

SCHOOL ACCOLADES

Std-5 (3rd week)

Elementary Mathematics

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Ex-100) Total area of flower bed = 20 m²

Flowers are planted in $\frac{5}{6}$ of a flower bed.

$$\begin{aligned} \therefore \text{The area of planted flowers} &= \frac{5}{6} \text{ of } 20 \text{ m}^2 \\ &= \left(\frac{5}{6} \times 20\right) \text{ m}^2 = \frac{5 \times 20}{6} \text{ m}^2 = \frac{50}{3} \text{ m}^2 \\ &= 16 \frac{2}{3} \text{ m}^2. \end{aligned}$$

Ans: $16 \frac{2}{3} \text{ m}^2$.

2) Here, $\frac{6}{7}$ kg of oil weights = 1 litre.

$$\begin{aligned} \therefore 1 \text{ kg of oil weights} &= 1 \div \frac{6}{7} \text{ litre} \\ \therefore 4 \text{ kg of oil weights} &= \left(1 \div \frac{6}{7} \times 4\right) \text{ litre} = \left(1 \times \frac{7}{6} \times 4\right) \text{ litre} \\ &= \frac{1 \times 7 \times 4}{6} \text{ litre} = \frac{14}{3} \text{ litre} \\ &= 4 \frac{2}{3} \text{ litre.} \end{aligned}$$

Ans: $4 \frac{2}{3}$ litre.

3) Mr Sajjad had = 24000 taka.

$$\begin{aligned} \text{He donated to an orphanage} &= \left(\frac{5}{12} \text{ of } 24000\right) \text{ taka} \\ &= \frac{5}{12} \times 24000 \text{ taka} \\ &= 10000 \text{ taka.} \end{aligned}$$

$$\begin{aligned} \text{He also donated to an educational institution} &= \left(\frac{3}{4} \text{ of } 24000\right) \text{ taka} \\ &= \frac{3}{4} \times 24000 \text{ taka} \\ &= 18000 \text{ taka.} \end{aligned}$$

$$\begin{aligned} \therefore \text{He total donated} &= (10000 + 18000) \text{ taka} \\ &= 28000 \text{ taka.} \end{aligned}$$

$$\begin{aligned} \therefore \text{He left amount of money} &= 24000 \text{ taka} - 28000 \text{ taka} \\ &= 5000 \text{ taka.} \end{aligned}$$

Ans: 5000 taka.

Chapter-5

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Ex-100 Write 10 multiples:

1) 1st 10 multiples of 5 are

$$\begin{aligned} 5 \times 1 &= 5 & 5 \times 6 &= 30 \\ 5 \times 2 &= 10 & 5 \times 7 &= 35 \\ 5 \times 3 &= 15 & 5 \times 8 &= 40 \\ 5 \times 4 &= 20 & 5 \times 9 &= 45 \\ 5 \times 5 &= 25 & 5 \times 10 &= 50 \end{aligned}$$

2) 1st 10 multiples of 7 are:

$$\begin{aligned} 7 \times 1 &= 7 & 7 \times 6 &= 42 \\ 7 \times 2 &= 14 & 7 \times 7 &= 49 \\ 7 \times 3 &= 21 & 7 \times 8 &= 56 \\ 7 \times 4 &= 28 & 7 \times 9 &= 63 \\ 7 \times 5 &= 35 & 7 \times 10 &= 70 \end{aligned}$$

3) 1st 10 multiples of 8 are: 4) 1st 10 multiples of 9 are:

$$\begin{array}{ll} 8 \times 1 = 8 & 8 \times 6 = 48 \\ 8 \times 2 = 16 & 8 \times 7 = 56 \\ 8 \times 3 = 24 & 8 \times 8 = 64 \\ 8 \times 4 = 32 & 8 \times 9 = 72 \\ 8 \times 5 = 40 & 8 \times 10 = 80 \end{array}$$

$$\begin{array}{ll} 9 \times 1 = 9 & 9 \times 6 = 54 \\ 9 \times 2 = 18 & 9 \times 7 = 63 \\ 9 \times 3 = 27 & 9 \times 8 = 72 \\ 9 \times 4 = 36 & 9 \times 9 = 81 \\ 9 \times 5 = 45 & 9 \times 10 = 90 \end{array}$$

Ex-1: Multiples of 4: 4, 8, 12, 16, 20, 24, 28, 32, 36, 40, 44, 48, 52, 56, 60.

Multiples of 5: 5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60.

1) 3 common multiple of 4 and 5 are:

20, 40, 60

2) Least common multiples of 4 and 5 is 20

Because, the first 3 common multiple of 4 and 5 are 20, 40, 60 out of which 20 is the least.

Ex-1: Multiples of 2: 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30

Multiples of 3: 3, 6, 9, 12, 15, 18, 21, 24, 27, 30

1) 5 common multiple of 2 and 3 are:

6, 12, 18, 24 and 30.

2) Least common multiples of 2 and 3 is 6.

Because, the first 5 common multiple of 2 and 3 are 6, 12, 18, 24 and 30 out of which 6 is the least.

Ex-2: Find the LCM:

1) Multiples of 4: 4, 8, 12, 16, 20.

Multiples of 5: 5, 10, 15, 20, 25.

From the above information, it is seen that the least common multiples of 4 and 5 is 20.

\therefore LCM = 20 Ans: 20

2) Multiples of 6: 6, 12, 18, 24,

Multiples of 9: 9, 18, 27, 36.

From the above information it is seen that the least common multiples of 6 and 9 is 18.

\therefore LCM = 18 Ans: 18

3) Multiples of 3: 3, 6, 9, 12, 15.

Multiples of 6: 6, 12, 18, 24, 30.

From the above information it is seen that the least common multiples of 3 and 6 is 6.

\therefore LCM = 6 Ans: 6.

Ex-3% Find the LCM:

1) Multiples of 2 are: 2, 4, 8, 10, 12, 14, 16, 18, 20.

Multiples of 3 are: 3, 6, 9, 12, 15, 18, 21.

Multiples of 4 are: 4, 8, 12, 16.

From the above information, it is seen that least common multiples of 2, 3 and 4 is 12.

\therefore LCM of 2, 3, 4 is 12. Ans: 12

2) Multiples of 3: 3, 6, 9, 12, 15, 18, 21, 24, 27, 30, 33, 36, 39, 42, 45, 48, 51, 54, 57, 60.

Multiples of 4: 4, 8, 12, 16, 20, 24, 28, 32, 36, 40, 44, 48, 52, 56, 60.

Multiples of 5: 5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60.

From the above information, it is seen that least common multiples of 3, 4, 5 is 60.

\therefore LCM of 3, 4, 5 is 60. Ans: 60

3) Multiples of 2: 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24

Multiples of 4: 4, 8, 12, 16, 20, 24, 28, 32, 36, 40

Multiples of 8: 8, 16, 24.

From the above information, it is seen that least common multiples of 2, 4, 8 is 24.

\therefore LCM of 2, 4, 8 is 24. Ans: 24.

Ex-5.3% Multiples of 8: 8, 16, 24, 32, 40, 48, 56, 64

Multiples of 6: 6, 12, 18, 24, 30, 36, 42, 48

So the length of a side of the smallest square is 24 cm.

Because the least common multiple of 8 and 6 is 24.

1) 4 tiles are necessary to make the smallest square.

$\frac{+3}{7}$ tiles are necessary to make the smallest square.

2) The length of a side of the second smallest square is 48 cm.

Ex-2% Multiples of 12: 12, 24, 36, 48, 60

Multiples of 5: 5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60

~~Multiples of 3: 3, 6, 9, 12, 15, 18, 21, 24, 27, 30, 33, 36, 39, 42, 45, 48~~

So the least common multiples of 12 and 5 is 60.

2. If they ring together at 3 pm. They will ring together next time after 60 minutes or 1 hour of 3 pm.

That is at $(3+1)$ pm = 4 pm. Ans: 4 pm.

Ex-3: Multiples of 15 : 15, 30, 45, ~~60~~, ~~75~~, 90
 Multiples of 25 : 25, 50, 75, 100

∴ The least common multiple of 15, 25 is 75.
 ∴ If they departed the bus station at 8:45 am together, they will depart together next time of 75 minutes or 1 hour 15 minutes, that is at (8:45 + 1 hour 15 minutes) am = 10 am.
 Ans: 10 am.

Ex-1: Write the factors:

1) Here $7 = 7 \times 1$
 ∴ Factors of 7 = 1 and 7

2) Here, $15 = 1 \times 15$
 $= 3 \times 5$
 ∴ Factors of 15 = 1, 3, 5, 15

3) Here $18 = 1 \times 18$
 $= 2 \times 9$
 $= 3 \times 6$
 ∴ Factors of 18 = 1, 2, 3, 6, 9 and 18

4) Here $23 = 1 \times 23$
 ∴ Factors of 23 = 1 and 23

5) Here $36 = 1 \times 36$
 $= 2 \times 18$
 $= 3 \times 12$
 $= 4 \times 9$
 $= 6 \times 6$
 ∴ Factors of 36 = 1, 2, 3, 4, 6, 9, 12, 18 and 36

6) Here $39 = 1 \times 39$
 $= 3 \times 13$
 ∴ Factors of 39 = 1, 3, 13 and 39

7) Here $42 = 1 \times 42$
 $= 2 \times 21$
 $= 3 \times 14$
 $= 6 \times 7$
 ∴ Factors of 42 = 1, 2, 3, 6, 7, 14, 21 and 42

8) $47 = 1 \times 47$
 ∴ Factors of 47 = 1, 47

9) $56 = 1 \times 56$
 $= 2 \times 28$
 $= 4 \times 14$
 $= 7 \times 8$
 ∴ Factors of 56 = 1, 2, 4, 7, 8, 28, 14 and 56.

Ex-2: Find all the common factors and the GCF:

1) Factors of 12 = 1×12
 $= 2 \times 6$
 $= 3 \times 4$

$15 = 1 \times 15$
 $= 3 \times 5$

So factors of 12 = 1, 2, 3, 4, 6, 12 ∴ Factors of 15 = 1, 3, 5, 15

From the above information that common factors of 12 and 15 are 1 and 3. out of which, the greatest common factors of 12 and 15 is 3.

Ans: Common factors 1 and 3 and GCF = 3

$$\begin{aligned} \text{Ex-28 2)} \quad 18 &= 1 \times 18 \\ &= 2 \times 9 \\ &= 3 \times 6 \end{aligned}$$

$$\begin{aligned} 45 &= 1 \times 45 \\ &= 3 \times 15 \\ &= 5 \times 9 \end{aligned}$$

\therefore Factors of 18 = 1, 2, 3, 6, 9, 18

\therefore Factors of 45 = 1, 3, 5, 9, 15, 45

From the above information common factors of 18, 45 are 1, 3, 9 out of the common factors of 18 and 45, the greatest common factor is 9.

Ans: Common factors 1, 3, 9 and GCF = 9

$$\begin{aligned} 3) \quad 28 &= 1 \times 28 \\ &= 2 \times 14 \\ &= 4 \times 7 \end{aligned}$$

$$\begin{aligned} 56 &= 1 \times 56 \\ &= 2 \times 28 \\ &= 4 \times 14 \\ &= 7 \times 8 \end{aligned}$$

\therefore Factors of 28 = 1, 2, 4, 7, 14, 28

\therefore Factors of 56 = 1, 2, 4, 7, 8, 14, 28, 56

From the above information common factors of 28 and 56 are 1, 2, 4, 7, 14 and 28 out of the common factors of 28 and 56 the greatest common factor is 28.

Ans: Common factors = 1, 2, 4, 7, 14, 28 and GCF = 28

$$\begin{aligned} 4) \quad 36 &= 1 \times 36 \\ &= 2 \times 18 \\ &= 3 \times 12 \\ &= 4 \times 9 \end{aligned}$$

$$\begin{aligned} 48 &= 1 \times 48 \\ &= 2 \times 24 \\ &= 3 \times 16 \\ &= 4 \times 12 \\ &= 6 \times 8 \end{aligned}$$

Factors of 36 = 1, 2, 3, 4, 9, 12, 18, 36

Factors of 48 = 1, 2, 3, 4, 6, 8, 12, 16, 24, 48

From the above information common factors of 36 and 48 are 1, 2, 3, 4 and 12 out of the common factors of 36 and 48 the greatest common factor is 12.

Ans: common factors of 36 and 48 are 1, 2, 3, 4 and 12 and GCF = 12.

$$\begin{aligned} 5) \quad 54 &= 1 \times 54 \\ &= 2 \times 27 \\ &= 3 \times 18 \\ &= 6 \times 9 \end{aligned}$$

$$\begin{aligned} 32 &= 1 \times 32 \\ &= 2 \times 16 \\ &= 4 \times 8 \end{aligned}$$

\therefore Factors of 32 = 1, 2, 4, 8, 16, 32

Factors of 54 = 1, 2, 3, 6, 9, 18, 27, 54

From the above information common factors of 54 and 32 are 1 and 2 out of the common factors of 54 and 32 the greatest common factor is 2.

$$\begin{aligned} 6) \quad 52 &= 1 \times 52 \\ &= 2 \times 26 \\ &= 4 \times 13 \end{aligned}$$

\therefore Factors of 52 = 1, 2, 4, 13, 26, 52

$$\begin{aligned} 39 &= 1 \times 39 \\ &= 3 \times 13 \end{aligned}$$

\therefore Factors of 39 = 1, 3, 13, 39

From the above information common factors of 52 and 39 are 1 and 13 out of the common factors of 52 and 39 the greatest common factor is 13.

Ans: Common factors of 52 and 39 = 1, 13 and GCF = 13.

Ex-3: Find the GCF of the following numbers:

$$\begin{aligned} 1) \quad 12 &= 1 \times 12 \\ &= 2 \times 6 \\ &= 3 \times 4 \end{aligned}$$

\therefore Factors of 12 = 1, 2, 3, 4, 6 and 12

$$\begin{aligned} 33 &= 1 \times 33 \\ &= 3 \times 11 \end{aligned}$$

\therefore Factors of 33 = 1, 3, 11, 33

$$\begin{aligned} 24 &= 1 \times 24 \\ &= 2 \times 12 \\ &= 3 \times 8 \\ &= 4 \times 6 \end{aligned}$$

\therefore Factors of 24 = 1, 2, 3, 4, 6, 8, 12, 24

\therefore Common factors of 12, 33, 24 are 1, 3

\therefore GCF of 12, 33 and 24 is 3 Ans: 3

$$\begin{aligned} 2) \quad 39 &= 1 \times 39 \\ &= 3 \times 13 \end{aligned}$$

\therefore Factors of 39 = 1, 3, 13, 39

$$\begin{aligned} 26 &= 1 \times 26 \\ &= 2 \times 13 \end{aligned}$$

\therefore Factors of 26 = 1, 2, 13, 26

$$\begin{aligned} 52 &= 1 \times 52 \\ &= 2 \times 26 \\ &= 4 \times 13 \end{aligned}$$

\therefore Factors of 52 = 1, 2, 4, 13, 26, 52

\therefore Common Factors of 39, 26, 52 are 1, 13

\therefore GCF of 39, 26 and 52 is 13.

$$\begin{aligned} 3) \quad 12 &= 1 \times 12 \\ &= 2 \times 6 \\ &= 3 \times 4 \end{aligned}$$

\therefore Common factors of 12 = 1, 2, 3, 4, 6, 12

$$\begin{aligned} 24 &= 1 \times 24 \\ &= 2 \times 12 \\ &= 3 \times 8 \\ &= 4 \times 6 \end{aligned}$$

\therefore Factors of 24 = 1, 2, 3, 4, 6, 8, 12, 24

$$\begin{aligned} 36 &= 1 \times 36 \\ &= 2 \times 18 \\ &= 3 \times 12 \\ &= 4 \times 9 \\ &= 6 \times 6 \end{aligned}$$

\therefore Factors of 36 = 1, 2, 3, 4, 6, 9, 12, 18, 36

\therefore Common factors of 12, 24, 36 are 1, 2, 3, 4, 6, 12

\therefore GCF of 12, 24 and 36 is = 12.

Ex- 5.6:

1) Here, we have;

length of the graph paper = 18 cm

width of the graph paper = 12 cm.

 \therefore Its area = $18 \text{ cm} \times 12 \text{ cm} = 216 \text{ cm}^2$.Now, $216 = 14 \times 14 + 4 \times 4 + 2 \times 2$ or $10 \times 10 + 10 \times 10 + 4 \times 4$ So, 3 squares of the largest size of 14×14 , 4×4 and 2×2 in cm^2 can be formed from 216 cm^2 of graph paper. Ans: 3 squares.2) Number of boys = 40
Number of girls = 24Now, $40 = 1 \times 40$
 $= 2 \times 20$
 $= 4 \times 10$
 $= 5 \times 8$ \therefore Factors of 40 = 1, 2, 4, 10, 20, 40, 5, 8 $24 = 1 \times 24$
 $= 2 \times 12$
 $= 3 \times 8$
 $= 4 \times 6$ \therefore Factors of 24 = 1, 2, 3, 4, 6, 8, 12, 24. \therefore Common factors of 40 and 24 are 1, 2, 4, 8.

The greatest common factor of 40 and 24 is 8.

 \therefore Maximum 8 groups can be formed with 40 boys and 24 girls where each group will include equal number of boy and girl.Now, number of boy in each group = $40 \div 8 = \frac{40}{8} = 5$ number of girl in each group = $24 \div 8 = \frac{24}{8} = 3$

Ans: 8 groups and in each group, there will be 5 boys and 3 girls.

3) Number of pencils = 60
Number of notebooks = 36Now, $60 = 1 \times 60$
 $= 2 \times 30$
 $= 3 \times 20$
 $= 4 \times 15$
 $= 5 \times 12$
 $= 6 \times 10$ \therefore Factors of 60 = 1, 2, 3, 4, 5, 6, 10, 12, 15, 20, 60 $36 = 1 \times 36$
 $= 2 \times 18$
 $= 3 \times 12$
 $= 4 \times 9$
 $= 6 \times 6$ \therefore Factors of 36 = 1, 2, 3, 4, 6, 9, 12, 18, 36

Now, the common factors of 60 and 36 are 1, 2, 3, 4, 6, 12.

The greatest common factor of 60 and 36 is 12.

∴ The greatest number of students is 12 among which 60 pencils and 36 notebooks can equally be distributed.

Ans: Maximum 12 students.

Ex-2: 1) $12 = 2 \times 2 \times 3$

$$\begin{array}{r} 2 \overline{)12} \\ 2 \overline{)6} \\ 3 \end{array}$$

2) $24 = 2 \times 2 \times 2 \times 3$

$$\begin{array}{r} 2 \overline{)24} \\ 2 \overline{)12} \\ 2 \overline{)6} \\ 3 \end{array}$$

3) $35 = 5 \times 7$

$$\begin{array}{r} 5 \overline{)35} \\ 7 \end{array}$$

4) $45 = 3 \times 3 \times 5$

$$\begin{array}{r} 3 \overline{)45} \\ 3 \overline{)15} \\ 5 \end{array}$$

5) $26 = 2 \times 13$

$$\begin{array}{r} 2 \overline{)26} \\ 13 \end{array}$$

Ex-1: Find the LCM (least common multiple)

1) 4, 6

$$\begin{array}{r} 2 \overline{)4, 6} \\ 2, 3 \end{array}$$

∴ LCM = $2 \times 2 \times 3$
= 12

Ans: 12

2) 8, 10

$$\begin{array}{r} 2 \overline{)8, 10} \\ 4, 5 \end{array}$$

∴ LCM = $2 \times 4 \times 5$
= 40

Ans: 40

3) 3, 5

$$\begin{array}{r} 1 \overline{)3, 5} \\ 3, 5 \end{array}$$

∴ LCM = $1 \times 3 \times 5$
= 15

Ans: 15

4) 12, 15

$$\begin{array}{r} 3 \overline{)12, 15} \\ 4, 5 \end{array}$$

∴ LCM = $3 \times 4 \times 5$
= 60

Ans: 60

5) 24, 36

$$\begin{array}{r} 2 \overline{)24, 36} \\ 2 \overline{)12, 18} \\ 3 \overline{)6, 9} \\ 2, 3 \end{array}$$

∴ LCM = $2 \times 2 \times 2 \times 3 \times 3$
= 72

Ans: 72

6) 35, 32

$$\begin{array}{r} 1 \overline{)35, 32} \\ 35, 32 \end{array}$$

∴ LCM = 35×32
= 1120

Ans: 1120

8) 6, 9, 12

$$\begin{array}{r} 2 \overline{)6, 9, 12} \\ 3 \overline{)3, 9, 6} \\ 1, 3, 2 \end{array}$$

∴ LCM = $2 \times 2 \times 3 \times 3$
= 36

Ans: 36

9) 14, 21, 18

$$\begin{array}{r} 2 \overline{)14, 21, 18} \\ 7 \overline{)7, 21, 9} \\ 3 \overline{)1, 3, 3} \\ 1, 1, 3 \end{array}$$

∴ LCM = $2 \times 3 \times 7 \times 3$
= 126

Ans: 126

10) 16, 24, 15, 28

$$\begin{array}{r} 2 \overline{)16, 24, 15, 28} \\ 2 \overline{)8, 12, 15, 14} \\ 2 \overline{)4, 6, 15, 7} \\ 3 \overline{)2, 3, 15, 7} \\ 2, 1, 5, 7 \end{array}$$

∴ LCM = $2 \times 2 \times 2 \times 2 \times 3 \times 7 \times 5$
= 1680

Ans: 1680

11) 7, 10, 12, 14

$$\begin{array}{r} 2 \overline{)7, 10, 12, 14} \\ 7 \overline{)7, 5, 6, 7} \\ 1, 5, 6, 1 \end{array}$$

∴ LCM = $2 \times 5 \times 6 \times 7$
= 420

Ans: 420