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Business Mathematics

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Mid term (summers)

Note: Attempt all questions.

Question No.1 (MCQS)

1	E
2	B
3	D
4	E
5	C
6	D
7	E
8	E
9	A
10	E



PART 2

Q2 (a). Bismark Tractor put a markup of 26% on cost on some parts for which they paid \$4.50. Find (a) selling price as % of cost (b) the selling price (c) the markup..

ANS. Markup = 26%

Cost = 4.5

b) Selling price =?

Solution

As we have formula

$$\text{Markup on Cost} = \left(\frac{\text{price} - \text{cost}}{\text{cost}} \right)$$

$$\text{Markup on Cost} = 0.26 \left(\frac{\text{price} - 4.50}{4.50} \right)$$

By cross multiplications

$$0.26 \times 4.50 = \text{price} - 4.50$$

➤ $1.17 = \text{price} - 4.50$

➤ $\text{Price} = 1.17 + 4.50$

$$\text{Selling Price} = 5.67$$

a) Selling Price as Percentage of cost?

Selling Price = 5.67

Percentage of cost = 100

$$\text{So, } \frac{5.67}{100}$$

Selling price as % of cost = 0.0567 or 5.67%

c) Markup

$$\text{Markup} = \frac{\text{selling price} - \text{cost}}{\text{cost}}$$

$$\text{Markup} = \frac{5.67 - 4.50}{4.50}$$

$$\text{Markup} = \frac{1.17}{4.50}$$

$$\text{Markup} = 0.26 \text{ or } 26\%$$



Q2 (b). Solve for x in the following equation

$$(x^2 - 9) \div (x + 3) \times (4x - 3) \div 2 = x$$

ANS. Solve for x in the following equation

$$(X^2 - 9) / (x - 3) (4x - 3) / 2 = x$$

$$= (X^2 - 3^2) * 2 / (x - 3) (4x - 3) = x$$

$$= (X + 3) (x - 3) * 2 / (x - 3) (4x - 3) = x$$

After we get this we divide and cancel the (x-3) with (x-3) and we get

$$2x + 6 = 4x^2 - 3x$$

$$4x^2 - 5x - 6 = 0$$

$$4x^2 - 8x + 3x - 6 = 0$$

$$4x(x - 2) + 3(x - 2) = 0$$

$$(x - 2)(4x + 3) = 0$$

$$x - 2 = 0 \quad \longrightarrow \quad (x = 2)$$

$$4x + 3 = 0 \quad \longrightarrow \quad (x = -3/4)$$



Q3(a). The sum of the ages of a girl and her brother is 60 years. Two years ago her age was three times the age of her brother. Find the present age of girl and her brother.

ANS. Let “x” be the present age of girl and “y” be the age of her brother. So from question we get

$$X+ y = 60 \text{ ----- (1)}$$

Two years ago her age is:

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

$$x-2 = 3y-6$$

$$x-2+6-3y=0$$

$$x+4-3y=0$$

$$x=3y -4 \text{ ----- (2)}$$

Subtract equation 2 from 1 after changing plus to minus as a mathematic rule we get

$$x+ y= 60$$

$$-x+ 3y=-4$$

$$4y =64$$

$$4y /4 = 64/4$$

We get

$$y = 16$$

Now put y = 14 in equation 1

$$x + y = 60$$

$$x + 16 = 60$$

$$x = 60 - 16$$

$$x = 44$$

Age of girl: $x = 44$ years

Age of boy: $y = 16$ years



Q3 (b). Selling price = \$18.75

Cost = \$15

Markup based on cost = ?

Percent markup based on cost = ?

ANS.

Cost	=	\$15
Sale Price	=	\$18.75
Profit	=	\$3.75

Percentage of Markup = $\frac{\text{Selling price} - \text{Purchase Price}}{\text{Purchase Price}} \times 100$

Percentage Markup = $\frac{18.75 - 15}{15} \times 100$

$$\text{Percentage Markup} = \frac{3.75}{15} \times 100$$

Percentage Markup = 25% Answer



Q4(a). List price = \$150
Trade discount = 20%
Find the net cost

ANS.

List price = \$150

Trade discount = 20% find the net cost=?

Solution

List price- discount

$$\text{Net cost} = 150 - 0.2(150)$$

$$\text{Net cost} = 150 - 30$$

$$\text{Net cost} = \mathbf{\$120}$$



Q4(b). Heat and electricity together cost a company Rs: 1080 for the month of January. If the consumption for heating purposes is three times as much as light, how much each expense cost to the company?

ANS.

Heat and Electricity cost=1080

Let the consumption of Light =x

Consumption of Heat is = 3x

How much each expense cost to company?

Solution

$$1+3=4$$

So, the expenses of light = $1/4 \times 1080$

- $1080/4$

Expenses of light = 270

Now the expenses of heat?

$$\text{Expenses of Heat} = 3/4 \times 1080$$

For simplification first we will multiply 1080 by 3 and then the total of them will be divided by 4

- $3 \times 1080 = 3240$

- $3240/4 = 810$

Expenses of heat = 810

For Verification: $810+270 = 1080$



Q5(a). 4 men and 6 boys can finish a piece of work in 5 days while 3 men and 4 boys can finish it in 7 days. Find the time taken by 1 man alone or than by 1 boy alone.

ANS.

Let the time taken by men be x and by boy be y

Then

$$4/x+6/y=1/5 \dots\dots \text{equation (1)}$$

$$3/x+4/y=1/7 \dots\dots\text{equation (2)}$$

Let

$$U=1/x \text{ and } V=1/y$$

$$4x+6v=1/5 \times 3$$

$$3x+4v=1/7 \times 4$$

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

$$-12u-16v=4/-7$$

$$2v=3/5-4/7=21-20/35=1/35$$

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

$$V=2/70 = 2/y$$

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

$$X=35 \text{ days}$$



Q5 (b). List price = \$150

Trade discount = 20%

Find the net cost

ANS.

List piece =\$150

Trade discount =20% find the net cost=?

Solution

List piece - discount

Net cost = $150-0.2(150)$

Net cost = $150-30$

Net cost =\$120

