H.C.F & L.C.M. - Solved Examples

Q 1 - Compute H.C.F of (2^2* 2^3*5*7^4), (2^3*3^2*5^2*7^3) and (2^2*5^3*7^5).

A - 6760

B - 6860

C - 6960

D - 7060

Answer - B

Explanation

Prime numbers which are common to all the given numbers are 2,5 ,7.
∴ H.C.F = (2^2*5*7^3)= (4*5*343) = 6860

Q 2 - Find the H.C.F of 108, 360 and 600.

A - 12

B - 13

C - 14

D - 15

Answer - A

Explanation

$108 = (2^2*3^3)$, $360 = (2^3*3^2*5)$ and $600 = (2^3*5^2*3)$
$\therefore$ H.C.F = $(2^2* 3) = (4* 3)=12$

Q 3 - Find the H.C.F of 148 and 185.

A - 37

B - 38

C - 39

D - 40

Answer - A

Explanation

Remainder of 185/148 = 37
Remainder of 148/37 = 0
$\therefore$ H.C.F. = 37

Q 4 - Find the H.C.F of 204, 1190 and 1445.

A - 16

B - 17

C - 18

D - 19

Answer - B

Explanation

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Remainder of 1190/204 = 170
Remainder of 204/170 = 34
Remainder of 170/34 = 0

∴ H.C.F. of 204, 1190 = 34

Remainder of 1145/34 = 17
Remainder of 34/17 = 0

∴ H.C.F. of 204, 1190 and 1145 = 17
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Q 5 - Reduce 391/667 to lowest terms.

A - 7/29

B - 27/29

C - 17/29

D - 37/29

Answer - C

Explanation

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First we find the H.C.F of 391 and 667.
Remainder of 667/391 = 276
Remainder of 391/276 =115
Remainder of 276/115 = 46
Remainder of 115/46 = 23
Remainder of 46/23= 0
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∴ H.C.F. of 391, 667 = 23
∴    391/667   =( 391/23)/ (667/23)=  17/29
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Q 6 - Find the L.C.M of (2^2*3^2*5*7) , ($2^3*3*5^2*7^2$) and (2*3*7*11).

A - 970200

B - 97020

C - 9702

D - 970

Answer - A

Explanation

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We have  L.C.M = product of terms containing highest powers of (2,3,5,7,11)
= (2³* 3²* 5²*7²*11) = (8*9*25*11*49)= 970200
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Q 7 - Find the L.C.M of 15, 18, 24, 27, 56.

A - 7260

B - 7360

C - 7460

D - 7560

Answer - D

Explanation

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15 = 3 * 5
18 = 2* 3 * 3 = 2 * 3 2
24 = 2 *2 * 2 * 3   =  2 3 * 3
27 = 3 * 3 * 3 =  3 3
56 = 2 * 2 * 2 * 7=  2 3 * 7
L.C.M  = product of terms containing highest powers of (2,3,5,7) =2 3 * 3 3 * 5 * 7 = 7560
```

Q 8 - Find the H.C.F and L.C.M of 2/3 , 8/9 , 10/27 and 16/81.

A - 45

B - 55

C - 65

D - 75

Answer - D

Explanation

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H.C.F of 2,8,10,16     = 2
L.C.M of  3,9,27,81 = 81
H.C.f =  H.C.F of 2,8,10,16/L.C.M of 3,9,27,81 = 2/81
L.C.M =  L.C.M of 2,8,10,16/H.C.F of  3,9, 27,81 = 80/3
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Q 9 - Two numbers are in the ratio 8:11 . Considering their H.C.f as 6, find the numbers.

A - 58.79

B - 48.66

C - 38.56

D - 28.33

Answer - B

Explanation

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Let the numbers be 8x and 11 x. then, their H.C.F = x
So, the numbers are (8*6), (11*6) i.e 48 and 66.
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Q 10 - Given the H.C. F of two numbers as 7 and their L.C.M as 210. If one of the numbers is 35, find the other.

A - 32

B - 42

C - 52

D - 62

Answer - B

Explanation

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Let the Other number be X. then,
Product of numbers = product of their H.C .F and L.C.M
35*x=   7* 210  ⇒ x=  7*210/35  = 42
Hence, the other number is 42.
```

Q 11 - Three big drums contain 36 liters, 45 liters and 72 liters of oil. What is the biggest measure which can measure all the different quantities exactly?

A - 9 liters

B - 10 liters

C - 11 liters

D - 12 liters

Answer - A

Explanation

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Required measure =   H.C.F  of 36 L, 45 L, and 72 L
= (3^2) liters = 9 liters
[As 36 = 2^2*3^2, 45 = 3^2*5 and 72 = 2^4* 3^4]
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Q 12 - Four electronic devices make a beep after duration of 30 minutes, 1 hour, 3/2 hours and 1 hour 45 min. respectively. If all the devices beeped together at 12 noon at what time will they beep together again?

A - 9 am

B - 10 am

C - 11 am

D - 11:30 am

Answer - A

Explanation

```
Intervals of beeping 30  min, 60 min, 90 min, 105 min.
Interval of beeping together= L.C.M of 30 min. 60 min. 90 min. 105 min
= (3*5*2*2*3*7) min. = 1260 min = 21 hrs.
So, they will beep together again next morning at 9 am.
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Q 13 - Find the largest number which can exactly divide 513, 783 and 1107.

A - 22

B - 23

C - 24

D - 25

Answer - B

Explanation

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Remainder of 783/513 = 270
Remainder of 513/270 =243
Remainder of 270/243 = 27
Remainder of 243/27 = 0

Remainder of 46/23= 0

∴ H.C.F. of 513, 783 = 23

Remainder of 1107/23 = 0

∴ H.C.F. of 513, 783 and 1107= 23
```

Q 14 - Find the smallest number which is exactly divisible by each one of the numbers 12, 15, 20 and 27.

A - 540

B -530

C - 520

D - 510

Answer - A

Explanation

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Required no. = L.C.M of 12,15, 20 and 27
= (3*2*2*5*9) = 540
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Q 15 - Find the least number which if divided by 6, 7, 8, 9, 12 leaves the same remainder 2 in each case.

A - 506

B - 504

C - 502

D - 500

Answer - A

Explanation

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Required number =  (L.C.M  of 6,7,8,9,12)+2   =  (2*3*2*7*2*3)+ 2 = (504+2)= 506.
```

Q 16 - Find the largest natural number which can divide the product of any 4 consecutive natural numbers.

A - 23

B - 24

C - 25

D - 26

Answer - B

Explanation

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(1*2*3*4) =  24
∴ Required number = 24
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Q 17 - Find the least number which if divided by 35, 45 and 55 leaves the remainder 18, 28 and 38 respectively.

A - 3448

B - 3458

C - 3468

D - 3478

Answer - A

Explanation

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Here (35-18) =  17 , (45-28)=  17  and (55- 38) =  17
Required number =  (L.C.M of 35,45, 55)- 17  = (3465 -17) = 3448
```

Q 18 - The H.C.F of 1/2 , 2/3 , 3/4 , 4/5 is

A - 1/120

B - 12/5

C - 100/3

D - 10/3

Answer - A

Explanation

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H.C.F =   H.C.F of 1,2,3,4/ L.C.M  of  2,3,4,5   = 1/120
```

Q 19 - The H.C.F of 2/3, 8/9 , 10/27 , 32/81.

A - 160/81

B - 160/3

C - 2/81

D - 2/3

Answer - C

Explanation

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H.C.F  = H.C.F of 2, 8,10, 32/  L.C.M of 3,9, 27, 81   = 2/81
```

Q 20 - Which of the following is a pair of Co-primes?

A - (14, 35)

B - (18, 25)

C - (31, 93)

D - (32,62)

Answer - B

Explanation

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H.C.F of  18 and 25 is 1.
∴  18 and 25 are co-primes.
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