



64, Shastri Nagar,
Ajmer (Rajasthan)
Ph. 2 62 52 92

Sheet 1

CONCEPTS & COMPETENCE



409/28, Nr. P. O. Bhajan Ganj,
Petrol Pump No-9, Ajmer
Ph. 2 66 52 91



MATHEMATICS HW

ANSWERS & SOLUTIONS REAL NUMBERS

Ans. 1

$$1155 > 506$$

Apply Euclid's division lemma to 1155 and 506.

$$1155 = 506 \times 2 + 143. [a = bq + r, \text{ where } 0 \leq r < b]$$

Since remainder $143 \neq 0$

So, we consider divisor 506 and remainder 143, and apply Euclid's division lemma.

$$506 = 143 \times 3 + 77.$$

Now we consider new divisor 143, and new remainder 77 and apply Euclid's division lemma.

$$143 = 77 \times 1 + 66.$$

Now we consider new divisor 77 and new remainder 66 and apply Euclid's division lemma.

$$77 = 66 \times 1 + 11.$$

$$66 = 11 \times 6 + 0.$$

We notice that remainder become zero and divisor at this stage is 11.

\therefore HCF of 506 and 1155 is 11.

Ans. 2

The maximum numbers of columns = HCF of 616 and 32.

$$616 > 32.$$

By Euclid's division lemma $616 = 32 \times 19 + 8.$

Since, remainder $8 \neq 0$. So, we consider new divisor 32 and new remainder 8. Apply Euclid's division lemma.

$$32 = 8 \times 4 + 0.$$

Since, the remainder at this stage is zero and divisor is 8.

Therefore, HCF of 616 and 32 is 8.

Hence, maximum number of columns = 8.

Ans. 3

Maximum capacity of container = HCF of 495 and 770.

$$495 = 3 \times 3 \times 5 \times 11$$

$$770 = 2 \times 5 \times 7 \times 11$$

$$\text{HCF}(495, 770) = 5 \times 11 = 55$$

Hence maximum capacity of the container = 55 litres.

Ans. 4

Length of longest tape = HCF of 7m 70 cm, 4m 29 cm and 3m 85cm.

Length = 7m 70 cm = 770 cm, Breadth = 4m 29 cm = 429 cm, Height = 3 m 85 cm = 385 cm.

$$429 = 3 \times 11 \times 13$$

$$770 = 2 \times 5 \times 7 \times 11$$

$$385 = 5 \times 7 \times 11. \text{HCF}(770, 429, 385) = 11$$

Hence length of longest tape = 11 cm.

Ans. 5

Let us we first find the HCF of 420 and 110.

$$420 = 2 \times 2 \times 3 \times 5 \times 7$$

$$110 = 2 \times 5 \times 11$$

$$\text{HCF}(420, 110) = 2 \times 5 = 10$$

$$10 = 420 \times 5 + 110 \times x$$

$$10 = 2100 + 110 \times x.$$

$$110 \times x = 10 - 2100$$

$$110 \times x = -2090$$

$$x = \frac{2090}{110} = -\frac{209}{11} = -19$$

Ans. 6

LCM = 1449, HCF = 23

1st number = 207

$$\text{We know that 2nd number} = \frac{\text{LCM} \times \text{HCF}}{\text{1st number}} = \frac{1449 \times 23}{207} = \frac{1449}{9} = 161$$

Hence 2nd number is 161

Ans. 7 Interval of change = LCM of 48, 72 and 108.
 $48 = 2 \times 2 \times 2 \times 2 \times 3 = 2^4 \times 3$
 $72 = 2 \times 2 \times 2 \times 3 \times 3 = 2^3 \times 3^2$
 $108 = 2 \times 2 \times 3 \times 3 \times 3 = 2^2 \times 3^3$
 $\text{LCM}(48, 72, 108) = 2^4 \times 3^3 = 432 \text{ seconds} = 7 \text{ minute } 12 \text{ seconds.}$
 Required time when again ring = 5 past 7.12.

Ans. 8 Difference between divisor and remainder are:
 $35 - 18 = 17$
 $45 - 28 = 17$
 $55 - 38 = 17$
 \therefore Different in each case is same.
 \therefore Required least number is LCM of 35, 45 and 55.

$35 = 5 \times 7 = 5 \times 7$
 $45 = 3 \times 3 \times 5 = 3^2 \times 5$
 $55 = 5 \times 11 = 5 \times 11$
 $\text{LCM}(35, 45, 55) = 3^2 \times 5 \times 7 \times 11$
 $= 9 \times 5 \times 7 \times 11 = 3465$

Ans. 9 Required least number = $3465 - 17 = 3448$.
 If HCF is number is 12 then 12 is a factor of numbers.
 Let the numbers be 12a and 12b according to question

$12a \times 12b = 2160$
 $\Rightarrow ab = \frac{2160}{12 \times 12} = 15$

Values of co-primes a and b with the product 15 are (1, 15), (3, 5)
 So the two digits numbers are 12×1 , 12×15 and 12×3 , 12×5
 12, 180 and 36 and 60.

But 180 is three digit number, so this answer is wrong.

Ans. 10 Least number = LCM of 5, 6, 7, 8

$5 = 5$
 $6 = 2 \times 3$
 $7 = 7$
 $8 = 2 \times 2 \times 2 = 2^3$

$\text{LCM}(5, 6, 7, 8) = 2^3 \times 3 \times 5 \times 7 = 840$

Required least number is of the form $840p + 3$, where p is positive integer.

Put $p = 1$ in $840p + 3$

$\Rightarrow 840 \times 1 + 3 = 843$ which is not divisible by 9

Put $p = 2$ in $840p + 3$

$\Rightarrow 840 \times 2 + 3 = 1683$ which is divisible by 9

Hence, required number is 1683.

(Can also be downloaded from our website: csquareajmer.com)