed{59}}$

LCM (56, 57, 58, 59) = 59K

17. Answer: (C)

LCM (23, 24) = 552

A = 552

HCF (23, 24) = 1

B = 1

A.T.Q

= A + B

= 552 + 1

= 553

18. Answer: (C)

H.C.F (42, 168, 210)

42 = 21 × 2

168 = 21 × 2 × 2 × 2

210 = 21 × 2 × 5

HCF (42, 168, 210) = 42

19. Answer: (D)

Let the number are x and y

37xy = 6845

xy = 185

xy = 37 × 5

1st Number = 185

2nd Number = 37

20. Answer: (A)

A.T.Q

(72 × 84) @ 144

HCF of 72 and 84 = 12

12 @ 144

LCM of 12 and 144 = 144

12 @ 144 = 144