Name of the Bundle	Intermediate Bundle V1	Subject	Aptitude
Topic	Simplification	Last updated on	04 August 2025

Simplification

Conversion of complex arithmetic expressions into simple ones is called Simplification.

- Remember the following fundamental formulas that might be utilized in such a situation:
- $(a+b)^2 = a^2 + b^2 + 2ab$
- $(a-b)^2 = a^2 + b^2 - 2ab$
- $a^2 - b^2 = (a+b)(a-b)$
- $a^3 + b^3 = (a+b)(a^2 - ab + b^2)$
- $(a+b)^3 = a^3 + b^3 + 3ab(a+b)$
- $(a-b)^3 = a^3 - b^3 - 3ab(a-b)$

VBODMAS:

RULE:

Vinculum > brackets>of >division> multiply>addition>subtraction.

1) Simplify: 5000 – 5000/10
   a. 0
   b. 4500
   c. 500
   d. 1000

Ans: b. 4500

Explanation:

By using VBODMAS

5000-500=4500

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2) If X/Y =2 then, find the value of Y^2/X^2 .
   a. 1/ 4
   b. 1/ 2
   c. 1
   d. 2

Ans: a. 1/4

Explanation:

$Y^2/X^2 = 1/2^2 = 1/4$

3) a /3 = b /4 = c/ 7 then find the value of (a+b+c) / c.
   a. 3
   b. 7
   c. 12
   d. 2

Ans: d. 2

Explanation:

(a+b+c) / c = (3+4+7)/7

=2

4) Find the value of √1.21 × 0.9 /1.1 × 0.11
   a. 1
   b. 11
   c. 3
   d. 1.1

Ans: c. 3

Explanation:

√121 × 9 /11 × 11 = 3

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5) Simplify: (81)^3.6 ×(9)^2.7 ➗ (81)^4.2×(3)^1 .

a. 3
b. 9
c. 27
d. 81

Ans: b. 9

Explanation:

(81)^3.6 ×(9)^2.7 ➗(81)^4.2 × (3)^1 =(81)^3.6-4.2 – 3^5.4-1

=81^- .6 - 3^4.4

=3^ (4.4 -2.4)

=3^2

= 9

6) If 5/ 10 × 8 /7 × 100 /50 × 35 /40 × x /16 = 1/ 8 then, find the value of 'x'.

a. 3
b. 2
c. 4
d. 5

Ans: b.2

Explanation:

~~5/ 10~~ × ~~8 /7~~ × ~~100 /50~~ × ~~35 /40~~ × x /~~16~~ = 1/ ~~8~~

X = 2

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7) Find the value of (1 + 1/ 2) (1 + 1 /3) (1 +1/4) … … (1 + 1 /120).
   a. 40
   b. 40.5
   c. 60
   d. 60.5

Ans: d. 60.5

Explanation:

~~3~~/2 X ~~4~~/~~3~~ X 5/~~4~~……..~~120~~/~~119~~ X 121/~~120~~

~~=121/2~~

=60.5

8) If 144/ 0.144 = 14.4/ x, then find the value of 'x'.
   a. 144
   b. 14.4
   c. 1.44
   d. 0.0144

Ans: d. 0.0144

Explanation:

X = 14.4 X .144 / 144

= 0.0144

9) Find the value of $y^{a-b} \times y^{b-c} \times y^{c-a}$.
   a. 0
   b. -1
   c. 2
   d. 1

Ans: d. 1

Explanation: ~~y^a/y^b~~ x ~~y^b/y^c~~ x ~~y^c~~ / ~~y^a~~=1

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10) 49 X49 X49 X 49 = $7^{?}$
   a. 4
   b. 7
   c. 8
   d. 16

Ans: c. 8

Explanation: $7^2 \times 7^2 \times 7^2 \times 7^2 = 7^{?}$

$7^{?} = 7^8 \Rightarrow ? = 8.$

11) 1/5 + 1/7+ 2/3 = ?
   a. 1 1/105
   b. 104/105
   c. 1 1/7
   d. 1 2/105

Ans: a. 1 1/105

Explanation: 1/5 + 1/7+ 2/3 = (21+15+70)/105

=106/105

=1 1/105

12) 10^{150} 10^{146} = ?
   a. 1000
   b. 10000
   c. 100000
   d. 10

Ans: b. 10000

Explanation:

$=10^{150 - 146}$

$=10^{4}$

=10000

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13) If $27^{15} = 3^{Y}$, then find the values of 'y'.

a. 18
b. 45
c. 30
d. 42

Ans: b. 45

Explanation:

$3^{3x15} = 3^{y}$
y=45

14) 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

Ans: d. 3900

Explanation:

Let the cost of a chair and that of a table be Rs. x and Rs. y respectively.

Then, $10x$ = $4y$ or y =	$\frac{5}{2}x$.

$\therefore$ $15x + 2y = 4000$

$\Rightarrow 15x + 2x$	$\frac{5}{2}$	x = 4000

$\Rightarrow 20x = 4000$
$\therefore$ $x = 200$.

So, y =	$\left(\frac{5}{2}\right)$	x 200	= 500.

Hence, the cost of 12 chairs and 3 tables = $12x + 3y$

= Rs. (2400 + 1500) = Rs. 3900.

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ALTER METHOD

10C = 4T

15C + 5C = 4000 → 20C 4000

12C + 7.5C = ? → 19.5C 3900

15) If a - b = 3 and $a^2 + b^2 = 29$, find the value of ab.

a. 10
b. 12
c. 15
d. 18

Ans: a. 10

Explanation:

$2ab = (a^2 + b^2) - (a - b)^2$

$= 29 - 9 = 20$

$\Rightarrow ab = 10.$

ALTER METHOD

A=5 & B=2

5-2=2

5^2 X 2^2= 29

5 X 2 = 10

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16) The price of 2 sarees and 4 shirts is Rs. 1600. With the same money, one can buy 1 saree and 6 shirts. If one wants to buy 12 shirts, how much will he have to pay?

a. Rs. 1200
b. Rs. 2400
c. Rs. 4800
d. Cannot be determined

Ans: b. 2400

Explanation:

Let the price of a saree and a shirt be Rs. x and Rs. y respectively.

Then, 2x + 4y = 1600 .... (i)

and x + 6y = 1600 .... (ii)

Divide equation (i) by 2, we get the below equation. => x + 2y = 800. --- (iii) Now subtract (iii) from (ii) x + 6y = 1600 (-) x + 2y = 800 ---------- 4y = 800 ---------- Therefore, y = 200. Now apply value of y in (iii) => x + 2 x 200 = 800 => x + 400 = 800 Therefore x = 400

Solving (i) and (ii) we get x = 400, y = 200.

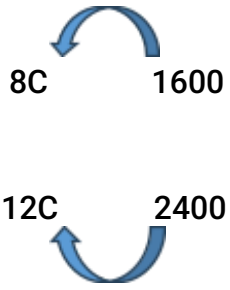
Cost of 12 shirts = Rs. (12 x 200) = Rs. 2400.

ALTER METHOD

2x + 4y = 1600 .... (i)

x + 6y = 1600 .... (ii)

1 Sharees = 2 Shirts



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17) $\dfrac{(469 + 174)^{\wedge 2} - (469 - 174)^{\wedge 2}}{(469 \times 174)} = ?$

a. 2
b. 4
c. 295
d. 643

Ans: b. 4

Explanation:

$= (a + b)^2 - (a - b)^2 \ / \ ab$

$= 4ab/ab$

$= 4$

18) Find the values of

$(1.75 \times 1.75 \times 1.75 + 1.25 \times 1.25 \times 1.25) \div (1.75 \times 1.75 - 1.75 \times 1.25 + 1.25 \times 1.25)$

a. 1
b. 2
c. 3
d. 21

Ans: c. 3

Explanation:

$a^3 + b^3 / (a^2 - ab + b^2) = (a+b)$

$= 1.75 + 1.25 = 3$

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19) Find the values of

1/ 2 + 1/ 6 + 1 /12 + 1/ 20 + 1/ 30 + 1/ 42 + 1/ 56 + 1 /72 + 1 /90 + 1 /110 + 1/ 132

a. 4 /7
b. 7 /11
c. 11/ 12
d. 13/ 15

Ans: c. 11/12

Explanation:

1/2 = 1/1x2

1/6= 1/2x3

In a denominator Last and first values are same numbers then we will take sum of the denominator and the first and last numbers are multiple

=11/1 x 12

=11/12

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20) $a^2 + b^2 = 117$, $ab = 54$ then find the value of $a+b / a-b$.

a. 6
b. 4
c. 5
d. 7

Ans: c. 5

Explanation:

$(a+b)^2 = a^2+b^2+2ab = 117+2(54) = 117+108=225$

$(a+b)=15$

$(a-b)^2=a^2+b^2-2ab=117-108 =9$

$(a-b)=3$

$(a+b)/(a-b) = 15/3$

$(a+b)/(a-b) = 5$

ALTER METHOD

$a=9$ & $b=6$

$9^2 + 6^2 = 117$

$9x6 = 54$

$a+b / a-b=9+6/9-6 =15 / 3 =5$