Simplification-1

Simplification(for All Placement Exams)

1. Multiplication & division technique
2. Decimals
3. Bodmas
4. Squares and Square roots
5. Cube roots
6. Surds and indices
7. Previous year problems

Simplification(for All Placement Exams)

Multiplication and Division technique :

Q1. $\frac{1017}{5} \times 2 = 2034$, then x = ?

2034 ✓

Multiplication

$\frac{1017 \times 2}{5 \times 2} = \frac{2034}{10} = 203.4$

Q2. $\frac{17 \times 4}{25} = x$, then x = ?

$\frac{17 \times 4}{25 \times 4} = \frac{68}{100} = 0.68$

25) 17 (- 2m

Q3. $\frac{22}{125} = x$, then x = ?

$\frac{22 \times 8}{125 \times 8} = \frac{176}{1000} = 0.11$

10, 100, 1000

Simplification(for All Placement Exams)

Multiplication and Division technique :

Q3. 48 * 52 = x, then x = ?

$(50-2) \times (50+2) \Rightarrow (a-b) \times (a+b)$

$50^2 - 2^2 = 2500 - 4 = 2496$ $a^2 - b^2$

Q4. 76 * 84 = x then x =?

$= (80-4) \times (80+4)$

$= 6400 - 16$

$= 6384$ ✓

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Q5. 32 * 2.5 = ? $0.5 = \frac{1}{2}$, $32 \times (2 + \frac{1}{2}) = 64 + 16 = 80$ ✓

Q6. 16 * 2.25 = ? $0.25 = \frac{1}{4}$, $16 \times (2 + \frac{1}{4}) = 32 + 4 = 36$

Q7. 184 * 21 = ? $184 \times (20 + 1) = 3680 + 184 = 3864$

Q8. 1.5 * 4.3 = ? (2 × 5) $15 \times 43 = 15 \times (40 + 3) = 600 + 45 = 645$ ✓

Q9. 15 * 621 = ? $15 \times (600 + 20 + 1)$

$= 9000 + 300 + 15 = 9315$

Simplification(for All Placement Exams)

Q10. Square of Number Ending with 5.] very useful

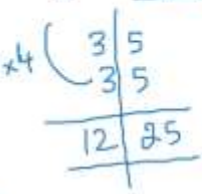
$(35)^2 = x$, then x = ? ,

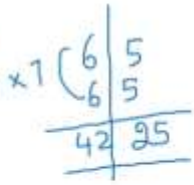
$(65)^2 = x$, then x = ? ,

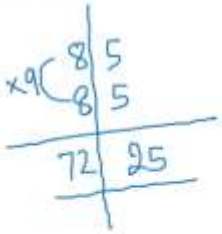
$(85)^2 = x$, then x = ? ,

$(75)^2 = x$

5625 ✓







Simplification(for All Placement Exams)

Multplication Trick of 11.

1. 11 * 12 = 1 (1+2) 2 = 132

$11 \times 24 = 2(2+4)4 = 264$ ✓

$11 \times 12 = 1(1+2)2 = 132$ ✓

2. 11 * 56 = 5 (5+6) 6 = 616

$11 \times 56 = 5(5+6)6 = 516$

616 ✓

3. 11 * 123 = 1 (1+2) (2+3) 3 = 1353

$11 \times 123 = 1(1+2)(2+3)3$

1353

Simplification(for All Placement Exams)

Q. Convert (1) .75 and (2) 0.25 into fractions.

Solution:

decimal → fraction

⇒ 0.75 0.25

$\frac{75}{100} = \frac{3}{4}$ $\frac{25}{100} = \frac{1}{4}$ ✓

Simplification(for All Placement Exams)

Addition and subtraction of decimal fractions:

Q. 41.4 + 5.078 + .38 + .5 = ?

58

41.4
5.078
.38
.5
47.358

Q. 6.046 – 3.87 = ?

6.046
−3.870
2.176

Simplification(for All Placement Exams)

Multiplication of a decimal fraction.

1. 5.4207 * 100 = 542.07 ✓ 5.4207 × 100
2. 0.4065 * 100 = 40.65 ✓
3. 1.23456 * 1000 = 1234.56
4. 3.4153 * 1.1 = 3.75683 ✓
   • 4 + 1 = 5
5. 3.61 * 1.21 = 4.3681
   +2 +2

Multiply
decimal - Right
divide
decimal - Left

34153
11
34153
34153
375683

3.61
1.21
361
722
361
4.3681

Simplification(for All Placement Exams)

Dividing a Decimal fractions:

1. 24 /0.4 = $\frac{24}{0.4} = \frac{240}{4} = 60$

2. 75/.15 = $\frac{75}{0.15} = \frac{7500}{15} = 500$

Q. Arrange 11/12, 5/8 ,3/4 in ascending order.

$\frac{5}{8} < \frac{3}{4} < \frac{11}{12}$

Q. Arrange 2/3, 7/12, 3/8 and 16/25 in ascending order.

0·66, 0·59, 0·39, 0·64

$\frac{3}{8} < \frac{7}{12} < \frac{16}{25} < \frac{2}{3}$

Simplification(for All Placement Exams)

Square root :

Find Square root of ⇒ Nos ending with 5

1. 1296
2. 3364
3. 4356
4. 7569
5. 13456
6. 16384

$\sqrt{1296}$

$36^2 = 6$

$35^2 = 1225$

$30^2 = 900$

$40^2 = 1600$

$50^2 = 2500$

$55^2 = 3025$

$60^2 = 3600$

Simplification(for All Placement Exams)

Square root :

Find Square root of

1. 1296
2. 3364
3. 4356
4. 7569
5. 13456
6. 16384

$80^2 = 6400$

$85^2 = 7225$

$\sqrt{7569} \Rightarrow 87$

$90^2 = 8100$

$12 \times 13 = 120 + 36 = 156$

125

16384

$128^2 = 14400$

$125^2 = 15625$

$126^2 =$

$127^2 =$

$128^2 =$

$16384 = 128^2$

$130^2 = 16900$

Simplification(for All Placement Exams)

Cube root :

Find Cube root of

1. 12167
2. 91124
3. 474552

$1^3 = 1$ $6^3 = 216$
$2^3 = 8$ $7^3 = 343$
$3^3 = 27$ $8^3 = 512$
$4^3 = 64$ $9^3 = 729$
$5^3 = 125$

(1) $\sqrt[3]{12167}$ → 23

(2) $\sqrt[3]{91124}$ → 44

(3) $\sqrt[3]{474552}$ → 78

Simplification(for All Placement Exams)

Laws of Indices:

1. $a^m * a^n = a^{m+n}$ $\left[a^m \times a^n = a^{m+n}\right]$ → $2^2 \times 2^1 = 2^3 = 2^3 = 2^3$, $4 \times 2 = 8$
ii. $a^m/a^n = a^{m-n}$
iii. $(a^m)^n = a^{mn}$
iv. $(a^b)^n = a^n b^n$
v. $(a/b)^n = a^n/b^n$
vi. $a^0 = 1$

Simplification(for All Placement Exams)

Examples:

1. Simplify: (i) $(81)^{3/4}$ → 27 (ii) $(1/64)^{-5/6}$ → 32 (iii) $(256)^{-1/4}$

$81 = 9 \times 9$
$81 = 3 \times 3 \times 3 \times 3$
$81 = 3^4$
$(a^m)^n = a^{mn}$
$(3^4)^{3/4}$
$3^{4 \times 3/4}$
$3^3 = 27$

$\left(\frac{1}{64}\right)^{-5/6}$
$(64^{-1})^{-5/6}$
$(64)^{-1 \times -5/6}$
$= 2^{6 \times 5/6}$
$64 = 8 \times 8$
$= 2 \times 2 \times 2 \times 2 \times 2 \times 2$
2^6
32

$(256)^{-1/4}$
$(4^4)^{-1/4}$
$4^{4 \times -1/4}$
4^{-1}
$= \frac{1}{4}$

$256 = 16 \times 16$
$= 4 \times 4 \times 4 \times 4$
$= 4^4$

Simplification(for All Placement Exams)

Q1. $3^{(x-y)} = 27$ and $3^{(x+y)} = 243$, then x is equal to:

A. 0
B. 2
C. 4
D. 6

$3^{(x-y)} = 27$ $\quad 3^{(x+y)} = 243$ $\quad 7\times3\times3\times3\times3$

$3^{(x-y)} = 3^3$ $\quad 3^{(x+y)} = 3^5$

$x - y = 3$
$x + y = 5$
$2x = 8$
$x = \frac{8}{2} = 4$

Simplification(for All Placement Exams)

Surds & indices

$(1331)^{-2} \div (14641)^{-3} = (11)^7 \times (121)$

(a) 2
(b) 4
(c) 6
(d) 8
(e) 10

$a^{-1} = \frac{1}{a}$ $\quad a^m \times a^n = a^{m+n}$

$\Rightarrow \frac{(1331)^{-2}}{(14641)^{-3}} = 11^x \times 11^2$

$\Rightarrow \frac{(113)^{-2}}{(114)^{-3}} = 11^{x+2}$

$11^{-6+12} = 11^{x+2}$
$11^6 = 11^{x+2}$
$x + 2 = 6$
$x = 4$

$\Rightarrow \frac{11^{-6}}{11^{-12}} = 11^{x+2}$

Simplification(for All Placement Exams)

Order of Operations

B	Brackets	10 × (4 + 2) = 10 × 6 = 60
O	Order	5 + 2^2 = 5 + 4 = 9
D	Division	10 + 6 ÷ 2 = 10 + 3 = 13
M	Multiplication	10 - 4 × 2 = 10 - 8 = 2
A	Addition	10 × 4 + 7 = 40 + 7 = 47
S	Subtraction	10 ÷ 2 - 3 = 5 - 3 = 2

Bodmas

Simplification(for All Placement Exams)

Q. $?^2 + (14)^2 \times 18 \div 6 - 1029 = 80 \times (12 - 7)$

(a) 25 (b) 841 (c) 729 (d) 27 (e) 29

$x^2 + 196 \times 18 \div 6 - 1029 = 80 \times 5$

$x^2 + 196 \times 3 - 1029 = 400$

$x^2 + 588 = 1429$

$x^2 = 841$

$x = 29$

Simplifiction

Q. X and Y are two numbers which when divided by 6 leaves a remainder of 4 and 5 respectively. What will be the remainder when x+y is divided by 6.

Placement

a.6 b.9 c.1 d.none (3)

Solution:

Use hit and trail to solve

Assume x=16 and y=17.

x	y	x+y
16	17	33

6)16(2
12
4

6)17(2
12
5

6)33(5
30
3

Simplifiction

Q. If p+q=3 then what is the value of $p^3 + q^3$, when it is given that p=1/q.

a.18 b.16 c.15 d.17

Solution:

Use the formula,

$(a+b)^3 = a^3 + b^3 + 3ab(a+b)$

$p + q = 3$ $\quad p = \frac{1}{q}$

$pq = 1$

$\Rightarrow p^3 + q^3$

$(p+q)^3 = p^3 + q^3 + 3pq(p+q)$

$27 = p^3 + q^3 + 3 \times 3$

$27 - 9 = p^3 + q^3$

18

Simplifiction

Q. The price of 10 chairs is equal to that of 4 tables. The price of 15 chairs and 2 tables together is Rs. 4000. The total price of 12 chairs and 3 tables is:

A. Rs. 3500 B. Rs. 3750 C. Rs. 3840 D. Rs. 3900

10 chair = 4 T

5 chair = 2T

15 C = 6T ✓

5 chair

5C = 2 × 500

100

C = 200

15 C + 2 T = 4000

6 T + 2 T = 4000

8T = 4000 ⇒ T = 500 ✓

12C + 3T

12 × 200 + 3 × 500

2400 + 1500

3.

Simplification

Tricks to Calculate Square of two digit number:

1. 46^2 - 2116

2. 53^2 2809

3. 68^2 - 4624

$6 \times 8 \times 2 = 96$

$(68)^2$

$6^2 | 8^2$

36 64

96 ×

4624

$(46)^2$

$4 \times 6 \times 2 = 48$

$4^2 | 6^2$

16 36

48 ×

2116

$5 \times 3 \times 2 = 30$

$(53)^2$

$5^2 | 3^2$

25 09

30 ×

2809

Simplification

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Placement for All. All for Placement

For Any queries/doubts , please mail us at onlinestudyu@gmail.com . We will reply your queries within 24hours of time.

Thank you and All the best for your