Student name:\_\_\_\_\_\_\_\_\_\_

**ESSAY. Write your answer in the space provided or on a separate sheet of paper.  
1)** Linnear Corporation uses a job-order costing system with a single plantwide predetermined overhead rate based on machine-hours. The company based its predetermined overhead rate for the current year on the following data:

|  |  |
| --- | --- |
| **Total machine-hours** | 30,000 |
| **Total fixed manufacturing overhead cost** | $144,000 |
| **Variable manufacturing overhead per machine-hour** | $ 4.00 |

**Required:**  
 Calculate the estimated total manufacturing overhead for the year.

**2)** Dallman Corporation uses a job-order costing system with a single plantwide predetermined overhead rate based on machine-hours. The company based its predetermined overhead rate for the current year on 70,000 machine-hours, total fixed manufacturing overhead cost of $287,000, and a variable manufacturing overhead rate of $3.50 per machine-hour.  
 **Required:**  
 a. Calculate the estimated total manufacturing overhead for the year.  
 b. Calculate the predetermined overhead rate for the year.

**3)** Henkes Corporation bases its predetermined overhead rate on the estimated labor-hours for the upcoming year. At the beginning of the most recently completed year, the company estimated the labor-hours for the upcoming year at 80,000 labor-hours. The estimated variable manufacturing overhead was $8.60 per labor-hour and the estimated total fixed manufacturing overhead was $1,328,000. The actual labor-hours for the year turned out to be 83,000 labor-hours.  
 **Required:**  
 Compute the company's predetermined overhead rate for the recently completed year. **(Round your answer to 2 decimal places.)**

**4)** Crowson Corporation uses a job-order costing system with a single plantwide predetermined overhead rate based on machine-hours. The company based its predetermined overhead rate for the current year on the following data:

|  |  |
| --- | --- |
| **Total machine-hours** | 50,000 |
| **Total fixed manufacturing overhead cost** | $390,000 |
| **Variable manufacturing overhead per machine-hour** | $ 3.60 |

**Required:**  
 Calculate the predetermined overhead rate for the year.

**5)** Cannizzaro Corporation uses a job-order costing system with a single plantwide predetermined overhead rate based on machine-hours. The company based its predetermined overhead rate for the current year on 40,000 machine-hours, total fixed manufacturing overhead cost of $248,000, and a variable manufacturing overhead rate of $3.80 per machine-hour.  
 **Required:**  
 Calculate the predetermined overhead rate for the year.

**6)** Quiet Corporation uses a job-order costing system with a single plantwide predetermined overhead rate based on machine-hours. The company based its predetermined overhead rate for the current year on 40,000 machine-hours, total fixed manufacturing overhead cost of $152,000, and a variable manufacturing overhead rate of $3.10 per machine-hour.  
 **Required:**  
 Calculate the estimated total manufacturing overhead for the year.

**7)** Florek Corporation uses a job-order costing system with a single plantwide predetermined overhead rate based on direct labor-hours. The company based its predetermined overhead rate for the current year on the following data:

|  |  |
| --- | --- |
| **Total direct labor-hours** | 10,000 |
| **Total fixed manufacturing overhead cost** | $31,000 |
| **Variable manufacturing overhead per direct labor-hour** | $ 2.50 |

**Required:**  
 a. Calculate the estimated total manufacturing overhead for the year.  
 b. Calculate the predetermined overhead rate for the year.

**8)** Meenach Corporation uses a job-order costing system with a single plantwide predetermined overhead rate based on direct labor-hours. The company based its predetermined overhead rate for the current year on 61,000 direct labor-hours, total fixed manufacturing overhead cost of $85,400, and a variable manufacturing overhead rate of $4.40 per direct labor-hour. Recently Job X387 was completed and required 160 direct labor-hours.  
 **Required:**  
 Calculate the amount of overhead applied to Job X387. **(Do not round intermediate calculations.)**

**9)** Meenach Corporation uses a job-order costing system with a single plantwide predetermined overhead rate based on direct labor-hours. The company based its predetermined overhead rate for the current year on 80,000 direct labor-hours, total fixed manufacturing overhead cost of $160,000, and a variable manufacturing overhead rate of $2.30 per direct labor-hour. Recently Job X387 was completed and required 120 direct labor-hours.  
 **Required:**  
 Calculate the amount of overhead applied to Job X387. **(Do not round intermediate calculations.)**

**10)** Weakley Corporation uses a predetermined overhead rate that was based on estimated total fixed manufacturing overhead of $358,000 and 20,000 machine-hours for the period. The company incurred actual total fixed manufacturing overhead of $382,000 and 18,300 total machine-hours during the period.  
 **Required:**  
 Determine the amount of manufacturing overhead that would have been applied to all jobs during the period.

**11)** Fillmore Corporation uses a job-order costing system with a single plantwide predetermined overhead rate based on direct labor-hours. The company based its predetermined overhead rate for the current year on 60,000 direct labor-hours, total fixed manufacturing overhead cost of $96,000, and a variable manufacturing overhead rate of $3.30 per direct labor-hour. Recently Job X809 was completed and required 100 direct labor-hours.  
 **Required:**  
 a. Calculate the estimated total manufacturing overhead for the year.  
 b. Calculate the predetermined overhead rate for the year.  
 c. Calculate the amount of overhead applied to Job X809.

**12)** Thrall Corporation uses a job-order costing system with a single plantwide predetermined overhead rate based on machine-hours. The company based its predetermined overhead rate for the current year on the following data:

|  |  |
| --- | --- |
| **Total machine-hours** | 10,000 |
| **Total fixed manufacturing overhead cost** | $50,000 |
| **Variable manufacturing overhead per machine-hour** | $ 3.90 |

Recently Job K125 was completed and required 160 machine-hours.  
 **Required:**  
 Calculate the amount of overhead applied to Job K125.

**13)** Verry Corporation uses a job-order costing system with a single plantwide predetermined overhead rate based on direct labor-hours. The company based its predetermined overhead rate for the current year on the following data:

|  |  |
| --- | --- |
| **Total direct labor-hours** | 60,000 |
| **Total fixed manufacturing overhead cost** | $342,000 |
| **Variable manufacturing overhead per direct labor-hour** | $ 2.40 |

Recently Job X711 was completed and required 90 direct labor-hours.  
 **Required:**  
 a. Calculate the estimated total manufacturing overhead for the year.  
 b. Calculate the predetermined overhead rate for the year.  
 c. Calculate the amount of overhead applied to Job X711.

**14)** Trevigne Corporation uses a predetermined overhead rate base on machine-hours that it recalculates at the beginning of each year. The company has provided the following data for the most recent year.

|  |  |
| --- | --- |
| **Estimated total fixed manufacturing overhead from the beginning of the year** | $ 114,000 |
| **Estimated activity level from the beginning of the year** | 10,000 machine-hours |
| **Actual total fixed manufacturing overhead** | $ 104,000 |
| **Actual activity level** | 9,400 machine-hours |

**Required:**  
 Determine the amount of manufacturing overhead that would have been applied to all jobs during the period.

**15)** Luarca Corporation has two manufacturing departments--Casting and Customizing. The company used the following data at the beginning of the year to calculate predetermined overhead rates:

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Casting** | **Customizing** | **Total** |
| **Estimated total machine-hours (MHs)** | 2,000 | 3,000 | 5,000 |
| **Estimated total fixed manufacturing overhead cost** | $11,600 | $7,200 | $18,800 |
| **Estimated variable manufacturing overhead cost per machine-hour** | $ 1.90 | $ 2.80 |  |

During the most recent month, the company started and completed two jobs--Job F and Job L. There were no beginning inventories. Data concerning those two jobs follow:

|  |  |  |
| --- | --- | --- |
|  | **Job F** | **Job L** |
| **Direct materials** | $10,600 | $6,600 |
| **Direct labor cost** | $24,400 | $8,600 |
| **Casting machine-hours** | 1,400 | 600 |
| **Customizing machine-hours** | 1,200 | 1,800 |

**Required:**  
 Assume that the company uses a *plantwide* predetermined manufacturing overhead rate based on machine-hours and uses a markup of 50% on manufacturing cost to establish selling prices. Calculate the selling prices for Job F and Job L.

**16)** Lamberson Corporation uses a job-order costing system with a single plantwide predetermined overhead rate based on machine-hours. The company based its predetermined overhead rate for the current year on the following data:

|  |  |
| --- | --- |
| **Total machine-hours** | 50,000 |
| **Total fixed manufacturing overhead cost** | $460,000 |
| **Variable manufacturing overhead per machine-hour** | $ 3.10 |

Recently Job P647 was completed with the following characteristics:

|  |  |
| --- | --- |
| **Number of units in the job** | 50 |
| **Total machine-hours** | 150 |
| **Direct materials** | $ 740 |
| **Direct labor cost** | $6,000 |

**Required:**  
 a. Calculate the amount of overhead applied to Job P647.  
 b. Calculate the total job cost for Job P647.  
 c. Calculate the unit product cost for Job P647.

**17)** Mcewan Corporation uses a job-order costing system with a single plantwide predetermined overhead rate based on direct labor-hours. The company based its predetermined overhead rate for the current year on 35,000 direct labor-hours, total fixed manufacturing overhead cost of $273,000, and a variable manufacturing overhead rate of $3.00 per direct labor-hour. Job X941, which was for 50 units of a custom product, was recently completed. The job cost sheet for the job contained the following data:

|  |  |
| --- | --- |
| **Total direct labor-hours** | 250 |
| **Direct materials** | $ 500 |
| **Direct labor cost** | $6,900 |

**Required:**  
 Calculate the selling price for Job X941 if the company marks up its unit product costs by 20%. **(Round intermediate calculations and final answer to 2 decimal places.)**

**18)** Mcewan Corporation uses a job-order costing system with a single plantwide predetermined overhead rate based on direct labor-hours. The company based its predetermined overhead rate for the current year on 20,000 direct labor-hours, total fixed manufacturing overhead cost of $182,000, and a variable manufacturing overhead rate of $2.50 per direct labor-hour. Job X941, which was for 50 units of a custom product, was recently completed. The job cost sheet for the job contained the following data:

|  |  |
| --- | --- |
| **Total direct labor-hours** | 250 |
| **Direct materials** | $ 740 |
| **Direct labor cost** | $ 6,500 |

**Required:**  
 Calculate the selling price for Job X941 if the company marks up its unit product costs by 20%. **(Round intermediate calculations and final answer to 2 decimal places.)**

**19)** Teasley Corporation uses a job-order costing system with a single plantwide predetermined overhead rate based on machine-hours. The company based its predetermined overhead rate for the current year on 70,000 machine-hours, total fixed manufacturing overhead cost of $630,000, and a variable manufacturing overhead rate of $3.40 per machine-hour. Job X159 was recently completed. The job cost sheet for the job contained the following data:

|  |  |
| --- | --- |
| **Total machine-hours** | 200 |
| **Direct materials** | $ 670 |
| **Direct labor cost** | $7,800 |

**Required:**  
 Calculate the total job cost for Job X159.

**20)** Alsobrooks Corporation uses a job-order costing system with a single plantwide predetermined overhead rate based on machine-hours. The company based its predetermined overhead rate for the current year on the following data:

|  |  |
| --- | --- |
| **Total machine-hours** | 40,000 |
| **Total fixed manufacturing overhead cost** | $156,000 |
| **Variable manufacturing overhead per machine-hour** | $ 2.20 |

Recently Job M242 was completed with the following characteristics:

|  |  |
| --- | --- |
| **Number of units in the job** | 20 |
| **Total machine-hours** | 60 |
| **Direct materials** | $ 725 |
| **Direct labor cost** | $1,680 |

**Required:**  
 a. Calculate the total job cost for Job M242.  
 b. Calculate the unit product cost for Job M242.

**21)** Ryans Corporation uses a job-order costing system with a single plantwide predetermined overhead rate based on machine-hours. The company based its predetermined overhead rate for the current year on the following data:

|  |  |
| --- | --- |
| **Total machine-hours** | 10,000 |
| **Total fixed manufacturing overhead cost** | $71,000 |
| **Variable manufacturing overhead per machine-hour** | $ 2.50 |

Recently Job P512 was completed with the following characteristics:

|  |  |
| --- | --- |
| **Number of units in the job** | 30 |
| **Total machine-hours** | 60 |
| **Direct materials** | $ 870 |
| **Direct labor cost** | $2,400 |

**Required:**  
 a. Calculate the predetermined overhead rate for the year.  
 b. Calculate the amount of overhead applied to Job P512.  
 c. Calculate the total job cost for Job P512.  
 d. Calculate the unit product cost for Job P512.

**22)** Lezo Corporation uses a job-order costing system with a single plantwide predetermined overhead rate based on machine-hours. The company based its predetermined overhead rate for the current year on 40,000 machine-hours, total fixed manufacturing overhead cost of $136,000, and a variable manufacturing overhead rate of $2.90 per machine-hour. Job A290, which was for 60 units of a custom product, was recently completed. The job cost sheet for the job contained the following data:

|  |  |
| --- | --- |
| **Total machine-hours** | 300 |
| **Direct materials** | $ 585 |
| **Direct labor cost** | $7,200 |

**Required:**  
 a. Calculate the estimated total manufacturing overhead for the year.  
 b. Calculate the predetermined overhead rate for the year.  
 c. Calculate the amount of overhead applied to Job A290.  
 d. Calculate the total job cost for Job A290.

**23)** Whitlatch Corporation uses a job-order costing system with a single plantwide predetermined overhead rate based on machine-hours. The company based its predetermined overhead rate for the current year on the following data:

|  |  |
| --- | --- |
| **Total machine-hours** | 60,000 |
| **Total fixed manufacturing overhead cost** | $342,000 |
| **Variable manufacturing overhead per machine-hour** | $ 2.70 |

Recently Job M238 was completed with the following characteristics:

|  |  |
| --- | --- |
| **Number of units in the job** | 70 |
| **Total machine-hours** | 140 |
| **Direct materials** | $ 945 |
| **Direct labor cost** | $2,800 |

**Required:**  
 Calculate the total job cost for Job M238.

**24)** Obermeyer Corporation uses a job-order costing system with a single plantwide predetermined overhead rate based on direct labor-hours. The company based its predetermined overhead rate for the current year on 10,000 direct labor-hours, total fixed manufacturing overhead cost of $96,000, and a variable manufacturing overhead rate of $3.60 per direct labor-hour. Job A735, which was for 40 units of a custom product, was recently completed. The job cost sheet for the job contained the following data:

|  |  |
| --- | --- |
| **Total direct labor-hours** | 200 |
| **Direct materials** | $ 540 |
| **Direct labor cost** | $6,400 |

**Required:**  
 a. Calculate the amount of overhead applied to Job A735.  
 b. Calculate the total job cost for Job A735.  
 c. Calculate the unit product cost for Job A735.

**25)** Olmscheid Corporation has two manufacturing departments--Molding and Customizing. The company used the following data at the beginning of the period to calculate predetermined overhead rates:

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Molding** | **Customizing** | **Total** |
| **Estimated total machine-hours (MHs)** | 5,000 | 5,000 | 10,000 |
| **Estimated total fixed manufacturing overhead cost** | $21,000 | $14,000 | $ 35,000 |
| **Estimated variable manufacturing overhead cost per MH** | $ 1.50 | $ 2.40 |  |

During the period, the company started and completed two jobs--Job F and Job K. There were no beginning inventories. Data concerning those two jobs follow:

|  |  |  |
| --- | --- | --- |
|  | **Job F** | **Job K** |
| **Direct materials** | $ 12,700 | $ 6,400 |
| **Direct labor cost** | $ 19,100 | $ 7,900 |
| **Molding machine-hours** | 3,400 | 1,600 |
| **Customizing machine-hours** | 2,000 | 3,000 |

**Required:**  
 a. Assume that the company uses a *plantwide* predetermined manufacturing overhead rate based on machine-hours. Calculate that overhead rate.  
 b. Assume that the company uses a *plantwide* predetermined manufacturing overhead rate based on machine-hours. Calculate the amount of manufacturing overhead applied to Job F.  
 c. Assume that the company uses a *plantwide* predetermined manufacturing overhead rate based on machine-hours. Calculate the amount of manufacturing overhead applied to Job K.  
 d. Assume that the company uses a *plantwide* predetermined manufacturing overhead rate based on machine-hours. Calculate the total manufacturing cost assigned to Job F.  
 e. Assume that the company uses a *plantwide* predetermined manufacturing overhead rate based on machine-hours. Calculate the total manufacturing cost assigned to Job K.  
 f. Assume that the company uses a *plantwide* predetermined manufacturing overhead rate based on machine-hours and uses a markup of 30% on manufacturing cost to establish selling prices. Calculate the selling price for Job F.  
 g. Assume that the company uses a *plantwide* predetermined manufacturing overhead rate based on machine-hours and uses a markup of 30% on manufacturing cost to establish selling prices. Calculate the selling price for Job K.  
 h. Assume that the company uses a *plantwide* predetermined manufacturing overhead rate based on machine-hours. If both jobs were sold during the month, what was the company's cost of goods sold for the month?

**26)** Cardosa Corporation uses a job-order costing system with a single plantwide predetermined overhead rate based on machine-hours. The company based its predetermined overhead rate for the current year on 70,000 machine-hours, total fixed manufacturing overhead cost of $308,000, and a variable manufacturing overhead rate of $2.10 per machine-hour. Job M556, which was for 50 units of a custom product, was recently completed. The job cost sheet for the job contained the following data:

|  |  |
| --- | --- |
| **Total machine-hours** | 100 |
| **Direct materials** | $ 555 |
| **Direct labor cost** | $2,700 |

**Required:**  
 a. Calculate the total job cost for Job M556.  
 b. Calculate the unit product cost for Job M556.

**27)** Dietzen Corporation has two manufacturing departments--Casting and Finishing. The company used the following data at the beginning of the year to calculate predetermined overhead rates:

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Casting** | **Finishing** | **Total** |
| **Estimated total machine-hours (MHs)** | 4,000 | 6,000 | 10,000 |
| **Estimated total fixed manufacturing overhead cost** | $ 18,000 | $ 18,000 | $ 36,000 |
| **Estimated variable manufacturing overhead cost per machine-hour** | $ 1.50 | 2.30 |  |

During the most recent month, the company started and completed two jobs--Job D and Job J. There were no beginning inventories. Data concerning those two jobs follow:

|  |  |  |
| --- | --- | --- |
|  | **Job D** | **Job J** |
| **Direct materials** | $ 14,300 | $ 6,800 |
| **Direct labor cost** | $ 21,700 | $ 8,800 |
| **Casting machine-hours** | 2,700 | 1,300 |
| **Finishing machine-hours** | 2,400 | 3,600 |

**Required:**  
 a. Assume that the company uses a *plantwide* predetermined manufacturing overhead rate based on machine-hours. Calculate the total manufacturing cost assigned to Job D.  
 b. Assume that the company uses a *plantwide* predetermined manufacturing overhead rate based on machine-hours. Calculate the total manufacturing cost assigned to Job J.

**28)** Posson Corporation uses a job-order costing system with a single plantwide predetermined overhead rate based on machine-hours. The company based its predetermined overhead rate for the current year on 20,000 machine-hours, total fixed manufacturing overhead cost of $130,000, and a variable manufacturing overhead rate of $3.00 per machine-hour. Job K789, which was for 10 units of a custom product, was recently completed. The job cost sheet for the job contained the following data:

|  |  |
| --- | --- |
| **Total machine-hours** | 30 |
| **Direct materials** | $ 775 |
| **Direct labor cost** | $1,170 |

**Required:**  
 a. Calculate the predetermined overhead rate for the year.  
 b. Calculate the amount of overhead applied to Job K789.  
 c. Calculate the total job cost for Job K789.  
 d. Calculate the unit product cost for Job K789

**29)** Rondo Corporation uses a job-order costing system with a single plantwide predetermined overhead rate based on machine-hours. The company based its predetermined overhead rate for the current year on the following data:

|  |  |
| --- | --- |
| **Total machine-hours** | 30,000 |
| **Total fixed manufacturing overhead cost** | $252,000 |
| **Variable manufacturing overhead per machine-hour** | $ 2.90 |

Recently Job T506 was completed with the following characteristics:

|  |  |
| --- | --- |
| **Number of units in the job** | 70 |
| **Total machine-hours** | 210 |
| **Direct materials** | $ 665 |
| **Direct labor cost** | $6,720 |

**Required:**  
 a. Calculate the estimated total manufacturing overhead for the year.  
 b. Calculate the predetermined overhead rate for the year.  
 c. Calculate the amount of overhead applied to Job T506.  
 d. Calculate the total job cost for Job T506.  
 e. Calculate the unit product cost for Job T506.  
 f. Calculate the selling price for Job T506 if the company marks up its unit product costs by 20%.

**30)** Leadley Corporation uses a job-order costing system with a single plantwide predetermined overhead rate based on direct labor-hours. The company based its predetermined overhead rate for the current year on the following data:

|  |  |
| --- | --- |
| **Total direct labor-hours** | 10,000 |
| **Total fixed manufacturing overhead cost** | $76,000 |
| **Variable manufacturing overhead per direct labor-hour** | $ 2.10 |

Recently Job X701 was completed with the following characteristics:

|  |  |
| --- | --- |
| **Number of units in the job** | 90 |
| **Total direct labor-hours** | 270 |
| **Direct materials** | $ 590 |
| **Direct labor cost** | $6,480 |

**Required:**  
 a. Calculate the estimated total manufacturing overhead for the year.  
 b. Calculate the predetermined overhead rate for the year.  
 c. Calculate the amount of overhead applied to Job X701.  
 d. Calculate the total job cost for Job X701

**31)** Pasko Corporation uses a job-order costing system with a single plantwide predetermined overhead rate based on direct labor-hours. The company based its predetermined overhead rate for the current year on the following data:

|  |  |
| --- | --- |
| **Total direct labor-hours** | 30,000 |
| **Total fixed manufacturing overhead cost** | $258,000 |
| **Variable manufacturing overhead per direct labor-hour** | $ 2.00 |

Recently Job P660 was completed with the following characteristics:

|  |  |
| --- | --- |
| **Number of units in the job** | 50 |
| **Total direct labor-hours** | 250 |
| **Direct materials** | $ 645 |
| **Direct labor cost** | $10,000 |

**Required:**  
 Calculate the selling price for Job P660 if the company marks up its unit product costs by 20%.

**32)** Leeds Corporation uses a job-order costing system with a single plantwide predetermined overhead rate based on machine-hours. The company based its predetermined overhead rate for the current year on the following data:

|  |  |
| --- | --- |
| **Total machine-hours** | 50,000 |
| **Total fixed manufacturing overhead cost** | $215,000 |
| **Variable manufacturing overhead per machine-hour** | $ 3.80 |

Recently Job T496 was completed with the following characteristics:

|  |  |
| --- | --- |
| **Number of units in the job** | 80 |
| **Total machine-hours** | 240 |
| **Direct materials** | $ 735 |
| **Direct labor cost** | $8,880 |

**Required:**  
 a. Calculate the estimated total manufacturing overhead for the year.  
 b. Calculate the predetermined overhead rate for the year.  
 c. Calculate the amount of overhead applied to Job T496.  
 d. Calculate the total job cost for Job T496.  
 e. Calculate the unit product cost for Job T496.

**33)** Petru Corporation uses a job-order costing system with a single plantwide predetermined overhead rate based on machine-hours. The company based its predetermined overhead rate for the current year on the following data:

|  |  |
| --- | --- |
| **Total machine-hours** | 70,000 |
| **Total fixed manufacturing overhead cost** | $525,000 |
| **Variable manufacturing overhead per machine-hour** | $ 2.30 |

Recently Job P987 was completed with the following characteristics:

|  |  |
| --- | --- |
| **Number of units in the job** | 20 |
| **Total machine-hours** | 80 |
| **Direct materials** | $ 630 |
| **Direct labor cost** | $2,080 |

**Required:**  
 Calculate the unit product cost for Job P987.

**34)** Franta Corporation uses a job-order costing system with a single plantwide predetermined overhead rate based on direct labor-hours. The company based its predetermined overhead rate for the current year on 70,000 direct labor-hours, total fixed manufacturing overhead cost of $238,000, and a variable manufacturing overhead rate of $2.70 per direct labor-hour. Job P873, which was for 50 units of a custom product, was recently completed. The job cost sheet for the job contained the following data:

|  |  |
| --- | --- |
| **Total direct labor-hours** | 200 |
| **Direct materials** | $ 630 |
| **Direct labor cost** | $4,800 |

**Required:**  
 Calculate the unit product cost for Job P873.

**35)** Temby Corporation uses a job-order costing system with a single plantwide predetermined overhead rate based on machine-hours. The company based its predetermined overhead rate for the current year on 10,000 machine-hours, total fixed manufacturing overhead cost of $88,000, and a variable manufacturing overhead rate of $3.20 per machine-hour. Job K418, which was for 50 units of a custom product, was recently completed. The job cost sheet for the job contained the following data:

|  |  |
| --- | --- |
| **Total machine-hours** | 150 |
| **Direct materials** | $ 580 |
| **Direct labor cost** | $3,900 |

**Required:**  
 a. Calculate the estimated total manufacturing overhead for the year.  
 b. Calculate the predetermined overhead rate for the year.  
 c. Calculate the amount of overhead applied to Job K418.  
 d. Calculate the total job cost for Job K418.  
 e. Calculate the unit product cost for Job K418.  
 f. Calculate the selling price for Job K418 if the company marks up its unit product costs by 30%.

**36)** Saxon Corporation uses a job-order costing system with a single plantwide predetermined overhead rate based on machine-hours. The company based its predetermined overhead rate for the current year on 10,000 machine-hours, total fixed manufacturing overhead cost of $91,000, and a variable manufacturing overhead rate of $2.40 per machine-hour. Job K373, which was for 60 units of a custom product, was recently completed. The job cost sheet for the job contained the following data:

|  |  |
| --- | --- |
| **Total machine-hours** | 120 |
| **Direct materials** | $ 645 |
| **Direct labor cost** | $3,720 |

**Required:**  
 a. Calculate the estimated total manufacturing overhead for the year.  
 b. Calculate the predetermined overhead rate for the year.  
 c. Calculate the amount of overhead applied to Job K373.  
 d. Calculate the total job cost for Job K373.  
 e. Calculate the unit product cost for Job K373

**37)** Kluth Corporation has two manufacturing departments--Molding and Customizing. The company used the following data at the beginning of the year to calculate predetermined overhead rates:

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Molding** | **Customizing** | **Total** |
| **Estimated total machine-hours (MHs)** | 7,000 | 1,300 | 8,300 |
| **Estimated total fixed manufacturing overhead cost** | $18,200 | $4,550 | $22,750 |
| **Estimated variable manufacturing overhead cost per machine-hour** | $1.50 | $3.00 |  |

During the most recent month, the company started and completed two jobs--Job C and Job M. There were no beginning inventories. Data concerning those two jobs follow:

|  |  |  |
| --- | --- | --- |
|  | **Job C** | **Job M** |
| **Direct materials** | $ 13,900 | $ 7,800 |
| **Direct labor cost** | $ 21,000 | $ 7,800 |
| **Molding machine-hours** | 1,250 | 5,750 |
| **Customizing machine-hours** | 800 | 500 |

**Required:**  
 Assume that the company uses departmental predetermined overhead rates with machine-hours as the allocation base in both production departments. Further assume that the company uses a markup of 20% on manufacturing cost to establish selling prices. Calculate the selling prices for Job C and for Job M. **(Do not round intermediate calculations.)**

**38)** Kluth Corporation has two manufacturing departments--Molding and Customizing. The company used the following data at the beginning of the year to calculate predetermined overhead rates:

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Molding** | **Customizing** | **Total** |
| **Estimated total machine-hours (MHs)** | 3,000 | 2,000 | 5,000 |
| **Estimated total fixed manufacturing overhead cost** | $15,900 | $4,200 | $ 20,100 |
| **Estimated variable manufacturing overhead cost per machine-hour** | $1.20 | $2.40 |  |

During the most recent month, the company started and completed two jobs--Job C and Job M. There were no beginning inventories. Data concerning those two jobs follow:

|  |  |  |
| --- | --- | --- |
|  | **Job C** | **Job M** |
| **Direct materials** | $ 15,600 | $ 8,600 |
| **Direct labor cost** | $ 25,100 | $ 8,300 |
| **Molding machine-hours** | 2,000 | 1,000 |
| **Customizing machine-hours** | 800 | 1,200 |

**Required:**  
 Assume that the company uses departmental predetermined overhead rates with machine-hours as the allocation base in both production departments. Further assume that the company uses a markup of 20% on manufacturing cost to establish selling prices. Calculate the selling prices for Job C and for Job M. **(Do not round intermediate calculations.)**

**39)** Amason Corporation has two production departments, Forming and Assembly. The company uses a job-order costing system and computes a predetermined overhead rate in each production department. The Forming Department’s predetermined overhead rate is based on machine-hours and the Assembly Department’s predetermined overhead rate is based on direct labor-hours. At the beginning of the current year, the company had made the following estimates:

|  |  |  |
| --- | --- | --- |
|  | **Forming** | **Assembly** |
| **Machine-hours** | 16,000 | 11,000 |
| **Direct labor-hours** | 2,000 | 6,000 |
| **Total fixed manufacturing overhead cost** | $102,400 | $66,000 |
| **Variable manufacturing overhead per machine-hour** | $ 1.90 |  |
| **Variable manufacturing overhead per direct labor-hour** |  | $ 3.80 |

During the current month the company started and finished Job A950. The following data were recorded for this job:

|  |  |  |
| --- | --- | --- |
| **Job A950:** | **Forming** | **Assembly** |
| Machine-hours | 50 | 20 |
| Direct labor-hours | 20 | 40 |
| Direct materials | $ 665 | $ 415 |
| Direct labor cost | $ 520 | $1,040 |

**Required:**  
 Calculate the selling price for Job A950 if the company marks up its unit product costs by 30% to determine selling prices.

**40)** Dancel Corporation has two production departments, Milling and Finishing. The company uses a job-order costing system and computes a predetermined overhead rate in each production department. The Milling Department’s predetermined overhead rate is based on machine-hours and the Finishing Department’s predetermined overhead rate is based on direct labor-hours. At the beginning of the current year, the company had made the following estimates:

|  |  |  |
| --- | --- | --- |
|  | **Milling** | **Finishing** |
| **Machine-hours** | 17,000 | 14,000 |
| **Direct labor-hours** | 1,000 | 6,000 |
| **Total fixed manufacturing overhead cost** | $91,800 | $64,200 |
| **Variable manufacturing overhead per machine-hour** | $ 2.00 |  |
| **Variable manufacturing overhead per direct labor-hour** |  | $ 3.40 |

During the current month the company started and finished Job M565. The following data were recorded for this job:

|  |  |  |
| --- | --- | --- |
| **Job M565:** | **Milling** | **Finishing** |
| Machine-hours | 70 | 20 |
| Direct labor-hours | 10 | 40 |
| Direct materials | $ 750 | $ 360 |
| Direct labor cost | $ 340 | $1,360 |

**Required:**  
 a. Calculate the total amount of overhead applied to Job M565 in both departments.  
 b. Calculate the total job cost for Job M565.  
 c. Calculate the selling price for Job M565 if the company marks up its unit product costs by 20% to determine selling prices.

**41)** Pangle Corporation has two production departments, Forming and Customizing. The company uses a job-order costing system and computes a predetermined overhead rate in each production department. The Forming Department’s predetermined overhead rate is based on machine-hours and the Customizing Department’s predetermined overhead rate is based on direct labor-hours. At the beginning of the current year, the company had made the following estimates:

|  |  |  |
| --- | --- | --- |
|  | **Forming** | **Customizing** |
| **Machine-hours** | 16,000 | 12,000 |
| **Direct labor-hours** | 4,000 | 9,000 |
| **Total fixed manufacturing overhead cost** | $91,200 | $99,000 |
| **Variable manufacturing overhead per machine-hour** | $ 2.10 |  |
| **Variable manufacturing overhead per direct labor-hour** |  | $ 3.10 |

During the current month the company started and finished Job M109. The following data were recorded for this job:

|  |  |  |
| --- | --- | --- |
| **Job M109:** | **Forming** | **Customizing** |
| Machine-hours | 50 | 30 |
| Direct labor-hours | 20 | 50 |
| Direct materials | $ 915 | $355 |
| Direct labor cost | $ 620 | $1,550 |

**Required:**  
 Calculate the total job cost for Job M109.

**42)** Vasilopoulos Corporation has two production departments, Casting and Assembly. The company uses a job-order costing system and computes a predetermined overhead rate in each production department. The Casting Department’s predetermined overhead rate is based on machine-hours and the Assembly Department’s predetermined overhead rate is based on direct labor-hours. At the beginning of the current year, the company had made the following estimates:

|  |  |  |
| --- | --- | --- |
|  | **Casting** | **Assembly** |
| **Machine-hours** | 17,000 | 11,000 |
| **Direct labor-hours** | 3,000 | 6,000 |
| **Total fixed manufacturing overhead cost** | $119,000 | $51,000 |
| **Variable manufacturing overhead per machine-hour** | $ 2.10 |  |
| **Variable manufacturing overhead per direct labor-hour** |  | $ 3.10 |

During the current month the company started and finished Job A182. The following data were recorded for this job:

|  |  |  |
| --- | --- | --- |
| **Job A182:** | **Casting** | **Assembly** |
| Machine-hours | 50 | 20 |
| Direct labor-hours | 10 | 50 |
| Direct materials | $ 895 | $ 365 |
| Direct labor cost | $ 240 | $1,200 |

**Required:**  
 a. Calculate the estimated total manufacturing overhead for the Casting Department.  
 b. Calculate the estimated total manufacturing overhead for the Assembly Department.  
 c. Calculate the predetermined overhead rate for the Casting Department.  
 d. Calculate the predetermined overhead rate for the Assembly Department.  
 e. Calculate the total amount of overhead applied to Job A182 in both departments.  
 f. Calculate the total job cost for Job A182.  
 g. Calculate the selling price for Job A182 if the company marks up its unit product costs by 20% to determine selling prices.

**43)** Hultquist Corporation has two manufacturing departments--Forming and Customizing. The company used the following data at the beginning of the period to calculate predetermined overhead rates:

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Forming** | **Customizing** | **Total** |
| **Estimated total machine-hours (MHs)** | 6,000 | 4,000 | 10,000 |
| **Estimated total fixed manufacturing overhead cost** | $24,000 | $10,400 | $34,400 |
| **Estimated variable manufacturing overhead cost per machine-hour** | $ 1.00 | $ 2.00 |  |

During the period, the company started and completed two jobs--Job C and Job L. Data concerning those two jobs follow:

|  |  |  |
| --- | --- | --- |
|  | **Job C** | **Job L** |
| **Direct materials** | $ 16,400 | $ 9,700 |
| **Direct labor cost** | $ 23,100 | $ 10,100 |
| **Forming machine-hours** | 2,500 | 3,500 |
| **Customizing machine-hours** | 2,500 | 1,500 |

**Required:**  
 a. Assume that the company uses a plantwide predetermined manufacturing overhead rate based on machine-hours. Calculate that overhead rate. **(Round your answer to 2 decimal places.)**  
 b. Assume that the company uses a plantwide predetermined manufacturing overhead rate based on machine-hours. Calculate the amount of manufacturing overhead applied to Job L. **(Do not round intermediate calculations.)**  
 c. Assume that the company uses a plantwide predetermined manufacturing overhead rate based on machine-hours. Calculate the total manufacturing cost assigned to Job L. **(Do not round intermediate calculations.)**  
 d. Assume that the company uses a plantwide predetermined manufacturing overhead rate based on machine-hours and uses a markup of 80% on manufacturing cost to establish selling prices. Calculate the selling price for Job L. **(Do not round intermediate calculations.)**   
 e. Assume that the company uses departmental predetermined overhead rates with machine-hours as the allocation base in both departments. What is the departmental predetermined overhead rate in the Forming department? **(Round your answer to 2 decimal places.)**  
 f. Assume that the company uses departmental predetermined overhead rates with machine-hours as the allocation base in both production departments. What is the departmental predetermined overhead rate in the Customizing department? **(Round your answer to 2 decimal places.)**  
 g. Assume that the company uses departmental predetermined overhead rates with machine-hours as the allocation base in both production departments. How much manufacturing overhead will be applied to Job L? **(Do not round intermediate calculations.)**  
 h. Assume that the company uses departmental predetermined overhead rates with machine-hours as the allocation base in both production departments. Further assume that the company uses a markup of 80% on manufacturing cost to establish selling prices. Calculate the selling price for Job L. **(Do not round intermediate calculations.)**

**44)** Hultquist Corporation has two manufacturing departments--Forming and Customizing. The company used the following data at the beginning of the period to calculate predetermined overhead rates:

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Forming** | **Customizing** | **Total** |
| **Estimated total machine-hours (MHs)** | 9,000 | 1,000 | 10,000 |
| **Estimated total fixed manufacturing overhead cost** | $50,400 | $2,600 | $53,000 |
| **Estimated variable manufacturing overhead cost per machine-hour** | $ 1.70 | $ 2.10 |  |

During the period, the company started and completed two jobs--Job C and Job L. Data concerning those two jobs follow:

|  |  |  |
| --- | --- | --- |
|  | **Job C** | **Job L** |
| **Direct materials** | $ 15,100 | $ 6,900 |
| **Direct labor cost** | $ 20,800 | $ 8,500 |
| **Forming machine-hours** | 6,100 | 2,900 |
| **Customizing machine-hours** | 400 | 600 |

**Required:**  
 a. Assume that the company uses a *plantwide* predetermined manufacturing overhead rate based on machine-hours. Calculate that overhead rate. **(Round your answer to 2 decimal places.)**  
 b. Assume that the company uses a *plantwide* predetermined manufacturing overhead rate based on machine-hours. Calculate the amount of manufacturing overhead applied to Job L. **(Do not round intermediate calculations.)**  
 c. Assume that the company uses a *plantwide* predetermined manufacturing overhead rate based on machine-hours. Calculate the total manufacturing cost assigned to Job L. **(Do not round intermediate calculations.)**  
 d. Assume that the company uses a *plantwide* predetermined manufacturing overhead rate based on machine-hours and uses a markup of 80% on manufacturing cost to establish selling prices. Calculate the selling price for Job L. **(Do not round intermediate calculations.)**   
 e. Assume that the company uses *departmental* predetermined overhead rates with machine-hours as the allocation base in both departments. What is the *departmental* predetermined overhead rate in the Forming department? **(Round your answer to 2 decimal places.)**  
 f. Assume that the company uses *departmental* predetermined overhead rates with machine-hours as the allocation base in both production departments. What is the *departmental* predetermined overhead rate in the Customizing department? **(Round your answer to 2 decimal places.)**  
 g. Assume that the company uses *departmental* predetermined overhead rates with machine-hours as the allocation base in both production departments. How much manufacturing overhead will be applied to Job L? **(Do not round intermediate calculations.)**  
 h. Assume that the company uses *departmental* predetermined overhead rates with machine-hours as the allocation base in both production departments. Further assume that the company uses a markup of 80% on manufacturing cost to establish selling prices. Calculate the selling price for Job L. **(Do not round intermediate calculations.)**

**45)** Carcana Corporation has two manufacturing departments--Machining and Finishing. The company used the following data at the beginning of the period to calculate predetermined overhead rates:

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Machining** | **Finishing** | **Total** |
| **Estimated total machine-hours (MHs)** | 1,000 | 4,000 | 5,000 |
| **Estimated total fixed manufacturing overhead cost** | $4,200 | $8,800 | $ 13,000 |
| **Estimated variable manufacturing overhead cost per MH** | $ 1.90 | $ 2.90 |  |

During the period, the company started and completed two jobs--Job E and Job G. Data concerning those two jobs follow:

|  |  |  |
| --- | --- | --- |
|  | **Job E** | **Job G** |
| **Direct materials** | $ 11,800 | $ 8,000 |
| **Direct labor cost** | $ 19,200 | $ 6,700 |
| **Machining machine-hours** | 700 | 300 |
| **Finishing machine-hours** | 1,600 | 2,400 |

**Required:**  
 a. Assume that the company uses *departmental* predetermined overhead rates with machine-hours as the allocation base in both departments. What is the *departmental* predetermined overhead rate in the Machining department?  
 b. Assume that the company uses *departmental* predetermined overhead rates with machine-hours as the allocation base in both production departments. What is the *departmental* predetermined overhead rate in the Finishing department?  
 c. Assume that the company uses *departmental* predetermined overhead rates with machine-hours as the allocation base in both production departments. How much manufacturing overhead will be applied to Job E?  
 d. Assume that the company uses *departmental* predetermined overhead rates with machine-hours as the allocation base in both production departments. How much manufacturing overhead will be applied to Job G?  
 e. Assume that the company uses *departmental* predetermined overhead rates with machine-hours as the allocation base in both production departments. Further assume that the company uses a markup of 80% on manufacturing cost to establish selling prices. Calculate the selling price for Job E.  
 f. Assume that the company uses *departmental* predetermined overhead rates with machine-hours as the allocation base in both production departments. Further assume that the company uses a markup of 80% on manufacturing cost to establish selling prices. Calculate the selling price for Job G.  
 g. Assume that the company uses *departmental* predetermined overhead rates with machine-hours as the allocation base in both production departments. If both jobs were sold during the month, what was the company's cost of goods sold for the month?

**46)** Braegelmann Corporation has two production departments, Casting and Assembly. The company uses a job-order costing system and computes a predetermined overhead rate in each production department. The Casting Department’s predetermined overhead rate is based on machine-hours and the Assembly Department’s predetermined overhead rate is based on direct labor-hours. At the beginning of the current year, the company had made the following estimates:

|  |  |  |
| --- | --- | --- |
|  | **Casting** | **Assembly** |
| **Machine-hours** | 20,000 | 14,000 |
| **Direct labor-hours** | 4,000 | 6,000 |
| **Total fixed manufacturing overhead cost** | $110,000 | $65,400 |
| **Variable manufacturing overhead per machine-hour** | $ 1.60 |  |
| **Variable manufacturing overhead per direct labor-hour** |  | $ 4.50 |

During the current month the company started and finished Job K246. The following data were recorded for this job:

|  |  |  |
| --- | --- | --- |
| **Job K246:** | **Casting** | **Assembly** |
| Machine-hours | 60 | 30 |
| Direct labor-hours | 20 | 40 |
| Direct materials | $ 950 | $ 305 |
| Direct labor cost | $ 460 | $ 920 |

**Required:**  
 a. Calculate the estimated total manufacturing overhead for the Casting Department.  
 b. Calculate the estimated total manufacturing overhead for the Assembly Department.  
 c. Calculate the predetermined overhead rate for the Casting Department.  
 d. Calculate the predetermined overhead rate for the Assembly Department.  
 e. Calculate the amount of overhead applied in the Casting Department to Job K246.  
 f. Calculate the amount of overhead applied in the Assembly Department to Job K246.  
 g. Calculate the total job cost for Job K246.  
 h. Calculate the selling price for Job K246 if the company marks up its unit product costs by 40% to determine selling prices.

**47)** Matrejek Corporation has two manufacturing departments--Forming and Customizing. The company used the following data at the beginning of the year to calculate predetermined overhead rates:

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Forming** | **Customizing** | **Total** |
| **Estimated total machine-hours (MHs)** | 8,000 | 2,000 | 10,000 |
| **Estimated total fixed manufacturing overhead cost** | $36,800 | $4,800 | $41,600 |
| **Estimated variable manufacturing overhead cost per MH** | $ 1.60 | $ 2.90 |  |

During the most recent month, the company started and completed two jobs--Job D and Job K. There were no beginning inventories. Data concerning those two jobs follow:

|  |  |  |
| --- | --- | --- |
|  | **Job D** | **Job K** |
| **Direct materials** | $15,600 | $6,900 |
| **Direct labor cost** | $19,100 | $8,700 |
| **Forming machine-hours** | 5,400 | 2,600 |
| **Customizing machine-hours** | 800 | 1,200 |

**Required:**  
 a. Assume that the company uses a plantwide predetermined manufacturing overhead rate based on machine-hours and uses a markup of 50% on manufacturing cost to establish selling prices. Calculate the selling price for Job D.  
 b. Assume that the company uses a plantwide predetermined manufacturing overhead rate based on machine-hours and uses a markup of 50% on manufacturing cost to establish selling prices. Calculate the selling price for Job K.  
 c. Assume that the company uses departmental predetermined overhead rates with machine-hours as the allocation base in both production departments. Further assume that the company uses a markup of 50% on manufacturing cost to establish selling prices. Calculate the selling price for Job D.  
 d. Assume that the company uses departmental predetermined overhead rates with machine-hours as the allocation base in both production departments. Further assume that the company uses a markup of 50% on manufacturing cost to establish selling prices. Calculate the selling price for Job K.

**48)** Harnett Corporation has two manufacturing departments--Molding and Assembly. The company used the following data at the beginning of the period to calculate predetermined overhead rates:

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Molding** | **Assembly** | **Total** |
| **Estimated total machine-hours (MHs)** | 5,000 | 5,000 | 10,000 |
| **Estimated total fixed manufacturing overhead cost** | $29,000 | $13,500 | $42,500 |
| **Estimated variable manufacturing overhead cost per machine-hour** | $ 1.20 | $ 2.30 |  |

During the period, the company started and completed two jobs--Job E and Job M. Data concerning those two jobs follow:

|  |  |  |
| --- | --- | --- |
|  | **Job E** | **Job M** |
| **Direct materials** | $ 14,300 | $ 9,400 |
| **Direct labor cost** | $ 22,800 | $ 8,900 |
| **Molding machine-hours** | 3,400 | 1,600 |
| **Assembly machine-hours** | 2,000 | 3,000 |

**Required:**  
 a. Assume that the company uses a plantwide predetermined manufacturing overhead rate based on machine-hours. Calculate that overhead rate. **(Round your answer to 2 decimal places.)**  
 b. Assume that the company uses a plantwide predetermined manufacturing overhead rate based on machine-hours. Calculate the amount of manufacturing overhead applied to Job E. **(Do not round intermediate calculations.)**  
 c. Assume that the company uses a plantwide predetermined manufacturing overhead rate based on machine-hours. Calculate the total manufacturing cost assigned to Job E. **(Do not round intermediate calculations.)**  
 d. Assume that the company uses a plantwide predetermined manufacturing overhead rate based on machine-hours and uses a markup of 60% on manufacturing cost to establish selling prices. Calculate the selling price for Job E. **(Do not round intermediate calculations.)**   
 e. Assume that the company uses departmental predetermined overhead rates with machine-hours as the allocation base in both departments. What is the departmental predetermined overhead rate in the Molding department? **(Round your answer to 2 decimal places.)**  
 f. Assume that the company uses departmental predetermined overhead rates with machine-hours as the allocation base in both production departments. What is the departmental predetermined overhead rate in the Assembly department? **(Round your answer to 2 decimal places.)**  
 g. Assume that the company uses departmental predetermined overhead rates with machine-hours as the allocation base in both production departments. How much manufacturing overhead will be applied to Job E? **(Do not round intermediate calculations.)**  
 h. Assume that the company uses departmental predetermined overhead rates with machine-hours as the allocation base in both production departments. Further assume that the company uses a markup of 60% on manufacturing cost to establish selling prices. Calculate the selling price for Job E. **(Do not round intermediate calculations.)**

**49)** Harnett Corporation has two manufacturing departments--Molding and Assembly. The company used the following data at the beginning of the period to calculate predetermined overhead rates:

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Molding** | **Assembly** | **Total** |
| **Estimated total machine-hours (MHs)** | 5,000 | 5,000 | 10,000 |
| **Estimated total fixed manufacturing overhead cost** | $15,000 | $29,500 | $44,500 |
| **Estimated variable manufacturing overhead cost per machine-hour** | $ 2.00 | $ 4.00 |  |

During the period, the company started and completed two jobs--Job E and Job M. Data concerning those two jobs follow:

|  |  |  |
| --- | --- | --- |
|  | **Job E** | **Job M** |
| **Direct materials** | $ 16,200 | $ 9,500 |
| **Direct labor cost** | $ 22,900 | $ 9,900 |
| **Molding machine-hours** | 2,700 | 2,300 |
| **Assembly machine-hours** | 400 | 4,600 |

**Required:**  
 a. Assume that the company uses a plantwide predetermined manufacturing overhead rate based on machine-hours. Calculate that overhead rate. **(Round your answer to 2 decimal places.)**  
 b. Assume that the company uses a plantwide predetermined manufacturing overhead rate based on machine-hours. Calculate the amount of manufacturing overhead applied to Job E. **(Do not round intermediate calculations.)**  
 c. Assume that the company uses a plantwide predetermined manufacturing overhead rate based on machine-hours. Calculate the total manufacturing cost assigned to Job E. **(Do not round intermediate calculations.)**  
 d. Assume that the company uses a plantwide predetermined manufacturing overhead rate based on machine-hours and uses a markup of 80% on manufacturing cost to establish selling prices. Calculate the selling price for Job E. **(Do not round intermediate calculations.)**   
 e. Assume that the company uses departmental predetermined overhead rates with machine-hours as the allocation base in both departments. What is the departmental predetermined overhead rate in the Molding department? **(Round your answer to 2 decimal places.)**  
 f. Assume that the company uses departmental predetermined overhead rates with machine-hours as the allocation base in both production departments. What is the departmental predetermined overhead rate in the Assembly department? **(Round your answer to 2 decimal places.)**  
 g. Assume that the company uses departmental predetermined overhead rates with machine-hours as the allocation base in both production departments. How much manufacturing overhead will be applied to Job E? **(Do not round intermediate calculations.)**  
 h. Assume that the company uses departmental predetermined overhead rates with machine-hours as the allocation base in both production departments. Further assume that the company uses a markup of 80% on manufacturing cost to establish selling prices. Calculate the selling price for Job E. **(Do not round intermediate calculations.)**

**50)** Bulla Corporation has two production departments, Machining and Customizing. The company uses a job-order costing system and computes a predetermined overhead rate in each production department. The Machining Department’s predetermined overhead rate is based on machine-hours and the Customizing Department’s predetermined overhead rate is based on direct labor-hours. At the beginning of the current year, the company had made the following estimates:

|  |  |  |
| --- | --- | --- |
|  | **Machining** | **Customizing** |
| **Machine-hours** | 19,000 | 13,000 |
| **Direct labor-hours** | 2,000 | 9,000 |
| **Total fixed manufacturing overhead cost** | $98,800 | $84,600 |
| **Variable manufacturing overhead per machine-hour** | $ 2.10 |  |
| **Variable manufacturing overhead per direct labor-hour** |  | $ 3.60 |

During the current month the company started and finished Job K369. The following data were recorded for this job:

|  |  |  |
| --- | --- | --- |
| **Job K369:** | **Machining** | **Customizing** |
| Machine-hours | 90 | 10 |
| Direct labor-hours | 20 | 50 |

**Required:**  
 Calculate the total amount of overhead applied to Job K369 in both departments. **(Do not round intermediate calculations.)**

**51)** Bulla Corporation has two production departments, Machining and Customizing. The company uses a job-order costing system and computes a predetermined overhead rate in each production department. The Machining Department’s predetermined overhead rate is based on machine-hours and the Customizing Department’s predetermined overhead rate is based on direct labor-hours. At the beginning of the current year, the company had made the following estimates:

|  |  |  |
| --- | --- | --- |
|  | **Machining** | **Customizing** |
| **Machine-hours** | 14,000 | 20,000 |
| **Direct labor-hours** | 4,000 | 5,000 |
| **Total fixed manufacturing overhead cost** | $65,800 | $90,000 |
| **Variable manufacturing overhead per machine-hour** | $ 1.00 |  |
| **Variable manufacturing overhead per direct labor-hour** |  | $ 2.00 |

During the current month the company started and finished Job K369. The following data were recorded for this job:

|  |  |  |
| --- | --- | --- |
| **Job K369:** | **Machining** | **Customizing** |
| Machine-hours | 60 | 30 |
| Direct labor-hours | 30 | 60 |

**Required:**  
 Calculate the total amount of overhead applied to Job K369 in both departments. **(Do not round intermediate calculations.)**

**52)** Bierce Corporation has two manufacturing departments--Machining and Finishing. The company used the following data at the beginning of the year to calculate predetermined overhead rates:

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Machining** | **Finishing** | **Total** |
| **Estimated total machine-hours (MHs)** | 4,000 | 1,000 | 5,000 |
| **Estimated total fixed manufacturing overhead cost** | $20,000 | $2,100 | $22,100 |
| **Estimated variable manufacturing overhead cost per machine-hour** | $ 1.40 | $ 2.80 |  |

During the most recent month, the company started and completed two jobs--Job B and Job K. There were no beginning inventories. Data concerning those two jobs follow:

|  |  |  |
| --- | --- | --- |
|  | **Job B** | **Job K** |
| **Direct materials** | $ 12,800 | $ 7,900 |
| **Direct labor cost** | $ 24,700 | $ 6,400 |
| **Machining machine-hours** | 2,700 | 1,300 |
| **Finishing machine-hours** | 400 | 600 |

**Required:**  
 a. Assume that the company uses a plantwide predetermined manufacturing overhead rate based on machine-hours. Calculate that overhead rate. **(Round your answer to 2 decimal places.)**  
 b. Assume that the company uses a plantwide predetermined manufacturing overhead rate based on machine-hours. Calculate the amount of manufacturing overhead applied to Job B. **(Do not round intermediate calculations.)**  
 c. Assume that the company uses a plantwide predetermined manufacturing overhead rate based on machine-hours. Calculate the amount of manufacturing overhead applied to Job K. **(Do not round intermediate calculations. Round your answer to the nearest whole dollar amount.)**  
 d. Assume that the company uses departmental predetermined overhead rates with machine-hours as the allocation base in both departments. What is the departmental predetermined overhead rate in the Machining department? **(Round your answer to 2 decimal places.)**  
 e. Assume that the company uses departmental predetermined overhead rates with machine-hours as the allocation base in both production departments. What is the departmental predetermined overhead rate in the Finishing department? **(Round your answer to 2 decimal places.)**  
 f. Assume that the company uses departmental predetermined overhead rates with machine-hours as the allocation base in both production departments. How much manufacturing overhead will be applied to Job B? **(Do not round intermediate calculations.)**  
 g. Assume that the company uses departmental predetermined overhead rates with machine-hours as the allocation base in both production departments. How much manufacturing overhead will be applied to Job K? **(Do not round intermediate calculations.)**

**53)** Bierce Corporation has two manufacturing departments--Machining and Finishing. The company used the following data at the beginning of the year to calculate predetermined overhead rates:

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Machining** | **Finishing** | **Total** |
| **Estimated total machine-hours (MHs)** | 2,000 | 8,000 | 10,000 |
| **Estimated total fixed manufacturing overhead cost** | $2,400 | $64,000 | $66,400 |
| **Estimated variable manufacturing overhead cost per machine-hour** | $ 2.10 | $ 6.00 |  |

During the most recent month, the company started and completed two jobs--Job B and Job K. There were no beginning inventories. Data concerning those two jobs follow:

|  |  |  |
| --- | --- | --- |
|  | **Job B** | **Job K** |
| **Direct materials** | $ 15,700 | $ 8,000 |
| **Direct labor cost** | $ 22,500 | $ 2,700 |
| **Machining machine-hours** | 1,300 | 700 |
| **Finishing machine-hours** | 600 | 7,400 |

**Required:**  
 a. Assume that the company uses a plantwide predetermined manufacturing overhead rate based on machine-hours. Calculate that overhead rate. **(Round your answer to 2 decimal places.)**  
 b. Assume that the company uses a plantwide predetermined manufacturing overhead rate based on machine-hours. Calculate the amount of manufacturing overhead applied to Job B. **(Do not round intermediate calculations.)**  
 c. Assume that the company uses a plantwide predetermined manufacturing overhead rate based on machine-hours. Calculate the amount of manufacturing overhead applied to Job K. **(Do not round intermediate calculations. Round your answer to the nearest whole dollar amount.)**  
 d. Assume that the company uses departmental predetermined overhead rates with machine-hours as the allocation base in both departments. What is the departmental predetermined overhead rate in the Machining department? **(Round your answer to 2 decimal places.)**  
 e. Assume that the company uses departmental predetermined overhead rates with machine-hours as the allocation base in both production departments. What is the departmental predetermined overhead rate in the Finishing department? **(Round your answer to 2 decimal places.)**  
 f. Assume that the company uses departmental predetermined overhead rates with machine-hours as the allocation base in both production departments. How much manufacturing overhead will be applied to Job B? **(Do not round intermediate calculations.)**  
 g. Assume that the company uses departmental predetermined overhead rates with machine-hours as the allocation base in both production departments. How much manufacturing overhead will be applied to Job K? **(Do not round intermediate calculations.)**

**54)** Gercak Corporation has two production departments, Forming and Assembly. The company uses a job-order costing system and computes a predetermined overhead rate in each production department. The Forming Department’s predetermined overhead rate is based on machine-hours and the Assembly Department’s predetermined overhead rate is based on direct labor-hours. At the beginning of the current year, the company had made the following estimates:

|  |  |  |
| --- | --- | --- |
|  | **Forming** | **Assembly** |
| **Machine-hours** | 16,000 | 11,000 |
| **Direct labor-hours** | 2,000 | 7,000 |
| **Total fixed manufacturing overhead cost** | $100,800 | $76,300 |
| **Variable manufacturing overhead per machine-hour** | $ 1.70 |  |
| **Variable manufacturing overhead per direct labor-hour** |  | $ 3.10 |

During the current month the company started and finished Job X560. The following data were recorded for this job:

|  |  |  |
| --- | --- | --- |
| **Job X560** | **Forming** | **Assembly** |
| Machine-hours | 50 | 30 |
| Direct labor-hours | 30 | 40 |

**Required:**  
 a. Calculate the estimated total manufacturing overhead for the Assembly Department.  
 b. Calculate the predetermined overhead rate for the Forming Department.  
 c. Calculate the total amount of overhead applied to Job X560 in both departments.

**55)** Sonneborn Corporation has two manufacturing departments--Molding and Customizing. The company used the following data at the beginning of the year to calculate predetermined overhead rates:

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Molding** | **Customizing** | **Total** |
| **Estimated total machine-hours (MHs)** | 1,000 | 9,000 | 10,000 |
| **Estimated total fixed manufacturing overhead cost** | $5,100 | $23,400 | $28,500 |
| **Estimated variable manufacturing overhead cost per machine-hour** | $ 1.50 | $ 2.50 |  |

During the most recent month, the company started and completed two jobs--Job D and Job G. There were no beginning inventories. Data concerning those two jobs follow:

|  |  |  |
| --- | --- | --- |
|  | **Job D** | **Job G** |
| **Direct materials** | $ 14,700 | $ 9,100 |
| **Direct labor cost** | $ 18,800 | $ 8,300 |
| **Molding machine-hours** | 700 | 300 |
| **Customizing machine-hours** | 3,600 | 5,400 |

**Required:**  
 a. Assume that the company uses a *plantwide* predetermined manufacturing overhead rate based on machine-hours. Calculate the amount of manufacturing overhead applied to Job D.  
 b. Assume that the company uses a *plantwide* predetermined manufacturing overhead rate based on machine-hours. Calculate the amount of manufacturing overhead applied to Job G.  
 c. Assume that the company uses *departmental* predetermined overhead rates with machine-hours as the allocation base in both production departments. How much manufacturing overhead will be applied to Job D?  
 d. Assume that the company uses *departmental* predetermined overhead rates with machine-hours as the allocation base in both production departments. How much manufacturing overhead will be applied to Job G?

**56)** Rocher Corporation has two production departments, Casting and Finishing. The company uses a job-order costing system and computes a predetermined overhead rate in each production department. The Casting Department’s predetermined overhead rate is based on machine-hours and the Finishing Department’s predetermined overhead rate is based on direct labor-hours. At the beginning of the current year, the company had made the following estimates:

|  |  |  |
| --- | --- | --- |
|  | **Casting** | **Finishing** |
| **Machine-hours** | 17,000 | 13,000 |
| **Direct labor-hours** | 4,000 | 6,000 |
| **Total fixed manufacturing overhead cost** | $124,100 | $52,200 |
| **Variable manufacturing overhead per machine-hour** | $ 2.30 |  |
| **Variable manufacturing overhead per direct labor-hour** |  | $ 4.00 |

During the current month the company started and finished Job A394. The following data were recorded for this job:

|  |  |  |
| --- | --- | --- |
| **Job A394** | **Casting** | **Finishing** |
| Machine-hours | 80 | 20 |
| Direct labor-hours | 10 | 40 |

**Required:**  
 a. Calculate the estimated total manufacturing overhead for the Casting Department.  
 b. Calculate the predetermined overhead rate for the Casting Department.  
 c. Calculate the amount of overhead applied in the Casting Department to Job A394.

**57)** Marius Corporation has two production departments, Casting and Finishing. The company uses a job-order costing system and computes a predetermined overhead rate in each production department. The Casting Department’s predetermined overhead rate is based on machine-hours and the Finishing Department’s predetermined overhead rate is based on direct labor-hours. At the beginning of the current year, the company had made the following estimates:

|  |  |  |
| --- | --- | --- |
|  | **Casting** | **Finishing** |
| **Machine-hours** | 18,000 | 12,000 |
| **Direct labor-hours** | 4,000 | 6,000 |
| **Total fixed manufacturing overhead cost** | $118,800 | $57,600 |
| **Variable manufacturing overhead per machine-hour** | $ 2.20 |  |
| **Variable manufacturing overhead per direct labor-hour** |  | $ 4.00 |

During the current month the company started and finished Job K895. The following data were recorded for this job:

|  |  |  |
| --- | --- | --- |
| **Job K895:** | **Casting** | **Finishing** |
| Machine-hours | 70 | 30 |
| Direct labor-hours | 20 | 60 |

**Required:**  
 a. Calculate the estimated total manufacturing overhead for the Finishing Department.  
 b. Calculate the predetermined overhead rate for the Finishing Department.  
 c. Calculate the amount of overhead applied in the Finishing Department to Job K895.

**58)** Madole Corporation has two production departments, Forming and Customizing. The company uses a job-order costing system and computes a predetermined overhead rate in each production department. The Forming Department’s predetermined overhead rate is based on machine-hours and the Customizing Department’s predetermined overhead rate is based on direct labor-hours. At the beginning of the current year, the company had made the following estimates:

|  |  |  |
| --- | --- | --- |
|  | **Forming** | **Customizing** |
| **Machine-hours** | 19,000 | 12,000 |
| **Direct labor-hours** | 4,000 | 8,000 |
| **Total fixed manufacturing overhead cost** | $119,700 | $67,200 |
| **Variable manufacturing overhead per machine-hour** | $ 2.00 |  |
| **Variable manufacturing overhead per direct labor-hour** |  | $ 4.20 |

During the current month the company started and finished Job K973. The following data were recorded for this job:

|  |  |  |
| --- | --- | --- |
| **Job K973:** | **Forming** | **Customizing** |
| Machine-hours | 50 | 20 |
| Direct labor-hours | 20 | 50 |

**Required:**  
 a. Calculate the estimated total manufacturing overhead for the Forming Department.  
 b. Calculate the predetermined overhead rate for the Customizing Department.  
 c. Calculate the total overhead applied to Job K973 in both departments.

**59)** Sullen Corporation uses a predetermined overhead rate base on machine-hours that it recalculates at the beginning of each year. The company has provided the following data for the most recent year.

|  |  |
| --- | --- |
| **Predetermined overhead rate** | $ 14.30 per machine-hour |
| **Estimated total fixed manufacturing overhead from the beginning of the year** | $572,000 |
| **Estimated activity level from the beginning of the year** | 40,000 machine-hours |
| **Actual total fixed manufacturing overhead** | $605,000 |
| **Actual activity level** | 36,700 machine-hours |

**Required:**  
 Determine the amount of manufacturing overhead that would have been applied to all jobs during the period.

**60)** Levi Corporation uses a predetermined overhead rate of $23.40 per direct labor-hour. This predetermined overhead rate was based on estimated total fixed manufacturing overhead of $702,000 and 30,000 direct labor-hours for the period. The company incurred actual total fixed manufacturing overhead of $738,000 and 27,100 total direct labor-hours during the period.  
 **Required:**  
 Determine the amount of manufacturing overhead that would have been applied to all jobs during the period.

**Answer Key**Test name: ch 2i

1) Estimated total manufacturing overhead cost = Estimated total fixed manufacturing overhead cost + (Estimated variable overhead cost per unit of the allocation base × Estimated total amount of the allocation base) = $144,000 + ($4.00 per machine-hour × 30,000 machine-hours) = $144,000 + $120,000 = $264,000

2) a. Estimated total manufacturing overhead cost = Estimated total fixed manufacturing overhead cost + (Estimated variable overhead cost per unit of the allocation base × Estimated total amount of the allocation base) = $287,000 + ($3.50 per machine-hour × 70,000 machine-hours) = $287,000 + $245,000 = $532,000  
 b. Predetermined overhead rate = Estimated total manufacturing overhead cost ÷ Estimated total amount of the allocation base = $532,000 ÷ 70,000 machine-hours = $7.60 per machine-hour

3) Estimated total manufacturing overhead = $1,328,000 + ($8.60 per labor-hour × 80,000 labor-hours) = $2,016,000  
 Predetermined overhead rate = $2,016,000 ÷ 80,000 labor-hours = $25.20 per labor-hour

4) Estimated total manufacturing overhead cost = Estimated total fixed manufacturing overhead cost + (Estimated variable overhead cost per unit of the allocation base × Estimated total amount of the allocation base) = $390,000 + ($3.60 per machine-hour × 50,000 machine-hours) = $390,000 + $180,000 = $570,000  
 Predetermined overhead rate = Estimated total manufacturing overhead cost ÷ Estimated total amount of the allocation base = $570,000 ÷ 50,000 machine-hours = $11.40 per machine-hour

5) Estimated total manufacturing overhead cost = Estimated total fixed manufacturing overhead cost + (Estimated variable overhead cost per unit of the allocation base × Estimated total amount of the allocation base) = $248,000 + ($3.80 per machine-hour × 40,000 machine-hours) = $248,000 + $152,000 = $400,000  
 Predetermined overhead rate = Estimated total manufacturing overhead cost ÷ Estimated total amount of the allocation base = $400,000 ÷ 40,000 machine-hours = $10.00 per machine-hour

6) Estimated total manufacturing overhead cost = Estimated total fixed manufacturing overhead cost + (Estimated variable overhead cost per unit of the allocation base × Estimated total amount of the allocation base) = $152,000 + ($3.10 per machine-hour × 40,000 machine-hours) = $152,000 + $124,000 = $276,000

7) a. Estimated total manufacturing overhead cost = Estimated total fixed manufacturing overhead cost + (Estimated variable overhead cost per unit of the allocation base × Estimated total amount of the allocation base) = $31,000 + ($2.50 per direct labor-hour × 10,000 direct labor-hours) = $31,000 + $25,000 = $56,000  
 b. Predetermined overhead rate = Estimated total manufacturing overhead cost ÷ Estimated total amount of the allocation base = $56,000 ÷ 10,000 direct labor-hours = $5.60 per direct labor-hour

8) Estimated total manufacturing overhead cost = Estimated total fixed manufacturing overhead cost + (Estimated variable overhead cost per unit of the allocation base × Estimated total amount of the allocation base) = $85,400 + ($4.40 per direct labor-hour × 61,000 direct labor-hours) = $85,400 + $268,400 = $353,800  
 Predetermined overhead rate = Estimated total manufacturing overhead cost ÷ Estimated total amount of the allocation base = $353,800 ÷ 61,000 direct labor-hours = $5.80 per direct labor-hour  
 Overhead applied to a particular job = Predetermined overhead rate × Amount of the allocation base incurred by the job = $5.80 per direct labor-hour × 160 direct labor-hours = $928

9) Estimated total manufacturing overhead cost = Estimated total fixed manufacturing overhead cost + (Estimated variable overhead cost per unit of the allocation base × Estimated total amount of the allocation base) = $160,000 + ($2.30 per direct labor-hour × 80,000 direct labor-hours) = $160,000 + $184,000 = $344,000  
 Predetermined overhead rate = Estimated total manufacturing overhead cost ÷ Estimated total amount of the allocation base = $344,000 ÷ 80,000 direct labor-hours = $4.30 per direct labor-hour  
 Overhead applied to a particular job = Predetermined overhead rate × Amount of the allocation base incurred by the job = $4.30 per direct labor-hour × 120 direct labor-hours = $516

10)

|  |  |
| --- | --- |
| **Estimated total fixed manufacturing overhead (a)** | $358,000 |
| **Estimated activity level (b)** | 20,000 machine-hours |
| **Predetermined overhead rate (a) ÷ (b)** | $ 17.90 per machine-hour |
| **Actual activity level** | 18,300 machine-hours |
| **Manufacturing overhead applied** | $327,570 |

11) a. Estimated total manufacturing overhead cost = Estimated total fixed manufacturing overhead cost + (Estimated variable overhead cost per unit of the allocation base × Estimated total amount of the allocation base) = $96,000 + ($3.30 per direct labor-hour × 60,000 direct labor-hours) = $96,000 + $198,000 = $294,000  
 b. Predetermined overhead rate = Estimated total manufacturing overhead cost ÷ Estimated total amount of the allocation base = $294,000 ÷ 60,000 direct labor-hours = $4.90 per direct labor-hour  
 c. Overhead applied to a particular job = Predetermined overhead rate × Amount of the allocation base incurred by the job = $4.90 per direct labor-hour × 100 direct labor-hours = $490

12) Estimated total manufacturing overhead cost = Estimated total fixed manufacturing overhead cost + (Estimated variable overhead cost per unit of the allocation base × Estimated total amount of the allocation base) = $50,000 + ($3.90 per machine-hour × 10,000 machine-hours) = $50,000 + $39,000 = $89,000  
 Predetermined overhead rate = Estimated total manufacturing overhead cost ÷ Estimated total amount of the allocation base = $89,000 ÷ 10,000 machine-hours = $8.90 per machine-hour  
 Overhead applied to a particular job = Predetermined overhead rate × Amount of the allocation base incurred by the job = $8.90 per machine-hour × 160 machine-hours = $1,424

13) a. Estimated total manufacturing overhead cost = Estimated total fixed manufacturing overhead cost + (Estimated variable overhead cost per unit of the allocation base × Estimated total amount of the allocation base) = $342,000 + ($2.40 per direct labor-hour × 60,000 direct labor-hours) = $342,000 + $144,000 = $486,000  
 b. Predetermined overhead rate = Estimated total manufacturing overhead cost ÷ Estimated total amount of the allocation base = $486,000 ÷ 60,000 direct labor-hours = $8.10 per direct labor-hour  
 c. Overhead applied to a particular job = Predetermined overhead rate × Amount of the allocation base incurred by the job = $8.10 per direct labor-hour × 90 direct labor-hours = $729

14)

|  |  |
| --- | --- |
| **Estimated total fixed manufacturing overhead (a)** | $ 114,000 |
| **Estimated activity level (b)** | 10,000 machine-hours |
| **Predetermined overhead rate (a) ÷ (b)** | $ 11.40 per machine-hour |
| **Actual activity level** | 9,400 machine-hours |
| **Manufacturing overhead applied** | $ 107,160 |

15) The first step is to calculate the estimated total overhead costs in the two departments.  
 Casting

|  |  |
| --- | --- |
| **Estimated fixed manufacturing overhead** | $11,600 |
| **Estimated variable manufacturing overhead ($1.90 per machine-hour × 2,000 machine-hours)** | 3,800 |
| **Estimated total manufacturing overhead cost** | $15,400 |

Customizing

|  |  |
| --- | --- |
| **Estimated fixed manufacturing overhead** | $ 7,200 |
| **Estimated variable manufacturing overhead ($2.80 per machine-hour × 3,000 machine-hours)** | 8,400 |
| **Estimated total manufacturing overhead cost** | $15,600 |

The second step is to combine the estimated manufacturing overhead costs in the two departments ($15,400 + $15,600 = $31,000) to calculate the plantwide predetermined overhead rate as follow:

|  |  |
| --- | --- |
| **Estimated total manufacturing overhead cost** | $31,000 |
| **Estimated total machine hours** | 5,000 machine-hours |
| **Predetermined overhead rate** | $ 6.20 per machine-hour |

The overhead applied to Job F is calculated as follows:  
 Overhead applied to a particular job = Predetermined overhead rate × Machine-hours incurred by the job  
 = $6.20 per machine-hour × (1,400 machine-hours + 1,200 machine-hours)  
 = $6.20 per machine-hour × (2,600 machine-hours)  
 = $16,120  
 The overhead applied to Job L is calculated as follows:  
 Overhead applied to a particular job = Predetermined overhead rate × Machine-hours incurred by the job  
 = $6.20 per machine-hour × (600 machine-hours + 1,800 machine-hours)  
 = $6.20 per machine-hour × (2,400 machine-hours)  
 = $14,880  
 Job F’s manufacturing cost:

|  |  |
| --- | --- |
| **Direct materials** | $ 10,600 |
| **Direct labor cost** | 24,400 |
| **Manufacturing overhead applied** | 16,120 |
| **Total manufacturing cost** | $ 51,120 |

Job L’s manufacturing cost:

|  |  |
| --- | --- |
| **Direct materials** | $ 6,600 |
| **Direct labor cost** | 8,600 |
| **Manufacturing overhead applied** | 14,880 |
| **Total manufacturing cost** | $30,080 |

The selling price for Job F:

|  |  |
| --- | --- |
| **Total manufacturing cost** | $ 51,120 |
| **Markup (50%)** | 25,560 |
| **Selling price** | $ 76,680 |

The selling price for Job L:

|  |  |
| --- | --- |
| **Total manufacturing cost** | $ 30,080 |
| **Markup (50%)** | 15,040 |
| **Selling price** | $ 45,120 |

16) a. Estimated total manufacturing overhead cost = Estimated total fixed manufacturing overhead cost + (Estimated variable overhead cost per unit of the allocation base × Estimated total amount of the allocation base) = $460,000 + ($3.10 per machine-hour × 50,000 machine-hours) = $460,000 + $155,000 = $615,000  
 Predetermined overhead rate = Estimated total manufacturing overhead cost ÷ Estimated total amount of the allocation base = $615,000 ÷ 50,000 machine-hours = $12.30 per machine-hour  
 Overhead applied to a particular job = Predetermined overhead rate × Amount of the allocation base incurred by the job = $12.30 per machine-hour × 150 machine-hours = $1,845  
 b.

|  |  |
| --- | --- |
| **Direct materials** | $ 740 |
| **Direct labor** | 6,000 |
| **Manufacturing overhead applied** | 1,845 |
| **Total cost of Job P647** | $8,585 |

c.

|  |  |
| --- | --- |
| **Total cost of Job P647 (a)** | $ 8,585 |
| **Number of units (b)** | 50 |
| **Unit product cost (a) ÷ (b)** | $171.70 |

17) Estimated total manufacturing overhead cost = Estimated total fixed manufacturing overhead cost + (Estimated variable overhead cost per unit of the allocation base × Estimated total amount of the allocation base) = $273,000 + ($3.00 per direct labor-hour × 35,000 direct labor-hours) = $273,000 + $105,000 = $378,000  
 Predetermined overhead rate = Estimated total manufacturing overhead cost ÷ Estimated total amount of the allocation base = $378,000 ÷ 35,000 direct labor-hours = $10.80 per direct labor-hour  
 Overhead applied to a particular job = Predetermined overhead rate × Amount of the allocation base incurred by the job = $10.80 per direct labor-hour × 250 direct labor-hours = $2,700

|  |  |
| --- | --- |
| **Direct materials** | $ 500 |
| **Direct labor** | 6,900 |
| **Manufacturing overhead applied** | 2,700 |
| **Total cost of Job X941** | $10,100 |

|  |  |
| --- | --- |
| **Total cost of Job X941 (a)** | $ 10,100 |
| **Number of units (b)** | 50 |
| **Unit product cost (a) ÷ (b)** | $202.00 |

|  |  |
| --- | --- |
| **Unit product cost for Job X941** | $ 202.00 |
| **Markup (20% × $202.00)** | 40.40 |
| **Selling price** | $ 242.40 |

18) Estimated total manufacturing overhead cost = Estimated total fixed manufacturing overhead cost + (Estimated variable overhead cost per unit of the allocation base × Estimated total amount of the allocation base) = $182,000 + ($2.50 per direct labor-hour × 20,000 direct labor-hours) = $182,000 + $50,000 = $232,000  
 Predetermined overhead rate = Estimated total manufacturing overhead cost ÷ Estimated total amount of the allocation base = $232,000 ÷ 20,000 direct labor-hours = $11.60 per direct labor-hour  
 Overhead applied to a particular job = Predetermined overhead rate × Amount of the allocation base incurred by the job = $11.60 per direct labor-hour × 250 direct labor-hours = $2,900

|  |  |
| --- | --- |
| **Direct materials** | $ 740 |
| **Direct labor** | 6,500 |
| **Manufacturing overhead applied** | 2,900 |
| **Total cost of Job X941** | $10,140 |

|  |  |
| --- | --- |
| **Total cost of Job X941 (a)** | $ 10,140 |
| **Number of units (b)** | 50 |
| **Unit product cost (a) ÷ (b)** | $ 202.80 |

|  |  |
| --- | --- |
| **Unit product cost for Job X941** | $ 202.80 |
| **Markup (20% × $202.80)** | 40.56 |
| **Selling price** | $ 243.36 |

19) Estimated total manufacturing overhead cost = Estimated total fixed manufacturing overhead cost + (Estimated variable overhead cost per unit of the allocation base × Estimated total amount of the allocation base) = $630,000 + ($3.40 per machine-hour × 70,000 machine-hours) = $630,000 + $238,000 = $868,000  
 Predetermined overhead rate = Estimated total manufacturing overhead cost ÷ Estimated total amount of the allocation base = $868,000 ÷ 70,000 machine-hours = $12.40 per machine-hour  
 Overhead applied to a particular job = Predetermined overhead rate × Amount of the allocation base incurred by the job = $12.40 per machine-hour × 200 machine-hours = $2,480

|  |  |
| --- | --- |
| **Direct materials** | $ 670 |
| **Direct labor** | 7,800 |
| **Manufacturing overhead applied** | 2,480 |
| **Total cost of Job X159** | $10,950 |

20) a. Estimated total manufacturing overhead cost = Estimated total fixed manufacturing overhead cost + (Estimated variable overhead cost per unit of the allocation base × Estimated total amount of the allocation base) = $156,000 + ($2.20 per machine-hour × 40,000 machine-hours) = $156,000 + $88,000 = $244,000  
 Predetermined overhead rate = Estimated total manufacturing overhead cost ÷ Estimated total amount of the allocation base = $244,000 ÷ 40,000 machine-hours = $6.10 per machine-hour  
 Overhead applied to a particular job = Predetermined overhead rate × Amount of the allocation base incurred by the job = $6.10 per machine-hour × 60 machine-hours = $366

|  |  |
| --- | --- |
| **Direct materials** | $ 725 |
| **Direct labor** | 1,680 |
| **Manufacturing overhead applied** | 366 |
| **Total cost of Job M242** | $2,771 |

b.

|  |  |
| --- | --- |
| **Total cost of Job M242 (a)** | $ 2,771 |
| **Number of units (b)** | 20 |
| **Unit product cost (a) ÷ (b)** | $138.55 |

21) a. Estimated total manufacturing overhead cost = Estimated total fixed manufacturing overhead cost + (Estimated variable overhead cost per unit of the allocation base × Estimated total amount of the allocation base) = $71,000 + ($2.50 per machine-hour × 10,000 machine-hours) = $71,000 + $25,000 = $96,000  
 Predetermined overhead rate = Estimated total manufacturing overhead cost ÷ Estimated total amount of the allocation base = $96,000 ÷ 10,000 machine-hours = $9.60 per machine-hour  
 b. Overhead applied to a particular job = Predetermined overhead rate × Amount of the allocation base incurred by the job = $9.60 per machine-hour × 60 machine-hours = $576  
 c.

|  |  |
| --- | --- |
| **Direct materials** | $ 870 |
| **Direct labor** | 2,400 |
| **Manufacturing overhead applied** | 576 |
| **Total cost of Job P512** | $3,846 |

d.

|  |  |
| --- | --- |
| **Total cost of Job P512 (a)** | $ 3,846 |
| **Number of units (b)** | 30 |
| **Unit product cost (a) ÷ (b)** | $128.20 |

22) a. Estimated total manufacturing overhead cost = Estimated total fixed manufacturing overhead cost + (Estimated variable overhead cost per unit of the allocation base × Estimated total amount of the allocation base) = $136,000 + ($2.90 per machine-hour × 40,000 machine-hours) = $136,000 + $116,000 = $252,000  
 b. Predetermined overhead rate = Estimated total manufacturing overhead cost ÷ Estimated total amount of the allocation base = $252,000 ÷ 40,000 machine-hours = $6.30 per machine-hour  
 c. Overhead applied to a particular job = Predetermined overhead rate × Amount of the allocation base incurred by the job = $6.30 per machine-hour × 300 machine-hours = $1,890  
 d.

|  |  |
| --- | --- |
| **Direct materials** | $ 585 |
| **Direct labor** | 7,200 |
| **Manufacturing overhead applied** | 1,890 |
| **Total cost of Job A290** | $9,675 |

23) Estimated total manufacturing overhead cost = Estimated total fixed manufacturing overhead cost + (Estimated variable overhead cost per unit of the allocation base × Estimated total amount of the allocation base) = $342,000 + ($2.70 per machine-hour × 60,000 machine-hours) = $342,000 + $162,000 = $504,000  
 Predetermined overhead rate = Estimated total manufacturing overhead cost ÷ Estimated total amount of the allocation base = $504,000 ÷ 60,000 machine-hours = $8.40 per machine-hour  
 Overhead applied to a particular job = Predetermined overhead rate × Amount of the allocation base incurred by the job = $8.40 per machine-hour × 140 machine-hours = $1,176

|  |  |
| --- | --- |
| **Direct materials** | $ 945 |
| **Direct labor** | 2,800 |
| **Manufacturing overhead applied** | 1,176 |
| **Total cost of Job M238** | $4,921 |

24) a. Estimated total manufacturing overhead cost = Estimated total fixed manufacturing overhead cost + (Estimated variable overhead cost per unit of the allocation base × Estimated total amount of the allocation base) = $96,000 + ($3.60 per direct labor-hour × 10,000 direct labor-hours) = $96,000 + $36,000 = $132,000  
 Predetermined overhead rate = Estimated total manufacturing overhead cost ÷ Estimated total amount of the allocation base = $132,000 ÷ 10,000 direct labor-hours = $13.20 per direct labor-hour  
 Overhead applied to a particular job = Predetermined overhead rate × Amount of the allocation base incurred by the job = $13.20 per direct labor-hour × 200 direct labor-hours = $2,640  
 b.

|  |  |
| --- | --- |
| **Direct materials** | $ 540 |
| **Direct labor** | 6,400 |
| **Manufacturing overhead applied** | 2,640 |
| **Total cost of Job A735** | $9,580 |

c.

|  |  |
| --- | --- |
| **Total cost of Job A735 (a)** | $ 9,580 |
| **Number of units (b)** | 40 |
| **Unit product cost (a) ÷ (b)** | $ 239.50 |

25) a. The first step is to calculate the estimated total overhead costs in the two departments.  
 Molding

|  |  |
| --- | --- |
| **Estimated fixed manufacturing overhead** | $ 21,000 |
| **Estimated variable manufacturing overhead ($1.50 per MH × 5,000 MHs)** | 7,500 |
| **Estimated total manufacturing overhead cost** | $ 28,500 |

Customizing

|  |  |
| --- | --- |
| **Estimated fixed manufacturing overhead** | $ 14,000 |
| **Estimated variable manufacturing overhead ($2.40 per MH × 5,000 MHs)** | 12,000 |
| **Estimated total manufacturing overhead cost** | $ 26,000 |

The second step is to combine the estimated manufacturing overhead costs in the two departments ($28,500 + $26,000 = $54,500) to calculate the *plantwide* predetermined overhead rate as follow:

|  |  |  |
| --- | --- | --- |
| **Estimated total manufacturing overhead cost** | $54,500 |  |
| **Estimated total machine hours** | 10,000 | MHs |
| **Predetermined overhead rate** | $5.45 | per MH |

b. The overhead applied to Job F is calculated as follows:  
 Overhead applied to a particular job = Predetermined overhead rate × Machine-hours incurred by the job  
 = $5.45 per MH × (3,400 MHs + 2,000 MHs)  
 = $5.45 per MH × (5,400 MHs)  
 = $29,430  
 c. The overhead applied to Job K is calculated as follows:  
 Overhead applied to a particular job = Predetermined overhead rate × Machine-hours incurred by the job  
 = $5.45 per MH × (1,600 MHs + 3,000 MHs)  
 = $5.45 per MH × (4,600 MHs)  
 = $25,070  
 d. Job F’s manufacturing cost:

|  |  |
| --- | --- |
| **Direct materials** | $ 12,700 |
| **Direct labor cost** | 19,100 |
| **Manufacturing overhead applied** | 29,430 |
| **Total manufacturing cost** | $ 61,230 |

e. Job K’s manufacturing cost:

|  |  |
| --- | --- |
| **Direct materials** | $ 6,400 |
| **Direct labor cost** | 7,900 |
| **Manufacturing overhead applied** | 25,070 |
| **Total manufacturing cost** | $39,370 |

f. The selling price for Job F:

|  |  |
| --- | --- |
| **Total manufacturing cost** | $ 61,230 |
| **Markup (30%)** | 18,369 |
| **Selling price** | $ 79,599 |

g. The selling price for Job K:

|  |  |
| --- | --- |
| **Total manufacturing cost** | $ 39,370 |
| **Markup (30%)** | 11,811 |
| **Selling price** | $ 51,181 |

h.

|  |  |
| --- | --- |
| **Total manufacturing cost assigned to Job F** | $ 61,230 |
| **Total manufacturing cost assigned to Job K** | 39,370 |
| **Cost of goods sold** | $100,600 |

26) a. Estimated total manufacturing overhead cost = Estimated total fixed manufacturing overhead cost + (Estimated variable overhead cost per unit of the allocation base × Estimated total amount of the allocation base) = $308,000 + ($2.10 per machine-hour × 70,000 machine-hours) = $308,000 + $147,000 = $455,000  
 Predetermined overhead rate = Estimated total manufacturing overhead cost ÷ Estimated total amount of the allocation base = $455,000 ÷ 70,000 machine-hours = $6.50 per machine-hour  
 Overhead applied to a particular job = Predetermined overhead rate × Amount of the allocation base incurred by the job = $6.50 per machine-hour × 100 machine-hours = $650

|  |  |
| --- | --- |
| **Direct materials** | $ 555 |
| **Direct labor** | 2,700 |
| **Manufacturing overhead applied** | 650 |
| **Total cost of Job M556** | $3,905 |

b.

|  |  |
| --- | --- |
| **Total cost of Job M556 (a)** | $ 3,905 |
| **Number of units (b)** | 50 |
| **Unit product cost (a) ÷ (b)** | $ 78.10 |

27) a.  
 The first step is to calculate the estimated total overhead costs in the two departments.  
 Casting

|  |  |
| --- | --- |
| **Estimated fixed manufacturing overhead** | $ 18,000 |
| **Estimated variable manufacturing overhead ($1.50 per machine-hour × 4,000 machine-hours)** | 6,000 |
| **Estimated total manufacturing overhead cost** | $ 24,000 |

Finishing

|  |  |
| --- | --- |
| **Estimated fixed manufacturing overhead** | $ 18,000 |
| **Estimated variable manufacturing overhead ($2.30 per machine-hour × 6,000 machine-hours)** | 13,800 |
| **Estimated total manufacturing overhead cost** | $ 31,800 |

The second step is to combine the estimated manufacturing overhead costs in the two departments ($24,000 + $31,800 = $55,800) to calculate the plantwide predetermined overhead rate as follow:

|  |  |
| --- | --- |
| **Estimated total manufacturing overhead cost** | $55,800 |
| **Estimated total machine hours** | 10,000 machine-hours |
| **Predetermined overhead rate** | $ 5.58 per machine-hour |

The overhead applied to Job D is calculated as follows:  
 Overhead applied to a particular job = Predetermined overhead rate × Machine-hours incurred by the job  
 = $5.58 per machine-hour × (2,700 machine-hours + 2,400 machine-hours)  
 = $5.58 per machine-hour × (5,100 machine-hours)  
 = $28,458  
 Job D’s manufacturing cost:

|  |  |
| --- | --- |
| **Direct materials** | $ 14,300 |
| **Direct labor cost** | 21,700 |
| **Manufacturing overhead applied** | 28,458 |
| **Total manufacturing cost** | $ 64,458 |

b.  
 The overhead applied to Job J is calculated as follows:  
 Overhead applied to a particular job = Predetermined overhead rate × Machine-hours incurred by the job  
 = $5.58 per machine-hour × (1,300 machine-hours + 3,600 machine-hours)  
 = $5.58 per machine-hour × (4,900 machine-hours)  
 = $27,342  
 Job J’s manufacturing cost:

|  |  |
| --- | --- |
| **Direct materials** | $ 6,800 |
| **Direct labor cost** | 8,800 |
| **Manufacturing overhead applied** | 27,342 |
| **Total manufacturing cost** | $42,942 |

28) a. Estimated total manufacturing overhead cost = Estimated total fixed manufacturing overhead cost + (Estimated variable overhead cost per unit of the allocation base × Estimated total amount of the allocation base) = $130,000 + ($3.00 per machine-hour × 20,000 machine-hours) = $130,000 + $60,000 = $190,000  
 Predetermined overhead rate = Estimated total manufacturing overhead cost ÷ Estimated total amount of the allocation base = $190,000 ÷ 20,000 machine-hours = $9.50 per machine-hour  
 b. Overhead applied to a particular job = Predetermined overhead rate × Amount of the allocation base incurred by the job = $9.50 per machine-hour × 30 machine-hours = $285  
 c.

|  |  |
| --- | --- |
| **Direct materials** | $ 775 |
| **Direct labor** | 1,170 |
| **Manufacturing overhead applied** | 285 |
| **Total cost of Job K789** | $2,230 |

d.

|  |  |
| --- | --- |
| **Total cost of Job K789 (a)** | $ 2,230 |
| **Number of units (b)** | 10 |
| **Unit product cost (a) ÷ (b)** | $223.00 |

29) a. Estimated total manufacturing overhead cost = Estimated total fixed manufacturing overhead cost + (Estimated variable overhead cost per unit of the allocation base × Estimated total amount of the allocation base) = $252,000 + ($2.90 per machine-hour × 30,000 machine-hours) = $252,000 + $87,000 = $339,000  
 b. Predetermined overhead rate = Estimated total manufacturing overhead cost ÷ Estimated total amount of the allocation base = $339,000 ÷ 30,000 machine-hours = $11.30 per machine-hour  
 c. Overhead applied to a particular job = Predetermined overhead rate × Amount of the allocation base incurred by the job = $11.30 per machine-hour × 210 machine-hours = $2,373  
 d.

|  |  |
| --- | --- |
| **Direct materials** | $ 665 |
| **Direct labor** | 6,720 |
| **Manufacturing overhead applied** | 2,373 |
| **Total cost of Job T506** | $9,758 |

e.

|  |  |
| --- | --- |
| **Total cost of Job T506 (a)** | $ 9,758 |
| **Number of units (b)** | 70 |
| **Unit product cost (a) ÷ (b)** | $139.40 |

f.

|  |  |
| --- | --- |
| **Unit product cost for Job T506** | $ 139.40 |
| **Markup (20% × $139.40)** | 27.88 |
| **Selling price** | $ 167.28 |

30) a. Estimated total manufacturing overhead cost = Estimated total fixed manufacturing overhead cost + (Estimated variable overhead cost per unit of the allocation base × Estimated total amount of the allocation base) = $76,000 + ($2.10 per direct labor-hour × 10,000 direct labor-hours) = $76,000 + $21,000 = $97,000  
 b. Predetermined overhead rate = Estimated total manufacturing overhead cost ÷ Estimated total amount of the allocation base = $97,000 ÷ 10,000 direct labor-hours = $9.70 per direct labor-hour  
 c. Overhead applied to a particular job = Predetermined overhead rate × Amount of the allocation base incurred by the job = $9.70 per direct labor-hour × 270 direct labor-hours = $2,619  
 d.

|  |  |
| --- | --- |
| **Direct materials** | $ 590 |
| **Direct labor** | 6,480 |
| **Manufacturing overhead applied** | 2,619 |
| **Total cost of Job X701** | $9,689 |

31) Estimated total manufacturing overhead cost = Estimated total fixed manufacturing overhead cost + (Estimated variable overhead cost per unit of the allocation base × Estimated total amount of the allocation base) = $258,000 + ($2.00 per direct labor-hour × 30,000 direct labor-hours) = $258,000 + $60,000 = $318,000  
 Predetermined overhead rate = Estimated total manufacturing overhead cost ÷ Estimated total amount of the allocation base = $318,000 ÷ 30,000 direct labor-hours = $10.60 per direct labor-hour  
 Overhead applied to a particular job = Predetermined overhead rate × Amount of the allocation base incurred by the job = $10.60 per direct labor-hour × 250 direct labor-hours = $2,650

|  |  |
| --- | --- |
| **Direct materials** | $ 645 |
| **Direct labor** | 10,000 |
| **Manufacturing overhead applied** | 2,650 |
| **Total cost of Job P660** | $13,295 |

|  |  |
| --- | --- |
| **Total cost of Job P660 (a)** | $ 13,295 |
| **Number of units (b)** | 50 |
| **Unit product cost (a) ÷ (b)** | $ 265.90 |

|  |  |
| --- | --- |
| **Unit product cost for Job P660** | $ 265.90 |
| **Markup (20% × $265.90)** | 53.18 |
| **Selling price** | $ 319.08 |

32) a. Estimated total manufacturing overhead cost = Estimated total fixed manufacturing overhead cost + (Estimated variable overhead cost per unit of the allocation base × Estimated total amount of the allocation base) = $215,000 + ($3.80 per machine-hour × 50,000 machine-hours) = $215,000 + $190,000 = $405,000  
 b. Predetermined overhead rate = Estimated total manufacturing overhead cost ÷ Estimated total amount of the allocation base = $405,000 ÷ 50,000 machine-hours = $8.10 per machine-hour  
 c. Overhead applied to a particular job = Predetermined overhead rate × Amount of the allocation base incurred by the job = $8.10 per machine-hour × 240 machine-hours = $1,944  
 d.

|  |  |
| --- | --- |
| **Direct materials** | $ 735 |
| **Direct labor** | 8,880 |
| **Manufacturing overhead applied** | 1,944 |
| **Total cost of Job T496** | $11,559 |

e.

|  |  |
| --- | --- |
| **Total cost of Job T496 (a)** | $ 11,559 |
| **Number of units (b)** | 80 |
| **Unit product cost (a) ÷ (b)** | $ 144.49 |

33) Estimated total manufacturing overhead cost = Estimated total fixed manufacturing overhead cost + (Estimated variable overhead cost per unit of the allocation base × Estimated total amount of the allocation base) = $525,000 + ($2.30 per machine-hour × 70,000 machine-hours) = $525,000 + $161,000 = $686,000  
 Predetermined overhead rate = Estimated total manufacturing overhead cost ÷ Estimated total amount of the allocation base = $686,000 ÷ 70,000 machine-hours = $9.80 per machine-hour  
 Overhead applied to a particular job = Predetermined overhead rate × Amount of the allocation base incurred by the job = $9.80 per machine-hour × 80 machine-hours = $784

|  |  |
| --- | --- |
| **Direct materials** | $ 630 |
| **Direct labor** | 2,080 |
| **Manufacturing overhead applied** | 784 |
| **Total cost of Job P987** | $3,494 |

|  |  |
| --- | --- |
| **Total cost of Job P987 (a)** | $ 3,494 |
| **Number of units (b)** | 20 |
| **Unit product cost (a) ÷ (b)** | $174.70 |

34) Estimated total manufacturing overhead cost = Estimated total fixed manufacturing overhead cost + (Estimated variable overhead cost per unit of the allocation base × Estimated total amount of the allocation base) = $238,000 + ($2.70 per direct labor-hour × 70,000 direct labor-hours) = $238,000 + $189,000 = $427,000  
 Predetermined overhead rate = Estimated total manufacturing overhead cost ÷ Estimated total amount of the allocation base = $427,000 ÷ 70,000 direct labor-hours = $6.10 per direct labor-hour  
 Overhead applied to a particular job = Predetermined overhead rate × Amount of the allocation base incurred by the job = $6.10 per direct labor-hour × 200 direct labor-hours = $1,220

|  |  |
| --- | --- |
| **Direct materials** | $ 630 |
| **Direct labor** | 4,800 |
| **Manufacturing overhead applied** | 1,220 |
| **Total cost of Job P873** | $6,650 |

|  |  |
| --- | --- |
| **Total cost of Job P873 (a)** | $ 6,650 |
| **Number of units (b)** | 50 |
| **Unit product cost (a) ÷ (b)** | $133.00 |

35) a.  
 Estimated total manufacturing overhead cost = Estimated total fixed manufacturing overhead cost + (Estimated variable overhead cost per unit of the allocation base × Estimated total amount of the allocation base) = $88,000 + ($3.20 per machine-hour × 10,000 machine-hours) = $88,000 + $32,000 = $120,000  
 b.  
 Predetermined overhead rate = Estimated total manufacturing overhead cost ÷ Estimated total amount of the allocation base = $120,000 ÷ 10,000 machine-hours = $12.00 per machine-hour  
 c.  
 Overhead applied to a particular job = Predetermined overhead rate × Amount of the allocation base incurred by the job = $12.00 per machine-hour × 150 machine-hours = $1,800  
 d.

|  |  |
| --- | --- |
| **Direct materials** | $ 580 |
| **Direct labor** | 3,900 |
| **Manufacturing overhead applied** | 1,800 |
| **Total cost of Job K418** | $6,280 |

e.

|  |  |
| --- | --- |
| **Total cost of Job K418 (a)** | $ 6,280 |
| **Number of units (b)** | 50 |
| **Unit product cost (a) ÷ (b)** | $125.60 |

f.

|  |  |
| --- | --- |
| **Unit product cost for Job K418** | $ 125.60 |
| **Markup (30% × $125.60)** | 37.68 |
| **Selling price** | $ 163.28 |

36) a. Estimated total manufacturing overhead cost = Estimated total fixed manufacturing overhead cost + (Estimated variable overhead cost per unit of the allocation base × Estimated total amount of the allocation base) = $91,000 + ($2.40 per machine-hour × 10,000 machine-hours) = $91,000 + $24,000 = $115,000  
 b. Predetermined overhead rate = Estimated total manufacturing overhead cost ÷ Estimated total amount of the allocation base = $115,000 ÷ 10,000 machine-hours = $11.50 per machine-hour  
 c. Overhead applied to a particular job = Predetermined overhead rate × Amount of the allocation base incurred by the job = $11.50 per machine-hour × 120 machine-hours = $1,380  
 d.

|  |  |
| --- | --- |
| **Direct materials** | $ 645 |
| **Direct labor** | 3,720 |
| **Manufacturing overhead applied** | 1,380 |
| **Total cost of Job K373** | $5,745 |

e.

|  |  |
| --- | --- |
| **Total cost of Job K373 (a)** | $ 5,745 |
| **Number of units (b)** | 60 |
| **Unit product cost (a) ÷ (b)** | $ 95.75 |

37) Molding Department predetermined overhead rate:

|  |  |
| --- | --- |
| **Estimated fixed manufacturing overhead** | $18,200 |
| **Estimated variable manufacturing overhead ($1.50 per machine-hour × 7,000 machine-hours)** | 10,500 |
| **Estimated total manufacturing overhead cost (a)** | $28,700 |
| **Estimated total machine-hours (b)** | 7,000 machine-hours |
| **Departmental predetermined overhead rate (a) ÷ (b)** | $4.10 per machine-hour |

Customizing Department predetermined overhead rate:

|  |  |
| --- | --- |
| **Estimated fixed manufacturing overhead** | $4,550 |
| **Estimated variable manufacturing overhead ($3.00 per machine-hour × 1,300 machine-hours)** | 3,900 |
| **Estimated total manufacturing overhead cost (a)** | $8,450 |
| **Estimated total machine-hours (b)** | 1,300 machine-hours |
| **Departmental predetermined overhead rate (a) ÷ (b)** | $6.50 per machine-hour |

Manufacturing overhead applied to Job C:

|  |  |
| --- | --- |
| **Molding ($4.10 per machine-hour × 1,250 machine-hours)** | $ 5,125 |
| **Customizing ($6.50 per machine-hour × 800 machine-hours)** | 5,200 |
| **Total manufacturing overhead applied** | $ 10,325 |

Manufacturing overhead applied to Job M:

|  |  |
| --- | --- |
| **Molding ($4.10 per machine-hour × 5,750 machine-hours)** | $ 23,575 |
| **Customizing ($6.50 per machine-hour × 500 machine-hours)** | 3,250 |
| **Total manufacturing overhead applied** | $ 26,825 |

The selling price for Job C would be calculated as follows:

|  |  |
| --- | --- |
| **Direct materials** | $ 13,900 |
| **Direct labor cost** | 21,000 |
| **Manufacturing overhead applied** | 10,325 |
| **Total manufacturing cost** | $ 45,225 |
| **Markup (20%)** | 9,045 |
| **Selling price** | $ 54,270 |

The selling price for Job M would be calculated as follows:

|  |  |
| --- | --- |
| **Direct materials** | $ 7,800 |
| **Direct labor cost** | 7,800 |
| **Manufacturing overhead applied** | 26,825 |
| **Total manufacturing cost** | $42,425 |
| **Markup (20%)** | 8,485 |
| **Selling price** | $50,910 |

38) Molding Department predetermined overhead rate:

|  |  |
| --- | --- |
| **Estimated fixed manufacturing overhead** | $15,900 |
| **Estimated variable manufacturing overhead ($1.20 per machine-hour × 3,000 machine-hours)** | 3,600 |
| **Estimated total manufacturing overhead cost (a)** | $19,500 |
| **Estimated total machine-hours (b)** | 3,000 machine-hours |
| **Departmental predetermined overhead rate (a) ÷ (b)** | $6.50 per machine-hour |

Customizing Department predetermined overhead rate:

|  |  |
| --- | --- |
| **Estimated fixed manufacturing overhead** | $4,200 |
| **Estimated variable manufacturing overhead ($2.40 per machine-hour × 2,000 machine-hours)** | 4,800 |
| **Estimated total manufacturing overhead cost (a)** | $9,000 |
| **Estimated total machine-hours (b)** | 2,000 machine-hours |
| **Departmental predetermined overhead rate (a) ÷ (b)** | $4.50 per machine-hour |

Manufacturing overhead applied to Job C:

|  |  |
| --- | --- |
| **Molding ($6.50 per machine-hour × 2,000 machine-hours)** | $ 13,000 |
| **Customizing ($4.50 per machine-hour × 800 machine-hours)** | 3,600 |
| **Total manufacturing overhead applied** | $ 16,600 |

Manufacturing overhead applied to Job M:

|  |  |
| --- | --- |
| **Molding ($6.50 per machine-hour × 1,000 machine-hours)** | $ 6,500 |
| **Customizing ($4.50 per machine-hour × 1,200 machine-hours)** | 5,400 |
| **Total manufacturing overhead applied** | $11,900 |

The selling price for Job C would be calculated as follows:

|  |  |
| --- | --- |
| **Direct materials** | $ 15,600 |
| **Direct labor cost** | 25,100 |
| **Manufacturing overhead applied** | 16,600 |
| **Total manufacturing cost** | $ 57,300 |
| **Markup (20%)** | 11,460 |
| **Selling price** | $ 68,760 |

The selling price for Job M would be calculated as follows:

|  |  |
| --- | --- |
| **Direct materials** | $ 8,600 |
| **Direct labor cost** | 8,300 |
| **Manufacturing overhead applied** | 11,900 |
| **Total manufacturing cost** | $28,800 |
| **Markup (20%)** | 5,760 |
| **Selling price** | $34,560 |

39) Forming Department:  
 Forming Department overhead cost = Fixed manufacturing overhead cost + (Variable overhead cost per machine-hour × Total machine-hours in the department)  
 = $102,400 + ($1.90 per machine-hour × 16,000 machine-hours)  
 = $102,400 +$30,400 = $132,800  
 Predetermined overhead rate = Estimated total manufacturing overhead cost ÷ Estimated total amount of the = $132,800 ÷ 16,000 machine-hours = $8.30 per machine-hour  
 Overhead applied to a particular job = Predetermined overhead rate × Amount of the allocation base incurred by the job = $8.30 per machine-hour × 50 machine-hours = $415  
 Assembly Department:  
 Assembly Department overhead cost = Fixed manufacturing overhead cost + (Variable overhead cost per direct labor-hour × Total direct labor-hours in the department)  
 = $66,000 + ($3.80 per direct labor-hour × 6,000 direct labor-hours)  
 = $66,000 + $22,800 = $88,800  
 Predetermined overhead rate = Estimated total manufacturing overhead cost ÷ Estimated total amount of the = $88,800 ÷6,000 direct labor-hours = $14.80 per direct labor-hour  
 Overhead applied to a particular job = Predetermined overhead rate × Amount of the allocation base incurred by the job = $14.80 per direct labor-hour × 40 direct labor-hours = $592  
   
 Overhead applied to Job A950

|  |  |
| --- | --- |
| **Forming Department** | $ 415 |
| **Assembly Department** | 592 |
| **Total** | $1,007 |

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Forming** | **Assembly** | **Total** |
| **Direct materials** | $ 665 | $ 415 | $1,080 |
| **Direct labor** | $ 520 | $1,040 | 1,560 |
| **Manufacturing overhead applied** | $ 415 | $ 592 | 1,007 |
| **Total cost of Job A950** |  |  | $3,647 |

|  |  |
| --- | --- |
| **Total cost of Job A950** | $ 3,647.00 |
| **Markup ($3,647.00 × 30%)** | 1,094.10 |
| **Selling price** | $ 4,741.10 |

40) a. Milling Department:  
 Milling Department overhead cost = Fixed manufacturing overhead cost + (Variable overhead cost per machine-hour × Total machine-hours in the department)  
 = $91,800 + ($2.00 per machine-hour × 17,000 machine-hours)  
 = $91,800 +$34,000 = $125,800  
 Predetermined overhead rate = Estimated total manufacturing overhead cost ÷ Estimated total amount of the = $125,800 ÷ 17,000 machine-hours = $7.40 per machine-hour  
 Overhead applied to a particular job = Predetermined overhead rate × Amount of the allocation base incurred by the job = $7.40 per machine-hour × 70 machine-hours = $518  
   
 Finishing Department:  
 Finishing Department overhead cost = Fixed manufacturing overhead cost + (Variable overhead cost per direct labor-hour × Total direct labor-hours in the department)  
 = $64,200 + ($3.40 per direct labor-hour × 6,000 direct labor-hours)  
 = $64,200 + $20,400 = $84,600  
 Predetermined overhead rate = Estimated total manufacturing overhead cost ÷ Estimated total amount of the = $84,600 ÷6,000 direct labor-hours = $14.10 per direct labor-hour  
 Overhead applied to a particular job = Predetermined overhead rate × Amount of the allocation base incurred by the job = $14.10 per direct labor-hour × 40 direct labor-hours = $564  
   
 Overhead applied to Job M565

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| --- | --- |
| **Milling Department** | $ 518 |
| **Finishing Department** | 564 |
| **Total** | $1,082 |

b.

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Milling** | **Finishing** | **Total** |
| **Direct materials** | $ 750 | $ 360 | $ 1,110 |
| **Direct labor** | $ 340 | $1,360 | 1,700 |
| **Manufacturing overhead applied** | $ 518 | $ 564 | 1,082 |
| **Total cost of Job M565** |  |  | $ 3,892 |

c.

|  |  |
| --- | --- |
| **Total cost of Job M565** | $ 3,892.00 |
| **Markup ($3,892.00 × 20%)** | 778.40 |
| **Selling price** | $ 4,670.40 |

41) Forming Department:  
 Forming Department overhead cost = Fixed manufacturing overhead cost + (Variable overhead cost per machine-hour × Total machine-hours in the department)  
 = $91,200 + ($2.10 per machine-hour × 16,000 machine-hours)  
 = $91,200 +$33,600 = $124,800  
 Predetermined overhead rate = Estimated total manufacturing overhead cost ÷ Estimated total amount of the = $124,800 ÷ 16,000 machine-hours = $7.80 per machine-hour  
 Overhead applied to a particular job = Predetermined overhead rate × Amount of the allocation base incurred by the job = $7.80 per machine-hour × 50 machine-hours = $390  
   
 Customizing Department:  
 Customizing Department overhead cost = Fixed manufacturing overhead cost + (Variable overhead cost per direct labor-hour × Total direct labor-hours in the department)  
 = $99,000 + ($3.10 per direct labor-hour × 9,000 direct labor-hours)  
 = $99,000 + $27,900 = $126,900  
 Predetermined overhead rate = Estimated total manufacturing overhead cost ÷ Estimated total amount of the = $126,900 ÷9,000 direct labor-hours = $14.10 per direct labor-hour  
 Overhead applied to a particular job = Predetermined overhead rate × Amount of the allocation base incurred by the job = $14.10 per direct labor-hour × 50 direct labor-hours = $705  
   
 Overhead applied to Job M109

|  |  |
| --- | --- |
| **Forming Department** | $ 390 |
| **Customizing Department** | 705 |
| **Total** | $1,095 |

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Forming** | **Customizing** | **Total** |
| **Direct materials** | $ 915 | $ 355 | $ 1,270 |
| **Direct labor** | $ 620 | $1,550 | 2,170 |
| **Manufacturing overhead applied** | $ 390 | $ 705 | 1,095 |
| **Total cost of Job M109** |  |  | $ 4,535 |

42) a. Casting Department overhead cost = Fixed manufacturing overhead cost + (Variable overhead cost per machine-hour × Total machine-hours in the department)  
 = $119,000 + ($2.10 per machine-hour × 17,000 machine-hours)  
 = $119,000 +$35,700 = $154,700  
   
 b. Assembly Department overhead cost = Fixed manufacturing overhead cost + (Variable overhead cost per direct labor-hour × Total direct labor-hours in the department)  
 = $51,000 + ($3.10 per direct labor-hour × 6,000 direct labor-hours)  
 = $51,000 + $18,600 = $69,600  
   
 c. Casting Department:  
 Predetermined overhead rate = Estimated total manufacturing overhead cost ÷ Estimated total amount of the = $154,700 ÷ 17,000 machine-hours = $9.10 per machine-hour  
   
 d. Assembly Department:  
 Predetermined overhead rate = Estimated total manufacturing overhead cost ÷ Estimated total amount of the = $69,600 ÷6,000 direct labor-hours = $11.60 per direct labor-hour  
   
 e. Casting Department: Overhead applied to a particular job = Predetermined overhead rate × Amount of the allocation base incurred by the job = $9.10 per machine-hour × 50 machine-hours = $455  
 Assembly Department: Overhead applied to a particular job = Predetermined overhead rate × Amount of the allocation base incurred by the job = $11.60 per direct labor-hour × 50 direct labor-hours = $580  
   
 Overhead applied to Job A182

|  |  |
| --- | --- |
| **Casting Department** | $ 455 |
| **Assembly Department** | 580 |
| **Total** | $1,035 |

f.

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Casting** | **Assembly** | **Total** |
| **Direct materials** | $ 895 | $ 365 | $ 1,260 |
| **Direct labor** | $ 240 | $1,200 | 1,440 |
| **Manufacturing overhead applied** | $ 455 | $ 580 | 1,035 |
| **Total cost of Job A182** |  |  | $ 3,735 |

g.

|  |  |
| --- | --- |
| **Total cost of Job A182** | $ 3,735.00 |
| **Markup ($3,735.00 × 20%)** | 747.00 |
| **Selling price** | $ 4,482.00 |

43) a.  
 The first step is to calculate the estimated total overhead costs in the two departments.  
 Forming

|  |  |
| --- | --- |
| **Estimated fixed manufacturing overhead** | $ 24,000 |
| **Estimated variable manufacturing overhead ($1.00 per machine-hour × 6,000 machine-hours)** | 6,000 |
| **Estimated total manufacturing overhead cost** | $ 30,000 |

Customizing

|  |  |
| --- | --- |
| **Estimated fixed manufacturing overhead** | $ 10,400 |
| **Estimated variable manufacturing overhead ($2.00 per machine-hour × 4,000 machine-hours)** | 8,000 |
| **Estimated total manufacturing overhead cost** | $ 18,400 |

The second step is to combine the estimated manufacturing overhead costs in the two departments ($30,000 + $18,400 = $48,400) to calculate the plantwide predetermined overhead rate as follow:

|  |  |
| --- | --- |
| **Estimated total manufacturing overhead cost** | $48,400 |
| **Estimated total machine hours** | 10,000 machine-hours |
| **Predetermined overhead rate** | $ 4.84 machine-hour |

b.  
 The overhead applied to Job L is calculated as follows:  
 Overhead applied to a particular job = Predetermined overhead rate × Machine-hours incurred by the job  
 = $4.84 per machine-hour × (3,500 machine-hours + 1,500 machine-hours)  
 = $4.84 per machine-hour × (5,000 machine-hours)  
 = $24,200  
 c.  
 Job L’s manufacturing cost:

|  |  |
| --- | --- |
| **Direct materials** | $ 9,700 |
| **Direct labor cost** | 10,100 |
| **Manufacturing overhead applied** | 24,200 |
| **Total manufacturing cost** | $44,000 |

d.  
 The selling price for Job L:

|  |  |
| --- | --- |
| **Total manufacturing cost** | $ 44,000 |
| **Markup (80%)** | 35,200 |
| **Selling price** | $79,200 |

e.  
 Forming Department predetermined overhead rate:

|  |  |
| --- | --- |
| **Estimated fixed manufacturing overhead** | $ 24,000 |
| **Estimated variable manufacturing overhead ($1.00 per machine-hour × 6,000 machine-hours)** | 6,000 |
| **Estimated total manufacturing overhead cost (a)** | $30,000 |
| **Estimated total machine-hours (b)** | 6,000 machine-hours |
| **Departmental predetermined overhead rate (a) ÷ (b)** | $ 5.00 machine-hour |

f.  
 Customizing Department predetermined overhead rate:

|  |  |
| --- | --- |
| **Estimated fixed manufacturing overhead** | $ 10,400 |
| **Estimated variable manufacturing overhead ($2.00 per machine-hour × 4,000 machine-hours)** | 8,000 |
| **Estimated total manufacturing overhead cost (a)** | $18,400 |
| **Estimated total machine-hours (b)** | 4,000 machine-hours |
| **Departmental predetermined overhead rate (a) ÷ (b)** | $ 4.60 machine-hour |

g.  
 Manufacturing overhead applied to Job L:

|  |  |
| --- | --- |
| **Forming ($5.00 per machine-hour × 3,500 machine-hours)** | $ 17,500 |
| **Customizing ($4.60 per machine-hour × 1,500 machine-hours)** | 6,900 |
| **Total manufacturing overhead applied** | $ 24,400 |

h.  
 The selling price for Job L would be calculated as follows:

|  |  |
| --- | --- |
| **Direct materials** | $ 9,700 |
| **Direct labor cost** | 10,100 |
| **Manufacturing overhead applied** | 24,400 |
| **Total manufacturing cost** | $44,200 |
| **Markup (80%)** | 35,360 |
| **Selling price** | $79,560 |

44) a.  
 The first step is to calculate the estimated total overhead costs in the two departments.  
 Forming

|  |  |
| --- | --- |
| **Estimated fixed manufacturing overhead** | $ 50,400 |
| **Estimated variable manufacturing overhead ($1.70 per machine-hour × 9,000 machine-hours)** | 15,300 |
| **Estimated total manufacturing overhead cost** | $ 65,700 |

Customizing

|  |  |
| --- | --- |
| **Estimated fixed manufacturing overhead** | $ 2,600 |
| **Estimated variable manufacturing overhead ($2.10 per machine-hour × 1,000 machine-hours)** | 2,100 |
| **Estimated total manufacturing overhead cost** | $ 4,700 |

The second step is to combine the estimated manufacturing overhead costs in the two departments ($65,700 + $4,700 = $70,400) to calculate the plantwide predetermined overhead rate as follow:

|  |  |
| --- | --- |
| **Estimated total manufacturing overhead cost** | $ 70,400 |
| **Estimated total machine hours** | 10,000 machine-hours |
| **Predetermined overhead rate** | $7.04 per machine-hour |

b.  
 The overhead applied to Job L is calculated as follows:  
 Overhead applied to a particular job = Predetermined overhead rate × Machine-hours incurred by the job  
 = $7.04 per machine-hour × (2,900 machine-hours + 600 machine-hours)  
 = $7.04 per machine-hour × (3,500 machine-hours)  
 = $24,640  
 c.  
 Job L’s manufacturing cost:

|  |  |
| --- | --- |
| **Direct materials** | $6,900 |
| **Direct labor cost** | 8,500 |
| **Manufacturing overhead applied** | 24,640 |
| **Total manufacturing cost** | $40,040 |

d.  
 The selling price for Job L:

|  |  |
| --- | --- |
| **Total manufacturing cost** | $ 40,040 |
| **Markup (80%)** | 32,032 |
| **Selling price** | $ 72,072 |

e.  
 Forming Department predetermined overhead rate:

|  |  |
| --- | --- |
| **Estimated fixed manufacturing overhead** | $ 50,400 |
| **Estimated variable manufacturing overhead ($1.70 per machine-hour × 9,000 machine-hours)** | 15,300 |
| **Estimated total manufacturing overhead cost (a)** | $ 65,700 |
| **Estimated total machine-hours (b)** | 9,000 machine-hours |
| **Departmental predetermined overhead rate (a) ÷ (b)** | $7.30 per machine-hour |

f.  
 Customizing Department predetermined overhead rate:

|  |  |
| --- | --- |
| **Estimated fixed manufacturing overhead** | $2,600 |
| **Estimated variable manufacturing overhead ($2.10 per machine-hour × 1,000 machine-hours)** | 2,100 |
| **Estimated total manufacturing overhead cost (a)** | $4,700 |
| **Estimated total machine-hours (b)** | 1,000 machine-hours |
| **Departmental predetermined overhead rate (a) ÷ (b)** | $ 4.70 per machine-hour |

g.  
 Manufacturing overhead applied to Job L:

|  |  |
| --- | --- |
| **Forming ($7.30 per machine-hour × 2,900 machine-hours)** | $ 21,170 |
| **Customizing ($4.70 per machine-hour × 600 machine-hours)** | 2,820 |
| **Total manufacturing overhead applied** | $ 23,990 |

h.  
 The selling price for Job L would be calculated as follows:

|  |  |
| --- | --- |
| **Direct materials** | $ 6,900 |
| **Direct labor cost** | 8,500 |
| **Manufacturing overhead applied** | 23,990 |
| **Total manufacturing cost** | $ 39,390 |
| **Markup (80%)** | 31,512 |
| **Selling price** | $ 70,902 |

45) a.  
 Machining Department predetermined overhead rate:

|  |  |  |
| --- | --- | --- |
| **Estimated fixed manufacturing overhead** | $ 4,200 |  |
| **Estimated variable manufacturing overhead ($1.90 per MH × 1,000 MHs)** | 1,900 |  |
| **Estimated total manufacturing overhead cost (a)** | $ 6,100 |  |
| **Estimated total machine-hours (b)** | 1,000 | MHs |
| **Departmental predetermined overhead rate (a) ÷ (b)** | $6.10 | per MH |

b. Finishing Department predetermined overhead rate:

|  |  |  |
| --- | --- | --- |
| **Estimated fixed manufacturing overhead** | $ 8,800 |  |
| **Estimated variable manufacturing overhead ($2.90 per MH × 4,000 MHs)** | 11,600 |  |
| **Estimated total manufacturing overhead cost (a)** | $ 20,400 |  |
| **Estimated total machine-hours (b)** | 4,000 | MHs |
| **Departmental predetermined overhead rate (a) ÷ (b)** | $5.10 | per MH |

c. Manufacturing overhead applied to Job E:

|  |  |
| --- | --- |
| **Machining ($6.10 per MH × 700 MHs)** | $ 4,270 |
| **Finishing ($5.10 per MH × 1,600 MHs)** | 8,160 |
| **Total manufacturing overhead applied** | $ 12,430 |

d. Manufacturing overhead applied to Job G:

|  |  |
| --- | --- |
| **Machining ($6.10 per MH × 300 MHs)** | $ 1,830 |
| **Finishing ($5.10 per MH × 2,400 MHs)** | 12,240 |
| **Total manufacturing overhead applied** | $ 14,070 |

e.  
 The selling price for Job E would be calculated as follows:

|  |  |
| --- | --- |
| **Direct materials** | $ 11,800 |
| **Direct labor cost** | 19,200 |
| **Manufacturing overhead applied** | 12,430 |
| **Total manufacturing cost** | $ 43,430 |
| **Markup (80%)** | 34,744 |
| **Selling price** | $ 78,174 |

f.  
 The selling price for Job G would be calculated as follows:

|  |  |
| --- | --- |
| **Direct materials** | $ 8,000 |
| **Direct labor cost** | 6,700 |
| **Manufacturing overhead applied** | 14,070 |
| **Total manufacturing cost** | $28,770 |
| **Markup (80%)** | 23,016 |
| **Selling price** | $51,786 |

g.

|  |  |
| --- | --- |
| **Total manufacturing cost Job E** | $ 43,430 |
| **Total manufacturing cost Job G** | 28,770 |
| **Cost of goods sold** | $ 72,200 |

46) a. Casting Department overhead cost = Fixed manufacturing overhead cost + (Variable overhead cost per machine-hour × Total machine-hours in the department)  
 = $110,000 + ($1.60 per machine-hour × 20,000 machine-hours)  
 = $110,000 +$32,000 = $142,000  
 b.  
 Assembly Department overhead cost = Fixed manufacturing overhead cost + (Variable overhead cost per direct labor-hour × Total direct labor-hours in the department)  
 = $65,400 + ($4.50 per direct labor-hour × 6,000 direct labor-hours)  
 = $65,400 + $27,000 = $92,400  
 c.  
 Casting Department:  
 Predetermined overhead rate = Estimated total manufacturing overhead cost ÷ Estimated total amount of the = $142,000 ÷ 20,000 machine-hours = $7.10 per machine-hour  
 d.  
 Assembly Department:  
 Predetermined overhead rate = Estimated total manufacturing overhead cost ÷ Estimated total amount of the = $92,400 ÷6,000 direct labor-hours = $15.40 per direct labor-hour  
 e.  
 Casting Department:  
 Overhead applied to a particular job = Predetermined overhead rate × Amount of the allocation base incurred by the job = $7.10 per machine-hour × 60 machine-hours = $426  
 f.  
 Assembly Department:  
 Overhead applied to a particular job = Predetermined overhead rate × Amount of the allocation base incurred by the job = $15.40 per direct labor-hour × 40 direct labor-hours = $616  
 g.

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Casting** | **Assembly** | **Total** |
| **Direct materials** | $ 950 | $ 305 | $ 1,255 |
| **Direct labor** | $ 460 | $ 920 | 1,380 |
| **Manufacturing overhead applied** | $ 426 | $ 616 | 1,042 |
| **Total cost of Job K246** |  |  | $ 3,677 |

h.

|  |  |
| --- | --- |
| **Total cost of Job K246** | $ 3,677.00 |
| **Markup ($3,677.00 × 40%)** | 1,470.80 |
| **Selling price** | $ 5,147.80 |

47) a.  
 The first step is to calculate the estimated total overhead costs in the two departments.  
 Forming

|  |  |
| --- | --- |
| **Estimated fixed manufacturing overhead** | $ 36,800 |
| **Estimated variable manufacturing overhead ($1.60 per MH × 8,000 MHs)** | 12,800 |
| **Estimated total manufacturing overhead cost** | $ 49,600 |

Customizing

|  |  |
| --- | --- |
| **Estimated fixed manufacturing overhead** | $ 4,800 |
| **Estimated variable manufacturing overhead ($2.90 per MH × 2,000 MHs)** | 5,800 |
| **Estimated total manufacturing overhead cost** | $10,600 |

The second step is to combine the estimated manufacturing overhead costs in the two departments ($49,600 + $10,600 = $60,200) to calculate the plantwide predetermined overhead rate as follow:

|  |  |  |
| --- | --- | --- |
| **Estimated total manufacturing overhead cost** | $60,200 |  |
| **Estimated total machine hours** | 10,000 | MHs |
| **Predetermined overhead rate** | $ 6.02 | per MH |

The overhead applied to Job D is calculated as follows:  
 Overhead applied to a particular job = Predetermined overhead rate × Machine-hours incurred by the job  
 = $6.02 per MH × (5,400 MHs + 800 MHs)  
 = $6.02 per MH × (6,200 MHs)  
 = $37,324  
 The selling price for Job D:

|  |  |
| --- | --- |
| **Direct materials** | $ 15,600 |
| **Direct labor cost** | 19,100 |
| **Manufacturing overhead applied** | 37,324 |
| **Total manufacturing cost** | $ 72,024 |
| **Markup (50%)** | 36,012 |
| **Selling price** | $108,036 |

b.  
 The overhead applied to Job K is calculated as follows:  
 Overhead applied to a particular job = Predetermined overhead rate × Machine-hours incurred by the job  
 = $6.02 per MH × (2,600 MHs + 1,200 MHs)  
 = $6.02 per MH × (3,800 MHs)  
 = $22,876  
 Job K’s manufacturing cost:

|  |  |
| --- | --- |
| **Direct materials** | $ 6,900 |
| **Direct labor cost** | 8,700 |
| **Manufacturing overhead applied** | 22,876 |
| **Total manufacturing cost** | $38,476 |

The selling price for Job K:

|  |  |
| --- | --- |
| **Total manufacturing cost** | $ 38,476 |
| **Markup (50%)** | 19,238 |
| **Selling price** | $ 57,714 |

c.  
 Forming Department predetermined overhead rate:

|  |  |  |
| --- | --- | --- |
| **Estimated fixed manufacturing overhead** | $36,800 |  |
| **Estimated variable manufacturing overhead ($1.60 per MH × 8,000 MHs)** | 12,800 |  |
| **Estimated total manufacturing overhead cost (a)** | $49,600 |  |
| **Estimated total machine-hours (b)** | 8,000 | MHs |
| **Departmental predetermined overhead rate (a) ÷ (b)** | $ 6.20 | per MH |

Customizing Department predetermined overhead rate:

|  |  |  |
| --- | --- | --- |
| **Estimated fixed manufacturing overhead** | $4,800 |  |
| **Estimated variable manufacturing overhead ($2.90 per per MH × 2,000 per MHs)** | 5,800 |  |
| **Estimated total manufacturing overhead cost (a)** | $10,600 |  |
| **Estimated total machine-hours (b)** | 2,000 | MHs |
| **Departmental predetermined overhead rate (a) ÷ (b)** | $ 5.30 | per MH |

Manufacturing overhead applied to Job D:

|  |  |
| --- | --- |
| **Forming ($6.20 per MH × 5,400 MHs)** | $ 33,480 |
| **Customizing ($5.30 per MH × 800 MHs)** | 4,240 |
| **Total manufacturing overhead applied** | $ 37,720 |

The selling price for Job D would be calculated as follows:

|  |  |
| --- | --- |
| **Direct materials** | $15,600 |
| **Direct labor cost** | 19,100 |
| **Manufacturing overhead applied** | 37,720 |
| **Total manufacturing cost** | $72,420 |
| **Markup (50%)** | 36,210 |
| **Selling price** | $108,630 |

d.  
 Manufacturing overhead applied to Job K:

|  |  |
| --- | --- |
| **Forming ($6.20 per MH × 2,600 MHs)** | $ 16,120 |
| **Customizing ($5.30 per MH × 1,200 MHs)** | 6,360 |
| **Total manufacturing overhead applied** | $ 22,480 |

The selling price for Job K would be calculated as follows:

|  |  |
| --- | --- |
| **Direct materials** | $ 6,900 |
| **Direct labor cost** | 8,700 |
| **Manufacturing overhead applied** | 22,480 |
| **Total manufacturing cost** | $38,080 |
| **Markup (50%)** | 19,040 |
| **Selling price** | $57,120 |

48) a.  
 The first step is to calculate the estimated total overhead costs in the two departments.  
 Molding

|  |  |
| --- | --- |
| **Estimated fixed manufacturing overhead** | $ 29,000 |
| **Estimated variable manufacturing overhead ($1.20 per machine-hour × 5,000 machine-hours)** | 6,000 |
| **Estimated total manufacturing overhead cost** | $ 35,000 |

Assembly

|  |  |
| --- | --- |
| **Estimated fixed manufacturing overhead** | $ 13,500 |
| **Estimated variable manufacturing overhead ($2.30 per machine-hour × 5,000 machine-hours)** | 11,500 |
| **Estimated total manufacturing overhead cost** | $ 25,000 |

The second step is to combine the estimated manufacturing overhead costs in the two departments ($35,000 + $25,000 = $60,000) to calculate the plantwide predetermined overhead rate as follow:

|  |  |
| --- | --- |
| **Estimated total manufacturing overhead cost** | $60,000 |
| **Estimated total machine hours** | 10,000 machine-hours |
| **Predetermined overhead rate** | $ 6.00 per machine-hour |

b.  
 The overhead applied to Job E is calculated as follows:  
 Overhead applied to a particular job = Predetermined overhead rate × Machine-hours incurred by the job  
 = $6.00 per machine-hour × (3,400 machine-hours + 2,000 machine-hours)  
 = $6.00 per machine-hour × (5,400 machine-hours)  
 = $32,400  
 c.  
 Job E’s manufacturing cost:

|  |  |
| --- | --- |
| **Direct materials** | $ 14,300 |
| **Direct labor cost** | 22,800 |
| **Manufacturing overhead applied** | 32,400 |
| **Total manufacturing cost** | $ 69,500 |

d.  
 The selling price for Job E:

|  |  |
| --- | --- |
| **Total manufacturing cost** | $ 69,500 |
| **Markup (60%)** | 41,700 |
| **Selling price** | $111,200 |

e.  
 Molding Department predetermined overhead rate:

|  |  |
| --- | --- |
| **Estimated fixed manufacturing overhead** | $29,000 |
| **Estimated variable manufacturing overhead ($1.20 per machine-hour × 5,000 machine-hours)** | 6,000 |
| **Estimated total manufacturing overhead cost (a)** | $35,000 |
| **Estimated total machine-hours (b)** | 5,000 machine-hours |
| **Departmental predetermined overhead rate (a) ÷ (b)** | $ 7.00 per machine-hour |

f.  
 Assembly Department predetermined overhead rate:

|  |  |
| --- | --- |
| **Estimated fixed manufacturing overhead** | $13,500 |
| **Estimated variable manufacturing overhead ($2.30 per machine-hour × 5,000 machine-hours)** | 11,500 |
| **Estimated total manufacturing overhead cost (a)** | $25,000 |
| **Estimated total machine-hours (b)** | 5,000 machine-hours |
| **Departmental predetermined overhead rate (a) ÷ (b)** | $ 5.00 per machine-hour |

g.  
 Manufacturing overhead applied to Job E:

|  |  |
| --- | --- |
| **Molding ($7.00 per machine-hour × 3,400 machine-hours)** | $ 23,800 |
| **Assembly ($5.00 per machine-hour × 2,000 machine-hours)** | 10,000 |
| **Total manufacturing overhead applied** | $ 33,800 |

h.  
 The selling price for Job E would be calculated as follows:

|  |  |
| --- | --- |
| **Direct materials** | $ 14,300 |
| **Direct labor cost** | 22,800 |
| **Manufacturing overhead applied** | 33,800 |
| **Total manufacturing cost** | $ 70,900 |
| **Markup (60%)** | 42,540 |
| **Selling price** | $113,440 |

49) a.  
 The first step is to calculate the estimated total overhead costs in the two departments.  
 Molding

|  |  |
| --- | --- |
| **Estimated fixed manufacturing overhead** | $ 15,000 |
| **Estimated variable manufacturing overhead ($2.00 per machine-hour × 5,000 machine-hours)** | 10,000 |
| **Estimated total manufacturing overhead cost** | $ 25,000 |

Assembly

|  |  |
| --- | --- |
| **Estimated fixed manufacturing overhead** | $ 29,500 |
| **Estimated variable manufacturing overhead ($4.00 per machine-hour × 5,000 machine-hours)** | 20,000 |
| **Estimated total manufacturing overhead cost** | $ 49,500 |

The second step is to combine the estimated manufacturing overhead costs in the two departments ($25,000 + $49,500 = $74,500) to calculate the plantwide predetermined overhead rate as follow:

|  |  |
| --- | --- |
| **Estimated total manufacturing overhead cost** | $74,500 |
| **Estimated total machine hours** | 10,000 machine-hours |
| **Predetermined overhead rate** | $ 7.45 per machine-hour |

b.  
 The overhead applied to Job E is calculated as follows:  
 Overhead applied to a particular job = Predetermined overhead rate × Machine-hours incurred by the job  
 = $7.45 per machine-hour × (2,700 machine-hours + 400 machine-hours)  
 = $7.45 per machine-hour × (3,100 machine-hours)  
 = $23,095  
 c.  
 Job E’s manufacturing cost:

|  |  |
| --- | --- |
| **Direct materials** | $ 16,200 |
| **Direct labor cost** | 22,900 |
| **Manufacturing overhead applied** | 23,095 |
| **Total manufacturing cost** | $ 62,195 |

d.  
 The selling price for Job E:

|  |  |
| --- | --- |
| **Total manufacturing cost** | $ 62,195 |
| **Markup (80%)** | 49,756 |
| **Selling price** | $111,951 |

e.  
 Molding Department predetermined overhead rate:

|  |  |
| --- | --- |
| **Estimated fixed manufacturing overhead** | $15,000 |
| **Estimated variable manufacturing overhead ($2.00 per machine-hour × 5,000 machine-hours)** | 10,000 |
| **Estimated total manufacturing overhead cost (a)** | $25,000 |
| **Estimated total machine-hours (b)** | 5,000 machine-hours |
| **Departmental predetermined overhead rate (a) ÷ (b)** | $ 5.00 per machine-hour |

f.  
 Assembly Department predetermined overhead rate:

|  |  |
| --- | --- |
| **Estimated fixed manufacturing overhead** | $29,500 |
| **Estimated variable manufacturing overhead ($4.00 per machine-hour × 5,000 machine-hours)** | 20,000 |
| **Estimated total manufacturing overhead cost (a)** | $49,500 |
| **Estimated total machine-hours (b)** | 5,000 machine-hours |
| **Departmental predetermined overhead rate (a) ÷ (b)** | $ 9.90 per machine-hour |

g.  
 Manufacturing overhead applied to Job E:

|  |  |
| --- | --- |
| **Molding ($5.00 per machine-hour × 2,700 machine-hours)** | $ 13,500 |
| **Assembly ($9.90 per machine-hour × 400 machine-hours)** | 3,960 |
| **Total manufacturing overhead applied** | $ 17,460 |

h.  
 The selling price for Job E would be calculated as follows:

|  |  |
| --- | --- |
| **Direct materials** | $ 16,200 |
| **Direct labor cost** | 22,900 |
| **Manufacturing overhead applied** | 17,460 |
| **Total manufacturing cost** | $ 56,560 |
| **Markup (80%)** | 45,248 |
| **Selling price** | $101,808 |

50) Machining Department:  
 Machining Department overhead cost = Fixed manufacturing overhead cost + (Variable overhead cost per machine-hour × Total machine-hours in the department)  
 = $98,800 + ($2.10 per machine-hour × 19,000 machine-hours)  
 = $98,800 + $39,900 = $138,700  
 Predetermined overhead rate = Estimated total manufacturing overhead cost ÷ Estimated total amount of the = $138,700 ÷ 19,000 machine-hours = $7.30 per machine-hour  
 Overhead applied to a particular job = Predetermined overhead rate × Amount of the allocation base incurred by the job = $7.30 per machine-hour × 90 machine-hours = $657  
 Customizing Department:  
 Customizing Department overhead cost = Fixed manufacturing overhead cost + (Variable overhead cost per direct labor-hour × Total direct labor-hours in the department)  
 = $84,600 + ($3.60 per direct labor-hour × 9,000 direct labor-hours)  
 = $84,600 + $32,400 = $117,000  
 Predetermined overhead rate = Estimated total manufacturing overhead cost ÷ Estimated total amount of the = $117,000 ÷9,000 direct labor-hours = $13.00 per direct labor-hour  
 Overhead applied to a particular job = Predetermined overhead rate × Amount of the allocation base incurred by the job = $13.00 per direct labor-hour × 50 direct labor-hours = $650  
 Overhead applied to Job K369

|  |  |
| --- | --- |
| **Machining Department** | $ 657 |
| **Customizing Department** | 650 |
| **Total** | $1,307 |

51) Machining Department:  
 Machining Department overhead cost = Fixed manufacturing overhead cost + (Variable overhead cost per machine-hour × Total machine-hours in the department)  
 = $65,800 + ($1.00 per machine-hour × 14,000 machine-hours)  
 = $65,800 + $14,000 = $79,800  
 Predetermined overhead rate = Estimated total manufacturing overhead cost ÷ Estimated total amount of the = $79,800 ÷ 14,000 machine-hours = $5.70 per machine-hour  
 Overhead applied to a particular job = Predetermined overhead rate × Amount of the allocation base incurred by the job = $5.70 per machine-hour × 60 machine-hours = $342  
 Customizing Department:  
 Customizing Department overhead cost = Fixed manufacturing overhead cost + (Variable overhead cost per direct labor-hour × Total direct labor-hours in the department)  
 = $90,000 + ($2.00 per direct labor-hour × 5,000 direct labor-hours)  
 = $90,000 + $10,000 = $100,000  
 Predetermined overhead rate = Estimated total manufacturing overhead cost ÷ Estimated total amount of the = $100,000 ÷ 5,000 direct labor-hours = $20.00 per direct labor-hour  
 Overhead applied to a particular job = Predetermined overhead rate × Amount of the allocation base incurred by the job = $20.00 per direct labor-hour × 60 direct labor-hours = $1,200  
 Overhead applied to Job K369

|  |  |
| --- | --- |
| **Machining Department** | $ 342 |
| **Customizing Department** | 1,200 |
| **Total** | $ 1,542 |

52) a.  
 The first step is to calculate the estimated total overhead costs in the two departments.  
 Machining

|  |  |
| --- | --- |
| **Estimated fixed manufacturing overhead** | $ 20,000 |
| **Estimated variable manufacturing overhead ($1.40 per machine-hour × 4,000 machine-hours)** | 5,600 |
| **Estimated total manufacturing overhead cost** | $ 25,600 |

Finishing

|  |  |
| --- | --- |
| **Estimated fixed manufacturing overhead** | $ 2,100 |
| **Estimated variable manufacturing overhead ($2.80 per machine-hour × 1,000 machine-hours)** | 2,800 |
| **Estimated total manufacturing overhead cost** | $ 4,900 |

The second step is to combine the estimated manufacturing overhead costs in the two departments ($25,600 + $4,900 = $30,500) to calculate the plantwide predetermined overhead rate as follow:

|  |  |
| --- | --- |
| **Estimated total manufacturing overhead cost** | $30,500 |
| **Estimated total machine hours** | 5,000 machine-hours |
| **Predetermined overhead rate** | $ 6.10 per machine-hour |

b.  
 The overhead applied to Job B is calculated as follows:  
 Overhead applied to a particular job = Predetermined overhead rate × Machine-hours incurred by the job  
 = $6.10 per machine-hour × (2,700 machine-hours + 400 machine-hours)  
 = $6.10 per machine-hour × (3,100 machine-hours)  
 = $18,910  
 c.  
 The overhead applied to Job K is calculated as follows:  
 Overhead applied to a particular job = Predetermined overhead rate × Machine-hours incurred by the job  
 = $6.10 per machine-hour × (1,300 machine-hours + 600 machine-hours)  
 = $6.10 per machine-hour × (1,900 machine-hours)  
 = $11,590  
 d.  
 Machining Department predetermined overhead rate:

|  |  |
| --- | --- |
| **Estimated fixed manufacturing overhead** | $20,000 |
| **Estimated variable manufacturing overhead ($1.40 per machine-hour × 4,000 machine-hours)** | 5,600 |
| **Estimated total manufacturing overhead cost (a)** | $25,600 |
| **Estimated total machine-hours (b)** | 4,000 machine-hours |
| **Departmental predetermined overhead rate (a) ÷ (b)** | $ 6.40 per machine-hour |

e.  
 Finishing Department predetermined overhead rate:

|  |  |
| --- | --- |
| **Estimated fixed manufacturing overhead** | $2,100 |
| **Estimated variable manufacturing overhead ($2.80 per machine-hour × 1,000 machine-hours)** | 2,800 |
| **Estimated total manufacturing overhead cost (a)** | $4,900 |
| **Estimated total machine-hours (b)** | 1,000 machine-hours |
| **Departmental predetermined overhead rate (a) ÷ (b)** | $ 4.90 per machine-hour |

f.  
 Manufacturing overhead applied to Job B:

|  |  |
| --- | --- |
| **Machining ($6.40 per machine-hour × 2,700 machine-hours)** | $ 17,280 |
| **Finishing ($4.90 per machine-hour × 400 machine-hours)** | 1,960 |
| **Total manufacturing overhead applied** | $ 19,240 |

g.  
 Manufacturing overhead applied to Job K:

|  |  |
| --- | --- |
| **Machining ($6.40 per machine-hour × 1,300 machine-hours)** | $ 8,320 |
| **Finishing ($4.90 per machine-hour × 600 machine-hours)** | 2,940 |
| **Total manufacturing overhead applied** | $11,260 |

53) a.  
 The first step is to calculate the estimated total overhead costs in the two departments.  
 Machining

|  |  |
| --- | --- |
| **Estimated fixed manufacturing overhead** | $ 2,400 |
| **Estimated variable manufacturing overhead ($2.10 per machine-hour × 2,000 machine-hours)** | 4,200 |
| **Estimated total manufacturing overhead cost** | $ 6,600 |

Finishing

|  |  |
| --- | --- |
| **Estimated fixed manufacturing overhead** | $ 64,000 |
| **Estimated variable manufacturing overhead ($6.00 per machine-hour × 8,000 machine-hours)** | 48,000 |
| **Estimated total manufacturing overhead cost** | $ 112,000 |

The second step is to combine the estimated manufacturing overhead costs in the two departments ($6,600 + $112,000 = $118,600) to calculate the plantwide predetermined overhead rate as follows:

|  |  |
| --- | --- |
| **Estimated total manufacturing overhead cost** | $118,600 |
| **Estimated total machine hours** | 10,000 machine-hours |
| **Predetermined overhead rate** | $ 11.86 per machine-hour |

b.  
 The overhead applied to Job B is calculated as follows:  
 Overhead applied to a particular job = Predetermined overhead rate × Machine-hours incurred by the job  
 = $11.86 per machine-hour × (1,300 machine-hours + 600 machine-hours)  
 = $11.86 per machine-hour × (1,900 machine-hours)  
 = $22,534  
 c.  
 The overhead applied to Job K is calculated as follows:  
 Overhead applied to a particular job = Predetermined overhead rate × Machine-hours incurred by the job  
 = $11.86 per machine-hour × (700 machine-hours + 7,400 machine-hours)  
 = $11.86 per machine-hour × (8,100 machine-hours)  
 = $96,066  
 d.  
 Machining Department predetermined overhead rate:

|  |  |
| --- | --- |
| **Estimated fixed manufacturing overhead** | $2,400 |
| **Estimated variable manufacturing overhead ($2.10 per machine-hour × 2,000 machine-hours)** | 4,200 |
| **Estimated total manufacturing overhead cost (a)** | $6,600 |
| **Estimated total machine-hours (b)** | 2,000 machine-hours |
| **Departmental predetermined overhead rate (a) ÷ (b)** | $ 3.30 per machine-hour |

e.  
 Finishing Department predetermined overhead rate:

|  |  |
| --- | --- |
| **Estimated fixed manufacturing overhead** | $64,000 |
| **Estimated variable manufacturing overhead ($6.00 per machine-hour × 8,000 machine-hours)** | 48,000 |
| **Estimated total manufacturing overhead cost (a)** | $112,000 |
| **Estimated total machine-hours (b)** | 8,000 machine-hours |
| **Departmental predetermined overhead rate (a) ÷ (b)** | $ 14.00 per machine-hour |

f.  
 Manufacturing overhead applied to Job B:

|  |  |
| --- | --- |
| **Machining ($3.30 per machine-hour × 1,300 machine-hours)** | $ 4,290 |
| **Finishing ($14.00 per machine-hour × 600 machine-hours)** | 8,400 |
| **Total manufacturing overhead applied** | $ 12,690 |

g.  
 Manufacturing overhead applied to Job K:

|  |  |
| --- | --- |
| **Machining ($3.30 per machine-hour × 700 machine-hours)** | $ 2,310 |
| **Finishing ($14.00 per machine-hour × 7,400 machine-hours)** | 103,600 |
| **Total manufacturing overhead applied** | $105,910 |

54) a. Assembly Department overhead cost = Fixed manufacturing overhead cost + (Variable overhead cost per direct labor-hour × Total direct labor-hours in the department)  
 = $76,300 + ($3.10 per direct labor-hour × 7,000 direct labor-hours)  
 = $76,300 + $21,700 = $98,000  
 b.  
 Forming Department overhead cost = Fixed manufacturing overhead cost + (Variable overhead cost per machine-hour × Total machine-hours in the department)  
 = $100,800 + ($1.70 per machine-hour × 16,000 machine-hours)  
 = $100,800 + $27,200 = $128,000  
 Forming Department: Predetermined overhead rate = Estimated total manufacturing overhead cost ÷ Estimated total amount of the = $128,000 ÷ 16,000 machine-hours = $8.00 per machine-hour  
 c.  
 Forming Department: Overhead applied to a particular job = Predetermined overhead rate × Amount of the allocation base incurred by the job = $8.00 per machine-hour × 50 machine-hours = $400  
 Assembly Department: Predetermined overhead rate = Estimated total manufacturing overhead cost ÷ Estimated total amount of the = $98,000 ÷7,000 direct labor-hours = $14.00 per direct labor-hour  
 Assembly Department: Overhead applied to a particular job = Predetermined overhead rate × Amount of the allocation base incurred by the job = $14.00 per direct labor-hour × 40 direct labor-hours = $560  
 Overhead applied to Job X560

|  |  |
| --- | --- |
| **Forming Department** | $ 400 |
| **Assembly Department** | 560 |
| **Total** | $ 960 |

55) a.  
 The first step is to calculate the estimated total overhead costs in the two departments.  
 Molding

|  |  |
| --- | --- |
| **Estimated fixed manufacturing overhead** | $ 5,100 |
| **Estimated variable manufacturing overhead ($1.50 per machine-hour × 1,000 machine-hours)** | 1,500 |
| **Estimated total manufacturing overhead cost** | $ 6,600 |

Customizing

|  |  |
| --- | --- |
| **Estimated fixed manufacturing overhead** | $ 23,400 |
| **Estimated variable manufacturing overhead ($2.50 per machine-hour × 9,000 machine-hours)** | 22,500 |
| **Estimated total manufacturing overhead cost** | $ 45,900 |

The second step is to combine the estimated manufacturing overhead costs in the two departments ($6,600 + $45,900 = $52,500) to calculate the plantwide predetermined overhead rate as follow:

|  |  |
| --- | --- |
| **Estimated total manufacturing overhead cost** | $52,500 |
| **Estimated total machine hours** | 10,000 machine-hours |
| **Predetermined overhead rate** | $ 5.25 per machine-hour |

The overhead applied to Job D is calculated as follows:  
 Overhead applied to a particular job = Predetermined overhead rate × Machine-hours incurred by the job  
 = $5.25 per machine-hour × (700 machine-hours + 3,600 machine-hours)  
 = $5.25 per machine-hour × (4,300 machine-hours)  
 = $22,575  
 b.  
 The overhead applied to Job G is calculated as follows:  
 Overhead applied to a particular job = Predetermined overhead rate × Machine-hours incurred by the job  
 = $5.25 per machine-hour × (300 machine-hours + 5,400 machine-hours)  
 = $5.25 per machine-hour × (5,700 machine-hours)  
 = $29,925  
 c.  
 Molding Department predetermined overhead rate:

|  |  |
| --- | --- |
| **Estimated fixed manufacturing overhead** | $5,100 |
| **Estimated variable manufacturing overhead ($1.50 per machine-hour × 1,000 machine-hours)** | 1,500 |
| **Estimated total manufacturing overhead cost (a)** | $6,600 |
| **Estimated total machine-hours (b)** | 1,000 machine-hours |
| **Departmental predetermined overhead rate (a) ÷ (b)** | $ 6.60 per machine-hour |

Customizing Department predetermined overhead rate:

|  |  |
| --- | --- |
| **Estimated fixed manufacturing overhead** | $23,400 |
| **Estimated variable manufacturing overhead ($2.50 per machine-hour × 9,000 machine-hours)** | 22,500 |
| **Estimated total manufacturing overhead cost (a)** | $45,900 |
| **Estimated total machine-hours (b)** | 9,000 machine-hours |
| **Departmental predetermined overhead rate (a) ÷ (b)** | $ 5.10 per machine-hour |

Manufacturing overhead applied to Job D:

|  |  |
| --- | --- |
| **Molding ($6.60 per machine-hour × 700 machine-hours)** | $ 4,620 |
| **Customizing ($5.10 per machine-hour × 3,600 machine-hours)** | 18,360 |
| **Total manufacturing overhead applied** | $22,980 |

d.Manufacturing overhead applied to Job G:

|  |  |
| --- | --- |
| **Molding ($6.60 per machine-hour × 300 machine-hours)** | $ 1,980 |
| **Customizing ($5.10 per machine-hour × 5,400 machine-hours)** | 27,540 |
| **Total manufacturing overhead applied** | $29,520 |

56) a. Casting Department overhead cost = Fixed manufacturing overhead cost + (Variable overhead cost per machine-hour × Total machine-hours in the department)  
 = $124,100 + ($2.30 per machine-hour × 17,000 machine-hours)  
 = $124,100 +$39,100 = $163,200  
 b. Casting Department:  
 Predetermined overhead rate = Estimated total manufacturing overhead cost ÷ Estimated total amount of the = $163,200 ÷ 17,000 machine-hours = $9.60 per machine-hour  
 c. Casting Department:  
 Overhead applied to a particular job = Predetermined overhead rate × Amount of the allocation base incurred by the job = $9.60 per machine-hour × 80 machine-hours = $768

57) a. Finishing Department overhead cost = Fixed manufacturing overhead cost + (Variable overhead cost per direct labor-hour × Total direct labor-hours in the department)  
 = $57,600 + ($4.00 per direct labor-hour × 6,000 direct labor-hours)  
 = $57,600 + $24,000 = $81,600  
 b. Finishing Department:  
 Predetermined overhead rate = Estimated total manufacturing overhead cost ÷ Estimated total amount of the = $81,600 ÷6,000 direct labor-hours = $13.60 per direct labor-hour  
 c. Finishing Department:  
 Overhead applied to a particular job = Predetermined overhead rate × Amount of the allocation base incurred by the job = $13.60 per direct labor-hour × 60 direct labor-hours = $816

58) a.Forming Department overhead cost = Fixed manufacturing overhead cost + (Variable overhead cost per machine-hour × Total machine-hours in the department) = $119,700 + ($2.00 per machine-hour × 19,000 machine-hours)  
 = $119,700 +$38,000 = $157,700  
 b. Customizing Department overhead cost = Fixed manufacturing overhead cost + (Variable overhead cost per direct labor-hour × Total direct labor-hours in the department)  
 = $67,200 + ($4.20 per direct labor-hour × 8,000 direct labor-hours)  
 = $67,200 + $33,600 = $100,800  
 Predetermined overhead rate = Estimated total manufacturing overhead cost ÷ Estimated total amount of the = $100,800 ÷8,000 direct labor-hours = $12.60 per direct labor-hour  
 c. Forming Department: Predetermined overhead rate = Estimated total manufacturing overhead cost ÷ Estimated total amount of the = $157,700 ÷ 19,000 machine-hours = $8.30 per machine-hour  
 Forming Department: Overhead applied to a particular job = Predetermined overhead rate × Amount of the allocation base incurred by the job = $8.30 per machine-hour × 50 machine-hours = $415  
 Customizing Department: Overhead applied to a particular job = Predetermined overhead rate × Amount of the allocation base incurred by the job = $12.60 per direct labor-hour × 50 direct labor-hours = $630

|  |  |
| --- | --- |
| **Forming Department** | $ 415 |
| **Customizing Department** | 630 |
| **Total** | $1,045 |

59)

|  |  |
| --- | --- |
| **Predetermined overhead rate (a)** | $ 14.30 per machine-hour |
| **Actual activity level (b)** | 36,700 machine-hours |
| **Manufacturing overhead applied (a) × (b)** | $524,810 |

60)

|  |  |
| --- | --- |
| **Predetermined overhead rate (a)** | $ 23.40 per direct labor-hour |
| **Actual activity level (b)** | 27,100 direct labor-hours |
| **Manufacturing overhead applied (a) × (b)** | $634,140 |