**Chapter 2**

**Job Order Costing and Analysis**

**QUESTIONS**

**1. Factory overhead is not identified with specific units (jobs) or batches (job lots). Therefore, to assign costs, estimates of the relation between factory overhead cost and job or job lot are necessary. Since managers need timely cost information, we need to estimate a predetermined overhead rate to use in applying estimated overhead to jobs. This estimated amount also helps job order companies determine prices on a timely basis.**

**2. Several other factors (allocation bases) are possible and reasonable. These common factors often include direct materials or machine hours.**

**3. The job order cost sheet captures information on cost and quantity of direct material and direct labor, and on the amount of factory overhead applied to the respective job or job lot. Management and employees use this information to monitor costs during production and to estimate total cost of production.**

**4. Each job is assigned a subsidiary ledger account. This account serves as the “posting account” (accumulates all increases and decreases) during production for direct material, direct labor, and applied factory overhead. The collection of job cost sheets for all of the jobs in process make up a subsidiary ledger controlled by the Work in Process Inventory account in the general ledger.**

1. **When a job is finished, its job cost sheet is completed and moved from the file of jobs in process to the file of finished jobs awaiting delivery to customers. This latter file acts as a subsidiary ledger controlled by the Finished Goods Inventory account. In this way, management and employees can obtain the costs, direct and indirect, associated with any job or job lot at any time.**

**5. A debit (increase) to Work in Process Inventory for direct materials, a debit (increase) to Factory Overhead for indirect materials, and a credit (decrease) to Raw Materials Inventory.**

**6. The materials requisition slip is designed to track the movement of materials from raw materials to production. It also serves as an internal control document because without the slip the inventory department should not release inventory to production.**

**7. The time ticket is used to record how much time an employee spends on each job. Time tickets are also used to determine the amount of overhead to charge to jobs when overhead is based on direct labor.**

 **8. Debits (increases) to factory overhead are the recording of actual overhead costs, such as indirect materials, indirect labor, factory rent, and factory insurance. Credits (decreases) represent the allocation of factory overhead to jobs or job lots.**

**9. Assuming that the overapplied or underapplied overhead is immaterial, it is closed to the Cost of Goods Sold account.**

**10. This production run should be accounted for as a job lot (batch). Although individual iPhones could be viewed as individual jobs, the costs of tracking this detailed information would outweigh the benefits. Determining the cost of the batch should provide management and employees with sufficient information about this product for all decision making purposes.**

**11. A predetermined factory overhead rate must be calculated for at least two reasons: (1) Not all costs are known in advance, yet estimated overhead costs must be applied to products during the current period. (2) A predetermined rate is used to spread indirect costs to products and/or services throughout an accounting period, where overhead costs are not incurred uniformly throughout the period and production may not be uniform throughout the period. For instance, property taxes on the factory building of $20,000 may be paid in July, but some of that $20,000 must be allocated to all items produced during the year, January through December. A *predetermined* rate is necessary, because we must estimate the rate at the beginning of the year, based on estimated costs and activity, before the period begins.**

**12. Each patient in a hospital can be viewed as a “job.” In this case, a job order cost sheet would be used to capture cost of direct materials (supplies, medicine, and so forth), direct labor, and hospital overhead.**

**13. Each of the 30 luxury motorcycles will likely be accounted for as an individual job. Although similar in many respects, each would have custom features that would impact costs. As the luxury motorcycles are shipped to dealers each will have a separate invoice detailing the cost associated with producing that motorcycle. Also, the price of a custom-made motorcycle is probably large enough (in the area of $20,000 to $50,000) that each would be accounted for individually.**

**14. Sprint employees can use job cost sheets to accumulate the costs (e.g. materials, labor, and overhead) used on each job. Managers can use this job cost information to monitor whether Sprint is meeting its target costs and producing reasonable profits. This information can be used to adjust the prices of certain services and/or cease providing certain services if the costs cannot be controlled to yield a reasonable profit.**

**QUICK STUDIES**

**Quick Study 2-1 (5 minutes)**

### Manufactured as a job: 3, 4, 6

**Manufactured as a job lot: 1, 2, 5**

**Quick Study 2-2 (10 minutes)**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Finished Goods Inventory**  | **10,500** |  |
|  |  **Work in Process Inventory**  |  | **10,500** |
|  |  ***Transfer cost of completed job to Fin. Goods.*** |  |  |
|  |  |  |  |
|  | **Cost of Goods Sold**  | **10,500** |  |
|  |  **Finished Goods Inventory**  |  | **10,500** |
|  |  ***Transfer cost of delivered job to COGS.*** |  |  |
|  | **Cash**  |  **14,900** |  |
|  |  **Sales**  |  | **14,900** |
|  |  ***Record sales price of delivered job.*** |  |  |

**Quick Study 2-3 (10 minutes)**

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **1.** | **A** |  | **3.** | **B** |  | **5. E** |  |  |  |  |  |
| **2.** | **D** |  | **4.** | **C** |  |  |  |  |  |  |  |

**Quick Study 2-4 (15 minutes)**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Raw Materials Inventory**  | **50,000** |  |
|  |  **Cash**  |  | **50,000** |
|  |  ***Record raw material purchases.*** |  |  |
|  |  |  |  |
|  | **Factory Overhead**  | **12,000** |  |
|  |  **Raw Materials Inventory**  |  | **12,000** |
|  |  ***Record indirect materials used in production.*** |  |  |
|  |  |  |  |
|  | **Work in Process Inventory**  | **32,000** |  |
|  |  **Raw Materials Inventory**  |  | **32,000** |
|  |  ***Record direct materials used in production.*** |  |  |

**Quick Study 2-5 (10 minutes)**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Work in Process Inventory**  | **140,000** |  |
|  |  **Factory Wages Payable**  |  | **140,000** |
|  |  ***Record direct labor.*** |  |  |
|  |  |  |  |
|  | **Factory Overhead**  | **40,000** |  |
|  |  **Factory Wages Payable**  |  | **40,000** |
|  | ***Record indirect labor.*** |  |  |

**Quick Study 2-6 (10 minutes)**

**1. Factory overhead, $117,000 / Direct labor, $468,000 = 25%**

**2. Factory overhead, $117,000 / Direct materials, $390,000 = 30%**

**Quick Study 2-7 (10 minutes)**

**Rate = Estimated overhead costs = $560,000 = $400 per machine hour**

 **Estimated machine hours 1,400**

**Amount applied to Job 65A = 13 x $400 = $5,200**

**Quick Study 2-8 (5 minutes)**

**Rate = Estimated overhead costs = $1,170,000 = 130%**

 **Estimated direct materials $900,000**

**Quick Study 2-9 (10 minutes)**

|  |
| --- |
| **Overhead Applied** |
|  **Job 1 ($5,000 x 40%)**  | **$2,000** |  |
|  **Job 2 ($7,000 x 40%)**  **Job 3 ($1,500 x 40%)**  |  **2,800****600** |  |

**Quick Study 2-10 (10 minutes)**

**1.**

|  |
| --- |
| **JOB COST SHEET** **Job 1** |
| **Direct materials** **Direct labor**  |  | **$ 5,000****9,000** |
| **Factory overhead (From QS 15-9)**  |  |  **2,000** |
| **Total**  |  | **$16,000** |

|  |
| --- |
| **JOB COST SHEET** **Job 2** |
| **Direct materials** **Direct labor**  |  | **$ 7,000****4,000** |
| **Factory overhead (From QS 15-9)**  |  |  **2,800** |
| **Total**  |  | **$13,800** |

|  |
| --- |
| **JOB COST SHEET** **Job 3** |
| **Direct materials** **Direct labor**  |  | **$1,500****3,000** |
| **Factory overhead (From QS 15-9)**  |  |  **600** |
| **Total**  |  | **$5,100** |

**2. The balance in the Work in the Process Inventory account equals $21,100, the sum of the total costs on the job cost sheets for the jobs that remain unfinished at the end of the period (Job 1 and Job 3).**

**3. The balance in the Finished Goods Inventory account equals $13,800, the total costs on the job cost sheet for the job (Job 2) that is finished (but not yet sold) at the end of the period.**

**Quick Study 2-11 (15 minutes)**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Cost of Goods Sold**  | **50,000** |  |
|  |  **Factory Overhead\***  |  | **50,000** |
|  |  ***Assign underapplied overhead.*** |  |  |

**Quick Study 2-12 (5 minutes)**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Factory Overhead**  | **22,000** |  |
|  |  **Cost of Goods Sold\***  |  | **22,000** |
|  |  ***Assign overapplied overhead.*** |  |  |

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**Quick Study 2-13 (10 minutes)**

|  |
| --- |
| **JOB COST SHEET** |
| **Direct labor ($50 x 200)**  |  | **$10,000** |
| **Factory overhead ($65 x 200)**  |  |  **13,000** |
| **Total cost**  |  | **$23,000** |

**Quick Study 2-14 (10 minutes)**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Services in Process Inventory\***  | **3,250** |  |
|  |  **Service Wages Payable**  |  | **3,250** |
|  |  ***Record direct labor.*** |  |  |

 **\*65 x $50**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Services in Process Inventory\*\***  | **2,600** |  |
|  |  **Factory Overhead**  |  | **2,600** |
|  |  ***Record overhead.*** |  |  |

 **\*\*65 x $40**

**Quick Study 2-15 (5 minutes)**

**Since each car is custom-ordered, Porsche produces in jobs rather in job lots (production of more than one unit of a custom product).**

**EXERCISES**

**Exercise 2-1 (10 minutes)**

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **1.** | **C** |  | **3.** | **E** |  | **5.** | **A** |  |  |  |  |
| **2.** | **D** |  | **4.** | **B** |  |  |  |  |  |  |  |

**Exercise 2-2 (15 minutes)**

|  |
| --- |
| **JOB COST SHEET: Job 9-1005** |
| **Direct materials** |  |  |
|  **Q-4698**  | **$1,250** |  |
|  **Q-4725**  |  **1,000** | **$2,250** |
| **Direct labor**  |  |  |
|  **W-3393**  |  **600** |  |
|  **W-3479**  |  **450** |  |
|  **W-3559**  |  **300**  | **1,350** |
| **Overhead ($1,350 X 110%)**  |  |  **1,485** |
| **Total cost**  |  | **$5,085** |

**Exercise 2-3 (25 minutes)**

**1*.* The cost of direct materials requisitioned in the month equals the total direct materials costs accumulated on the three jobs less the amount of direct materials cost assigned to Job 102 in May:**

|  |  |  |
| --- | --- | --- |
| Job 102  | **$15,000** |  |
| **Less prior costs**  |  **(6,000)** | **$ 9,000** |
| **Job 103**  |  | **33,000** |
| **Job 104**  |  |  **27,000** |
| **Total materials used (requisitioned)**  |  | **$69,000** |

**2*.* Direct labor cost incurred in the month equals the total direct labor costs accumulated on the three jobs less the amount of direct labor cost assigned to Job 102 in May:**

|  |  |  |
| --- | --- | --- |
| Job 102  | **$8,000** |  |
| **Less prior costs**  |  **(1,800)** | **$ 6,200** |
| **Job 103**  |  | **14,200** |
| **Job 104**  |  |  **21,000** |
| **Total direct labor**  |  | **$41,400** |

**3*.* The predetermined overhead rate equals the ratio of the amount of overhead assigned to jobs divided by the amount of direct labor cost assigned to them. Since the same rate is used for all jobs started and completed within a month, the ratio for any one job equals the rate that was applied. This table shows the ratio for jobs 102 and 104:**

|  |  |  |
| --- | --- | --- |
|  | **Job 102** | **Job 104** |
| Overhead  | **$ 4,000** | **$10,500** |
| **Direct labor**  | **8,000** | **21,000** |
| **Ratio**  | **50%** | **50%** |

**4*.* The cost transferred to finished goods in June equals the total costs of the two completed jobs for the month, which are Jobs 102 and 103:**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Job 102** | **Job 103** | **Total** |
| Direct materials  | **$15,000** | **$33,000** | **$48,000** |
| **Direct labor**  | **8,000** | **14,200** | **22,200** |
| **Overhead**  |  **4,000** |  **7,100** |  **11,100** |
| **Total transferred cost**  | **$27,000** | **$54,300** | **$81,300** |

**Exercise 2-4 (15 minutes)**

|  |  |  |  |
| --- | --- | --- | --- |
| **1.** | **Raw Materials Inventory**  | **76,200** |  |
|  |  **Accounts Payable**  |  | **76,200** |
|  |  ***Record materials purchases.*** |  |  |
|  |  |  |  |
| **2.** | **Work in Process Inventory**  | **48,000** |  |
|  |  **Raw Materials Inventory**  |  | **48,000** |
|  |  ***Assign costs of direct materials used.*** |  |  |
|  |  |  |  |
| **3.** | **Work in Process Inventory**  | **15,350** |  |
|  |  **Factory Wages Payable**  |  | **15,350** |
|  |  ***Record direct labor used in production.*** |  |  |
|  |  |  |  |
| **4.** | **Work in Process Inventory**  | **18,420** |  |
|  |  **Factory Overhead**  |  | **18,420** |
|  |  ***Apply overhead to jobs*.** |  |  |

**Exercise 2-5 (20 minutes)**

**1.**

|  |  |  |  |
| --- | --- | --- | --- |
| **a.** | **Work in Process Inventory**  | **9,500** |  |
|  |  Raw Materials Inventory  |  | **9,500** |
|  |  ***Record direct materials used.*** |  |  |
|  |  |  |  |
| **b.** | **Work in Process Inventory**  | **8,000** |  |
|  |  **Factory Wages Payable**  |  | **8,000** |
|  |  ***Record direct labor used.*** |  |  |
|  |  |  |  |
| **c.** | **Work in Process Inventory**  | **6,400** |  |
|  |  **Factory Overhead**  |  | **6,400** |
|  |  ***Apply overhead at 80% of direct labor cost.*** |  |  |
|  |  |  |  |
| **d.** | **Cost of Goods Sold\***  | **16,000** |  |
|  |  **Finished Goods Inventory**  |  | **16,000** |
|  |  ***Record cost of sale of job 120.*** |  |  |
|  |  |  |  |
| **e.** | **Accounts Receivable**  | **22,000** |  |
|  |  **Sales**  |  | **22,000** |
|  |  ***Record sale of job 120.*** |  |  |

**\*Total of direct materials, direct labor, and overhead applied to this job in June ($11,040) and July ($4,960).**

**Exercise 2-5 (continued)**

**2. The balance in Work in Process Inventory at the end of July ($6,280) equals the total cost reported on the job cost sheet for Job 122, the only job still in process at the end of the month. The balance in Finished Goods Inventory ($12,660) equals the total cost reported on the job cost sheet for Job 121, the only job finished but not sold by the end of the month.**

|  |  |  |  |
| --- | --- | --- | --- |
|  |  **Job 121** | **Job 122** |  |
| **Direct materials**  | **$ 6,000** | **$2,500** |  |
| **Direct labor**  | **3,700** | **2,100** |  |
| **Overhead**  |  **2,960** |  **1,680** |  |
| **Total cost**  | **$12,660** | **$6,280** |  |

**Exercise 2-6 (25 minutes)**

|  |  |  |  |
| --- | --- | --- | --- |
| **a.** | **Raw Materials Inventory**  | **90,000** |  |
|  |  **Accounts Payable**  |  | **90,000** |
|  |  ***Record materials purchases.*** |  |  |
|  |  |  |  |
| **b.** | **Work in Process Inventory**  | **36,500** |  |
|  |  **Raw Materials Inventory**  |  | **36,500** |
|  |  ***Assign costs of direct materials used.*** |  |  |
|  |  |  |  |
|  | **Factory Overhead**  | **19,200** |  |
|  |  **Raw Materials Inventory**  |  | **19,200** |
|  |  ***Record indirect materials.*** |  |  |
|  |  |  |  |
| **c.** | **Work in Process Inventory**  | **38,000** |  |
|  |  **Factory Overhead**  **Cash**  | **12,000** | **50,000** |
|  |  ***Record payroll costs paid.*** |  |  |
|  |  |  |  |
| **d.** | **Factory Overhead**  | **11,475** |  |
|  |  Cash  |  | **11,475** |
|  |  ***Record other factory overhead paid.*** |  |  |
|  |  |  |  |
| **e.** | **Work in Process Inventory**  | **47,500** |  |
|  |  **Factory Overhead**  |  | **47,500** |
|  |  ***Apply overhead to jobs at the rate of 125% of direct labor cost.*** |  |  |
| **f.** | **Finished Goods Inventory**  | **56,800** |  |
|  |  **Work in Process Inventory**  |  | **56,800** |
|  |  ***Record jobs completed.*** |  |  |
|  |  |  |  |
| **g.** | **Cost of Goods Sold**  | **56,800** |  |
|  |  **Finished Goods Inventory**  |  | **56,800** |
|  |  ***Record cost of sale of job.*** |  |  |
|  |  |  |  |
|  | **Accounts Receivable**  | **82,000** |  |
|  |  **Sales**  |  | **82,000** |
|  |  ***Record sale of job.*** |  |  |

**Exercise 2-7 (30 minutes)**

|  |  |  |
| --- | --- | --- |
| **1.** | **Cost of direct materials used** |  |
|  | **Beginning raw materials inventory**  | **$ 43,000** |
|  | **Plus purchases**  |  **210,000** |
|  | **Raw materials available**  | **253,000** |
|  | **Less ending raw materials inventory**  |  **(52,000)** |
|  | **Total raw materials used**  | **201,000**  |
|  | **Less indirect materials used**  |  **(15,000)** |
|  | **Cost of direct materials used**  | **$186,000** |
|  |  |  |
|  |  |  |
| **2.** | **Cost of direct labor used** |  |
|  | **Total factory payroll**  | **$345,000** |
|  | **Less indirect labor**  |  **(80,000)** |
|  | **Cost of direct labor used**  | **$265,000** |
|  |  |  |
| **3.** | **Cost of goods manufactured** |  |
|  | **Beginning work in process inventory**  | **$ 10,200** |
|  | **Plus direct materials**  |  **186,000** |
|  | **Plus direct labor**  |  **265,000** |
|  | **Plus overhead applied (70% of direct labor cost)**  |  **185,500** |
|  | **Total cost of work in process**  | **646,700** |
|  | **Less ending work in process inventory**  |  **(21,300)** |
|  | **Cost of goods manufactured**  | **$625,400** |
|  |  |  |
|  |  |  |

**Exercise 2-7 (*continued)***

|  |  |  |
| --- | --- | --- |
| **4.** | **Cost of goods sold** |  |
|  | **Beginning finished goods inventory**  | **$ 63,000** |
|  | **Plus cost of goods manufactured**  | **625,400** |
|  | **Less ending finished goods inventory**  |  **(35,600)** |
|  | **Cost of goods sold**  | **$ 652,800** |
|  |  |  |
|  |  |  |
| **5.** | **Gross profit** |  |
|  | **Sales**  | **$1,400,000** |
|  | **Cost of goods sold**  |  **(652,800)** |
|  | **Gross profit**  | **$ 747,200** |
|  |  |  |
| **6.** | **Actual overhead incurred** |  |
|  | **Indirect materials**  | **$ 15,000** |
|  | **Indirect labor**  | **80,000** |
|  | **Other overhead costs**  |  **120,000** |
|  | **Total actual overhead incurred**  | **215,000** |
|  | **Overhead applied**  |  **185,500** |
|  | **Underapplied overhead**  | **$ 29,500** |
|  |  |  |

**Exercise 2-8 (10 minutes)**

|  |  |  |  |
| --- | --- | --- | --- |
|  **1.** | **Raw Materials Inventory**  | **210,000** |  |
|  |  **Cash**  |  | **210,000** |
|  |  ***Record materials purchases.*** |  |  |
|  |  |  |  |
|  **2.** | **Work in Process Inventory**  | **186,000** |  |
|  |  **Raw Materials Inventory**  |  | **186,000** |
|  |  ***Assign direct materials to jobs.*** |  |  |
|  |  |  |  |
|  **3.** | **Factory Overhead**  | **15,000** |  |
|  |  **Raw Materials Inventory**  |  | **15,000** |
|  |  ***Record indirect materials used.*** |  |  |

**Exercise 2-9 (10 minutes)**

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| --- | --- | --- | --- |
|  |  |  |  |
|  **1.** | **Work in Process Inventory**  | **265,000** |  |
|  |  **Factory Wages Payable**  |  | **265,000** |
|  |  ***Record direct labor used.*** |  |  |
|  |  |  |  |
|  **2.** | **Factory Overhead**  | **80,000** |  |
|  |  **Factory Wages Payable**  |  | **80,000** |
|  |  ***Record indirect labor used.*** |  |  |
|  |  |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
|  **3.** | **Factory Wages Payable**  | **345,000** |  |
|  |  **Cash**  |  | **345,000** |
|  |  ***Record payment of payroll.*** |  |  |

**Exercise 2-10 (10 minutes)**

|  |  |  |  |
| --- | --- | --- | --- |
| **1.** | **Factory Overhead**  | **120,000** |  |
|  |  **Other Accounts**  |  | **120,000** |
|  |  ***Record other factory overhead.*** |  |  |
|  |  |  |  |
|  **2.** | **Work in Process Inventory**  | **185,500** |  |
|  |  **Factory Overhead**  |  | **185,500** |
|  |  ***Apply overhead to jobs.*** |  |  |
|  | ***Computed as: 70% Predetermined overhead rate x direct labor of $265,000*** |  |  |

**Exercise 2-11 (15 minutes)**

**1.**

**Estimated overhead costs**

**Estimated direct labor**

**$747,500**

**$575,000**

 **Rate = = = 130%**

**2.**

|  |  |
| --- | --- |
| Direct materials  | **$15,350** |
| **Direct labor**  | **3,200** |
| **Factory overhead ($3,200 x 130%)**  |  **4,160** |
| **Total cost of Job No. 13-56**  | **$22,710** |

**Exercise 2-12 (20 minutes)**

**1. Rate = = = 40%**

**$600,000**

**$1,500,000**

**Overhead costs**

**Direct material costs**

|  |  |  |
| --- | --- | --- |
| **2.** | **Total cost of job in process (given)**  | **$ 50,000** |
|  | **Less materials cost of job in process (given)**  |  **(30,000)** |
|  | **Less overhead applied (30,000 x 40%)**  |  **(12,000)** |
|  | **Direct labor cost**  | **$ 8,000** |

**Exercise 2-13 (10 minutes)**

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|  |  |  |  |
| --- | --- | --- | --- |
|  | **Cost of Goods Sold**  | **29,500** |  |
|  |  **Factory Overhead**  |  | **29,500** |
|  | Allocate (close) underapplied overhead to cost of goods sold. *Applied overhead equals $265,000 x 70% = $185,500. Actual overhead = $215,000, computed as $15,000 + $80,000 + $120,000.* |  |  |

**Exercise 2-14 (15 minutes)**

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|  |  |  |  |
| --- | --- | --- | --- |
|  | **Factory Overhead**  | **3,200** |  |
|  |  **Cost of Goods Sold**  |  | **3,200** |
|  |  ***Close overapplied overhead for Storm.*** |  |  |

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|  |  |  |  |
| --- | --- | --- | --- |
|  |  |  |  |
|  | **Cost of Goods Sold**  | **800** |  |
|  |  **Factory Overhead**  |  | **800** |
|  |  ***Close underapplied overhead for Valle.*** |  |  |
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**Exercise 2-15 (35 minutes)**

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| --- | --- |
| **1.** | **Predetermined overhead rate** |
|  | **Estimated overhead costs**  | **$750,000** |
|  | **Estimated direct material costs**  | **$625,000** |
|  |  |  |
|  | **Rate (Overhead/Direct material)**  | **120%** |

**2. & 3.**

|  |
| --- |
| **Factory Overhead** |
| **Incurred**  | **830,000** | **Applied\***  | **822,000** |
| **Underapplied**  | **8,000** |  |  |

**\*Overhead applied to jobs = 120% x $685,000 = $822,000**

|  |  |  |  |
| --- | --- | --- | --- |
| **4.** |  |  |  |
|  **Dec. 31** | **Cost of Goods Sold**  | **8,000** |  |
|  |  **Factory Overhead**  |  | **8,000** |
|  |  ***Close underapplied overhead.*** |  |  |

**Exercise 2-16 (25 minutes)**

|  |  |
| --- | --- |
| **1.** | **Predetermined overhead rate** |
|  | Estimated overhead costs  | **$1,680,000** |
|  | **Estimated direct labor costs**  | **$ 480,000** |
|  | **Rate ($1,680,000/$480,000)**  | **350%** |

**2. & 3.**

|  |
| --- |
| Overhead |
| **Incurred**  | **1,652,000** | **Applied\***  | **1,662,500** |
|  |  | **Overapplied**  |  **10,500** |

**\*Overhead applied to jobs = 350% x $475,000 = $1,662,500**

|  |  |  |  |
| --- | --- | --- | --- |
| **4.** |  |  |  |
| **Dec. 31** | **Factory Overhead**  | **10,500** |  |
|  |  **Cost of Goods Sold**  |  | **10,500** |
|  |  ***Close overapplied overhead.*** |  |  |

 **Exercise 2-17 (30 minutes)**

**1. Overhead rate = Total overhead costs / Total direct labor costs**

 **= $1,800,000 / $3,000,000 = 60%**

|  |  |  |
| --- | --- | --- |
| **2.** |  |  |
|  | **Total cost of work in process inventory**  |  **$ 71,000** |
|  | **Deduct: Direct labor**  | **(20,000)** |
|  | **Deduct: Factory overhead ($20,000 x 60%)**  |  **(12,000)** |
|  | **Direct materials**  | **$ 39,000** |

|  |  |  |
| --- | --- | --- |
| **3.** |  |  |
|  | **Total cost of finished goods inventory**  | **$490,000** |
|  | **Deduct: Direct materials**  |  **(250,000)** |
|  | **Direct labor and factory overhead costs**  | **$240,000** |

 **We also know that the total of direct labor costs (*X*) and factory overhead costs (0.6*X*) equals $240,000. Thus, to get the individual amounts we need to solve: [*X* + 0.6*X* = $240,000]. The solution is:**

**Direct labor costs = $150,000**

**Factory overhead costs = $150,000 x 0.6 = $90,000**

 **Exercise 2-18 (35 minutes)**

**1. Estimated cost of the architectural job**

|  |  |  |  |
| --- | --- | --- | --- |
| Labor type | **Estimated hours** | **Hourly rate** | **Total cost** |
| **Architects**  | **150** | **$300** | **$ 45,000** |
| **Staff**  | **300** | **75** | **22,500** |
| **Clerical**  | **500** | **20** |  **10,000** |
| **Total labor cost**  | **77,500** |
| **Overhead applied 175% of direct labor cost**  |  **135,625** |
| **Total estimated cost**  | **$213,125** |

**2. Frey should first determine an estimated selling price, based on its cost and desired profit for this job.**

|  |  |
| --- | --- |
| **Total estimated cost**  | **$213,125** |
| **Desired profit**  |  **80,000** |
| **Estimated selling price**  | **$293,125** |

 **This $293,125 price may or may not be its bid. It must consider past experiences and competition. It might make the bid at the low end of what it believes the competition will bid. By bidding at about $285,000, the profit on the job will only be $71,875 ($285,000 – $213,125). While this may allow Frey to get the job, it must consider several other factors. Among them:**

1. **How accurate are its estimates of costs? If costs are understated, the bid may be too low. This will cause profits to be lower than anticipated. If costs are overestimated, it may bid too high and lose the job.**
2. **How accurate is the estimate of the competition’s probable bidding range? If it has underestimated the low end, it may be unnecessarily underbidding. If it has overestimated the low end, it may lose the job.**
3. **Is it willing to meet the expected low bid of the competition? In the example above, would it be acceptable to earn only $71,875 on this job (about a 25% gross profit ratio), rather than the normal $80,000 (about a 27% gross profit ratio)? Can it earn a better profit on another job?**

**There is no exact answer to these questions, but Frey must consider these and other factors before it submits the bid.**

**Exercise 2-19 (15 minutes)**

|  |  |  |  |
| --- | --- | --- | --- |
| **(1)** | **Services in Process Inventory\***  | **9,900** |  |
|  |  **Service Salaries Payable**  |  | **9,900** |
|  |  ***Record direct labor.*** |  |  |
|  | **\*(5 x $500) + (12 x $200) + (100 x $50)** |  |  |
| **(2)** | **Services in Process Inventory\*\***  **Services Overhead** ***Apply overhead.*****\*\*$9,900 x 50%****Cost of Services Provided**  | **4,950****14,850** | **4,950** |
|  |  **Services in Process Inventory**  |  | **14,850** |
|  |  ***Record cost of services.*** |  |  |

**Exercise 2-20 (15 minutes)**

|  |  |  |  |
| --- | --- | --- | --- |
|  **(1)** | **Raw Materials Inventory**  | **3,108** |  |
|  |  **Accounts Payable**  |  | **3,108** |
|  |  ***Record raw material purchases.*** |  |  |
|  |  |  |  |
|  | **Work in Process Inventory\***  | **3,106** |  |
|  |  **Raw Materials Inventory**  |  | **3,106** |
|  |  ***Record raw materials used in production.*** |  |  |

**\* The amount of raw materials used in production is computed from the Raw Materials Inventory account. Beginning balance plus purchases minus ending balance equals raw materials used in production, or (in millions), €83 + €3,108 - €85 = €3,106.**

**(2) The amount of materials purchased is almost equal to the amount of materials used in production. This means the company holds very little inventory of raw materials, consistent with lean manufacturing.**

**PROBLEM SET A**

**Problem 2-1A (80 minutes)**

***Part 1* *Total manufacturing costs and the costs assigned to each job***

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  **306** |  **307** | **308** | **April Total** |
| **From March** |  |  |  |  |
| **Direct materials**  | **$ 29,000** | **$ 35,000** |  |  |
| **Direct labor**  | **20,000** | **18,000** |  |  |
| **Applied overhead\***  |  **10,000** |  **9,000** |  |  |
| Beginning work **in process**  | **59,000** | **62,000** |  | **$ 121,000** |
|  |  |  |  |  |
| **For April** |  |  |  |  |
| **Direct materials**  | **135,000** | **220,000** | **$100,000** | **455,000** |
| **Direct labor**  | **85,000** | **150,000** | **105,000** | **340,000** |
| **Applied overhead\***  |  **42,500** |  **75,000** |  **52,500** |  **170,000** |
| **Total costs added in April**  |  **262,500** |  **445,000** |  **257,500** |  **965,000** |
| **Total costs**  | **$321,500** | **$507,000** | **$257,500** | **$1,086,000** |

 **\*Equals 50% of direct labor cost.**

***Part 2* *Journal entries for April***

|  |  |  |  |
| --- | --- | --- | --- |
| **a.** | **Raw Materials Inventory**  | **500,000** |  |
|  |  **Accounts Payable**  |  | **500,000** |
|  |  ***Record materials purchases.*** |  |  |
|  |  |  |  |
| **b.** | **Work in Process Inventory**  | **455,000** |  |
|  |  **Raw Materials Inventory**  |  | **455,000** |
|  |  ***Assign direct materials to jobs.*** |  |  |
| **c.**  | **Work in Process Inventory**  | **340,000** |  |
|  |  **Cash**  |  | **340,000** |
|  |  ***Record direct labor.*** |  |  |
|  |  |  |  |
| **d.** | **Factory Overhead**  | **23,000** |  |
|  |  **Cash**  |  | **23,000** |
|  |  ***Record indirect labor.*** |  |  |
| **e.** | **Work in Process Inventory**  | **170,000** |  |
|  |  **Factory Overhead**  |  | **170,000** |
|  |  ***Apply overhead to jobs.*** |  |  |

**Problem 2-1A (*continued*)**

|  |  |  |  |
| --- | --- | --- | --- |
| **f.**  | **[continued from prior page]****Factory Overhead**  **Raw Materials Inventory**  ***Record indirect materials.*** |  **50,000** | **50,000** |
|  |  |  |  |
|  | **Factory Overhead**  | **19,000** |  |
|  |  **Cash**  |  | **19,000** |
|  |  ***Record factory utilities.*** |  |  |
|  |  |  |  |
|  | **Factory Overhead**  | **51,000** |  |
|  |  Accumulated Depreciation—Factory Equip  |  | **51,000** |
|  |  ***Record other factory overhead.*** |  |  |
|  | **Factory Overhead**  | **32,000** |  |
|  |  **Cash**  |  | **32,000** |
|  |  ***Record factory rent.*** |  |  |
| **g.** | **Finished Goods Inventory (306 & 307)**  | **828,500** |  |
|  |  **Work in Process Inventory**  |  | **828,500** |
|  |  ***Record jobs completed ($321,500 + $507,000).*** |  |  |
|  |  |  |  |
| **h.** | **Cost of Goods Sold (306)**  | **321,500** |  |
|  |  **Finished Goods Inventory**  |  | **321,500** |
|  |  ***Record cost of sale of job.*** |  |  |
|  |  |  |  |
| **i.** | **Cash**  | **635,000** |  |
|  |  **Sales**  |  | **635,000** |
|  |  ***Record sale of job.*** |  |  |
|  |  |  |  |
| **j.** | **Cost of Goods Sold**  | **5,000** |  |
|  |  **Factory Overhead\***  |  | **5,000** |
|  |  ***Assign underapplied overhead.*** |  |  |

|  |  |
| --- | --- |
| **\*Overhead applied to jobs**  | **$170,000** |
| **Overhead incurred** |  |  |
| **Indirect materials**  | **$50,000** |  |
| **Indirect labor**  | **23,000** |  |
| **Factory rent**  | **32,000** |  |
| **Factory utilities**  | **19,000** |  |
| **Factory equip. depreciation.**  |  **51,000** |  **175,000** |
| **Underapplied overhead**  |  | **$ 5,000** |

**Problem 2-1A *(Continued)***

***Part 3***

|  |
| --- |
| **MARCELINO COMPANY** |
| **Schedule of Cost of Goods Manufactured** |
| **For Month Ended April 30** |
| Direct materials used  |  | **$ 455,000** |
| Direct labor used  |  | **340,000** |
| **Factory overhead applied**  |  | **170,000** |
| **Total manufacturing costs**  |  | **965,000** |
| **Add work in process March 31 (Jobs 306 & 307)**  |  |  **121,000** |
| **Total cost of work in process**  |  | **1,086,000** |
| **Deduct work in process, April 30 (Job 308)**  |  |  **(257,500)** |
| **Cost of goods manufactured**  |  | **$ 828,500** |
|  |  |  |

***Part 4***

**Gross profit on the income statement for the month ended April 30**

|  |  |
| --- | --- |
| Sales  | **$ 635,000** |
| **Cost of goods sold ($321,500 + $5,000)**  |  **(326,500)** |
| **Gross profit**  | **$ 308,500** |

**Presentation of inventories on the April 30 balance sheet**

|  |  |
| --- | --- |
| **Inventories** |  |
| Raw materials  | **$ 75,000\*** |
| **Work in process (Job 308)**  | **257,500** |
| **Finished goods (Job 307)**  |  **507,000** |
| **Total inventories**  | **$ 839,500** |

|  |  |
| --- | --- |
| **\* Beginning raw materials inventory**  | **$ 80,000** |
|  **Purchases**  | **500,000** |
|  **Direct materials used**  | **(455,000)** |
|  **Indirect materials used**  |  **(50,000)** |
|  **Ending raw materials inventory**  | **$ 75,000** |

Part 5

**Overhead is underapplied by $5,000, meaning that individual jobs or batches of jobs are under-costed. Thus, profits at the job (and batch) level are overstated.**

**Problem 2-2A (75 minutes)**

***Part 1***

|  |  |  |  |
| --- | --- | --- | --- |
| **a.** |  |  |  |
| **Dec. 31** | **Work in Process Inventory**  | **28,800** |  |
|  |  **Raw Materials Inventory**  |  | **28,800** |
|  |  ***Record direct materials costs for*** ***Jobs 402 and 404 ($10,200 + 18,600).*** |  |  |
|  |  |  |  |
| **b.** |  |  |  |
| Dec. 31 | **Work in Process Inventory**  | **59,800** |  |
|  |  **Factory Wages Payable**  |  | **59,800** |
|  |  ***Record direct labor costs for***  ***Jobs 402 and 404 ($36,000 + $23,800).*** |  |  |
|  |  |  |  |
| **c.** |  |  |  |
| **Dec. 31** | **Work in Process Inventory**  | **119,600** |  |
|  |  **Factory Overhead**  |  | **119,600** |
|  |  ***Allocate overhead to Jobs 402 and 404*** ***at 200% of direct labor cost assigned.*** |  |  |
|  |  |  |  |
| **d.** |  |  |  |
| **Dec. 31** | **Factory Overhead**  | **5,600** |  |
|  |  **Raw Materials Inventory**  |  | **5,600** |
|  |  ***Add cost of indirect materials***  ***to actual factory overhead.***  |  |  |
|  |  |  |  |
| **e.** |  |  |  |
| **Dec. 31** | **Factory Overhead**  | **8,200** |  |
|  |  **Factory Wages Payable**  |  | **8,200** |
|  |  ***Accrue indirect labor and assign it to***  ***actual factory overhead.*** |  |  |

***Part 2***

**Revised Factory Overhead account**

|  |  |  |
| --- | --- | --- |
| **Ending balance from trial balance**  | **$115,000** |  **debit** |
| **Applied to Jobs 402 and 404**  | **(119,600)** | **credit** |
| **Additional indirect materials**  | **5,600** |  **debit** |
| **Additional indirect labor**  |  **8,200** |  **debit** |
| **Underapplied overhead**  | **$ 9,200** |  **debit** |

|  |  |  |  |
| --- | --- | --- | --- |
| **Dec. 31** | **Cost of Goods Sold**  | **9,200** |  |
|  |  **Factory Overhead**  |  | **9,200** |
|  | ***Close underapplied overhead.*** |  |  |

**Problem 2-2A (*continued*)**

***Part 3***

|  |
| --- |
| **BERGAMO BAY COMPANY** |
| **Trial Balance** |
| **December 31, 2017** |
|  | **Debit** | **Credit** |
| Cash  | **$170,000** |  |
| Accounts receivable  | **75,000** |  |
| **Raw materials inventory\***  | **45,600** |  |
| **Work in process inventory\*\***  | **208,200** |  |
| **Finished goods inventory**  | **15,000** |  |
| **Prepaid rent**  | **3,000** |  |
| **Accounts payable**  |  | **$ 17,000** |
| **Factory wages payable** **Notes payable**  |  | **68,000****25,000** |
| **Common stock**  |  | **50,000** |
| **Retained earnings**  |  | **271,000** |
| **Sales**  |  | **373,000** |
| **Cost of goods sold ($218,000 + $9,200)**  | **227,200** |  |
| **Factory overhead**  | **0** |  |
| **Operating expenses**  |  **60,000** |  **\_\_\_\_\_\_\_** |
| **Totals**  | **$804,000** | **$804,000** |

 **\* Raw materials inventory**

|  |  |
| --- | --- |
| **Balance per trial balance**  | **$80,000** |
| **Less: Amounts recorded for Jobs 402 and 404**  | **(28,800)** |
| **Less: Indirect materials**  |  **(5,600)** |
| **Ending balance**  | **$45,600** |

 **\*\* Work in process inventory**

|  |  |  |  |
| --- | --- | --- | --- |
|  |  **Job 402** | **Job 404** |  **Total** |
| **Direct materials**  | **$ 10,200** | **$18,600** | **$ 28,800** |
| **Direct labor**  | **36,000** | **23,800** | **59,800** |
| **Overhead**  |  **72,000** |  **47,600** |  **119,600** |
| **Total cost**  | **$118,200** | **$90,000** | **$208,200** |

**Problem 2-2A (*continued*)**

***Part 4***

|  |
| --- |
| **BERGAMO BAY COMPANY****Income Statement****For Year Ended December 31, 2017** |
|  | **Sales**  | **$373,000** |  |
|  | **Cost of goods sold**  |  **(227,200)** |  |
|  | **Gross profit**  | **145,800** |  |
|  | **Operating expenses**  |  **(60,000)** |  |
|  | **Net income**  | **$ 85,800** |  |
|  |  |  |  |

|  |
| --- |
| **BERGAMO BAY COMPANY** **Balance Sheet****December 31, 2017** |
|  | **Assets** |
|  | **Cash**  |  | **$170,000** |
|  | **Accounts receivable**  |  | **75,000** |
|  | **Inventories** |  |  |
|  |  **Raw materials inventory**  | **$ 45,600** |  |
|  |  **Work in process inventory**  | **208,200** |  |
|  |  **Finished goods inventory**  |  **15,000** | **268,800** |
|  | **Prepaid rent**  |  |  **3,000** |
|  | **Total assets**  |  | **$516,800** |
|  |  |  |  |
|  | **Liabilities and equity** |  |  |
|  | **Accounts payable**  |  | **$ 17,000** |
|  | **Factory wages payable** **Notes payable**  |  |  **68,000**  **25,000** |
|  | **Total liabilities**  |  | **110,000** |
|  | **Common stock**  |  | **50,000** |
|  | **Retained earnings ($271,000 + $85,800)**  |  |  **356,800** |
|  | **Total stockholders' equity**  |  |  **406,800** |
|  | **Total liabilities and equity**  |  | **$516,800** |
|  |  |  |  |

**Problem 2-2A (*concluded*)**

 ***Part 5***

**This $5,600 error would cause the costs for Job 404 to be understated. Since Job 404 is in process at the end of the period, work in process inventory and total assets would both be understated on the balance sheet. In addition, the over- or underapplied overhead would change by $5,600. That is, if overhead is underapplied by, say, $9,200, this amount would decrease by $5,600 when the error is corrected. Since underapplied overhead is charged directly to cost of goods sold, then cost of goods sold would decrease by $5,600 and net income would increase by $5,600—yielding a $5,600 increase in retained earnings on the balance sheet.**

**Problem 2-3A (70 minutes)**

***Part 1***

|  |
| --- |
| **JOB COST SHEETS** |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Job No. 136** |  |  | **Job No. 138** |  |
| **Materials**  | **$ 48,000** |  | **Materials**  | **$ 19,200** |
| **Labor**  | **12,000** |  | **Labor**  | **37,500** |
| **Overhead**  |  **24,000** |  | **Overhead**  |  **75,000** |
| **Total cost**  | **$ 84,000** |  | **Total cost**  | **$131,700** |
|  |  |  |  |  |
| **Job No. 137** |  |  | **Job No. 139** |  |
| **Materials**  | **$ 32,000** |  | **Materials**  | **$ 22,400** |
| **Labor**  | **10,500** |  | **Labor**  | **39,000** |
| **Overhead**  |  **21,000** |  | **Overhead**  |  **78,000** |
| **Total cost**  | **$ 63,500** |  | **Total cost**  | **$139,400** |
|  |  |  |  |  |
|  |  |  | **Job No. 140** |  |
|  |  |  | **Materials**  | **$ 6,400** |
|  |  |  | **Labor**  | **3,000** |
|  |  |  | **Overhead**  |  **6,000** |
|  |  |  | **Total cost**  | **$ 15,400** |

***Part 2***

|  |  |  |  |
| --- | --- | --- | --- |
| **a.** | **Raw Materials Inventory**  | **200,000** |  |
|  |  **Accounts Payable**  |  | **200,000** |
|  |  ***Record materials purchases.*** |  |  |
|  |  |  |  |
|  |  |  |  |
| **b.** | **Work in Process Inventory**  | **128,000** |  |
|  | **Factory Overhead**  | **19,500** |  |
|  |  **Raw Materials Inventory**  |  | **147,500** |
|  |  ***Record direct & indirect materials.*** |  |  |
| **c.** | **Factory Overhead**  | **15,000** |  |
|  |  **Cash**  |  | **15,000** |
|  |  ***Record other factory overhead.*** |  |  |
|  |  |  |  |

**Problem 2-3A *(Continued)***

**[continued from prior page]**

|  |  |  |  |
| --- | --- | --- | --- |
| **d.** | **Work in Process Inventory**  | **102,000** |  |
|  | **Factory Overhead**  | **24,000** |  |
|  |  **Cash**  |  | **126,000** |
|  |  ***Record direct & indirect labor.*** |  |  |
|  |  |  |  |
| **e.** | **Work in Process Inventory**  | **177,000** |  |
|  |  **Factory Overhead**  |  | **177,000** |
|  |  ***Apply overhead to jobs***  ***[($12,000 + $37,500 + $39,000) x 200%].*** |  |  |
|  |  |  |  |
| **f.** | **Finished Goods Inventory**  | **355,100** |  |
|  |  **Work in Process Inventory**  |  | **355,100** |
|  |  ***Record completion of jobs***  ***($84,000 + $131,700 + $139,400).*** |  |  |
|  |  |  |  |
| **g.** | **Accounts Receivable**  | **525,000** |  |
|  |  **Sales**  |  | **525,000** |
|  |  ***Record sales on account.*** |  |  |
|  |  |  |  |
|  | **Cost of Goods Sold**  | **215,700** |  |
|  |  **Finished Goods Inventory**  |  | **215,700** |
|  |  ***Record cost of sales ($84,000 + $131,700).*** |  |  |
|  |  |  |  |
| **h.** | **Factory Overhead**  | **149,500** |  |
|  |  **Accum. Depreciation—Factory Building**  |  | **68,000** |
|  |  **Accum. Depreciation—Factory Equipment**  |  | **36,500** |
|  |  **Prepaid Insurance**  |  | **10,000** |
|  |  **Property Taxes Payable**  |  | **35,000** |
|  |  ***Record other factory overhead.*** |  |  |
|  |  |  |  |
| **i.** | **Work in Process Inventory**  | **27,000** |  |
|  |  **Factory Overhead**  |  | **27,000** |
|  |  ***Apply overhead to jobs*** ***[($10,500 + $3,000) x 200%].*** |  |  |

**Problem 2-3A *(Continued)***

***Part 3***

|  |
| --- |
| **GENERAL LEDGER ACCOUNTS** |

|  |  |  |
| --- | --- | --- |
| **Raw Materials Inventory** |  |  |
| **(a)** | **200,000** | **(b)** | **147,500** |  |  |  |  |  |
| **Bal.** | **52,500** |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
| **Work in Process Inventory** |  | **Factory Overhead** |
| **(b)** | **128,000** | **(f)** | **355,100** |  | **(b)** | **19,500** | **(e)** | **177,000** |
| **(d)** | **102,000** |  |  |  | **(c)** | **15,000** | **(i)** | **27,000** |
| **(e)** | **177,000** |  |  |  | **(d)** | **24,000** |  |  |
| **(i)** | **27,000** |  |  |  | **(h)** | **149,500** |  |  |
| **Bal.** | **78,900** |  |  |  | **Bal.** | **4,000** |  |  |
|  |  |  |  |  |  |  |  |  |
| **Finished Goods Inventory** |  | **Cost of Goods Sold** |
| **(f)** | **355,100** | **(g)** | **215,700** |  | **(g)** | **215,700** |  |  |
| **Bal.** | **139,400** |  |  |  | **Bal.** | **215,700** |  |  |

***Part 4***

**Reports of Job Costs\***

|  |  |
| --- | --- |
| **Work in Process Inventory** |  |
|  **Job 137**  |  **$ 63,500** |
|  **Job 140**  |  **15,400** |
|  **Balance**  | **$ 78,900** |
|  |  |
| **Finished Goods Inventory** |  |
|  **Job 139**  | **$139,400** |
|  **Balance**  | **$139,400** |
|  |  |
| Cost of Goods Sold |  |
|  **Job 136**  | **$ 84,000** |
|  **Job 138**  |  **131,700** |
|  **Balance**  | **$215,700** |

**\*Individual totals reconcile with general ledger account balances in part 3.**

### Problem 2-4A (35 minutes)

# *Part 1*

**a. Predetermined overhead rate**

**Estimated overhead costs**

**Estimated direct labor cost**

**$1,500,000**

**$2,500,000**

**$1,500,000**

**[50 x 2,000 x $25]**

 **= = = 60%**

**b. Overhead costs charged to jobs**

|  |  |  |
| --- | --- | --- |
|  | **Direct** | **Applied** |
| **Job No.** | **Labor** | **Overhead (60%)** |
| **201**  | **$ 604,000** | **$ 362,400** |
| **202**  | **563,000** | **337,800** |
| **203**  | **298,000** | **178,800** |
| **204**  | **716,000** | **429,600** |
| **205**  | **314,000** | **188,400** |
| **206**  |  **17,000** |  **10,200** |
| **Total**  | **$2,512,000** | **$1,507,200** |

**c. Overapplied or underapplied overhead determination**

|  |  |
| --- | --- |
| Actual overhead cost  | **$1,520,000** |
| **Less applied overhead cost**  |  **1,507,200** |
| **Underapplied overhead**  | **$ 12,800** |

***Part 2***

|  |  |  |  |
| --- | --- | --- | --- |
| **Dec. 31** | Cost of Goods Sold  | **12,800** |  |
|  |  **Factory Overhead**  |  | **12,800** |
|  |  ***Assign underapplied overhead.*** |  |

**Problem 2-5A (80 minutes)**

|  |
| --- |
| **JOB COST SHEET** |
|  |  |  |  |  |  |
| **Customer's Name** | **Worldwide Company** |  | **Job No.** | **102** |  |
|  |  |  |  |  |  |
|  | **Direct Materials** | **Direct Labor** | **Overhead Costs Applied** |
| **Date** | **Requisition Number** | **Amount** | **Time Ticket Number** | **Amount** | **Date** | **Rate** | **Amount** |
|  | **#35** | **33,750** | **#1-10** | **90,000** | **May ---** | **80%** | **72,000** |
|  | **#36** | **12,960** |  |  |  |  |  |
|  |  |  |  |  | **SUMMARY OF COSTS** |
|  |  |  |  |  | **Dir. Materials**  | **46,710** |
|  |  |  |  |  | **Dir. Labor**  | **90,000** |
|  |  |  |  |  | **Overhead**  |  **72,000** |
|  |  |  |  |  | **Total cost of Job**  | **208,710** |
|  | **Total** | **46,710** | **Total** | **90,000** |  |  |  |
|  |  |  |  |  | **Finished** |
|  |  |  |  |  |  |  |  |

|  |
| --- |
| **JOB COST SHEET** |
|  |  |  |  |  |  |
| **Customer's Name** | **Reuben Company** |  | **Job No.** | **103** |  |
|  |  |  |  |  |  |
|  | **Direct Materials** | **Direct Labor** | **Overhead Costs Applied** |
| **Date** | **Requisition Number** | **Amount** | **Time Ticket Number** | **Amount** | **Date** | **Rate** | **Amount** |
|  | **#37** | **17,500** | **#11-30** | **65,000** | **May ---** | **80%** | **52,000** |
|  | **#38** | **6,840** |  |  |  |  |  |
|  |  |  |  |  | **SUMMARY OF COSTS** |
|  |  |  |  |  | **Dir. Materials**  |  |
|  |  |  |  |  | **Dir. Labor**  |  |
|  |  |  |  |  | **Overhead**  | **\_\_\_\_\_\_** |
|  |  |  |  |  | **Total cost of Job**  |  **.** |
|  | **Total** |  | **Total** |  |  |  |  |
|  |  |  |  |  |  |  |

**Problem 2-5A *(Continued)***

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **MATERIALS LEDGER CARD** |  |  |  |  |  |
|  |  |  |  |  |  |
| **Item** | **Material M** |  |  |  |  |
|  |  |  |  |  |  |
| **Received** | **Issued** | **Balance** |
| **Date** | **Receiving Report** | **Units** | **Unit Price** | **Total Price** | **Requi-sition** | **Units** | **Unit Price** | **Total Price** | **Units** | **Unit Price** | **Total Price** |
| **May 1** |  |  |  |  |  |  |  |  | **200** | **250** | **50,000** |
|  | **#426** | **250** | **250** | **62,500** |  |  |  |  | **450** | **250** | **112,500** |
|  |  |  |  |  | **#35** | **135** | **250** | **33,750** | **315** | **250** | **78,750** |
|  |  |  |  |  | **#37** |  **70** | **250** | **17,500** | **245** | **250** | **61,250** |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **MATERIALS LEDGER CARD** |  |  |  |  |  |
|  |  |  |  |  |  |
| **Item** | **Material R** |  |  |  |  |
|  |  |  |  |  |  |
| **Received** | **Issued** | **Balance** |
| **Date** | **Receiving Report** | **Units** | **Unit Price** | **Total Price** | **Requi-sition** | **Units** | **Unit Price** | **Total Price** | **Units** | **Unit Price** | **Total Price** |
| **May 1** |  |  |  |  |  |  |  |  | **95** | **180** | **17,100** |
|  | **#427** | **90** | **180** | **16,200** |  |  |  |  | **185** | **180** | **33,300** |
|  |  |  |  |  | **#36** | **72** | **180** | **12,960** | **113** | **180** | **20,340** |
|  |  |  |  |  | **#38** | **38** | **180** | **6,840** | **75** | **180** | **13,500** |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **MATERIALS LEDGER CARD** |  |  |  |  |  |
|  |  |  |  |  |  |
| **Item** | **Paint** |  |  |  |  |
|  |  |  |  |  |  |
| **Received** | **Issued** | **Balance** |
| **Date** | **Receiving Report** | **Units** | **Unit Price** | **Total Price** | **Requi-sition** | **Units** | **Unit Price** | **Total Price** | **Units** | **Unit Price** | **Total Price** |
| **May 1** |  |  |  |  |  |  |  |  | **55** | **75** | **4,125** |
|  |  |  |  |  | **#39** | **15** | **75** | **1,125** | **40** | **75** | **3,000** |
|  |  |  |  |  |  |  |  |  |  |  |  |

**Problem 2-5A *(Continued)***

|  |
| --- |
| **GENERAL JOURNAL** |
|  |  |
| **a.** | **Raw Materials Inventory**  | **78,700** |  |
|  |  **Accounts Payable**  |  | **78,700** |
|  |  ***Record materials purchases ($62,500+$16,200).*** |  |  |
|  |  |  |  |
| **d.** | **Work in Process Inventory\***  | **155,000** |  |
|  | **Factory Overhead**  | **19,250** |  |
|  |  **Cash**  |  | **174,250** |
|  |  ***Record direct & indirect labor.***  ***\*($90,000 + 65,000)*** |  |  |
|  |  |  |  |
|  | **Factory Overhead**  | **102,000** |  |
|  |  **Cash**  |  | **102,000** |
|  |  ***Record other factory overhead.*** |  |
|  |  |  |  |
| **e.** | **Finished Goods Inventory**  | **208,710** |  |
|  |  **Work in Process**  |  | **208,710** |
|  |  ***Record completion of jobs.*** |  |  |
|  |  |  |  |
| **f.** | **Accounts Receivable**  | **400,000** |  |
|  |  **Sales**  |  | **400,000** |
|  |  ***Record sales on account.*** |  |  |
|  |  |  |  |
|  | **Cost of Goods Sold**  | **208,710** |  |
|  |  **Finished Goods Inventory**  |  | **208,710** |
|  |  ***Record cost of sales.*** |  |  |
|  |  |  |  |
| **h.** | **Work in Process Inventory\***  | **71,050** |  |
|  | **Factory Overhead**  | **1,125** |  |
|  |  **Raw Materials Inventory**  |  | **72,175** |
|  |  ***Record direct & indirect materials.***  ***\*($33,750 + $12,960 + $17,500 + $6,840)*** |
|  |  |  |  |
| **i.** | **Work in Process Inventory**  | **124,000** |  |
|  |  **Factory Overhead**  |  | **124,000** |
|  |  ***Apply overhead ($72,000 + 52,000).*** |  |  |

**Problem 2-5A *(Continued)***

**j. The ending balance in the Factory Overhead account is computed as:**

|  |  |
| --- | --- |
| **Actual Factory Overhead** |  |
|  **Miscellaneous overhead**  | **$102,000** |
|  **Indirect materials**  | **1,125** |
|  **Indirect labor**  |  **19,250** |
|  **Total actual factory overhead**  | **122,375** |
| **Factory overhead applied**  |  **124,000** |
| **Overapplied overhead**  | **$ (1,625)** |

**PROBLEM SET B**

**Problem 2-1B (80 minutes)**

***Part 1***

**Total manufacturing costs and the costs assigned to each job**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **114** | **115** | **116** | **Sept. Total** |
| **From August** |  |  |  |  |
| **Direct materials**  | **$ 14,000** | **$ 18,000** |  |  |
| **Direct labor**  | **18,000** | **16,000** |  |  |
| **Applied overhead\***  |  **9,000** |  **8,000** |  |  |
| **Beginning work** **In process**  | **41,000** | **42,000** |  | **$ 83,000** |
| **For September** |  |  |  |  |
| **Direct materials**  | **100,000** | **170,000** | **$ 80,000** | **350,000** |
| **Direct labor**  | **30,000** | **68,000** | **120,000** | **218,000** |
| **Applied overhead\***  |  **15,000** |  **34,000** |  **60,000** |  **109,000** |
| **Total costs added in**  **September**  |  **145,000** |  **272,000** |  **260,000** |  **677,000** |
| **Total costs**  | **$186,000** | **$314,000** | **$260,000** | **$760,000** |

 **\*Equals 50% of direct labor cost.**

***Part 2* *Journal entries for September***

|  |  |  |  |
| --- | --- | --- | --- |
| **a.** | **Raw Materials Inventory**  | **400,000** |  |
|  |  **Accounts Payable**  |  | **400,000** |
|  |  ***Record materials purchases.*** |  |  |
|  |  |  |  |
| **b.** | **Work in Process Inventory**  | **350,000** |  |
|  |  **Raw Materials Inventory**  |  | **350,000** |
|  |  ***Assign direct materials to jobs.*** |  |  |
| **c.** | **Work in Process Inventory**  | **218,000** |  |
|  |  **Cash**  |  | **218,000** |
|  |  ***Record and pay direct labor.*** |  |  |
|  |  |  |  |
|  |  |  |  |
| **d.** | **Factory Overhead**  | **14,000** |  |
|  |  **Cash**  |  | **14,000** |
|  |  ***Record and pay indirect labor.*** |  |  |
|  |  |  |  |
| **e.** | **Work in Process Inventory**  | **109,000** |  |
|  |  **Factory Overhead**  |  | **109,000** |
|  |  ***Apply overhead to jobs.*** |  |  |

**Problem 2-1B *(Continued)***

**f. [continued from prior page]**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Factory Overhead**  | **20,000** |  |
|  |  **Cash**  |  | **20,000** |
|  |  ***Record other factory overhead (rent).*** |  |  |
|  | **Factory Overhead**  | **12,000** |  |
|  |  **Cash**  |  | **12,000** |
|  |  ***Record other factory overhead (utilities).*** |  |  |
|  |  |  |  |
|  | **Factory Overhead**  | **30,000** |  |
|  |  Accum. Depreciation—Factory Equip  |  | **30,000** |
|  |  ***Record other factory overhead (depreciation).*** |  |  |
|  |  |  |  |
|  | **Factory Overhead**  | **30,000** |  |
|  |  **Raw Materials Inventory**  |  | **30,000** |
|  |  ***Record indirect materials.*** |  |  |
|  |  |  |  |
| **g.** | **Finished Goods Inventory**  | **500,000** |  |
|  |  **Work in Process Inventory**  |  | **500,000** |
|  |  ***Record jobs completed ($186,000 + $314,000).*** |  |  |
|  |  |  |  |
| **h.** | **Cost of Goods Sold**  | **186,000** |  |
|  |  **Finished Goods Inventory**  |  | **186,000** |
|  |  ***Record cost of sale of job.*** |  |  |
|  |  |  |  |
| **i.** | **Cash**  | **380,000** |  |
|  |  **Sales**  |  | **380,000** |
|  |  ***Record sale of job.*** |  |  |
|  |  |  |  |
| **j.** | **Factory Overhead\***  | **3,000** |  |
|  |  **Cost of Goods Sold**  |  | **3,000** |
|  |  ***Assign overapplied overhead.*** |  |  |

|  |  |  |
| --- | --- | --- |
| **\*Overhead applied to jobs**  |  | **$109,000** |
| **Overhead incurred** |  |  |
| **Indirect materials**  | **$30,000** |  |
| **Indirect labor**  | **14,000** |  |
| **Factory rent**  | **20,000** |  |
| **Factory utilities**  | **12,000** |  |
| **Factory equip. depreciation**  |  **30,000** |  **106,000** |
| **Overapplied overhead**  |  | **$ 3,000** |

**Problem 2-1B *(Continued)***

***Part 3***

|  |
| --- |
| **PEREZ MFG.** |
| **Schedule of Cost of Goods Manufactured** |
| **For Month Ended September 30** |
| **Direct materials used**  |  | **$350,000** |
| **Direct labor used** |  | **218,000** |
| **Factory overhead applied**  |  |  **109,000** |
| **Total manufacturing costs**  |  | **677,000** |
| **Add work in process August 31 (Jobs 114 & 115)**  |  |  **83,000** |
| **Total cost of work in process**  |  | **760,000** |
| **Deduct work in process, September 30 (Job 116)**  |  |  **(260,000)** |
| **Cost of goods manufactured**  |  | **$500,000** |

***Part 4***

**Gross profit on the income statement for the month ended September 30**

|  |  |
| --- | --- |
| Sales  | **$380,000** |
| **Cost of goods sold ($186,000 - $3,000)**  |  **(183,000)** |
| Gross profit  | **$197,000** |

**Presentation of inventories on the September 30 balance sheet**

|  |  |
| --- | --- |
| **Inventories** |  |
|  Raw materials  | **$170,000\*** |
|  **Work in process (Job 116)**  | **260,000** |
|  **Finished goods (Job 115)**  |  **314,000** |
|  **Total inventories**  | **$744,000** |

|  |  |
| --- | --- |
| **\* Beginning raw materials inventory**  | **$150,000** |
|  **Purchases**  | **400,000** |
|  **Direct materials used**  | **(350,000)** |
|  **Indirect materials used**  |  **(30,000)** |
|  **Ending raw materials inventory**  | **$170,000** |

**Problem 2-1B *(Concluded)***

***Part 5***

**Overhead is overapplied by $3,000, meaning that individual jobs or batches are over-costed. Thus, profits at the job (and batch) level are understated.**

**Problem 2-2B (75 minutes)**

***Part 1***

|  |  |  |  |
| --- | --- | --- | --- |
| **a.** |  |  |  |
| **Dec. 31** | **Work in Process Inventory**  | **12,200** |  |
|  |  **Raw Materials Inventory**  |  | **12,200** |
|  |  ***Record direct materials costs for*** ***Jobs 603 and 604 ($4,600 + $7,600).*** |  |  |
|  |  |  |  |
| **b.** |  |  |  |
| **Dec. 31** | **Work in Process Inventory**  | **13,000** |  |
|  |  **Factory Wages Payable**  |  | **13,000** |
|  |  ***Record direct labor costs for***  ***Jobs 603 and 604 ($5,000 + $8,000).*** |  |
|  |  |  |  |
| **c.** |  |  |  |
| **Dec. 31** | **Work in Process Inventory**  | **26,000** |  |
|  |  **Factory Overhead**  |  | **26,000** |
|  |  ***Allocate overhead to Jobs 603 and 604 at*** ***200% of direct labor cost assigned to them.*** |  |
|  |  |  |  |
| **d.** |  |  |  |
| **Dec. 31** | **Factory Overhead**  | **2,100** |  |
|  |  **Raw Materials Inventory**  |  | **2,100** |
|  |  ***Record cost of indirect materials.***  |  |  |
| **e.** |  |  |  |
| **Dec. 31** | **Factory Overhead**  | **3,000** |  |
|  |  **Factory Wages Payable**  |  | **3,000** |
|  |  ***Accrue cost of indirect labor.*** |  |  |

**Problem 2-2B (*Continued)***

***Part 2***

 **Revised Factory Overhead account**

|  |  |  |
| --- | --- | --- |
| **Ending balance from trial balance**  | **$27,000** | **Debit** |
| **Applied to Jobs 603 and 604**  | **(26,000)** | **Credit** |
| **Additional indirect materials**  | **2,100** | **Debit** |
| **Additional indirect labor**  |  **3,000** | **Debit** |
| **Underapplied overhead**  | **$ 6,100**  | **Debit** |

|  |  |  |  |
| --- | --- | --- | --- |
| **Dec. 31** | **Cost of Goods Sold**  | **6,100** |  |
|  |  **Factory Overhead**  |  | **6,100** |
|  | ***To remove $6,100 of underapplied overhead from the Factory Overhead account and add it to cost of goods sold.*** |  |

***Part 3***

|  |
| --- |
| **CAVALLO MFG.** |
| **Trial Balance** |
| **December 31, 2017** |
|  | **Debit** | **Credit** |
| Cash  | **$ 64,000** |  |
| Accounts receivable  | **42,000** |  |
| **Raw materials inventory\***  | **11,700** |  |
| **Work in process inventory\*\***  | **51,200** |  |
| **Finished goods inventory**  | **9,000** |  |
| **Prepaid rent**  | **3,000** |  |
| **Accounts payable**  |  | **$ 10,500** |
| **Factory wages payable** **Notes payable**  |  | **16,000****13,500** |
| **Common stock**  |  | **30,000** |
| **Retained earnings**  |  | **87,000** |
| **Sales**  |  | **180,000** |
| **Cost of goods sold\*\*\***  | **111,100** |  |
| **Factory overhead**  | **0** |  |
| **Operating expenses**  |  **45,000** | **\_\_\_\_\_\_\_** |
| **Totals**  | **$337,000** | **$337,000** |

**Problem 2-2B *(Continued)***

***Part 3* (*Concluded)***

 **\* Raw materials inventory**

|  |  |
| --- | --- |
| **Balance per trial balance**  | **$26,000** |
| **Less: Amounts recorded for Jobs 603 and 604**  | **(12,200)** |
| **Less: Indirect materials**  |  **(2,100)** |
| **Ending balance**  | **$11,700** |

 **\*\* Work in process inventory**

|  |  |  |  |
| --- | --- | --- | --- |
|  |  **Job 603** | **Job 604** |  **Total** |
| **Direct materials**  | **$ 4,600** | **$ 7,600** | **$12,200** |
| **Direct labor**  | **5,000** | **8,000** | **13,000** |
| **Overhead**  |  **10,000** |  **16,000** |  **26,000** |
| **Total cost**  | **$19,600** | **$31,600** | **$51,200** |

 **\*\*\* $105,000 + $6,100 = $111,100**

***Part 4***

|  |
| --- |
| **CAVALLO MFG.****Income Statement****For Year Ended December 31, 2017** |
|  | **Sales**  | **$ 180,000** |  |
|  | **Cost of goods sold**  |  **(111,100)** |  |
|  | **Gross profit**  | **68,900** |  |
|  | **Operating expenses**  |  **(45,000)** |  |
|  | **Net income**  | **$ 23,900** |  |
|  |  |  |  |

**Problem 2-2B *(Concluded)***

***Part 4 (Concluded)***

|  |
| --- |
| **CAVALLO MFG.****Balance Sheet****December 31, 2017** |
| **Assets** |
|  | **Cash**  |  | **$ 64,000** |
|  | **Accounts receivable**  |  | **42,000** |
|  | **Inventories** |  |  |
|  |  **Raw materials inventory**  | **$11,700** |  |
|  |  **Work in process inventory**  | **51,200** |  |
|  |  **Finished goods inventory**  |  **9,000** | **71,900** |
|  | **Prepaid rent**  |  |  **3,000** |
|  | **Total assets**  |  | **$180,900** |
|  |  |  |  |
| **Liabilities and equity** |
|  | **Accounts payable**  |  | **$ 10,500** |
|  | **Factory wages payable** **Notes payable**  |  | **16,000**  **13,500** |
|  | **Total liabilities**  |  | **40,000** |
|  | **Common stock**  |  | **30,000** |
|  | **Retained earnings ($87,000 + $23,900)**  |  |  **110,900** |
|  | **Total stockholders' equity**  |  |  **140,900** |
|  | **Total liabilities and equity**  |  | **$180,900** |
|  |  |  |  |

***Part 5***

**The $2,100 error would cause the costs for Job 604 to be understated. Since Job 604 is in process at the end of the period, work in process inventory and total assets would both be understated on the balance sheet. In addition the over- or underapplied overhead would change by $2,100. That is, if overhead is underapplied by, say, $6,100, that amount would decrease by $2,100, yielding $4,000 in underapplied overhead. Any under- or overapplied overhead is charged directly to cost of goods sold, so correcting the error would cause cost of goods sold to decrease and net income to increase by $2,100—yielding a $2,100 increase in retained earnings.**

**Problem 2-3B (70 minutes)**

***Part 1***

|  |
| --- |
| **JOB COST SHEETS** |

|  |  |
| --- | --- |
| **Job No. 487** |  |
| **Materials**  | **$30,000** |
| **Labor**  | **8,000** |
| **Overhead**  |  **16,000** |
| **Total cost**  | **$54,000**  |

|  |  |
| --- | --- |
| **Job No. 488** |  |
| **Materials**  | **$20,000** |
| **Labor**  |  **7,000** |
| **Overhead**  |  **14,000** |
| **Total cost**  | **$41,000** |

|  |  |
| --- | --- |
| **Job No. 489** |  |
| **Materials**  | **$12,000** |
| **Labor**  |  **25,000** |
| **Overhead**  |  **50,000** |
| **Total cost**  | **$87,000** |

|  |  |
| --- | --- |
| **Job No. 490** |  |
| **Materials**  | **$14,000** |
| **Labor**  |  **26,000** |
| **Overhead**  |  **52,000** |
| **Total cost**  | **$92,000** |

|  |  |
| --- | --- |
| **Job No. 491** |  |
| **Materials**  | **$ 4,000** |
| **Labor**  |  **2,000** |
| **Overhead**  |  **4,000** |
| **Total cost**  | **$10,000** |

**Problem 2-3B (*Concluded*)**

***Part 2***

|  |  |  |  |
| --- | --- | --- | --- |
| **a.** | **Raw Materials Inventory**  | **125,000** |  |
|  |  **Accounts Payable**  |  | **125,000** |
|  |  ***Record materials purchases.*** |  |  |
| **b.** | **Work in Process Inventory**  | **80,000** |  |
|  | **Factory Overhead**  | **12,000** |  |
|  |  **Raw Materials Inventory**  |  | **92,000** |
|  |  ***Record direct & indirect materials.*** |  |
| **c.** | **Factory Overhead**  | **11,000** |  |
|  |  **Cash**  |  | **11,000** |
|  |  ***Record other factory overhead.*** |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| **d.** | **Work in Process Inventory**  | **68,000** |  |
|  | **Factory Overhead**  | **16,000** |  |
|  |  **Cash**  |  | **84,000** |
|  |  ***Record direct & indirect labor.*** |  |  |
| **e.** | **Work in Process Inventory**  | **118,000** |  |
|  |  **Factory Overhead**  |  | **118,000** |
|  |  ***Apply overhead to jobs***  ***[($8,000 + $25,000 + $26,000) x 200%].*** |  |
|  |  |  |  |
| **f.** | **Finished Goods Inventory**  | **233,000** |  |
|  |  **Work in Process Inventory**  |  | **233,000** |
|  |  ***Record completion of jobs*** ***($54,000 + $87,000 + $92,000).*** |  |  |

**Problem 2-3B *(Continued)***

**[continued from prior page]**

|  |  |  |  |
| --- | --- | --- | --- |
| **g.** | **Accounts Receivable**  | **340,000** |  |
|  |  **Sales**  |  | **340,000** |
|  |  ***Record sales on account.*** |  |  |
|  |  |  |  |
|  | **Cost of Goods Sold**  | **141,000** |  |
|  |  **Finished Goods Inventory**  |  | **141,000** |
|  |  ***Record cost of sales ($54,000 + $87,000).*** |  |  |
|  |  |  |  |
| **h.** | **Factory Overhead**  | **96,000** |  |
|  |  **Accum. Depreciation—Factory Building**  |  | **37,000** |
|  |  **Accum. Depreciation—Factory Equipment**  |  | **21,000** |
|  |  **Prepaid Insurance**  |  | **7,000** |
|  |  **Property Taxes Payable**  |  | **31,000** |
|  |  ***Record other factory overhead.*** |  |  |
|  |  |  |  |
| **i.** | **Work in Process Inventory**  | **18,000** |  |
|  |  **Factory Overhead**  |  | **18,000** |
|  |  ***Apply overhead to jobs***  ***[($7,000 + $2,000) x 200%].*** |  |  |

**Problem 2-3B *(Continued)***

***Part 3***

|  |
| --- |
| **GENERAL LEDGER ACCOUNTS** |

|  |  |  |
| --- | --- | --- |
| **Raw Materials Inventory** |  |  |
| **(a)** | **125,000** | **(b)** | **92,000** |  |  |  |  |  |
| **Bal.** | **33,000** |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
| **Work in Process Inventory** |  | **Factory Overhead** |
| **(b)** | **80,000** | **(f)** | **233,000** |  | **(b)** | **12,000** | **(e)** | **118,000** |
| **(d)** | **68,000** |  |  |  | **(c)** | **11,000** | **(i)** | **18,000** |
| **(e)** | **118,000** |  |  |  | **(d)** | **16,000** |  |  |
| **(i)** | **18,000** |  |  |  | **(h)** | **96,000** |  |  |
| **Bal.** | **51,000** |  |  |  |  |  | **Bal.** | **1,000** |
|  |  |  |  |  |  |  |  |  |
| **Finished Goods Inventory** |  | **Cost of Goods Sold** |
| **(f)** | **233,000** | **(g)** | **141,000** |  | **(g)** | **141,000** |  |  |
| **Bal.** | **92,000** |  |  |  | **Bal.** | **141,000** |  |  |

***Part 4***

**Reports of Job Costs\***

|  |  |
| --- | --- |
| **Work in Process Inventory** |  |
|  **Job 488**  |  **$ 41,000** |
|  **Job 491**  |  **10,000** |
|  **Balance**  | **$ 51,000** |
|  |  |
| Finished Goods Inventory |  |
|  **Job 490**  | **$ 92,000** |
|  **Balance**  | **$ 92,000** |
|  |  |
| **Cost of Goods Sold** |  |
|  **Job 487**  | **$ 54,000** |
|  **Job 489**  |  **87,000** |
|  **Balance**  | **$141,000** |

**\*Individual totals reconcile with account balances shown in part 3.**

### Problem 2-4B (35 minutes)

***Part 1***

**a. Predetermined overhead rate**

**Estimated overhead costs**

 **Estimated direct labor cost**

 **$750,000 $750,000**

**[50 x 2,000 x $15] $1**,**500,000**

 **= = = 50%**

1. **Overhead costs charged to jobs**

|  |  |  |
| --- | --- | --- |
|  | **Direct** | **Applied** |
| **Job No.** | **Labor** | **Overhead (50%)** |
| **625**  | **$ 354,000** | **$177,000** |
| **626**  | **330,000** | **165,000** |
| **627**  | **175,000** | **87,500** |
| **628**  | **420,000** | **210,000** |
| **629**  | **184,000** | **92,000** |
| **630**  |  **10,000** |  **5,000** |
| **Total**  | **$1,473,000** | **$736,500** |

**c. Overapplied or underapplied overhead determination**

|  |  |
| --- | --- |
| Actual overhead cost  | **$725,000** |
| **Less applied overhead cost**  |  **736,500** |
| **Overapplied overhead**  | **$ (11,500)** |

***Part 2***

|  |  |  |  |
| --- | --- | --- | --- |
| **Dec. 31** | **Factory Overhead**  | **11,500** |  |
|  |  **Cost of Goods Sold**  |  | **11,500** |
|  |  ***To assign overapplied overhead.*** |  |  |

**Problem 2-5B (90 minutes)**

|  |
| --- |
| **JOB COST SHEET** |
|  |  |  |  |  |  |
| **Customer's Name** | **Encinita Company** |  | **Job No.** | **450** |  |
|  |  |  |  |  |  |
|  | **Direct Materials** | **Direct Labor** | **Overhead Costs Applied** |
| **Date** | **Requisition Number** | **Amount** | **Time Ticket Number** | **Amount** | **Date** | **Rate** | **Amount** |
|  | **#223** | **16,000** | **#1-10** | **40,000** | **June --** | **70%** | **28,000** |
|  | **#224** |  **9,600** |  |  |  |  |  |
|  |  |  |  |  | **SUMMARY OF COSTS** |
|  |  |  |  |  | **Dir. Materials**  | **25,600** |
|  |  |  |  |  | **Dir. Labor**  | **40,000** |
|  |  |  |  |  | **Overhead**  | **28,000** |
|  |  |  |  |  | **Total Cost of Job**  | **93,600** |
|  | **Total** | **25,600** | **Total** | **40,000** |  |  |  |
|  |  |  |  |  | **Finished** |
|  |  |  |  |  |  |  |  |

|  |
| --- |
| **JOB COST SHEET** |
|  |  |  |  |  |  |
| **Customer's Name** | **Fargo, Inc.** |  | **Job No.** | **451** |  |
|  |  |  |  |  |  |
|  | **Direct Materials** | **Direct Labor** | **Overhead Costs Applied** |
| **Date** | **Requisition Number** | **Amount** | **Time Ticket Number** | **Amount** | **Date** | **Rate** | **Amount** |
|  | **#225** | **8,000** | **#11-20** | **32,000** | **June--** | **70%** | **22,400** |
|  | **#226** | **4,800** |  |  |  |  |  |
|  |  |  |  |  | **SUMMARY OF COSTS** |
|  |  |  |  |  | **Dir. Materials**  |  |
|  |  |  |  |  | **Dir. Labor**  |  |
|  |  |  |  |  | **Overhead**  | **\_\_\_\_\_\_** |
|  |  |  |  |  | **Total cost of Job**  |  **.** |
|  | **Total** |  | **Total** |  |  |  |  |
|  |  |  |  |  |  |  |

**Problem 2-5B *(Continued)***

|  |
| --- |
| **MATERIALS LEDGER CARD** |
|  |  |  |  |  |  |
| **Item** | **Material M** |  |  |  |  |
|  |  |  |  |  |  |
| **Received** | **Issued** | **Balance** |
| **Date** | **Receiving Report** | **Units** | **Unit Price** | **Total Price** | **Requi-sition** | **Units** | **Unit Price** | **Total Price** | **Units** | **Unit Price** | **Total Price** |
| **June 1** |  |  |  |  |  |  |  |  | **120** | **200** | **24,000** |
|  | **#20** | **150** | **200** | **30,000** |  |  |  |  | **270** | **200** | **54,000** |
|  |  |  |  |  | **#223** | **80** | **200** | **16,000** | **190** | **200** | **38,000** |
|  |  |  |  |  | **#225** | **40** | **200** | **8,000** | **150** | **200** | **30,000** |

|  |
| --- |
| **MATERIALS LEDGER CARD** |
|  |  |  |  |  |  |
| **Item** | **Material R** |  |  |  |  |
|  |  |  |  |  |  |
| **Received** | **Issued** | **Balance** |
| **Date** | **Receiving Report** | **Units** | **Unit Price** | **Total Price** | **Requi-sition** | **Units** | **Unit Price** | **Total Price** | **Units** | **Unit Price** | **Total Price** |
| June 1 |  |  |  |  |  |  |  |  | **80** | **160** | **12,800** |
|  | **#21** | **70** | **160** | **11,200** |  |  |  |  | **150** | **160** | **24,000** |
|  |  |  |  |  | **#224** | **60** | **160** | **9,600** | **90** | **160** | **14,400** |
|  |  |  |  |  | **#226** | **30** | **160** | **4,800** | **60** | **160** | **9,600** |

|  |
| --- |
| **MATERIALS LEDGER CARD** |
|  |  |  |  |  |  |
| **Item** | **Paint** |  |  |  |  |
|  |  |  |  |  |  |
| **Received** | **Issued** | **Balance** |
| **Date** | **Receiving Report** | **Units** | **Unit Price** | **Total Price** | **Requi-sition** | **Units** | **Unit Price** | **Total Price** | **Units** | **Unit Price** | **Total Price** |
| **June 1** |  |  |  |  |  |  |  |  | **44** | **72** | **3,168** |
|  |  |  |  |  | **#227** | **12** | **72** | **864** | **32** | **72** | **2,304** |
|  |  |  |  |  |  |  |  |  |  |  |  |

**Problem 2-5B *(Continued*)**

|  |
| --- |
| **GENERAL JOURNAL** |
| **a.** | **Raw Materials Inventory**  | **41,200** |  |
|  |  **Accounts Payable**  |  | **41,200** |
|  |  ***Record materials purchases ($30,000+$11,200).*** |  |  |
|  |  |  |  |
| **d.** | **Work in Process Inventory\***  | **72,000** |  |
|  | **Factory Overhead**  | **12,000** |  |
|  |  **Cash**  |  | **84,000** |
|  |  ***Record direct & indirect labor.***  ***\*($40,000 + $32,000)*** |  |  |
|  |  |  |  |
|  | **Factory Overhead**  | **36,800** |  |
|  |  **Cash**  |  | **36,800** |
|  |  ***Record other factory overhead.*** |  |  |
|  |  |  |  |
| **e.** | **Finished Goods Inventory**  | **93,600** |  |
|  |  **Work in Process Inventory**  |  | **93,600** |
|  |  ***Record completion of jobs.*** |  |  |
|  |  |  |  |
| **f.** | **Accounts Receivable**  | **290,000** |  |
|  |  **Sales**  |  | **290,000** |
|  |  ***Record sales on account.*** |  |  |
|  |  |  |  |
|  | **Cost of Goods Sold**  | **93,600** |  |
|  |  **Finished Goods Inventory**  |  | **93,600** |
|  |  ***Record cost of sales.*** |  |  |
|  |  |  |  |
| **h.** | **Work in Process Inventory\***  | **38,400** |  |
|  | **Factory Overhead**  | **864** |  |
|  |  **Raw Materials Inventory**  |  | **39,264** |
|  |  ***Record direct & indirect materials.*** ***\*($16,000 + $8,000 + $9,600 + $4,800)*** |  |
|  |  |  |  |
| **i.** | **Work in Process Inventory**  | **50,400** |  |
|  |  **Factory Overhead**  |  | **50,400** |
|  |  ***Apply overhead ($28,000 + $22,400).*** |  |

**Problem 2-5B *(Continued*)**

**j. The ending balance in Factory Overhead is computed as:**

|  |  |
| --- | --- |
| **Actual Factory Overhead** |  |
|  **Miscellaneous overhead**  | **$36,800** |
|  **Indirect materials**  | **864** |
|  **Indirect labor**  |  **12,000** |
|  **Total actual factory overhead**  | **49,664** |
| **Factory overhead applied**  |  **50,400** |
| **Overapplied overhead**  | **$ (736)** |

**Serial Problem— SP 2**

**Serial Problem—SP 15, Business Solutions (40 minutes)**

**1*.* The cost of direct materials requisitioned in the month equals the total direct materials costs accumulated on the three jobs less the amount of direct materials cost assigned to Job 602 in May:**

|  |  |  |
| --- | --- | --- |
| Job 602  | **$1,500** |  |
| **Less prior costs**  |  **(600)** | **$ 900** |
| **Job 603**  |  | **3,300** |
| **Job 604**  |  |  **2,700** |
| **Total materials used (requisitioned)**  |  | **$6,900** |

**2*.* Direct labor cost incurred in the month equals the total direct labor costs accumulated on the three jobs less the amount of direct labor cost assigned to Job 602 in May:**

|  |  |  |
| --- | --- | --- |
| Job 602  | **$ 800** |  |
| **Less prior costs**  |  **(180)** | **$ 620** |
| **Job 603**  |  | **1,420** |
| **Job 604**  |  |  **2,100** |
| **Total direct labor**  |  | **$4,140** |

**3*.* The predetermined overhead rate equals the ratio between the amount of overhead assigned to the jobs divided by the amount of direct labor cost assigned to them. Since the rate is assumed constant during the year in this problem, and the same rate is used for all jobs within a month, the ratio for any one of them equals the rate that was applied. This table shows the ratio for jobs 602 and 604:**

|  |  |  |
| --- | --- | --- |
|  | **Job 602** | **Job 604** |
| Overhead  | **$ 400** | **$1,050** |
| **Direct labor**  | **800** | **2,100** |
| **Predetermined overhead rate**  | **50%** | **50%** |

1. **The cost transferred to finished goods in June equals the total costs of the two completed jobs for the month, which are Jobs 602 and 603:**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Job 602** | **Job 603** | **Total** |
| Direct materials  | **$1,500** | **$3,300** | **$4,800** |
| **Direct labor**  | **800** | **1,420** | **2,220** |
| **Overhead**  |  **400** |  **710** |  **1,110** |
| **Total transferred cost**  | **$2,700** | **$5,430** | **$8,130** |

**Reporting in Action — BTN 2-1**

**1. Actual inventory changes and operating cash flow effects as found on the cash flow statement (amounts are in $millions)**

|  |  |  |  |
| --- | --- | --- | --- |
| Apple | **Current Year** | **One Year Prior** | **Two Years Prior** |
| **Inventory change**  | **Increase** | **Increase** | **Increase** |
| **Operating cash****flow effect from inventory change**  | **Decrease of****$238** | **Decrease of****$76** | **Decrease of****$973** |

**2. A successful JIT system should reduce inventory levels. This reduction in inventory should increase operating cash flows. In the solution of part 1, notice that decreases in inventory yield increases in operating cash flow, while increases in inventory yield decreases in operating cash flow. The decreases in inventory from a JIT system should free up additional resources that could be directed toward paying off debt or expanding operations for even greater returns. This should increase operating income. In addition, losses from obsolete or damaged inventory should decline, also increasing operating income.**

**3. This is a one-time occurrence of a release of cash. However, this one-time adjustment can yield a recurring impact on returns if such freed up resources are directed into productive assets. Moreover, this adjustment should not reverse provided the JIT inventory system can maintain the reduced inventory levels.**

**Comparative Analysis — BTN 2-2**

**1.**

|  |  |  |  |
| --- | --- | --- | --- |
| Apple ($millions) | **Current Year** | **One Year Prior** | **Two Years Prior** |
| **Gross margin**  | **$93,626** | **$70,537** | **$64,304** |
| **Net sales** **Gross margin ratio**  | **$233,715****0.401** | **$182,795****0.386** | **$170,910****0.376** |

**2.**

|  |  |  |  |
| --- | --- | --- | --- |
| Google ($millions) | **Current Year** | **One Year Prior** | **Two Years Prior** |
| **Gross margin\***  | **$46,825** | **$40,310** | **$33,526** |
| **Net sales** **Gross margin ratio**  | **$74,989****0.624** | **$66,001****0.611** | **$55,519****0.604** |

\***Computed as Revenues – Cost of Revenues**

**3. For both Apple and Google, gross margin ratios increased in the current and prior year relative to their amounts two years prior. This indicates both companies are successfully controlling costs as sales increase.**

**Ethics Challenge — BTN 2-3**

|  |
| --- |
| **Instructor note: This problem is designed to illustrate why the accounting professional must be aware of management’s and employees’ biases when working with and relying on accounting estimates and data.** |
|  |
| **MEMORANDUM** |
| **TO:** |
| **FROM:** |
| **DATE:** |
| **SUBJECT:** |
|  |
| Suggested content outline |
| **The obvious concern is that management is allocating more overhead to government jobs compared to open market bid contracts. There is no obvious reason for such behavior other than a profit motive.****Specifically, by allocating more overhead to government jobs, profits on government jobs will increase in relation to cost. Conversely, private market jobs will show greater profits because more overhead is allocated to government jobs and less to private jobs.****This type of abuse in overhead allocation is a real problem in practice.**  |

**Communicating in Practice — BTN 2-4**

**Student notes should include but not be limited to the following points:**

**1. You recommend replacing the general accounting (periodic inventory) system with a cost accounting (perpetual inventory) system—specifically a job order cost accounting system. Cost accounting systems provide product cost information as products are manufactured whereas the current system does not. The new system would yield more timely information for pricing goods for sale. A job order system is particularly appropriate for the kinds of goods this business produces—goods made-to-order or stock items produced at varying points in time. A job order system is also appropriate for this type of discontinuous production of goods. Finally, the new system has the potential to reduce inventory levels—with possible implementation of a JIT system—that will free up funds to be devoted elsewhere.**

**2. This new system would require use of many different documents to control the acquisition, use, and availability of materials. It also requires documents for allocation of labor and overhead costs, and for finished goods that are sold and unsold. The chapter illustrates many of these source documents for a cost accounting system. You might also suggest that these documents could/should be implemented in an “online” (paperless) manner to further facilitate information and inventory management.**

**3. The focal point of the new system is the job cost sheet, which is used to accumulate and tally costs of goods as produced for each specific job order and job lot. You could prepare a sample and explain and illustrate how the system determines unit costs as production is completed.**

**Taking It to the Net — BTN 2-5**

**Instructor note: There is no single solution to this assignment.**

**The Website [amsi.com] provides details about what its job costing software can provide to users. After careful examination, students can write a report to the CEO, which may include the following points:**

* **Features of the software (including the tools it offers)**
* **Reports that can be generated using the software**
* **Benefits of the software—pricing, cost control, inventory management, general ledger package, accounts payable and receivable, etc.**

**Teamwork in Action — BTN 2-6**

**1. A medical clinic can be considered as appropriate for a job order cost accounting system. This is because each patient is unique in many ways, such as the type/location of the illness (skin, heart, lung, etc.), health condition (some may have diabetes or high blood pressure whereas others may be free of such conditions), and other personal characteristics (age, gender, weight, etc.). Also, different patients have different emotional frames of mind that impact diagnosis and treatment.**

**2. In light of the differences identified in part 1, the doctors will consider the individual characteristics of every patient in determining the type and extent of treatment to be provided, the extent of counseling required, and so forth. Each individual patient will therefore “consume” resources in varying quantities resulting in different costs. This would suggest a job order cost accounting system as an appropriate monitoring and control system.**

**Entrepreneurial Decision — BTN 2-7**

**1. A job cost sheet for a service company would likely not contain many costs for direct materials. Often, service providers simply include materials in their overhead costs. A manufacturing company converts raw materials into finished goods, thus its job cost sheet would accumulate and track costs of direct materials for each job.**

**2. Examples of direct labor and overhead costs for Neha Assar include:**

 **Direct Labor: Wages/salaries of part-time mehndi artists.**

 **Overhead: Neha’s overhead costs likely include the cost of supplies (henna paste, applicators, rhinestones), insurance, licenses and permits, and travel costs.**

**Hitting the Road — BTN 2-8**

**1. The framework for the job cost sheet should follow that in the third exhibit in the chapter. This includes the descriptions for: company name, date, quantity, etc. In addition, the direct costs should include subcontract work, such as electrical and plumbing. The response for overhead will likely vary. The key is that any overhead allocation pattern be logical. In the building business, square footage, lot size, labor time, cost of materials, a straight average, or a combination may be utilized to allocate overhead.**

**2. Results of the comparison of job cost sheets to a builder’s actual job cost sheets depend on the builder chosen and the format used. Instructors often find it useful to have students/teams report findings to the class.**

**Global Decision — BTN 2-9**

**1. Actual inventory amounts and changes. Apple’s amounts are in $millions and Samsung’s amounts are in millions of Korean won.**

|  |  |  |  |
| --- | --- | --- | --- |
| Apple ($millions) | **Balance,****Current Year** | **Balance,****Prior Year** | **Change in Inventory** |
| **Inventory**  | **$2,349** | **$2,111** | **$238 Increase** |
| **Operating cash****flow effect from inventory change**  |  |  | **Decrease of****$238** |
|  |
| Samsung (₩millions) | **Balance,****Current Year** | **Balance,****Prior Year** | **Change in Inventory** |
| **Inventory**  | ₩**18,811,794** | ₩**17,317,504** | ₩**1,494,290 Increase** |
| **Operating cash****flow effect from inventory change**  |  |  | **Decrease** ₩**1,494,290** |

**2. A successful JIT system should reduce inventory levels. This reduction in inventory should increase operating cash flows. In the solution of part 1, notice that increases in inventory yield decreases in operating cash flow; thus, decreases in inventory will yield increases in operating cash flow. The decreases in inventory from a JIT system should free up additional resources that could be directed toward paying off debt or expanding operations for even greater returns. This should also increase operating income. In addition, losses from obsolete or damaged inventory should decline, also increasing operating income.**

**3. We cannot definitively determine which company of the two would benefit the most from JIT implementation. The benefit of JIT would depend on the efficiencies gained from the implementation, which might vary by company. Also, we cannot directly compare changes expressed in U.S. dollars with those expressed in Korean won. We would have to translate U.S. dollars into Korean won (or vice versa) to be able to determine which company has experienced the largest changes in inventory over the past few years.**