Certified in Planning and Inventory Management(Part 2)

APICS CPIM-Part-2

Version Demo

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Topic Break Down

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QUESTION NO: 1

A company sold 8,400 units last year. Average inventory investment was $42,000. Whatwas the inventory turns ratio,knowing that the unit cost is $207?

A. 0.20

B. 0.25

C. 4

D. 5

E. 41.4 turns

ANSWER: E

Explanation:

41.4 turns is correct. Inventory turns measures how many times, during a stated period, inventory is sold or used and replenished. For inventory valued at cost, the calculation is annual cost of goods sold divided by average inventory investment. First, annual cost of goods sold is 8,400 units multiplied by the $207 unit cost, or $1,738,800. Dividing $1,738,800 by the average inventory investment of $42,000 gives 41.4. Thus, the company turned its average inventory investment approximately 41.4 times during the year. The calculation must use the inventory's cost value, rather than sales revenue, because the stated average inventory investment is a cost-based asset amount. Inventory turnover is a core inventory-management performance measure: it connects annual material flow to the capital tied up in inventory and helps planners assess whether inventory is moving at an appropriate rate. The result need not be rounded to a whole number unless the question explicitly requests rounding. ASCM identifies inventory planning and management as central CPIM subject matter; see the ASCM CPIM credential overview. The standard turnover formula is also summarized by Corporate Finance Institute's inventory turnover reference.

QUESTION NO: 2

A component is used directly in a finished product and also in a subassembly used by that finished product. An engineering change moves one occurrence of the component to a lower level in the bill of material (BOM). Which item-planning parameter is most important to update so that MRP accumulates all requirements before planning the component?

A. Lowest-level code

B. Lead time

C. Lot-sizing rule

D. Safety-stock quantity

ANSWER: A

Explanation:

The lowest-level code is correct because it identifies the lowest level at which an item occurs in any BOM. MRP uses this code to sequence planning so that demand generated through all parent relationships is accumulated before the item is netted and planned. The component's lead time, lot size, and safety-stock policy affect the resulting order plan, but they do not ensure that all dependent requirements are recognized before MRP processes the item.

QUESTION NO: 3

Which of the following represents landed costs?

A. Combining smaller shipments to take advantage of bulk efficiencies

B. Purchasing and delivering a purchased product to its final destination

C. Supplier absorbing freight charges

D. Duties levied on imports and exports

ANSWER: B

Explanation:

“Purchasing and delivering a purchased product to its final destination” correctly represents landed cost because landed cost is the accumulated cost incurred to obtain an item and make it available at its intended receiving location. In an APICS planning and inventory-management context, the relevant cost is not limited to the supplier’s quoted unit price. It reflects the full acquisition-and-delivery process needed to bring purchased material into the organization’s supply network or to its final destination. Depending on the transaction, this total can include the purchase price, transportation, insurance, brokerage, tariffs or duties, handling, and other directly attributable charges. The precise elements included depend on the agreed delivery terms and the organization’s costing policy, but the core concept remains the total delivered acquisition cost. This measure supports sound sourcing, supplier-selection, inventory-valuation, and replenishment decisions because alternatives with similar purchase prices can have materially different delivered costs. It also provides a more complete basis for comparing domestic and international supply alternatives. Freightos describes landed cost as the total expense of moving a product from its origin to its destination, including the associated charges: Freightos: Landed Cost. The CPIM program likewise focuses on applying integrated planning, sourcing, inventory, and supply-chain-management concepts: ASCM CPIM.

QUESTION NO: 4

What priority control technique is most appropriate for a firm using a cellular production system?

A. Shortest processing time (SPT) rule

B. Distribution requirements planning (DRP)

C. Pull production activity control (PAC)

D. Push production activity control (PAC)

ANSWER: C

Explanation:

Pull production activity control (PAC) is the most appropriate technique for a cellular production system because cellular manufacturing is designed around smooth, demand-driven flow through a compact sequence of processes. In pull control, a downstream operation signals its need for material or replenishment to the preceding operation. Production and movement therefore occur in response to actual consumption, rather than being released solely according to a centrally planned schedule. This approach supports the central operational objectives of manufacturing cells: low work-in-process inventory, short and predictable throughput times, visual control, rapid identification of disruptions, and avoidance of producing ahead of need.

Pull PAC is commonly implemented using kanban signals, replenishment containers, or equivalent electronic signals. Within a cell, these signals limit the amount of work authorized between operations and link each process directly to the requirements of its internal customer. The result is a paced flow that helps the cell respond efficiently to real demand while maintaining disciplined control of inventory and capacity. APICS describes pull systems as authorizing production based on downstream consumption, a core mechanism in lean operations and cellular layouts. See the ASCM CPIM certification overview and the Lean Enterprise Institute definition of a pull system.

QUESTION NO: 5

A manufacturer has reduced its production lead time from 20 days to 8 days while maintaining the same demand rate, order quantity, and desired customer-service level. Which of the following inventory effects is most likely?

A. The reorder point and safety-stock requirement will decrease

B. The reorder point will increase while safety stock remains unchanged

C. The order quantity will increase because replenishment is more frequent

D. Cycle stock will increase because less inventory is held in transit

ANSWER: A

Explanation:

The reorder point and safety-stock requirement will decrease. A shorter replenishment lead time reduces the expected demand that must be covered before a replenishment arrives. It also reduces the period over which demand and supply uncertainty can occur, generally lowering the safety stock needed to achieve a given service objective.

The order quantity is unchanged under the stated conditions. Lead-time reduction does not inherently increase cycle stock, and it does not require a higher reorder point when demand rate and service target remain unchanged.

QUESTION NO: 6

Which of the following actions will result in lower inventory levels?

A. Level load the master production schedule (MPS).

B. B. Reduce replenishment lead times.

C. Increase customer service level.

D. Decentralize inventory locations.

ANSWER: B

Explanation:

Reduce replenishment lead times. is correct because lead time directly affects the inventory required to maintain material availability between placing an order and receiving it. When replenishment is faster and more reliable, less inventory is tied up in the supply pipeline, since fewer units are needed to cover demand during the wait for replenishment. Shorter lead times also reduce demand uncertainty over the replenishment interval. This allows planners to lower safety stock while maintaining the same target customer-service performance, provided that demand variability and supplier reliability remain unchanged.

In inventory-management terms, reducing lead time lowers both lead-time demand exposure and pipeline inventory. It also makes the replenishment process more responsive: planners can wait longer before committing to an order, use more current demand information, and correct deviations from plan sooner. These effects support lower average on-hand inventory without requiring a reduction in demand or an intentional reduction in service objectives. Lead-time reduction is therefore a fundamental operational lever for improving inventory turns, releasing working capital, and reducing carrying costs. APICS/ASCM CPIM emphasizes managing inventory through such drivers as lead time, demand variability, replenishment policies, and service requirements. See ASCM’s CPIM certification overview and Investopedia’s overview of lead time.

QUESTION NO: 7

Which of the following risk management strategies assumes that losses in one part of the supplychain will be offset by gainsin another?

A. Flexible

B. Fluctuation

C. Hedge

D. Speculative

ANSWER: C

Explanation:

Hedge is correct because hedging deliberately creates an offsetting exposure: a loss arising from one supply-chain-related position is expected to be compensated, wholly or partly, by a gain on a related position. In planning and distribution contexts, this is especially relevant where an organization faces volatile commodity prices, exchange rates, interest rates, or transportation-related costs. For example, a manufacturer purchasing materials priced in a foreign currency can use a forward contract to establish a known exchange rate. If the currency movement increases the material's purchase cost, the financial hedge can gain value and reduce the net effect on the organization's cash flow and margin. The purpose is not to generate a speculative profit; it is to reduce uncertainty and stabilize the financial consequences of an underlying operational exposure. This offsetting relationship is the defining feature of a hedge and directly matches the question's description that losses in one part of the supply chain are balanced by gains in another. The CME Group explains that hedging uses derivatives to manage price risk, while the CFA Institute describes hedging as reducing risk through an offsetting position. See CME Group: Hedging and CFA Institute: Derivatives and Risk Management.

QUESTION NO: 8

In which of the following environments is capable-to-promise (CTP) more appropriate than available-to-promise (ATP)?

A. Consumer electronics sold through local retailers

B. Industrial supplies shipped from regional distribution centers (DCs)

C. Packaged foods sold in grocery stores

D. Specialty chemicals packaged and shipped to order

ANSWER: D

Explanation:

Specialty chemicals packaged and shipped to order is the environment in which capable-to-promise is most appropriate. CTP is an order-promising approach used when accepting an order requires evaluating whether the organization can obtain or allocate the required materials and perform the necessary production, packaging, and distribution work within the requested time frame. It therefore considers capacity as well as material availability, and may trigger planning calculations to determine a feasible delivery date.

Specialty chemical orders commonly have customer-specific requirements, batch sizes, packaging configurations, handling needs, and lead-time commitments. The organization must confirm more than finished-goods inventory: it must determine whether suitable material is available and whether constrained resources—such as reactors, blending equipment, filling lines, quality-control operations, qualified labor, or shipping capability—can complete the order on time. CTP produces a realistic promise date by incorporating these supply and capacity constraints. This supports dependable customer commitments while aligning the accepted order with an executable production and fulfillment plan. Oracle describes CTP as checking component availability and resource capacity when determining a promise date: Oracle, Overview of Capable-to-Promise. For related order-promising concepts, see Microsoft Learn, ATP and CTP delivery-date control.

QUESTION NO: 9

The approved output of the distribution requirements planning (DRP) process is an input to which of the following planningprocesses?

A. Strategic

B. Business

C. Master production planning

D. Final assembly

ANSWER: C

Explanation:

Master production planning is correct because approved distribution requirements translate demand at distribution centers, warehouses, and other downstream stocking locations into time-phased replenishment requirements for the supplying source. When that source is a manufacturing plant, the consolidated DRP requirements identify the quantities and due dates of finished goods the plant must provide. These requirements become an important demand input for master production planning, where planners establish a feasible, time-phased plan for end-item production. The master production planning process reconciles distribution needs with other demand sources, available inventory, production capacity, and relevant planning constraints. Its resulting master production schedule then drives more detailed material and capacity planning activities. This linkage ensures that manufacturing plans are aligned with the network's approved replenishment needs rather than being created independently of distribution demand. ASCM's CPIM credential covers the integration of demand, supply, inventory, and detailed planning decisions across the supply chain; see the ASCM CPIM certification overview. Additional terminology and planning concepts are available through the ASCM APICS Dictionary.

QUESTION NO: 10

A part is sold as a service part, and it is also used as a component in another part. Which of the following statements about the planning for this part is true?

A. Its low-level code is zero.

B. The material requirements for the part will be understated.

C. The service part demand can be included in the gross requirements.

D. It shouldn't have any safety stock.

ANSWER: C

Explanation:

The service part demand can be included in the gross requirements. This item has both independent demand, created by customer orders or forecasts for the service part itself, and dependent demand, created when MRP explodes requirements for parent items that consume it as a component. Effective MRP planning must recognize the total time-phased requirement from both sources. The item's gross requirements therefore include direct service demand in the periods when that demand is expected, together with demand generated by planned order releases for its parent items. MRP then offsets this combined gross requirement by available inventory, scheduled receipts, safety stock policy, and lead time to calculate net requirements and planned orders. This approach ensures that replenishment planning covers the same physical inventory pool used to satisfy both aftermarket customers and production. Demand can be entered directly through forecasts or sales orders for the service item and, where appropriate, represented through planning structures that support aggregate demand planning. Oracle's MRP documentation describes gross requirements as the demand used in netting and explains that demand is generated through bill-of-material explosion: Oracle Material Requirements Planning. ASCM provides the professional terminology foundation for MRP and inventory planning through its APICS Dictionary.

QUESTION NO: 11

A life cycle assessment (LCA) would be used to determine:

A. the length of a long-term agreement.

B. how an item should be scheduled.

C. environmental aspects and impacts.

D. if risk pooling would reduce inventory investment.

ANSWER: C

Explanation:

Environmental aspects and impacts are determined through a life cycle assessment because LCA is a structured method for evaluating the potential environmental burdens associated with a product, process, or service across its full life cycle. The assessment considers stages such as raw-material extraction, material processing, manufacturing, transportation, use, and end-of-life treatment. It identifies relevant inputs and outputs, including energy and material consumption, emissions to air and water, and waste generation, then evaluates the potential environmental consequences associated with those flows.

In practical supply-chain and operations decisions, LCA provides a life-cycle perspective rather than focusing solely on impacts at one facility or during one manufacturing step. This perspective supports identifying environmental “hot spots,” comparing alternatives, and prioritizing improvements that reduce total environmental impact without merely shifting it from one stage of the product life cycle to another. International standards ISO 14040 and ISO 14044 establish the principles, framework, requirements, and guidance for LCA. The U.S. Environmental Protection Agency also describes LCA as a technique for assessing environmental aspects and potential impacts throughout a product’s life cycle. See the ISO 14040 life-cycle assessment framework and the U.S. EPA Life Cycle Assessment overview.

QUESTION NO: 12

In the design and development of a manufacturing process, process engineers wouldmost likely be responsible fordecisions relating to:

A. lead times.

B. production capacity.

C. product reliability.

D. routing sequences.

ANSWER: D

Explanation:

routing sequences is correct because process engineers translate product requirements into a defined, repeatable method of manufacture. A routing specifies the ordered operations required to make an item, commonly including the work centers or resources used at each operation, operation standards, and the sequence in which work flows through the plant. Establishing this sequence is a core process-design decision: it determines how material is transformed, how handoffs occur, and which equipment, labor skills, tooling, and process instructions are needed. The resulting routing becomes essential master data for production planning and control, supporting scheduling, capacity requirements planning, shop-floor execution, costing, and performance analysis. In CPIM terms, the routing connects the manufacturing process design to the operational information that planners use to release and manage work. Process engineers therefore have the technical knowledge of operations and manufacturing methods needed to define routing sequences during development and to revise them when processes, equipment, or methods change. ASCM identifies CPIM as covering the planning and control of production and inventory activities; accurate manufacturing-process data, including routings, is foundational to those activities. See ASCM’s CPIM certification overview and the ASCM APICS Dictionary for related supply-chain and operations-management terminology.

QUESTION NO: 13

A supplier making a part with a specified dimension of 50 mm + 0.3 mm changes the tolerance range to + 0.5 mm. Which ofthe following pairs correctly identifies the changes to the percentage of defective parts and the process capability index?

A. The percentage of defective parts increases, and the process capability index increases.

B. The percentage of defective parts increases, and the process capability index decreases.

C. The percentage of defective parts decreases, and the process capability index increases.

D. The percentage of defective parts decreases, and the process capability index decreases.

ANSWER: C

Explanation:

The percentage of defective parts decreases, and the process capability index increases. Provided that the manufacturing process itself is unchanged—meaning its mean and standard deviation remain the same—expanding the allowable tolerance from 50 mm ± 0.3 mm to 50 mm ± 0.5 mm moves the specification limits farther from the process distribution. Consequently, a larger proportion of produced parts falls within specification, reducing the proportion classified as defective.

A capability index compares the allowable specification width and/or the distance from the process mean to the nearest specification limit with actual process variation. For a centered process, the capability ratio is expressed as $Cp = (USL - LSL)/(6\sigma)$; increasing the specification width while σ is unchanged raises Cp. Similarly, Cpk increases when the nearest relevant specification limit is moved farther from the process mean. Thus, wider tolerances represent greater demonstrated capability relative to the same process variation, not lower capability.

This interpretation follows standard capability-analysis practice: specification limits are customer or design requirements, whereas process spread is measured from process data. See the NIST/SEMATECH e-Handbook discussion of process capability indices and the ASQ process capability analysis resource.

QUESTION NO: 14

Shop backlogs remain constant when:

A. work input equals work output,

B. forecasts are updated on the basis of the longest lead time item.

C. capacity is assumed to be infinite.

D. shop orders are released at a steady rate.

ANSWER: A

Explanation:

Shop backlogs remain constant when **work input equals work output**. In shop-floor control, backlog represents the workload awaiting completion at a work center, department, or production facility. Its level is determined by the balance between the rate at which work arrives and the rate at which work is completed. When incoming workload and completed workload are equal over the relevant planning period, there is no net accumulation or reduction of open work, so the backlog stays stable.

This relationship is fundamental to capacity planning and production activity control. A stable backlog indicates that available effective capacity is keeping pace with the load being released to and processed by the shop. It does not necessarily mean the backlog is at an ideal level; rather, it means its quantity is not changing. Managers can use this balance to monitor flow, assess whether capacity and load are aligned, and decide whether changes to staffing, schedules, order release, or priorities are necessary to achieve a target backlog level.

APICS-aligned terminology defines backlog as customer orders received but not yet shipped, while shop-floor control manages the flow of work through production resources. The same flow-balance principle applies: inventory of work grows when input exceeds output and remains unchanged when they match. See the ASCM APICS Dictionary and the Little's Law overview.

QUESTION NO: 15

A manufacturer wishes to decrease the time-to-market for a new product family. Which of the following strategies should be used?

A. Decrease the number of suppliers for components of the new product.

B. Decrease the purchasing lot size for the new product's components.

C. Increase collaboration between the buyer and the supplier of new components.

D. Increase the safety stocks for the new product's components.

ANSWER: C

Explanation:

Increase collaboration between the buyer and the supplier of new components is the appropriate strategy because early supplier involvement can shorten and strengthen the new-product-development process. A supplier that participates early can provide design-for-manufacturability input, technical knowledge of component capabilities, availability information, cost and lead-time estimates, and timely feedback on specifications. This reduces the iterations, handoffs, and uncertainty that commonly delay a product family's release. Collaboration also allows the manufacturer and supplier to align development schedules, resolve component-design issues sooner, coordinate prototypes and qualification activities, and prepare capacity and material plans before production launch. These activities directly support a shorter elapsed time from concept through commercial availability, which is the central objective of time-to-market improvement. APICS supply-chain principles emphasize integrating suppliers into planning and product-development decisions when their expertise or components materially affect product performance, manufacturability, and launch readiness. Effective collaboration is therefore more than routine purchasing communication: it is cross-organizational coordination around shared product, process, timing, and supply objectives. See ASCM's discussion of supplier collaboration at ASCM Supply Chain Collaboration and the product-development guidance on early supplier involvement from Supply Chain Dive.

QUESTION NO: 16

Which of the following factors typically would distort a sales forecast that is based solely on shipment history?

A. Material shortages

B. Labor rate changes

C. Currency exchange rates

D. Customer demands

ANSWER: A

Explanation:

Material shortages is correct because shipment history records what the organization was able to ship, which may be less than what customers actually wanted to buy. When a shortage of purchased material, components, or finished goods constrains supply, unfilled demand may be backordered, lost, delayed, or satisfied by an alternative source. Those demand signals are therefore absent or understated in shipment data. A forecasting method that treats constrained shipments as an unbiased measure of market demand will interpret the reduced shipments as lower demand and can systematically underforecast future requirements once supply is available again.

In CPIM planning terms, this is a key distinction between demand and sales or shipments: historical shipments can be a useful input to forecasting, but they must be adjusted when they do not represent true demand. Planners should identify periods affected by stockouts or other availability constraints and use information such as backlog, customer orders, lost-sales estimates, and sales input to develop a demand history that better reflects unconstrained demand. This produces a more credible forecast and supports appropriate inventory, capacity, and replenishment decisions. The U.S. Census Bureau also distinguishes shipments from new orders and unfilled orders in its manufacturing data, illustrating why shipments alone do not fully portray demand conditions. See the ASCM CPIM program overview and the U.S. Census Manufacturers' Shipments, Inventories, and Orders data.

QUESTION NO: 17

Product X sells for $20 each, and it has a variable cost of $5 per unit. The company sells 10,000 units per year and has a fixed cost of $120,000. What is the break-even point in units for Product X?

A. 6,000

B. 8,000

C. 10,000

D. 24,000

ANSWER: B

Explanation:

The correct answer is **8,000**. Break-even volume is the number of units that must be sold for total sales revenue to exactly cover total fixed and variable costs, resulting in zero profit and zero loss. The relevant contribution margin per unit is the selling price less the variable cost: $20 − $5 = $15 per unit. Each unit sold therefore contributes $15 toward recovering the company's $120,000 fixed cost. Dividing fixed cost by unit contribution margin gives the break-even quantity: $120,000 ÷ $15 = 8,000 units. At 8,000 units, revenue is $160,000, while total cost is also $160,000: $120,000 in fixed cost plus $40,000 in variable cost (8,000 × $5). The stated annual sales volume of 10,000 units provides context for expected activity but does not change the break-even calculation; it indicates anticipated sales exceed the 8,000-unit break-even point. This cost-volume-profit approach supports operational and financial decisions by connecting price, variable cost, fixed cost, volume, and profitability. See the ASCM CPIM certification overview and the AccountingCoach explanation of break-even analysis.

QUESTION NO: 18

A company can easily change its workforce, but inventory carrying costs are high. Which of the following strategies would be most appropriate during times of highly fluctuating demand?

A. Produce to backorders

B. Produce at a constant level

C. Produce to the sales forecast

D. Produce to demand

ANSWER: D

Explanation:

Produce to demand is the appropriate strategy because the stated conditions favor a chase approach to production planning. In a chase strategy, output capacity is adjusted to follow changes in demand rather than maintaining a fixed production rate and absorbing variation through inventory. Since this company can easily change its workforce, it has a practical capacity lever for increasing or decreasing production as demand rises and falls. Because inventory carrying costs are high, the company should avoid deliberately building inventory during lower-demand periods for use during later peaks. Producing to demand helps limit inventory investment, storage requirements, insurance, handling, obsolescence exposure, and the capital tied up in stocked goods. This approach is especially suitable when demand fluctuates substantially and the organization can respond quickly through hiring, temporary labor, overtime adjustments, layoffs, or work-hour changes. In aggregate planning terms, the company is choosing capacity flexibility over inventory buffering, aligning supply more closely with actual market requirements. This is consistent with CPIM production-planning concepts that evaluate the trade-offs among workforce changes, inventory, backlog, and service in selecting an aggregate strategy. See ASCM's CPIM certification overview and the CPIM Exam Content Manual page.