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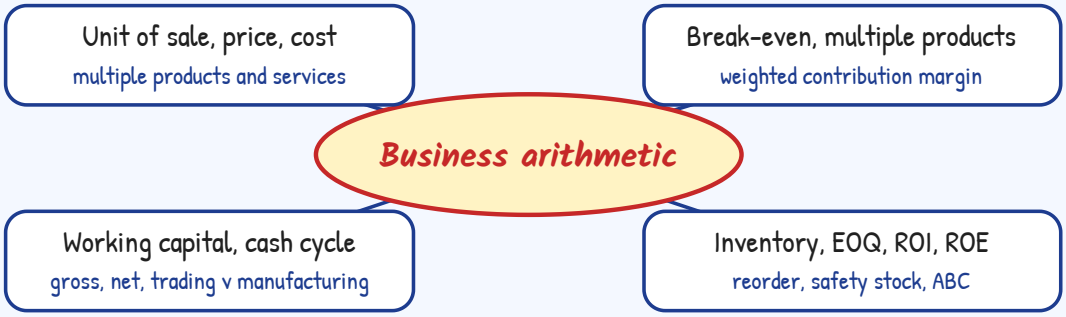
Class 12 · Entrepreneurship · Unit 5

Chapter 5 Business Arithmetic



CBSE Entrepreneurship (066) syllabus 2026-27 · board 2027 · Units 5 + 6 = 20 marks of 70

Chapter map



What is inside

1. Formulas with fully worked examples
2. Important textbook numericals, fully solved
3. Every CBSE board question of 2024, 2025, 2026 from this unit, solved to the marking scheme
4. Practice A-G with numericals, 20 MCQs, 6 A-R, answers, summary

red = key term green = definition

purple = sub-heading black = explanation

★ = high-frequency board topic

This unit in the board paper

year	MCQ (1)	2 / 3 / 5 marks
2024	reorder point, gross working capital	unit price per customer (2); multi-product BEP (5)
2025	ROI, current liability, SKU and obsolescence	cash conversion cycle or ABC (2); EOQ (3); multi-product BEP (5)
2026	gross WC, cash cycle, carrying cost, safety stock	EOQ or ROE and ROI (2); multi-product BEP (5)

★ **Exam tip:** A 5-mark **multi-product BEP** has come every year: practise the 3-step table until it is automatic.

Based on the CBSE Entrepreneurship syllabus 2026-27 and the CBSE textbook. All answers written by us.

5.1 Unit of sale, unit price, unit cost

unit of sale	the unit in which a product or service is sold: a piece, kg, litre, dozen, per hour, per customer, per visit
unit price	the price charged per unit of sale
unit cost	total cost ÷ number of units produced or sold

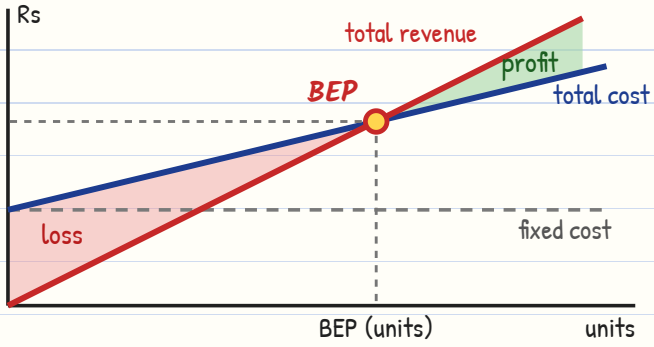
With **multiple products or services**, or varying customers, use the **average**: **unit price per customer = total amount billed ÷ number of customers.**

Worked example: a salon billed 20 customers at Rs 200, 30 at Rs 150 and 50 at Rs 120 in a week. Total billed = 4,000 + 4,500 + 6,000 = Rs 14,500; customers = 100; unit price per customer = 14,500 ÷ 100 = **Rs 145**.

5.2 Break-even analysis ★★★

Break-even point (BEP) is the level of sales at which total revenue equals total cost: no profit, no loss.

contribution margin (CM) per unit	selling price − variable cost per unit
BEP (units), single product	fixed cost ÷ CM per unit
BEP (Rs)	BEP units × selling price (or fixed cost ÷ P/V ratio)



BEP for multiple products ★★★

When a firm sells several products in a fixed **sales mix**:

1. **CM per unit** of each product = SP − VC
2. **weighted CM** of each = CM × sales mix %
3. **total weighted average CM (WACM)** = sum of weighted CMs
4. **overall BEP (units of sales mix)** = fixed cost ÷ WACM
5. **BEP units of each product** = overall BEP × its mix %
6. **BEP (Rs) of each** = its BEP units × its SP; total = sum

Worked example: fixed cost Rs 60,000; product X: SP 50, VC 30, mix 60%; Y: SP 80, VC 50, mix 40%.

	X	Y
CM	50 − 30 = 20	80 − 50 = 30
weighted CM	20 × 60% = 12	30 × 40% = 12

WACM = 12 + 12 = **Rs 24**. Overall BEP = 60,000 ÷ 24 = **2,500 units**. X = 2,500 × 60% = **1,500**; Y = 2,500 × 40% = **1,000**. BEP (Rs): X = 1,500 × 50 = 75,000; Y = 1,000 × 80 = 80,000; total **Rs 1,55,000**.

Check: CM earned = 1,500 × 20 + 1,000 × 30 = 30,000 + 30,000 = 60,000 = fixed cost ✓

★ ***Exam tip:*** Always add the **check line**: total contribution at BEP must equal fixed cost.

5.3 Working capital ★★★

Working capital is the capital needed to run day-to-day operations: to hold stock, give credit and pay expenses.

gross working capital	= total current assets = cash + accounts receivable (debtors) + inventory (stock) + other current assets
net working capital	= current assets – current liabilities

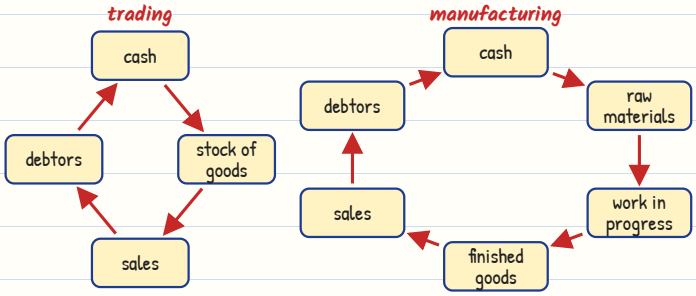
current assets	*current liabilities*
cash, bank, debtors, bills receivable, stock, short-term investments, prepaid expenses	creditors, bills payable, short-term loans, outstanding expenses (rent), bank overdraft

✗ *Don't do this:* Traps: fixed assets and long-term liabilities are never in working capital. Short-term investment is a current asset, not a liability (2025). Short-term loans are not in gross WC (2026).

Worked example (2025 VI): cash 20,000; creditors 2,00,000; debtors 3,50,000; short-term loans ₹5,000; outstanding rent 15,000; stock 80,000.
Gross WC = cash + debtors + stock = 20,000 + 3,50,000 + 80,000 = Rs 4,50,000.
Net WC = 4,50,000 – (2,00,000 + ₹5,000 + 15,000) = 4,50,000 – 2,90,000 = Rs 1,60,000.

5.4 Cash conversion cycle ★★

The cash conversion cycle (CCC) is the length of time between a firm's purchase of inventory and the receipt of cash from accounts receivable. A CCC of 45 days means 45 days pass from buying inventory to collecting cash.



trading	cash → stock of goods → sales → debtors → cash
manufacturing	cash → raw materials → work in progress → finished goods → sales → debtors → cash

CCC (days) = days inventory outstanding + days sales outstanding – days payables outstanding. A shorter cycle means less working capital is locked up.

Example: stock held 40 days, debtors pay in 30 days, creditors paid in 25 days: CCC = 40 + 30 – 25 = 45 days.

5.5 Inventory control ★★★

Inventory control is maintaining the right quantity of stock at the right time at minimum cost: avoiding both stock-outs and excess stock.

SKU code	stock keeping unit: a unique alpha-numeric code for each item, used for data collection, statistics and decisions
obsolescence	items no longer used as technology advances; demand drops off
shelf life	period for which perishable items remain usable

demand not uniform	seasonal or unpredictable demand

Costs of inventory

ordering cost (P)	carrying (holding) cost (C)
cost of placing and receiving an order: paperwork for placing order, transport, inspection	interest on money locked up, space cost (storage, rent), insurance, deterioration, obsolescence

Economic order quantity ★★★

EOQ is the order size at which the total of ordering and carrying costs is minimum.

$$EOQ = \sqrt{(2PD \div C)}$$

P = cost of placing and receiving one order; D = annual demand in units; C = carrying cost per unit per year (if given as %, C = % × purchase price).

Worked example: D = 7,200 units; P = Rs 40; purchase price Rs 20; carrying cost 10% per year.
C = 10% × 20 = Rs 2. EOQ = $\sqrt{(2 \times 40 \times 7{,}200 \div 2)} = \sqrt{2{,}88{,}000} \approx$ 537 units.

Reorder point and safety stock ★★

Reorder point = procurement lead time × demand during that time. Fresh supplies should arrive just as stock reaches zero.

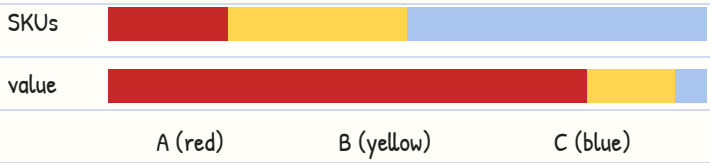
Safety stock: extra stock added to the reorder level to cover variability in demand and lead time, so stock does not hit zero before supply arrives. Reorder level with safety stock = lead time × demand + safety stock.

Examples: lead time 2 months × 300 bales per month = 600 bales (2024). Lead time 2 months × 2,000 batteries = 4,000; with 500 extra = 4,500: the 500 is safety stock (2026).

ABC analysis ★★

In ABC analysis a company reviews its inventory and sorts all SKU codes into three categories, A, B and C, by value.

class	% of SKUs	% of value	control
A	20%	80%	tight: close watch on current demand and forecasts
B	30%	15%	watched closely, ordering reviewed less often
C	50%	5%	cheap: order in bulk, minimal control



S.6 Return on investment and return on equity ★★

ROI	= net profit ÷ total capital invested × 100; a critical profitability ratio showing how well all the capital (equity + debt) is used
ROE	= net income ÷ shareholders' equity × 100; return earned on the owners' money; net income = net profit after interest on debt (and tax)

Worked example: net profit (before interest) Rs 1,20,000; equity Rs 6,00,000; 10% loan Rs 4,00,000 (interest Rs 40,000).

ROI = 1,20,000 ÷ (6,00,000 + 4,00,000) × 100 = **12%**.

Net income = 1,20,000 − 40,000 = 80,000; ROE = 80,000 ÷ 6,00,000 × 100 = **13.33%**.

ROE > ROI because the loan costs 10% but earns 12%: **trading on equity**.

Uses

- ROI compares the profitability of projects and firms and tells whether capital is used efficiently
- ROE tells shareholders what their investment earns; investors compare it with other options

Formula sheet

unit price per customer	total billed ÷ number of customers
CM per unit	SP − VC
WACM	Σ (CM × mix %)
overall BEP (units)	FC ÷ WACM
BEP of a product	overall BEP × its mix %
BEP (Rs)	BEP units × SP
gross WC	cash + debtors + inventory + other current assets
net WC	current assets − current liabilities
CCC	DIO + DSO − DPO
EOQ	√(2PD ÷ C)
reorder point	lead time × demand (+ safety stock)
ROI	net profit ÷ total capital invested × 100
ROE	net income ÷ equity × 100

★ ***Exam tip:*** **Exam method**: write the formula (½–1 mark), substitute, compute, state the answer with units. Marks are split between formula, working and final answer.

Key Terms: unit of sale, unit price, unit cost, contribution margin, sales mix, WACM, break-even point, gross and net working capital, cash conversion cycle, SKU, obsolescence, ordering and carrying cost, EOQ, reorder point, safety stock, ABC analysis, ROI, ROE.

Important textbook questions and numericals, fully solved

1. A firm makes A (SP 40, VC 25) and B (SP 60, VC 36) in the mix 50 : 50. Fixed cost Rs 39,000. Find BEP in units and rupees for each.

> ***Ans.*** CM: A = 15, B = 24. Weighted: A = 15 × 50% = 7.5; B = 24 × 50% = 12. WACM = **Rs 19.5**. Overall BEP = 39,000 ÷ 19.5 = **2,000 units**. A = 1,000; B = 1,000. BEP (Rs): A = 1,000 × 40 = 40,000; B = 1,000 × 60 = 60,000; total **Rs 1,00,000**. Check: 1,000 × 15 + 1,000 × 24 = 39,000 ✓

2. Annual demand 1,600 units; ordering cost Rs 50 per order; carrying cost Rs 4 per unit per year. Find EOQ and number of orders.

> ***Ans.*** EOQ = √(2 × 50 × 1,600 ÷ 4) = √40,000 = **200 units**. Orders per year = 1,600 ÷ 200 = **8**.

3. Current assets: cash 30,000, debtors ₹0,000, stock 1,00,000, prepaid 10,000. Current liabilities: creditors 80,000, outstanding wages 20,000. Find gross and net working capital.

> **Ans.** Gross WC = 30,000 + ₹0,000 + 1,00,000 + 10,000 = **Rs 2,10,000**. Net WC = 2,10,000 − 1,00,000 = **Rs 1,10,000**.

4. Daily use 50 units; lead time 12 days; safety stock 100 units. Find the reorder level.

> **Ans.** Reorder level = 50 × 12 + 100 = 600 + 100 = **₹00 units**.

5. Net profit Rs 90,000; equity Rs 5,00,000; debt Rs 2,50,000 at 8% (interest Rs 20,000). Find ROI and ROE.

> **Ans.** ROI = 90,000 ÷ ₹,50,000 × 100 = **12%**. Net income = 90,000 − 20,000 = ₹0,000; ROE = ₹0,000 ÷ 5,00,000 × 100 = **14%**.

6. What is ABC analysis? Why is it useful?

> **Ans.** Sorting all SKUs into A (about 20% of items, 80% of value), B (30%, 15%) and C (50%, 5%). It concentrates control where the money is: A items are tightly controlled with careful forecasts; C items are bought in bulk with minimal control, saving time and cost.

7. Distinguish between a trading and a manufacturing cash conversion cycle.

> **Ans.** Trading: cash → stock of goods → sales → debtors → cash (shorter). Manufacturing: cash → raw materials → work in progress → finished goods → sales → debtors → cash (longer, needs more working capital).

CBSE board questions 2024–2026, fully solved

CBSE 2024 · 066 Raghuram, stock in-charge of a shirt company, must avoid stock-outs. Procurement lead time is 2 months and demand is 300 bales of cotton fabric per month. The order should be placed when stock reaches: (A) 600 (B) 450 (C) 300 (D) 150 bales [1]

> **Ans.** **(A) 600 bales**: reorder point = 2 × 300.

CBSE 2024 · 066 The correct formula for 'Gross Working Capital' is: (A) cash + AR + fixed assets + other CA (B) cash + accounts payable + inventory + other CA (C) cash + accounts receivable + inventory + other current assets (D) cash + AR + inventory + long-term liabilities [1]

> **Ans.** **(C)**

CBSE 2024 · 066 A beauty parlour had varying customers in five weeks: (week, customers, average bill Rs): (1, 20, 200), (2, 34, 170), (3, 26, 142), (4, 44, 462), (5, 36, 350). Calculate 'Unit Price' per customer. [2]

> **Ans.**

week	customers	avg bill	total billed
1	20	200	4,000
2	34	170	5,780
3	26	142	3,692
4	44	462	20,328
5	36	350	12,600
total	160		46,400

Unit price per customer = total billed amount ÷ number of customers = 46,400 ÷ 160 = **Rs 290 per customer**. [½ totals + ½ customers + ½ formula + ½ answer]

CBSE 2024 · 066 'Happy Hands Ltd.' makes three liquid hand washes; fixed cost Rs 2,49,000. SP per 100 ml: Scrub 155, Gel 175, Foam 195; variable cost: 75, 95, 105; sales mix 40%, 30%, 30%. Calculate (A) total weighted average contribution margin (B) break-even quantity for each variety (C) BEP in rupees for Scrub Hand Wash. [5]

Ans.

	Scrub	Gel	Foam
SP	155	175	195
VC	75	95	105
CM	80	80	90
mix	40%	30%	30%
weighted CM	32	24	27

(A) WACM = 32 + 24 + 27 = **Rs 83**.

(B) Overall BEP = 2,49,000 ÷ 83 = **3,000 units** (of 100 ml). Scrub = 3,000 × 40% = **1,200**; Gel = 3,000 × 30% = **900**; Foam = 3,000 × 30% = **900**.

(C) BEP (Rs) Scrub = 1,200 × 155 = **Rs 1,86,000**.

Check: 1,200 × 80 + 900 × 80 + 900 × 90 = 96,000 + 72,000 + 81,000 = 2,49,000 ✓

The printed paper said variable cost "per 10 ml", so the board gave **full marks to all candidates**; the solution above treats both figures as per 100 ml, which gives the clean answer intended.

CBSE 2025 · 066 ROI = Net Profit ÷ _____ × 100. (A) equity (B) debt (C) total capital invested (D) debt + interest on debt [1]

Ans. (C) Total capital invested

CBSE 2025 · 066 Which is not a current liability? (A) outstanding rent (B) short-term investment (C) trade creditors (D) short-term loans [1]

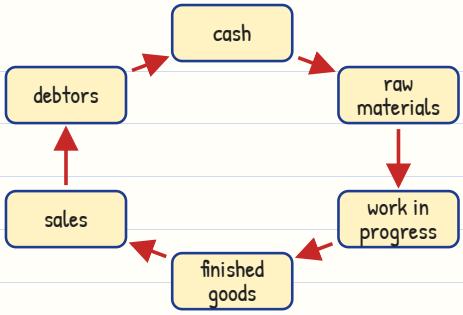
Ans. (B) Short-term investment (a current asset)

CBSE 2025 · 066 'Techworks' gives each inventory item a unique alpha-numeric code used for data collection, statistics and decisions; over time some items are no longer used due to technology and demand drops off. These are _____ and _____. (A) SKU code, motley crowd (B) motley crowd, demand not uniform (C) obsolescence, shelf life (D) SKU code, obsolescence [1]

Ans. (D) Stock Keeping Unit (SKU) code, Obsolescence

CBSE 2025 · 066 (A) Cash → stock of goods → sales → debtors → cash. (i) Identify the type of business. (ii) Draw a cash conversion cycle for the other type. *Vl*: gross working capital from cash 20,000, creditors 2,00,000, debtors 3,50,000, short-term loans 75,000, outstanding rent 15,000, stock 80,000. **OR** (B) Give the meaning of ABC analysis. [2]

Ans. (A) (i) **Trading business**. [1] (ii) Manufacturing: **cash → raw materials → work in progress → finished goods → sales → debtors → cash**: [1]



Cash conversion cycle of a manufacturing business

VI: gross WC = cash + debtors + stock = 20,000 + 3,50,000 + 80,000 = **Rs 4,50,000**. [2]

(B) In ABC analysis a company reviews its inventory and sorts all SKU codes into A, B and C: A = 20% of SKUs, 80% of value, tightly controlled with close attention to current demand and forecasts; B = 30% of SKUs, 15% of value, watched closely but ordering reviewed less often; C = 50% of SKUs, 5% of value, less expensive, ordered in bulk with minimal control. [2]

CBSE 2025 · 066 'Kwality Book Store' sells 40,000 chart papers a year; demand is constant. Purchase cost Rs 10 each; holding cost 20% of purchase cost per year; ordering cost Rs 100 per order. Calculate EOQ. [3]

Ans. EOQ = $\sqrt{(2PD \div C)}$ [1]

D = 40,000; P = Rs 100; C = 20% × 10 = **Rs 2** [1]

EOQ = $\sqrt{(2 \times 100 \times 40{,}000 \div 2)}$ = $\sqrt{40{,}00{,}000}$ = **2,000 chart papers** [1]

CBSE 2025 · 066 'Royal Fruit Juice Ltd.': fixed cost Rs 1,76,000. Per litre: Mango SP 150, VC 80, mix 20%; Orange SP 135, VC 65, mix 40%; Guava SP 100, VC 60, mix 40%. Calculate (A) total WACM per unit (B) BEP in units of sales mix (C) BEP (Rs) for each juice. [5]

Ans.

	Mango	Orange	Guava
CM	70	70	40
mix	20%	40%	40%
weighted CM	14	28	16

(A) WACM = 14 + 28 + 16 = **Rs 58**. [1 + 1 + 1]

(B) BEP = 1,76,000 ÷ 58 = **3,034.48 litres**; Mango = 3,034.48 × 20% = 606.89 L; Orange = 1,213.79 L; Guava = 1,213.79 L. [1]

(C) BEP (Rs): Mango = 606.89 × 150 = **Rs 91,033.50**; Orange = 1,213.79 × 135 = **Rs 1,63,861.65**; Guava = 1,213.79 × 100 = **Rs 1,21,379**. [1]

The scheme allows full marks if all formulas are given and the answer is correct up to the WACM.

CBSE 2026 · 066 Which is not included while calculating gross working capital? (A) cash (B) inventory (C) short-term loans (D) accounts receivable [1]

Ans. (C) Short-term loans

CBSE 2026 · 066 A cash conversion cycle of 45 days implies: (A) 45 days to manufacture (B) the length of time between a firm's purchase of inventory and the receipt of cash from accounts receivable is 45 days (C) creditors paid in 45 days (D) 45 days between manufacture and sale [1]

Ans. (B)

CBSE 2026 · 066 Which is not included in inventory carrying cost? (A) interest (B) paperwork for placing order (C) space cost (D) insurance [1]

Ans. (B) Paperwork for placing order (an ordering cost)

CBSE 2026 · 066 'Zen MotoCorp' has lead time 2 months and demand 2,000 batteries per month, so reorder point 4,000. To cater to variability in demand and lead time it adds 500 batteries; reorder level becomes 4,500. The 500 is: (A) average inventory (B) annual demand (C) EOQ (D) safety stock [1]

Ans. (D) Safety stock

CBSE 2026 · 066 (A) 'Tech Supplies Ltd.' sells 2,500 bluetooth speakers a year; cost of placing and receiving an order Rs 50; holding cost Rs 25 per unit per year. Calculate EOQ. [2]

Ans. EOQ = $\sqrt{(2PD \div C)}$ [½]; P = 50, D = 2,500, C = 25

EOQ = $\sqrt{(2 \times 50 \times 2{,}500 \div 25)} = \sqrt{10{,}000}$ [1] = **100 speakers** [½]

CBSE 2026 · 066 · OR (B) 'Sunshine Fabrics Ltd.' earned a net profit of Rs 50,000. Shareholders' equity Rs 2,50,000; loan Rs 2,50,000; interest on loan @ 10% p.a. is Rs 2,500. Calculate ROE and ROI. [2]

Ans. **ROE** = net income ÷ equity × 100. Net income = 50,000 − 2,500 = 47,500; ROE = 47,500 ÷ 2,50,000 × 100 = **19%**. (The scheme also accepts 50,000 ÷ 2,50,000 × 100 = 20%.) [½ + ½]

ROI = net profit ÷ total capital invested × 100 = 50,000 ÷ 2,50,000 × 100 = **20%** (as per the marking scheme). [½ + ½]

✗ **Don't do this:** **Note**: the printed figures are inconsistent (10% on Rs 2,50,000 would be Rs 25,000, not Rs 2,500). By the textbook definition, total capital invested = equity + loan = Rs 5,00,000, giving ROI = 50,000 ÷ 5,00,000 × 100 = 10%. Write the formula clearly; the scheme gave marks for its 20% working.

CBSE 2026 · 066 'Star Bakery Pvt. Ltd.': Chocolate cake SP 200, VC 120, mix 40%; Vanilla SP 150, VC 90, mix 60%; total fixed cost Rs 1,15,600. Calculate (A) BEP in units of sales mix (B) units of each at BEP (C) BEP in rupees. [5]

Ans.

	Chocolate	Vanilla
CM	200 − 120 = 80	150 − 90 = 60
weighted CM	80 × 40% = 32	60 × 60% = 36

WACM = 32 + 36 = **Rs 68**. [1 + 1]

(A) Overall BEP = 1,15,600 ÷ 68 = **1,700 units**. [1]

(B) Chocolate = 1,700 × 40% = **680**; Vanilla = 1,700 × 60% = **1,020**. [1]

(C) Chocolate = 680 × 200 = Rs 1,36,000; Vanilla = 1,020 × 150 = Rs 1,53,000; total BEP = **Rs 2,89,000**. [1]

Check: 680 × 80 + 1,020 × 60 = 54,400 + 61,200 = 1,15,600 ✓

Practice set: test yourself *Exam-style*

A. Fill in the blanks (1 mark each)

1. SP − VC per unit = _____.
2. Gross working capital = total _____ assets.
3. EOQ = √(2PD ÷ _____).
4. Extra stock to cover variability is _____ stock.
5. In ABC analysis, _____ items get minimal control.
6. ROE = net income ÷ _____ × 100.

B. True or false? (1 mark each)

1. Short-term investment is a current liability.
2. A shorter cash conversion cycle needs less working capital.
3. Insurance is an ordering cost.
4. At BEP, total contribution equals fixed cost.
5. Manufacturing CCC includes work in progress.
6. A items are about 50% of SKUs.

C. Very short answer (1 mark each)

1. Expand SKU.
2. Define reorder point.
3. Name two carrying costs.
4. Define cash conversion cycle.

D. Numericals (2 marks each)

1. Lead time 3 weeks; weekly demand 400; safety stock 300. Find reorder level.
2. D = 3,600; P = Rs 20; C = Rs 4. Find EOQ.
3. Cash 15,000; debtors 45,000; stock 60,000; creditors 50,000; short-term loan 20,000. Find gross and net WC.
4. A tutor earned Rs 36,000 from 60 students in month 1 and Rs 54,000 from 90 students in month 2. Find unit price per student.

E. Numerical (3 marks)

1. Net profit Rs 1,50,000; equity Rs 10,00,000; 9% debt Rs 5,00,000. Find ROI and ROE.

F. Numerical (5 marks)

1. Fixed cost Rs 2,10,000. P: SP 120, VC 70, mix 50%; Q: SP 90, VC 60, mix 30%; R: SP 60, VC 40, mix 20%. Find WACM, overall BEP, BEP units and rupees of each.

G. HOTS

1. Why should a firm keep its cash conversion cycle short? Give two ways.

20 MCQs

1. Unit price per customer is:
(A) total cost ÷ units (B) customers ÷ total billed
(C) total billed ÷ customers (D) fixed cost ÷ CM

2. Contribution margin per unit is:
(A) SP − VC (B) SP + VC (C) FC − VC (D) SP − FC

3. Overall BEP (units) for multiple products is:
(A) FC ÷ SP (B) FC ÷ VC (C) WACM ÷ FC (D) FC ÷ WACM

4. At break-even:
(A) profit is maximum (B) revenue = total cost
(C) loss is maximum (D) fixed cost is zero

5. Gross working capital includes:
(A) fixed assets (B) inventory (C) long-term loans (D) creditors

6. Net working capital is:
(A) CA − FA (B) CA + CL (C) FA − CL (D) CA − CL

7. Which is a current liability?
(A) outstanding rent (B) debtors (C) stock (D) prepaid expenses

8. A trading cash cycle does NOT include:
(A) cash (B) debtors (C) work in progress (D) sales

9. CCC measures time from:
(A) loan to repayment (B) production to sale (C) order to delivery (D) purchase of inventory to receipt of cash from debtors

10. A unique alpha-numeric code for each item:
(A) EOQ (B) SKU (C) ABC (D) ROI

11. Items no longer used due to technology:
(A) shelf life (B) safety stock (C) obsolescence (D) lead time

12. Paperwork for placing an order is:
(A) ordering cost (B) carrying cost (C) fixed asset (D) safety stock

13. Space cost and insurance are:
(A) ordering costs (B) carrying costs (C) selling costs (D) fixed assets

14. EOQ with D = 800, P = 25, C = 4 is:
(A) 50 (B) 200 (C) 100 (D) 400

15. Lead time 4 weeks, weekly demand 150: reorder point:
(A) 150 (B) 450 (C) 750 (D) 600

16. Extra stock above reorder point for variability:
(A) safety stock (B) EOQ (C) average stock (D) obsolescence

17. A items in ABC analysis are about:
(A) 20% of SKUs, 80% of value (B) 50% of SKUs, 5% of value (C) 30%, 15% (D) 80%, 20%

18. ROI = net profit ÷ _____ × 100
(A) equity (B) debt (C) sales (D) total capital invested

19. ROE is measured on:
(A) total assets (B) shareholders' equity (C) debt (D) sales

20. Fixed cost 12,000; WACM 30; overall BEP:
(A) 300 (B) 360 (C) 400 (D) 4,000

1 (C) · 2 (A) · 3 (D) · 4 (B) · 5 (B) · 6 (D) · 7 (A) · 8 (C) · 9 (D) · 10 (B) · 11 (C) · 12 (A) · 13 (B) · 14 (C) · 15 (D) · 16 (A) · 17 (A) · 18 (D) · 19 (B) · 20 (C)

Assertion–Reason (6)

(A) Both true, R explains A. (B) Both true, R does not explain A. (C) A true, R false. (D) A false, R true.

1. A: At BEP, total contribution equals fixed cost. R: Revenue equals total cost at BEP.
2. A: A items need tight control. R: A items form about 80% of inventory value.
3. A: Short-term loans are part of gross working capital. R: Gross working capital is the sum of current assets.
4. A: Paperwork for placing an order is a carrying cost. R: Carrying cost includes interest, space and insurance.

5. A: Safety stock prevents stock-outs. R: Demand and lead time can vary.
6. A: EOQ minimises total inventory cost. R: ROI uses total capital invested.

Key: 1 (A) · 2 (A) · 3 (D) · 4 (D) · 5 (A) · 6 (B)

Answers to the practice set

A. 1. contribution margin 2. current 3. C (carrying cost per unit) 4. safety 5. C 6. shareholders' equity

B. 1. F 2. T 3. F 4. T 5. T 6. F

C. 1. stock keeping unit 2. stock level at which a fresh order is placed (lead time × demand) 3. interest, insurance (also space, obsolescence) 4. time between purchase of inventory and receipt of cash from debtors

D. 1. 3 × 400 + 300 = **1,500** 2. √(2 × 20 × 3,600 ÷ 4) = √36,000 ≈ **190 units** 3. gross = 15,000 + 45,000 + 60,000 = **1,20,000**; net = 1,20,000 − 70,000 = **50,000** 4. (36,000 + 54,000) ÷ 150 = **Rs 600**

E. ROI = 1,50,000 ÷ 15,00,000 × 100 = **10%**; interest = 45,000; net income = 1,05,000; ROE = 1,05,000 ÷ 10,00,000 × 100 = **10.5%**

F. CM: P 50, Q 30, R 20; weighted: 25, 9, 4; WACM = **Rs 38**. BEP = 2,10,000 ÷ 38 = **5,526.32 units**. P = 2,763.16 units (Rs 3,31,579); Q = 1,657.89 (Rs 1,49,211); R = 1,105.26 (Rs 66,316); total ≈ **Rs 5,47,105**. Check: 2,763.16 × 50 + 1,657.89 × 30 + 1,105.26 × 20 ≈ 2,10,000 ✓

G. less cash is locked in stock and debtors, so less working capital and interest are needed; ways: collect from debtors faster, hold less stock (EOQ, ABC), negotiate longer credit from suppliers

Last-night summary

- Unit price per customer = total billed ÷ customers. CM = SP − VC. Multi-product BEP: CM ⟶ × mix ⟶ WACM ⟶ FC ÷ WACM ⟶ × mix ⟶ × SP; check total CM = FC.
- Gross WC = cash + debtors + inventory + other CA (no fixed assets, no loans). Net WC = CA − CL. Short-term investment = CA; short-term loan, outstanding rent, creditors = CL.
- CCC = time from buying inventory to collecting cash. Trading: cash ⟶ stock ⟶ sales ⟶ debtors ⟶ cash. Manufacturing adds raw materials, WIP, finished goods.
- Inventory: SKU, obsolescence, shelf life. Ordering cost (paperwork) v carrying cost (interest, space, insurance). EOQ = √(2PD ÷ C). Reorder = lead time × demand; + safety stock. ABC: 20/80, 30/15, 50/5.
- ROI = net profit ÷ total capital invested × 100. ROE = net income ÷ equity × 100.