[Date]

M Vijay

[company name]

MATHEMATICS BASICS

# MATHEMATICS BASICS

**Integers**

* Addition(**+**)
* Subtraction(**-**)
* Multiplication(**×**)
* Division(**÷**)
* LCM

**Fractions**

* Addition(**+**)
* Subtraction(**-**)
* Multiplication(**×**)
* Division(**÷**)

**Decimals**

* Addition(**+**)
* Subtraction(**-**)
* Multiplication(**×**)
* Division(**÷**)
* Addition of fractions(**+,F**)
* Subtraction of fractions(**-,F**)
* Multiplication of fractions(**×,F**)
* Division of fractions(**÷,F**)

**Variables**

* Addition(**+**)
* Subtraction(**-**)
* Multiplication(**×**)
* Division(**÷**)
* Addition of fractions(**+,F**)
* Subtraction of fractions(**-,F**)
* Multiplication of fractions(**×,F**)
* Division of fractions(**÷,F**)
* LCM

**Irrational numbers**

* Addition(**+**)
* Subtraction(**-**)
* Multiplication(**×**)
* Division(**÷**)
* Addition of fractions(**+,F**)
* Subtraction of fractions(**-,F**)
* Multiplication of fractions(**×,F**)
* Division of fractions(**÷,F**)
* LCM

**Cmparison**

**Cancellation**

**Convertion**

* Decimal to Fraction
* Fraction to Decimal

**VBODMAS Rule**

**Balancing of Equation**

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# 

# 1.Indian Number System

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Crore** | | **Lakh** | | **Thousand** | | **One** | | |
| H | T | O |
| 7 | 9 | 5 | 4 | 6 | 8 | 2 | 8 | 3 |

Q.1. 795468283

Ans: C L Th O

79, 54, 68

79 Crore 54 Lakh 68 Thousand 283

**Seventy nine** crore **fifty four** lakh **sixty eight** thousand **two hundred and eighty three**

Q.2. 600008205

Ans: C L Th O

60, 00, 08, 205

60 Crore 8 Thousand

**Sixty** crore **eight** thousand **two** hundred and **five**

Q.3. 74003023

Ans: C L Th O

7, 40, 03, 023

7 Crore 40 lakh 3 thousand 23

**Seven c**rore **forty** lakh **three** thousand **twenty three**

Q.4. 50000406

Ans: C L Th O

5, 00, 00, 406

5 Crore 406

**Five c**rore **four** hundred and **six**

Q.5. 275083

Ans: L Th O

2, 75, 083

2 lakh 75 thousand 83

Two lakh seventy five thousand eighty three

|  |  |  |
| --- | --- | --- |
| **S.no.** | **Question** | **Answer** |
| 1 | 1024 | **One** thousand **twenty** four |
| 2 | 1790056 | **Seventeen** lakh **ninety** thousand **fifty six** |
| 3 | 29345683 | **Two** crore **ninety t**hree lakh **forty five** thousand **six** hundred and **eighty three** |
| 4 | 485643000 | **Forty eight** crore **fifty six** lakh **forty three** thousand |
| 5 | 540007000 | **Fifty four** crore **seven** thousand |

# **2.Addition of Integers**

Q.1 27+405+3652+972+3

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Th | H | T | O |  |
|  | 2 | 1 | 1 |  |  |
|  |  |  | 2 | 7 |  |
|  |  | 4 | 0 | 5 |  |
|  | 3 | 6 | 5 | 2 |  |
|  |  | 9 | 7 | 2 |  |
|  |  |  |  | 3 |  |
|  | **5** | **0** | **5** | **9** |  |

Ans:

27+405+3652+972+3 = 5059

|  |  |  |
| --- | --- | --- |
| **S.no.** | **Question** | **Answer** |
| 1 | 23+457+9052+36592 | 46124 |
| 2 | 209+4893+20+35+428 | 5585 |
| 3 | 1796+2794+405+32 | 5027 |
| 4 | 25+296+758+8034 | 9113 |
| 5 | 2000+105+2796 | 4901 |

# 3.Addition of Decimal numbers

Q.1 2.5+0.7+0.002+4.96+237.42

Ans:

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |  |  |
|  | Th | H | T | O |  |  |  |
|  |  |  |  | 2 |  |  |  |
|  |  |  |  | 2 | 5 | 0 | 0 |
|  |  |  |  | 0 | 7 | 0 | 0 |
|  |  |  |  | 0 | 0 | 0 | 2 |
|  |  |  |  | 4 | 9 | 6 | 0 |
|  |  | 2 | 3 | 7 | 4 | 2 | 0 |
|  |  | **2** | **4** | **5** | **5** | **8** | **2** |

2.5+0.7+0.002+4.96+237.42= **245.582**

Q.2 0.3+5.46+92+3

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| H | T | O |  |  |
|  | 1 |  |  |  |
|  |  | 0 | 3 | 0 |
|  |  | 5 | 4 | 6 |
|  | 9 | 2 | 0 | 0 |
|  |  | 3 | 0 | 0 |
| **1** | **0** | **0** | **7** | **6** |

|  |
| --- |
| 92=92.  3=3.  3=3.0  =3.0  =300  =3.000  =3.00000000 |

0.3+5.46+92+3 = **100.76**

|  |  |  |
| --- | --- | --- |
| **S.no.** | **Question** | **Answer** |
| 1 | 0.2+4.3+24.72+2.254 | 31.474 |
| 2 | 24.36+4+2.3+7.62+2.456 | 40.736 |
| 3 | 2.8+8.2+3.44+24 | 38.44 |
| 4 | 0.05+0.005+0.02+3 | 3.075 |
| 5 | 4.7+2.724+0.756+9 | 17.18 |

# 4.Comparison of Integers & Decimals

|  |  |  |
| --- | --- | --- |
| Less than | **Apple with solid fill** **Apple with solid fill** | 2 5  2 is less than 5 |
| Greater than | **Apple with solid fill Apple with solid fill** | 7 3  7 is greater than 3 |
| Equal to = | **Apple with solid fillApple with solid fill** | 4 = 4  4 is equal to 4 |

|  |
| --- |
| 1. Count the digits before decimal point(Bigger number contain more number of digits) 2. Compare the digits from left to right(Bigger number contain big digit) |

|  |  |  |  |
| --- | --- | --- | --- |
| Q.1 | 275 |  | 23589 |

Ans: Number of digits before decimal point in 275 is 3

Number of digits before decimal point in 23589 is 5

|  |  |  |
| --- | --- | --- |
| 275 |  | 23589 |

Therefore 23589 is bigger than275

|  |  |  |  |
| --- | --- | --- | --- |
| Q.2 | 172.005 |  | 42.73 |

Ans: Number of digits before decimal point in 172.005 is 3

Number of digits before decimal point in 42.73 is 2

|  |  |  |
| --- | --- | --- |
| 172.005 |  | 42.73 |

|  |  |  |  |
| --- | --- | --- | --- |
| Q.3 | 2053 |  | 2078 |

Ans: Number of digits before decimal point in 2053 is 4

Number of digits before decimal point in 2078 is 4

Number of digits are same in both the numbers ,hence go for 2nd condition, Compare the digits from left to right.

2=2

0=0

5<7

Therefore 2078 is bigger than 2053 because it contain big digit 7

|  |  |  |
| --- | --- | --- |
| 2053 |  | 2078 |

|  |  |  |  |
| --- | --- | --- | --- |
| Q.4 | 458.534 |  | 459.23 |

Ans: Number of digits before decimal point in 458.534 is 3

Number of digits before decimal point in 459.23 is 3

Number of digits are same in both the numbers ,hence go for 2nd condition, Compare the digits from left to right.

4=4

5=5

8<9

Therefore 459.23 is bigger than 458.534 because it contain big digit 9

|  |  |  |
| --- | --- | --- |
| 458.534 |  | 459.23 |

|  |  |  |  |
| --- | --- | --- | --- |
| Q.5 | 254.0562 |  | 254.053967 |

Ans: Number of digits before decimal point in 254.0562 is 3

Number of digits before decimal point in 254.053967 is 3

Number of digits are same in both the numbers ,hence go for 2nd condition, Compare the digits from left to right.

2=2

5=5

4=4

0=0

5=5

6>3

Therefore 254.0562 is bigger than 254.053967 because it contain big digit 6

|  |  |  |
| --- | --- | --- |
| 254.0562 |  | 254.053967 |

|  |  |  |  |
| --- | --- | --- | --- |
| Q.6 | 3.4 |  | 3.400025 |

Ans: Number of digits before decimal point in 3.4 is 1

Number of digits before decimal point in 3.400025 is 1

Number of digits are same in both the numbers ,hence go for 2nd condition, Compare the digits from left to right.

|  |
| --- |
| 3.4=3.40  =3.400  =3.4000  =3.40000  =3.4000000000000 |

3=3

4=4

0=0

0=0

0=0

0<2

Therefore 3.400025 is bigger than 3.4 because it contain big digit 2

|  |  |  |
| --- | --- | --- |
| 3.4 |  | 3.400025 |

|  |  |  |  |
| --- | --- | --- | --- |
| Q.7 | 45 |  | 45.00 |

Ans: Number of digits before decimal point in 45 is 2

Number of digits before decimal point in 45.00 is 2

Number of digits are same in both the numbers ,hence go for 2nd condition, Compare the digits from left to right.

|  |
| --- |
| 45=45.0  =45.00  =45.000  =45.0000  =45.000000000000 |

4=4

5=5

0=0

0=0

Therefore 45 is equal to 45.00

|  |  |  |
| --- | --- | --- |
| 45 |  | 45.00 |

|  |  |  |
| --- | --- | --- |
| **S.no.** | **Question** | **Answer** |
| 1 | |  |  |  | | --- | --- | --- | | 25987 |  | 435 | |  |
| 2 | |  |  |  | | --- | --- | --- | | 32.73 |  | 123.456 | |  |
| 3 | |  |  |  | | --- | --- | --- | | 57.468 |  | 25.89845 | |  |
| 4 | |  |  |  | | --- | --- | --- | | 245 |  | 245.023 | |  |
| 5 | |  |  |  | | --- | --- | --- | | 34.4700 |  | 34.47 | |  |

# 5.Subtraction of Integers

Q.1 2736 ─ 2052

Ans: 2736 > 2052

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |  |
|  | Th | H |  | T | O |  |
|  |  | 6 |  |  |  |  |
| + | 2 | ~~7~~ | 1 | 3 | 6 |  |
| ─ | 2 | 0 |  | 5 | 2 |  |
|  | **0** | **6** |  | **8** | **4** |  |

2736 ─ 2052 = 684

Q.2 157 ─ 4206

Ans: 157 < 4206

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | Th | H |  | T |  | O | |
|  |  |  | 1 |  | 9 |  |  |  |
|  | ─ | 4 | ~~2~~ | ~~1~~ | ~~0~~ | 1 | 6 |  |
|  | **+** |  | 1 |  | 5 |  | 7 |  |
|  | ─ | **4** | **0** |  | **4** |  | **9** |  |

|  |  |  |
| --- | --- | --- |
| **S.no.** | **Question** | **Answer** |
| 1 | 2549 ─ 352 | 2197 |
| 2 | 1968 ─ 9732 | ─ 7764 |
| 3 | 24 ─ 1982 | ─ 1958 |
| 4 | ─ 205 + 1785 | 1580 |
| 5 | 452 ─ 2000 | ─ 1548 |

157 ─ 4206 = ─**4049**

# 6.Subtraction of Decimal numbers

Q.1 524.362 ─ 216.32

Ans: 524.362 > 216.32

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | H | T |  | O |  |  |  |
|  |  | 1 |  |  |  |  |  |
| + | 5 | ~~2~~ | 1 | 4 | 3 | 6 | 2 |
| ─ | 2 | 1 |  | 6 | 3 | 2 | 0 |
|  | **3** | **0** |  | **8** | **0** | **4** | **2** |

524.362 ─ 216.32 = 308.042

Q.2 1 ─ 0.278

Ans: 1 > 0.278

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | O |  |  |  |  |  |  |
|  |  | 0 |  | 9 |  | 9 |  |  |
|  | + | ~~1~~ | ~~1~~ | ~~0~~ | ~~1~~ | ~~0~~ | 1 | 0 |
|  | ─ | 0 |  | 2 |  | 7 |  | 8 |
|  |  | **0** |  | **7** |  | **2** |  | **2** |

1 ─ 0.278 = 0.722

|  |  |  |
| --- | --- | --- |
| **S.no.** | **Question** | **Answer** |
| 1 | 2 ─ 0.02 | 1.98 |
| 2 | 105.45 ─ 25.0985 | 80.3515 |
| 3 | ─ 2.5 + 47.23 | 44.73 |
| 4 | 2000.02 ─ 523.479 | 1476.541 |
| 5 | ─ 5.467 + 0.029 | ─ 5.438 |

# 7.Multiplication of Integers

|  |
| --- |
| * Multiplication of two same symbols is “+” * Multiplication of two different symbols is “─”   **+ × + = +**  **─ × ─ = +**  **+ × ─ = ─**  **─ × + = ─**  **(─)even  = +**  **(+)odd  = ─** |

Q.1 2052 **×** 258

Ans:

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | L | Tth | Th | H | T | O |  |  |  |  |  |  |
|  |  |  | 2 | 0 | 5 | 2 |  |  |  |  |  |  |
|  |  |  | × | 2 | 5 | 8 |  | ~~1~~ |  | ~~1~~ |  | ~~1~~ |
|  |  | 1 | 6 | 4 | 1 | 6 |  | ~~4~~ |  | ~~2~~ |  |  |
|  | 1 | 0 | 2 | 6 | 0 | × |  |  |  |  |  |  |
|  | 4 | 1 | 0 | 4 | × | × |  |  |  |  |  |  |
|  |  |  | 1 |  |  |  |  |  |  |  |  |  |
|  | **5** | **2** | **9** | **4** | **1** | **6** |  |  |  |  |  |  |

2052 **×** 258 = 529416

Q.2 (─2)3  =?

Ans: (─2)3  = (─)3 (2)3 [ (─)odd  = ─ , (2)3 =8 ]

= ─8

Q.3 (─3)2  =?

Ans: (─3)2  = (─)2 (3)2 [ (─)even  = + , (3)2 =9 ]

= +9

=9

Q.4 (─2) × (─1) × (─5) × (─2) = ?

Ans: (─2) × (─1) × (─5) × (─2) = (─)4 (2×1×5×2) [ (─)even  = + ]

= + 20

=20

|  |  |  |
| --- | --- | --- |
| **S.no.** | **Question** | **Answer** |
| 1 | 2354 × 201 | 473154 |
| 2 | 4002 ×2549 | 10201098 |
| 3 | 20 × 245 × 436 | 2136400 |
| 4 | (─3)4 | 81 |
| 5 | (─1)20203 | ─1 |

# 8.Multiplication of Decimal numbers

|  |
| --- |
| * Multiply the numbers with out decimal point * Count the digits after decimal point in the question and write the decimal point after counted places from right to left in the answer * Write zeroes in empty places |

Q.1 2.052 **×** 2.58

Ans: 2.052 **×** 2.58 3+2=5

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | L | Tth | Th | H | T | O |  |  |  |  |  |  |
|  |  |  | 2 | 0 | 5 | 2 |  |  |  |  |  |  |
|  |  |  | × | 2 | 5 | 8 |  | ~~1~~ |  | ~~1~~ |  | ~~1~~ |
|  |  | 1 | 6 | 4 | 1 | 6 |  | ~~4~~ |  | ~~2~~ |  |  |
|  | 1 | 0 | 2 | 6 | 0 | × |  |  |  |  |  |  |
|  | 4 | 1 | 0 | 4 | × | × |  |  |  |  |  |  |
|  |  |  | 1 |  |  |  |  |  |  |  |  |  |
|  | **5** | **2** | **9** | **4** | **1** | **6** |  |  |  |  |  |  |

|  |
| --- |
| 529416 =529416. |

2052 × 258 = 529416

2.052 ×2.58 = 5. 2 9 4 1 6

= 5.29416

Q.2 0.002 × 0.0006

Ans: 0.002 ×0.0006 3+4=7

0002 ×00006

2 × 6 =12

0.002 × 0.0006 = 0.0 0 0 0 0 1 2

= 0.0000012

|  |
| --- |
| There is no value for zeroes after decimal point without having any digit except zero after them |

Q.3 2.125 × 100

Ans: 2.125 × 100 =3

1. 100 = 212500

2.125 × 100 = 2 1 2. 5 0 0

= 212.500

= 212.5

|  |  |  |
| --- | --- | --- |
| **S.no.** | **Question** | **Answer** |
| 1 | 1.25 × 3.2 | 4 |
| 2 | 2.496 × 100 | 249.6 |
| 3 | 0.002 × 0.009 | 0.000018 |
| 4 | 1.2 × 0.003 | 0.0036 |
| 5 | (─0.1) (─0.002) (0.03) (0.4) (─0.001) | ─ 0.0000000024 |

# 9.Division of Integers

|  |
| --- |
| Dividend ÷ Divisor  Divisor ) Dividend ( Quotient  \_\_\_\_\_\_\_\_\_\_\_  Remainder |

Q.1 2536 ÷ 4

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 4) | 2 | 5 | 3 | 6 | (0634 |
|  | 2 | 4 |  |  |  |
|  | 0 | 1 | 3 |  |  |
|  |  | 1 | 2 |  |  |
|  |  | 0 | 1 | 6 |  |
|  |  |  | 1 | 6 |  |
|  |  |  | 0 | |  |

2536 ÷ 4 = 634

Q.2 21025 ÷ 3

Ans:

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 3) | 2 | 1 | 0 | 2 | 5 | (07008.333.... | | | | | | | | | | | |
|  | 2 | 1 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | 0 | 0 | 0 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  | 0 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  | 0 | 2 | 5 |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  | 2 | 4 |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  | 0 | 1 | 0 |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  | 9 |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  | 1 | 0 |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  | 9 |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  | 1 | 0 |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  | 9 |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  | 1 |  |  |  |  |  |  |  |  |  |

21025 ÷ 3 = 7008.333……

=7008.

Q.3 221 ÷ 11

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 11) | | 2 | 2 | 1 | (20.0909…. | | | | | | | | | | |
|  |  | 2 | 2 |  |  |  |  |  |  |  |  |  |  |  |  | |
|  |  | 0 | 0 | 1 | 0 | 0 |  |  |  |  |  |  |  |  |  | |
|  |  |  |  |  | 9 | 9 |  |  |  |  |  |  |  |  |  | |
|  |  |  |  |  |  | 1 | 0 | 0 |  |  |  |  |  |  |  | |
|  |  |  |  |  |  |  | 9 | 9 |  |  |  |  |  |  |  | |
|  |  |  |  |  | |  |  | 1 |  |  |  |  |  |  |  | |
|  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  | |
|  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  | |

221 ÷ 11 = 20.0909…

= 20.

|  |  |  |
| --- | --- | --- |
| **S.no.** | **Question** | **Answer** |
| 1 | 102 ÷ 4 | 25.5 |
| 2 | 28101 ÷ 11 |  |
| 3 | 1 ÷ 8 | 0.125 |
| 4 | 1 ÷ 6 |  |
| 5 | 4051 ÷ 5 | 810.2 |

# 10.Cancellation

Q.1

Ans:

0634

= = = 634

1

Q.2

Ans:

07008.333…

= = = 7008.

1

Q.3

Ans:

20.0909…

= = = 20.

1

|  |
| --- |
|  |
|  |
|  |
|  |  |

Q.4

Ans:

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |  |  | **12** |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  | **~~24~~** |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  | **~~48~~** |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  | **~~96~~** |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  | **~~288~~** |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  | **~~864~~** |  |  |  |  |  |  |  |  |  |
| **1728** | = |  |  |  |  |  |  | **~~1728~~** |  | 2 | 3 | 3 | 2 | 2 | 2 | = | **1728** |
| **144** |  |  |  |  |  | **~~144~~** |  | **144** |
|  |  |  |  |  |  |  |  | **~~72~~** |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  | **~~24~~** |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  | **~~8~~** |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  | **~~4~~** |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  | **~~2~~** |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  | **1** |  |  |  |  |  |  |  |  |  |

|  |  |  |
| --- | --- | --- |
| **S.no.** | **Question** | **Answer** |
| 1 |  | 25.5 |
| 2 |  | 2554. |
| 3 |  | 0.125 |
| 4 |  | 0.1 |
| 5 |  | 125 |

# 11.Convertion

Decimal to fraction :

|  |
| --- |
| * Remove decimal point and write the number as it is in the place of **numerator**, write 1 is in the place of **denominator** and write zeros “0” after 1(Number of zeroes are equal to number of digits after decimal point) * Remove decimal point and write the number as it is in the place of **denominator**, write 1 is in the place of **numerator** and write zeros “0” after 1(Number of zeroes are equal to number of digits after decimal point) |

05

Q.1 2.5 = =

02

1

Q.2 0.002 = = =

~~0~~500

~~0~~64

~~128~~

Q.3 2.56 = =

~~050~~

25

1 0500

Q.4 = = =  **=**500

2 1

Fraction to decimal :

|  |
| --- |
| * If 10, 100, 1000, …….. are in the place of denominator, move the decimal point towards left in numerator * If there is no decimal point in the number then decimal point is present after last digit in the number(Right side) |

Q.1 = 0.0 2 = 0.02

Q.2 = 2 4.7 5 6 = 24.756

Q.3 = 1 2 7 .4 5 = 1.2745

Q.4 = 4 9 8 6 2.0 5 2 = 49.862052

|  |  |  |
| --- | --- | --- |
| **S.no.** | **Question** | **Answer** |
| 1 | 0.007 |  |
| 2 | 1.6 |  |
| 3 | 6.25 |  |
| 4 |  | 24.576 |
| 5 |  | 0.0003 |

# 12.Multiplication of Fraction

|  |
| --- |
| * Multiply all numerators and write as a numerator * Multiply all denominators and write as a denominator * Cancellation |

Q.1 × × ×

Ans: =

=

=

=

= 0.125

(or)

× × ×

=

=

=

=

=

= 1.25

= 0.125

Q.2 × × × 6

=

=

=

=

= 40

|  |  |  |
| --- | --- | --- |
| **S.no.** | **Question** | **Answer** |
| 1 | × ×6 | 3 |
| 2 | × ××5 | 25 |
| 3 | ×  ×  × × | 1 |
| 4 | × ×3 × | 2 |
| 5 | 24 × | 20 |

# 13.Multiplication of Fraction in Decimals

Q.1 × × 0.5

=

=

=

=

=

=

= 10

|  |  |  |
| --- | --- | --- |
| **S.no.** | **Question** | **Answer** |
| 1 | × ×0.2 | 15 |
| 2 | × × 0.01 | 64 |
| 3 | 3.618 × | 603 |
| 4 | × × 0.4 | 0.01 |
| 5 | 2 × × 0.1 | 0.1 |

# 14.Division of Fraction

|  |
| --- |
| * Write first term as it is * Write **×**(Multiplication symbol) instead of (Division symbol) * Write reciprocal of second term * (*or*) = × * (*or*) = × * (*or*) = = × |

Q.1 (*or*)

Ans:

= ×

=

=

=

=

= 0.5

Q.2 (*or*)

= ×

=

=

=

= 10

Q.3 (*or*) =

Ans:

= ×

|  |  |  |
| --- | --- | --- |
| **S.no.** | **Question** | **Answer** |
| 1 |  | 2.5 |
| 2 |  | 49 |
| 3 |  | 0.6 |
| 4 |  | 6 |
| 5 |  | 0.25 |

=

=

=

=

= 1.

# 15.Division of Fraction in Decimals

Q.1 (*or*)

Ans:

= ×

=

=

=

=

=

= 16

Q.2 (*or*)

Ans:

|  |  |  |
| --- | --- | --- |
| **S.no.** | **Question** | **Answer** |
| 1 |  | 0.25 |
| 2 |  | 9 |
| 3 |  | 100 |
| 4 |  | 1000 |
| 5 |  | 0.0045 |

= ×

=

=

=

=

=

= 2.4

# 16.LCM of Integers

Q.1 What is the LCM of 8,10,16,6,15 ?

Ans:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |
|  | 2 | 8 , 10 , 16 , 6 ,15 |  |  |  |
|  | 2 | 4 , 5 , 8 , 3 , 15 |  |  |  |
|  | 2 | 2 , 5 , 4 , 3 , 15 |  |  |  |
|  | 3 | 1 , 5 , 2 , 3 , 15 |  |  |  |
|  | 5 | 1 , 5 , 2 , 1 , 5 |  |  |  |
|  |  | 1 , 1 , 2 , 1 , 1 |  |  |  |
| LCM of 8, 10, 16, 6, 15 = 2 × 2 × 2 × 3 × 5 × 2  = 240 | | | | | |
|  | | | | | |
|  | | | | | |
|  | | | | | |

Q.2 What is the LCM of 24, 36, 42 ?

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 3 | 24 , 36 , 42 |  |  |  |  |  |
| 2 | 8 , 12 , 14 |  |  |  |  |  |
| 2 | 4 , 6 , 7 |  |  |  |  |  |
|  | 2 , 3 , 7 |  |  |  |  |  |
| LCM of 24, 36, 42 = 3 × 2 × 2 × 2 × 3 × 7   |  |  |  | | --- | --- | --- | | **S.no.** | **Question** | **Answer** | | 1 | What is the LCM of 3, 9, 12, 6 | 36 | | 2 | What is the LCM of 10, 1000, 100 | 1000 | | 3 | What is the LCM of 2, 24, 6, 12, 3 | 24 | | 4 | What is the LCM of 5, 2, 13 | 130 | | 5 | What is the LCM of 16, 2, 8 | 16 |   = 504 | | | | | | |
|  | | | | | | |

# 17.Addition of Fraction

|  |
| --- |
| * If they are like fractions write the numerators as it is and write denominator one time * If they are unlike fractions(denominators are not same) find the LCM of denominators and make all the denominators as LCM(i.e. like fractions) |

Q.1 +  +

Ans:

= +  +

=

=

= 5

Q.2 +  +

|  |  |  |
| --- | --- | --- |
| 2 | 2 , 6 , 12 |  |
| 3 | 1 , 3 , 6 |  |
|  | 1 , 1 , 2 |  |
| LCM = 2 × 3 × 2  = 12 | | |

Ans: = +  +

= +  +

=

=

=

=

= 2.33…

= 2.

|  |  |  |
| --- | --- | --- |
| 5 | 5 , 10 |  |
|  | 1 , 2 |  |
| LCM = 5 × 2  = 10 | | |

Q.2 +  + 2

Ans: = +  +

= +  +

= +  +

=

=

= 2.8

= 2.8

|  |  |  |
| --- | --- | --- |
| **S.no.** | **Question** | **Answer** |
| 1 | +  +  + | 3 |
| 2 | +  +  + 4 | 6.8 |
| 3 | +  +  + 3 | 6.8 |
| 4 | +  + | 2.2 |
| 5 | +  + 1 | 2 |

# 18.Addition of Fraction in Decimals

Q.1 +  +

Ans: = +  +

= +  +

= +  +

= +  +

|  |  |
| --- | --- |
| 2 | 2 , 20 |
|  | 1 , 10 |
| LCM = 2 × 10  = 20 | | |

= +  +

= +  +

= +  +

=

|  |  |  |
| --- | --- | --- |
| **S.no.** | **Question** | **Answer** |
| 1 | +  + | 16. |
| 2 | 0.5 +  + | 34.5 |
| 3 | +  +  + 0.1 | 5.4 |
| 4 | 0.1 + | 10.1 |
| 5 | +  +  + 0.2 | 15.4 |

=

=

= 107.65

= 107.65

# 19.Subtraction of Fraction

Q.1

Ans:

=

=

=

=

= 1.4

Q.2

|  |  |
| --- | --- |
| 2 | 2 , 20 |
|  | 1 , 10 |
| LCM = 2 × 10  = 20 | | |

Ans: =

=

=

=

=

= 0.9

= 0.9

Q.3  +

|  |  |  |
| --- | --- | --- |
| 2 | 12 , 6 , 4 , 3 |  |
| 2 | 6 , 3 , 2 , 3 |  |
| 3 | 3 , 3 , 1 , 3 |  |
|  | 1 , 1 , 1 , 1 |  |
| LCM = 2 × 2 × 3  = 12 | | |

Ans: =  +

=  +

=  +

|  |  |
| --- | --- |
| 2 | 2 , 20 |
|  | 1 , 10 |
| LCM = 2 × 10  = 20 | | |

=

=

=

=

=

= 0.166…

= 0.1

|  |  |  |
| --- | --- | --- |
| **S.no.** | **Question** | **Answer** |
| 1 |  | 0.25 |
| 2 | 1 | 2.5 |
| 3 | + |  |
| 4 | 1 | 0.5 |
| 5 | +  2 | .5 |

# 20.Subtraction of Fraction in Decimals

Q.1

Ans: =

=

=

=

|  |  |
| --- | --- |
|  | 80 , 1 |
|  |  |
| LCM = 80 × 1  = 80 | | |

=

=

=

=

=

|  |  |  |
| --- | --- | --- |
| **S.no.** | **Question** | **Answer** |
| 1 |  |  |
| 2 | 2.5 | 1.9 |
| 3 |  | 1.75 |
| 4 |  | 27 |
| 5 |  | 0 |

=

= 19.9875

= 19.9875

# 21.Addition of Variables

|  |
| --- |
| 3 |

Q.1

Ans:

(or)

9

Q.2

Ans:

Q.3

|  |  |  |
| --- | --- | --- |
| **S.no.** | **Question** | **Answer** |
| 1 |  |  |
| 2 |  |  |
| 3 |  |  |
| 4 |  |  |
| 5 |  |  |

# 22.Subtraction of Variables

|  |
| --- |
|  |

Q.1

Ans:

(or)

Q.2

Ans:

Q.3

|  |  |  |
| --- | --- | --- |
| **S.no.** | **Question** | **Answer** |
| 1 |  |  |
| 2 |  |  |
| 3 |  |  |
| 4 |  |  |
| 5 |  |  |

# 23.Multiplication of Variables

|  |
| --- |
|  |

Q.1

Q.2 5

Q.3

Q.4

Q.5

Q.5

|  |  |  |
| --- | --- | --- |
| **S.no.** | **Question** | **Answer** |
| 1 |  |  |
| 2 |  |  |
| 3 |  |  |
| 4 |  |  |
| 5 |  |  |

# 24.Division of Variables

|  |
| --- |
| = 1 |

Q.1

Ans:

Q.2

Ans:

Q.3

Ans:

|  |  |  |
| --- | --- | --- |
| **S.no.** | **Question** | **Answer** |
| 1 |  |  |
| 2 |  |  |
| 3 |  |  |
| 4 |  |  |
| 5 |  |  |

# 25.Multiplication of Fraction in Variables

Q.1

|  |  |  |
| --- | --- | --- |
| **S.No.** | **Question** | **Answer** |
| 1 |  |  |
| 2 |  |  |
| 3 |  |  |
| 4 |  |  |
| 5 |  |  |

# 26.Division of Fraction in Variables

Q.1

Ans:

|  |  |  |
| --- | --- | --- |
| **S.no.** | **Question** | **Answer** |
| 1 |  |  |
| 2 |  |  |
| 3 |  |  |
| 4 |  |  |
| 5 |  |  |

# 27.LCM of Variables

Q.1 What is the LCM of ?

Ans:

|  |  |  |  |
| --- | --- | --- | --- |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
| LCM | | | |

Q.1 What is the LCM of ?

Ans:

|  |  |  |  |
| --- | --- | --- | --- |
| 3 |  |  |  |
| 2 |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
| LCM | | | |

|  |  |  |
| --- | --- | --- |
| **S.no.** | **Question** | **Answer** |
| 1 |  |  |
| 2 |  |  |
| 3 |  |  |
| 4 |  |  |
| 5 |  |  |

# 28.Addition of Fraction in Variables

Q.1

Ans:

|  |  |  |  |
| --- | --- | --- | --- |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
| LCM | | | |

Q.1

Ans:

|  |  |  |  |
| --- | --- | --- | --- |
| 2 |  |  |  |
| 2 |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
| LCM | | | |

|  |  |  |
| --- | --- | --- |
| **S.no.** | **Question** | **Answer** |
| 1 |  |  |
| 2 |  |  |
| 3 |  |  |
| 4 |  |  |
| 5 |  |  |

# 29.Subtraction of Fraction in Variables

Q.1

Ans:

|  |  |  |  |
| --- | --- | --- | --- |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
| LCM | | | |

Q.2

Ans:

|  |  |  |  |
| --- | --- | --- | --- |
|  | , |  |  |
|  |  |  |  |
| LCM | | | |

|  |  |  |
| --- | --- | --- |
| **S.No.** | **Question** | **Answer** |
| 1 |  |  |
| 2 |  |  |
| 3 |  |  |
| 4 |  |  |
| 5 |  |  |

# 30.Addition of Irrational numbers

|  |
| --- |
|  |

Q.1

Ans:

(*or*)

Q.2

Ans:

|  |  |
| --- | --- |
| 3 | 9 |
|  | 3 |

|  |  |
| --- | --- |
| 2 | 6 |
|  | 3 |

Q.3

Ans:

|  |  |
| --- | --- |
| 2 | 8 |
| 2 | 4 |
|  | 2 |

|  |  |
| --- | --- |
| 2 | 4 |
|  | 2 |

|  |  |  |
| --- | --- | --- |
| S.no. | Question | Answer |
| 1 |  |  |
| 2 |  |  |
| 3 |  |  |
| 4 |  |  |
| 5 |  | 3 |

# 31.Subtraction of Irrational numbers

|  |
| --- |
|  |

Q.1

Ans:

(*or*)

Q.2

Ans:

(or)

|  |  |
| --- | --- |
| 2 | 8 |
| 2 | 4 |
|  | 2 |

Q.3

Ans:

|  |  |
| --- | --- |
| 2 | 244 |
| 2 | 122 |
|  | 61 |

|  |  |
| --- | --- |
| 3 | 27 |
| 3 | 9 |
|  | 3 |

|  |  |  |
| --- | --- | --- |
| S.no. | Question | Answer |
| 1 |  |  |
| 2 |  |  |
| 3 |  |  |
| 4 |  |  |
| 5 |  |  |

# 32.Multiplication of Irrational numbers

|  |
| --- |
|  |

Q.1

Ans:

(*or*)

Q.2

Ans:

(*or*)

Q.3

Ans:

|  |  |  |
| --- | --- | --- |
| S.no. | Question | Answer |
| 1 |  |  |
| 2 |  |  |
| 3 |  |  |
| 4 |  |  |
| 5 |  |  |

# 33.Division of Irrational numbers

|  |
| --- |
|  |

Q.1

|  |  |
| --- | --- |
| 2 | 6 |
|  | 3 |

Ans:

Rationalizing the denominator

|  |
| --- |
| * Root should not be there in the place of denominator * Rationalize the denominator |

Q.2

Ans:

Q.3

|  |  |
| --- | --- |
| 2 | 8 |
| 2 | 4 |
|  | 2 |

Ans:

Q.4

Ans:

|  |  |
| --- | --- |
| 3 | 27 |
| 3 | 9 |
|  | 3 |

|  |  |
| --- | --- |
| 3 | 81 |
| 3 | 27 |
| 3 | 9 |
|  | 3 |

Rationalizing the denominator

|  |  |  |
| --- | --- | --- |
| S.no. | Question | Answer |
| 1 |  |  |
| 2 |  | 41. |
| 3 |  |  |
| 4 |  |  |
| 5 |  |  |

# 34.Multiplication of Fraction in Irrational numbers

Q.1

|  |  |
| --- | --- |
| 2 | 8 |
| 2 | 4 |
|  | 2 |

|  |  |
| --- | --- |
| 2 | 6 |
|  | 3 |

Ans:

|  |  |  |
| --- | --- | --- |
| S.no. | Question | Answer |
| 1 |  | 1 |
| 2 |  |  |
| 3 |  |  |
| 4 |  |  |
| 5 |  |  |

# 35.Division of Fraction in Irrational numbers

Q.1

Ans:

|  |  |
| --- | --- |
| 2 | 12 |
| 2 | 6 |
|  | 3 |

|  |  |
| --- | --- |
| 3 | 27 |
| 3 | 9 |
|  | 3 |

|  |  |
| --- | --- |
| 5 | 125 |
| 5 | 25 |
|  | 5 |

Q.2

|  |  |
| --- | --- |
| 2 | 12 |
| 2 | 6 |
|  | 3 |

Ans:

|  |  |
| --- | --- |
| 3 | 27 |
| 3 | 9 |
|  | 3 |

|  |  |
| --- | --- |
| 5 | 125 |
| 5 | 25 |
|  | 5 |

Q.3

Ans:

|  |  |
| --- | --- |
| 2 | 40 |
| 2 | 20 |
| 2 | 10 |
|  | 5 |

=1

|  |  |  |
| --- | --- | --- |
| **S.no.** | **Home Work** | **Answers** |
| 1 |  |  |
| 2 |  |  |
| 3 |  |  |
| 4 |  |  |
| 5 |  |  |

# 36.LCM of Irrational numbers

Q.1

|  |  |
| --- | --- |
| 2 | 6 |
|  | 3 |

|  |  |
| --- | --- |
| 2 | 10 |
|  | 5 |

Ans:

|  |  |  |  |
| --- | --- | --- | --- |
| 2 |  |  |  |
| 3 |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  | 1 , 1 , 4 , 1 , 1 |  |  |
| LCM =  = 24  = 24 | | | |
|  | | | |

|  |  |
| --- | --- |
| 2 | 12 |
| 2 | 6 |
|  | 3 |

|  |  |
| --- | --- |
| 3 | 27 |
| 3 | 9 |
|  | 3 |

Q.2

Ans:

|  |  |
| --- | --- |
| 5 | 125 |
| 5 | 25 |
|  | 5 |
|  |  |
| 2 | 30 |
| 3 | 15 |
|  | 5 |
| 3 | 45 |
| 3 | 15 |
|  | 5 |

|  |  |
| --- | --- |
| 3 |  |
|  |  |
|  |  |
|  |  |

LCM =

= 15

= 15

|  |  |  |
| --- | --- | --- |
| **S.no.** | **Home Work** | **Answers** |
| 1 |  |  |
| 2 |  |  |
| 3 |  |  |
| 4 |  |  |
| 5 |  |  |

# 37.Addition of Fraction in Irrational numbers

Q.1

Ans:

Q.2

|  |  |  |  |
| --- | --- | --- | --- |
|  |  |  |  |
|  | 3 , 2 |  |  |
| LCM =  = 6 | | | |

Ans:

|  |  |  |
| --- | --- | --- |
| S.no. | Home Work | Answers |
| 1 |  |  |
| 2 |  |  |
| 3 |  |  |
| 4 |  |  |
| 5 |  |  |

# 38.Subtraction of Fraction in Irrational numbers

Q.1

|  |  |  |  |
| --- | --- | --- | --- |
|  |  |  |  |
|  |  |  |  |
| LCM =  =  = | | | |

Ans:

|  |
| --- |
|  |

*(or)*

|  |  |  |  |
| --- | --- | --- | --- |
|  | , |  |  |
|  |  |  |  |
|  |  |  |  |
| LCM | | | |
|  | | | |

|  |  |
| --- | --- |
|  |  |
|  |  |
|  |  |
| LCM | | |

Q.2

Ans:

*(or)*

|  |  |  |  |
| --- | --- | --- | --- |
|  | |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
| LCM | | | |

|  |  |  |
| --- | --- | --- |
| **S.no.** | **Home Work** | **Answers** |
| 1 |  |  |
| 2 |  |  |
| 3 |  |  |
| 4 |  |  |
| 5 |  |  |

# 39.VBODMAS rule

|  |
| --- |
| **VBODMAS**   * **V** : Vinculum/Bar “” * **B** : Bracket * **O** : Of/Order * **D** : Division * **M** : Multiplication * **A** : Addition * **S** : Subtraction |

Q.1

Ans:

Q.2

Ans:

Q.3

Ans:

Q.4

**Ans:**

|  |  |  |
| --- | --- | --- |
| **S.No.** | **Home Work** | **Answers** |
| 1 |  |  |
| 2 |  |  |
| 3 |  |  |
| 4 |  |  |
| 5 |  |  |

# 40.Balance of Equation

|  |
| --- |
| * Represents different terms   Example: 7 (3 terms) Example:   * Represents single term   Example: (single term)   * If we send complete term to other side the symbol will change * If we send part of a single term to other side the position will change * First we have to send complete term to other side |

Q.1

|  |
| --- |
| * and are different terms * send to other side, that will become * is a single term and is a part in * Here is multiplying with in LHS, If we send to other side(RHS) will divide |

Ans:

Q.2

Ans:

Q.3

Ans:

Q.4

Ans:

Q.5

Ans:

Multiplying by on both sides

Q.6

Ans:

Q.7

Ans:

Multiplying by on both sides

Q.8

Ans:

Multiplying by on both sides

|  |  |  |
| --- | --- | --- |
| **S.No.** | **Home Work** | **Answers** |
| 1 |  |  |
| 2 |  |  |
| 3 |  |  |
| 4 |  |  |
| 5 |  |  |