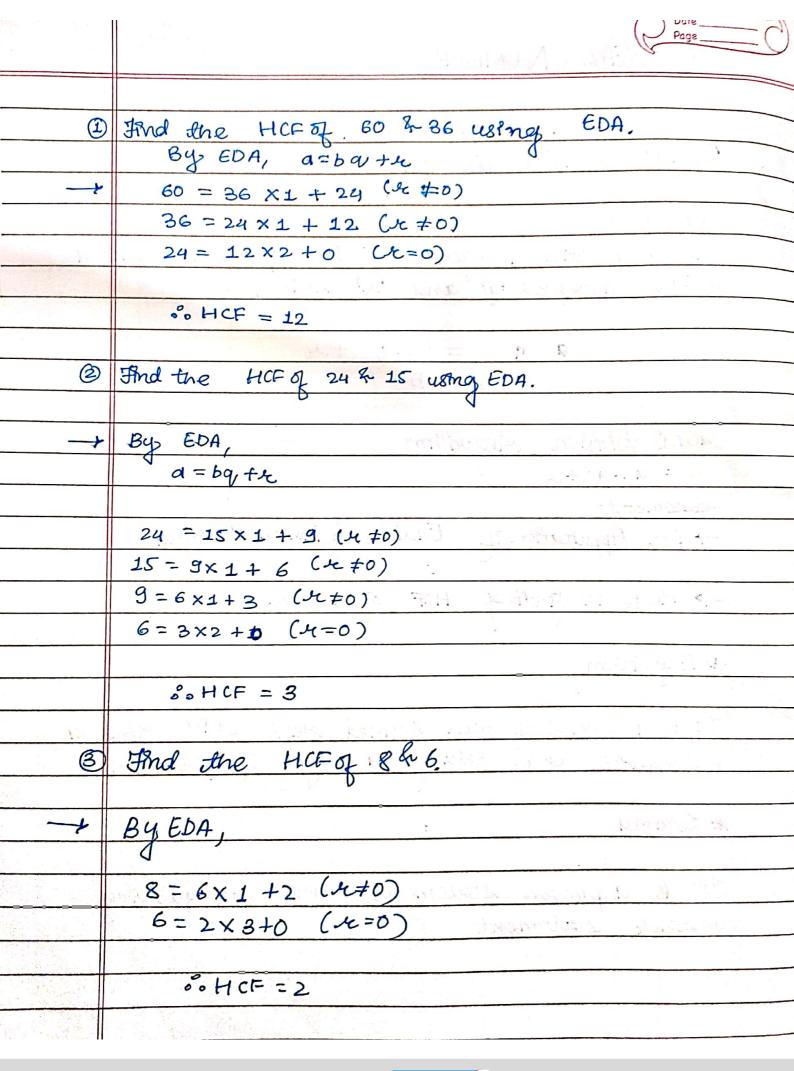
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REAL NUMBERS

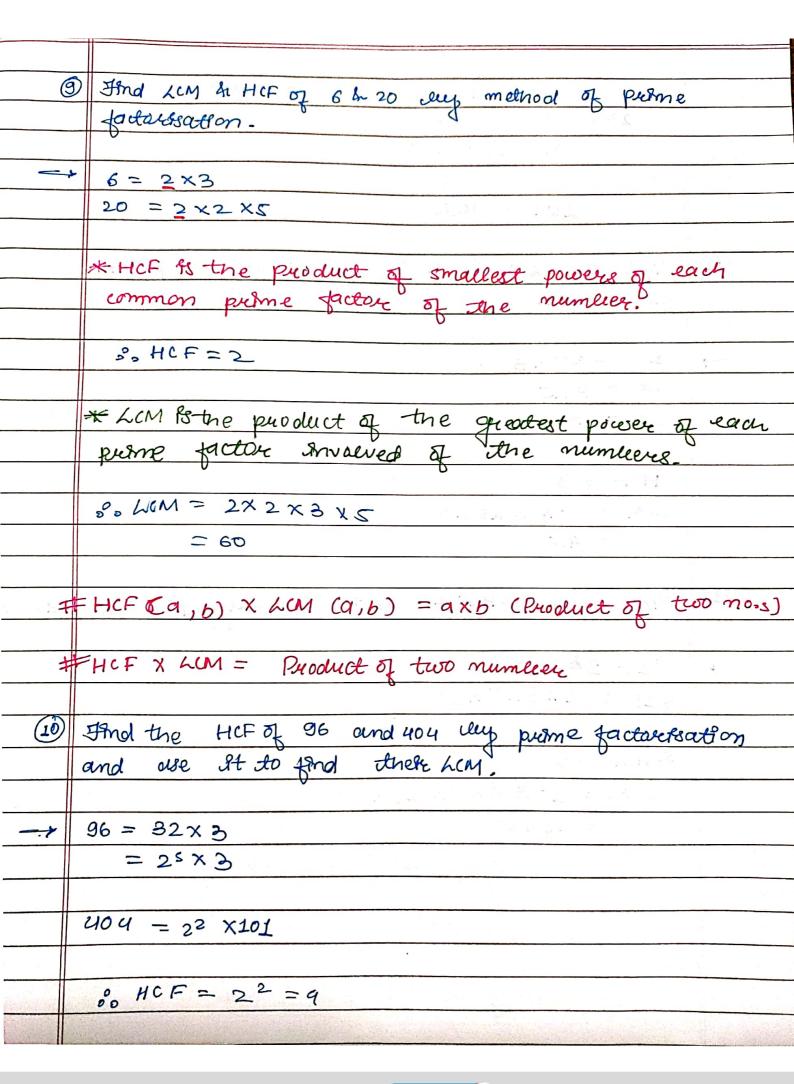
. Note that the second of the
Euclid's Division Lemma
1 7 1 P 2 1 2 2 2 2 1 1 1 1 1 1 1 1 1 1 1 1
Statement
Given pastive integers "a" & "b", there exist a
Given pasitive integers "a" & "b", there exist a unique integers "q" and "x" satisfying
@ g a = b x q +.4
where of excb
Euclide Dirision Algorithm
C= dxq+re
Statement
-> In Application of Euclid's Division Lemma
(24-7-2 4 4 2-1-24
-> Helps in finding HCF of numleurs
(0=1) 0.4 5.4 6 1 -
* Algorithm
8 = 73H .°.
It is a series of well defined steps which gives a
It is a series of well defined steps which gives a procedure you salving, a type of problem.
procedure gar
* Lemma
* AUITITU
It is a proven statement used fare proving
another statement



Find the HCF of 135 & 225. + By EDA, 225 = 135 × 1 +90 (4+0) 135= 90 ×1+45 (x+0) 90=45x2+0 (x=0) 80 HCF= 45 (5) Find the HCF of 867 & 255. + By EDA, 255 867= 255 X3 + 102 (M +0) 255 = 102 × 2 +51 (4 +0) 102 = 51 × 2+0 (x=0) 00 HCF = 51 6 Find the HCF of 616 & 32. 616 = 32 × 19 +8 (4 ≠0) 32 = 8 × 4 + 0 (x=0) o's HCF =8

Dereve that every positive even integer is of the form 29 in every positive odd integer is of the form 29+1, where of is some integer. Let a lie any tre Anteger & b=2. Apply EDA to (a) & (b) q = 29, +4, 0 < 2 < 2 30 M=0,1 $Q = 2q + 1 \longrightarrow Odd$ the Every composite no. can the factorised as a product of pulme nos in a unsque way.

(apart from order) (8) Can 4th end with a serio & Where hi its a notineal no.) It cannot end with yero as it has only



HCF X LCM = Product of two numbers 22 X LCM = 96 X 40 Y LCM = 96 X 404 . 4 LCM = 9696 Find the LCM & HCF of 12, 15, 21 less prime (<u>1</u> factoresation. 12 = 22 X3 15 = 3x5 21 = 3x7 by by by by by the section of the suprice announced of the number LCM = 22 x B X5 x7 = 420 Find LCM & HCF 8 92 8 510 ley frame fector88 alfon 92 = 22 x 23 510 = 2 × 3 × 5 × 17 BHCF = 2 $LOM = 2^2 \times 3 \times 5 \times 17 \times 23$ = 23460

* Iruational Number An number spæalled servetsonal, still cannot be expressed as play, where 'p' & 'q,' are sitegers and ay 70 # Theorem 8- If 'p' le a prime number If 'p' divides 'a2', then 'p' will divide "a' also, 'a' is a positive integer. (13) Prove that VI & Kreational. - By using Method of Contradiction Assume NZ &s a reational number. $\sqrt{2} = \frac{a}{b}$ (b $\neq 0$) $\sqrt{2} = \sqrt{6}$ (a & b and co-primes) (HCF. as 1) Squaring seoth the sides $(b\sqrt{2})^2 = a^2$ $2b^2 = a^2$ (2 divides a) Let a = 2h (h is an integer) $2b^2 = 4h^2$ $b^2 = 2h^2$ (2 alrides b) o's a k b have 2 as a common factor

so Over assumption is colonop. Hence, NZ Ps an Secrational number * Any real number which has a decimal expansion that terminates can ue expuessed as a vational number voluse denominator de a power 0 10. * Rational number = P/9/ where, of = 2n x 5m and in, im are non -negative interpres * If 'x' is a certional number whose decimal expansion derminates, then 'x' ean he wilten in the form plg, (p,g, are co-primes) and the prame factorisation of egg will up of the form 2" x5m, where in & im are non-negative integers. * If the rational no. x = p/g/ (q/ =0; p, q) are co-promes) such that the prime factoresotton of by, so of the form of 2" x5m or ethner ency 2" or 5m where in, & im are non-negative Integues, then in well have desimal expansion which terminates. * The square of natural number can never end on 2,3,7,048. Get More Learning Materials Here:

If q = 2m x5m the decimal expansion coll derminate. Face eg. = 3/8 = 3/23 = 0.375 1/8 = 1/25 = 0.125 875 /20000 = 875 / 24 X54 = 0.0875 If q + 2" x 5" the demmal expansion will not terminate repeating. fare e.g = 1/7 = 0.142857 (19) Without susing long distion, check of the given rational numbers are terminating or receiving. we have (a) 13/3125 = P/9/ 23) 1056 (45 To verif = 3125 = 27 x 5m 136 9=3125 = 55 x20 21 s. Its terminating Require no. = 23-21 The least number must be added to 1056, so that the sum

88 completely day 88? ble by 23.82.