Name: Anuj Sapkota
Class: 8 'G'
Roll no: 6
Subject: Maths

Mid-Term Exam-2077

Group 'A' [2×1=27]

~~1) → Soln,~~
~~Here,~~

1)

→ Soln,
Here,
SP = Rs. 1250
CP = Rs. 1300
We know,
∴ Actual loss = CP − SP = Rs. 1300 − Rs. 1250
= Rs. 50

Now,
∴ Loss % = $\frac{\text{Loss}}{\text{CP}} \times 100\%$
= $\frac{\text{Rs. } 50}{\text{Rs. } 1300} \times 100\%$
= $\frac{50}{13} = 3.84\%$

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2. Find LCM of $6a^2bc^3$ and $9ab^2c^2$.

→ Soln, Here,
1st term = $2 \times 3 \times a \times a \times b \times c \times c \times c$
2nd term = $3 \times 3 \times a \times b \times b \times c \times c$
∴ LCM = $3 \times a \times b \times c \times c \times c \times 2 \times a \times 3 \times b$
= $18a^2b^2c^3$

1

3 | 6, 9
3 | 2, 3
1

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Group 'B' [3×2=6]

1.)

→ Soln,

Here,

Cost of 120 bulbs = Rs. 1200
Bought = 120 bulbs
Broken = 20 bulbs
Remaining = 100 bulbs
SP of remaining = Rs. 13.80

Now,

Total SP = 100 × Rs. 13.80
= Rs. 1380

Since,

SP > CP,

$$\text{Profit \%} = \frac{SP - CP}{100} \times 100\% = \frac{Rs.(1380 - 1200)}{1380} \times 100\%$$

$$= \frac{Rs.(1380-1200)}{1200} \times 100\% \quad - \frac{Rs.180}{1380} \times 100\%$$

$$= \frac{Rs.180}{Rs.1200} \times 100\%$$

$$= 15\%$$

∴ The gain percent is 15%.

2.) → Soln,

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Here,

$= p^4 - 1$

$= (p^2)^2 - (1)^2$

$= (p^2+1)(p^2-1)$

$= (p^2+1)\{(p)^2 - (1)^2\}$

$= (p^2+1)(p+1)(p-1)$

3.

→ Soln,

Here,

1st term $= 5x^2 - 20y^2$

$= 5(x^2 - 4y^2)$

$= 5\{(x)^2 - (2y)^2\}$

$= 5(x+2y)(x-2y)$

2nd term $= x^2 - 5xy + 6y^2$

$= x^2 - (2+3)xy + 6y^2$

$= x^2 - 2xy - 3xy + 6y^2$

$= x(x-2y) - 3y(x-2y)$

$= (x-2y)(x-3y)$

∴ HCF $= (x-2y)$

Group 'C' [3×4=12]

1)

→ Soln,

Here,

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CP = Rs. 25000
LP or MP = 25%.

Now,

(i) MP = (100+25)% of CP

$= \frac{125}{100} \times$ Rs. 25000

$=$ Rs. 31250

discount% = 10%.

So,

(ii) discount amount = 10% of MP

$= \frac{10}{100} \times 31250$

$=$ Rs. 3125

(iii) SP_1 = MP - discount

= Rs. (31250 - 3125)

= Rs. 28125.

Now,

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VAT % = 13%

(iv) VAT amount = 13% of SP

$= \frac{13}{100} \times$ Rs. 28125

= Rs. 3656.25

Therefore,

SP with VAT = SP_1 + VAT amount

= Rs. (28125 + 3656.25)

= Rs. 31781.25

∴ The customer should pay Rs. 31781.25 for it.

2. → Sol^n,

Here,

$$y + \frac{1}{y} = 6$$

To find value of: $y^3 + \frac{1}{y^3}$.

Cubing both sides,

$$\left(y + \frac{1}{y}\right)^3 = (6)^3$$

$$\text{or, } (y)^3 + \left(\frac{1}{y}\right)^3 + 3 \cdot y \cdot \frac{1}{y}\left[y + \frac{1}{y}\right] = 216$$

$$\text{or, } y^3 + \frac{1}{y^3} + 3[6] = 216$$

$$\text{or, } y^3 + \frac{1}{y^3} + 18 = 216$$

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$\therefore y^3 + \frac{1}{y^3} = 216 - 18$

$\therefore y^3 + \frac{1}{y^3} = 198$

3.

→ Soln

Here,

1st term $= (x-3a)^2$

$= (x-3a)(x-3a)$

2nd term $= x^2 - 2ax - 3a^2$

$= x^2 - (3-1)ax - 3a^2$

$= x^2 - 3ax + ax - 3a^2$

$= x^2 + ax - 3ax - 3a^2$

$= x(x+a) - 3a(x+a)$

$= (x+a)(x-3a)$

3rd term $= x^3 - 27a^3$

$= (x)^3 - (3a)^3$

$= (x-3a)\{(x)^2 + x.3a + (3a)^2\}$

$= (x-3a)(x^2 + 3ax + 9a^2)$

$\therefore$ HCF $= (x-3a)$

$\therefore$ LCM $= (x-3a) \times (x+a)(x^2+3ax+9a^2)$

$= (x-3a)(x+a)(x^2+3ax+9a^2)$