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Subject : Business Maths & Statistics

Course : MBA-90

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Mid Term Exam

Q1 - i) (e) None of them

Q1 - ii) (b) $\Delta x = 3, \Delta y = 11$

Q1 - iii) (d) None of them

Q1 - iv) (e) None of them

Q1 - v) (d) None of them

Q1 - vi) (e) None of them

Q1 - vii) (a) $(-1, 1)$

Q1 - viii) (e) None of them

Q1 - ix) (b) Linear Profit Function

Q1 - x) (e) None of them.

Question No 2

(a)

Solution:-

Sum of Numbers:

$$7 + 4 + 2 + 5 = 18$$

$$\text{Divide } 540 / 18 = 30$$

$$7 \times 30 = \del{210} 210$$

$$4 \times 30 = 120$$

$$2 \times 30 = 60$$

$$5 \times 30 = 150$$

Check:

$$210 + 120 + 60 + 150 = 540$$

Answer

X

X

Question No. 2

(b) Solve for x in the following

$$(x^2 - 4) \div (x + 2) \times (4x - 2) \div 2 = x$$

Solution :-

$$= \left(\frac{x^2 - 4}{x + 2} \right) \times \left(\frac{4x - 2}{2} \right) = x$$

$$= \frac{x^2 - 4}{x + 2} = x \times \left(\frac{2}{4x - 2} \right)$$

$$= \frac{x^2 - 2^2}{x + 2} = \frac{2x}{4x - 2}$$

$$= \frac{(x - 2)(\cancel{x + 2})}{(\cancel{x + 2})} = \frac{2x}{4x - 2}$$

$$x - 2 = \frac{2x}{4x - 2}$$

$$(4x - 2)(x - 2) = 2x$$

$$4x^2 - 8x - 2x + 4 = 2x$$

$$4x^2 - 10x - 2x + 4 = 0$$

$$4x^2 - 12x + 4 = 0$$

$$a = 4 \quad b = -12 \quad c = 4$$

$$a = 4 \quad b = -12 \quad c = 4$$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$x = 12 \pm \sqrt{\frac{(-12)^2 - 4(4)(4)}{8}}$$

$$= 12 \pm \sqrt{\frac{144 - 64}{8}}$$

$$= 12 \pm \sqrt{\frac{80}{8}}$$

$$= 12 \pm \frac{8.94}{8}$$

$$x = \frac{12 + 8.94}{8}, \frac{12 - 8.94}{8}$$

$$(2.61), (0.38)$$

Ans

Q No 3(a)

Current sum of ages = 60 years

Two year ago sum of ages = 56 years

$$56 \times \frac{3}{4} = 42$$

$$56 \times \frac{1}{4} = 14$$

Two years ago age

Brother = 14 years

Sister = 42 years

Current age

Brother = 16 years

Sister = 44 years.

(b) Selling Price = \$ 18.75

Cost = \$ 15

Mark up based on cost

$$\Rightarrow 18.75 - 15 = 3.75$$

Percent mark up base on cost

$$\Rightarrow \frac{3.75}{15} \times 100$$

$$\Rightarrow 0.25 \times 100 \Rightarrow 25\% \text{ Ans.}$$

Q No 4:-

(a)

$$\text{List Price} = \$ 150$$

$$\text{Trade Discount} = 20\%$$

Find the Net Cost

$$150 \times 20\% = 30$$

$$150 - 30 = 120 \text{ Ans.}$$

OR

$$150 \times 80\% = 120 \text{ Ans}$$

X
(b)

$$\text{Total Cost } 1080$$

$$\text{Total Portions (Heat 3, Light 1)} = 4$$

$$\frac{1080}{4} = 270$$

$$\text{Heat} = 270 \times 3 = 810$$

$$\text{Light} = 270 \times 1 = 270 \text{ Ans}$$

X X X

Q No 5

(a) Let 1 boy alone can finish it in x days and 1 man can finish the work in y days.

Then

$$1 \text{ man } 1 \text{ day work} = 1/x$$

and

$$1 \text{ boy } 1 \text{ day work} = 1/y$$

$$(4 \text{ men } 1 \text{ day work}) + (6 \text{ boys } 1 \text{ day work})$$

$$= 4/x + 6/y = 1/5$$

$$4u + 6v = 1/5 \quad (\text{where } 1/x = u \text{ and } 1/y = v)$$

$$= 4u + 6v = 1/5 \quad \text{--- (1)}$$

again

$$(3 \text{ men } 1 \text{ day work}) + (4 \text{ boys } 1 \text{ day work})$$

$$= 1/7$$

$$3/x + 4/y = 1/7$$

$$3u + 4v = 1/7 \quad \text{--- (2)}$$

on multiplying (1) by 3 and 2 by 4 we get

~~$$12u + 18v = 3/5$$~~

P.T.O

$$12v + 18v = 3/5 \text{ ———— (3)}$$

and

$$12v + 16v = 4/7 \text{ ———— (4)}$$

Sub 3 and 4 we get

$$2v = (3/5 - 4/7)$$

$$2v = 1/35$$

$$v = 1/35 \times 2$$

$$v = 1/70$$

$$1/y = v$$

$$1/y = 1/70$$

$$y = 70 \text{ days}$$

Putting $v = 1/70$ in eq 1 we get

$$4u + 6v = 1/5$$

$$4u = (1/5 - 6/70) \text{ (by putting } v \text{ value } 70)$$

$$4u = (1/5 - 6/70)$$

$$4u = (14 - 6/70)$$

$$4u = (8/70)$$

$$u = 8/70 \times 1/4$$

$$u = 1/35$$

$$\frac{1}{x} = 0$$

$$\frac{1}{x} = \frac{1}{35}$$

$$x = 35$$

Therefore one man can alone finish the work in 70 days and one boy alone can finish the work in 35 days.

X
Q#5
(b)

List Price = 150
Trade Discount = 20%
Find the cost

$$150 \times 20\% = 30$$

$$150 - 30 = 120$$

or

$$150 \times 80\% = 120 \text{ Ans}$$