



Week 6 (Chapter 5) Tutorial Solutions

Introduction to Management Accounting (Monash University)

ACC/ACF 2200 Introduction to Management Accounting

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Semester 1, 2018

Note to students: Beware! These solutions are not necessarily model answers. In exams, you will not have demonstrated your understanding of the answers to these exercises if you seek only to memorise them. You are encouraged to use tutorial time to discuss issues that will test and clarify your understanding of these exercises, as well as expanding your analytical and critical-thinking skills.

- 5.8** The difference between the two methods relates to the calculation of the relevant total equivalent units for the period.

Under the weighted average method, the equivalent units of activity for the month relate to the closing work in process inventory and the units completed and transferred out. Thus, in Exhibit 5.2, the total EUs for direct material are 400 000 and for conversion cost are 395 000.

Under the FIFO method, the equivalent units of activity in the beginning work in process inventory are subtracted from the total equivalent units for the period to arrive at the new equivalent units of activity for the current period. In Exhibit 5.7, the total EUs that were calculated in Exhibit 5.2 using the weighted average cost method are reduced by the EUs of inputs received by 20 000 physical units in the opening WIP, to arrive at 380 000 EUs of direct material and 393 000 EUs of conversion cost.

The result is that under the weighted average method the total costs for opening work in process inventory plus the cost of resources consumed this period are averaged over all work that they relate to, both that performed in the previous period and that performed on the current period. Using FIFO we work out the cost per unit only for the work performed in the current period by dividing the cost of resources consumed in this period by the measure of work performed in this period. We then work out the equivalent units of activity required to finish off the units in the opening inventory and add the cost of that activity to the opening inventory costs. We separately cost the units both started and finished in this period and also the closing inventory.

- 5.9** The name ‘first-in-first-out’, or FIFO, is used as it assumes that the units transferred to finished goods inventory at any time are those that were started earliest and the units remaining in the work in process inventory at any time are those that were started last. Hence, any resource cost changes are isolated to current activity by leaving the opening inventory costs as part of the cost of the units that were started in the previous period, then adding the share of this period’s costs that relate to completing (or finishing off) those units. The costs incurred in this period are only associated with the work that is done in this period.

5.10 Under the weighted average cost method the total equivalent cost per unit is the total of the average of the cost per equivalent unit for the opening work in process and the units commenced during the month for the two inputs to production. In Exhibit 5.3, the average cost per EU for direct material is \$1.40 and for conversion cost is \$0.37.

For FIFO it is assumed that the old units are completed before new units are commenced. Thus, to calculate the total cost per equivalent unit, the units in opening work in process are first subtracted from the total of the units completed and the closing work in process units to give the equivalent units that relate to new production. A cost per equivalent unit is then calculated for each input to production, based on costs incurred in the current period. In Exhibit 5.8 the cost per EU for material is \$1.33 and for conversion cost is \$0.36. These costs relate to the new production that commenced during the period.

Under both methods there is a matching of the costs of resources consumed with the activity performed in the consumption of those resources. Using the weighted average method the resource costs and activity relate to the current period plus those from the previous period that are in the opening inventory. Using FIFO, the cost per equivalent unit relates only to the resource costs and activity in the current period.

EXERCISE 5.27 (30 minutes) Weighted average cost and FIFO: manufacturer

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	Direct material	Conversion	Total
Work in process, 1 July	16 350	43 425	59 775
Cost incurred during July	<u>169 050</u>	<u>240 300</u>	<u>409 350</u>
Total cost to account for	<u>185 400</u>	<u>283 725</u>	<u>469 125</u>
Equivalent units	154 500	145 500	
Cost per equivalent unit	\$1.20	1.95	\$3.15

(a) $133\,500 \times 3.15 = \$420\,525^*$

(b) For material $154\,500 - 133\,500 = 21\,000$ equivalent units in work in process

For conversion cost $145\,500 - 133\,500 = 12\,000$ equivalent units

$21\,000 \times 1.20 = 25\,200$

$12\,000 \times 1.95 = \underline{23\,400}$

$\$48\,600^*$

$* 420\,525 + 48\,600 = \$469\,125$

	Direct material	Conversion	Total
Work in process 1 July			59 775
Cost incurred during July	169 050	240 300	<u>409 350</u>
Total cost to account for			<u>469 125</u>
Equivalent units	139 500	140 250	
Cost per equivalent unit	1.2118	1.7134	\$2.9252
1. Cost of opening work in process			59 775
2. Cost incurred to complete opening work in process inventory			
Direct materials			0
Conversion	15 000 × 65% × 1.7134		16 706
3. Cost incurred to produce units started and completed		118 500 × 2.9252	<u>346 636</u>
Total cost of goods completed			<u>\$423 117</u>
Cost remaining in work in process 31 July			
Direct materials	21 000 × 1.2118		25 448
Conversion cost		12 000 × 1.7134	<u>20 561</u>
Closing work in process			<u>\$46 009</u>
Check:			
Cost of goods completed and transferred out			<u>423 117</u>
Cost of closing work in process			<u>46 009</u>
Total costs accounted for			<u>\$469 126*</u>

* There is a rounding error as many items were rounded up

PROBLEM 5.38 (40 minutes) Process costing with spoilage; journal entries: manufacturer

1 Schedule of equivalent units

	Physical units	Percentage of completion with respect to conversion	Equivalent units	
			Direct material	Conversion
Work in process, 1 April	100 000	60%		
Units started in April	<u>200 000</u>			
Total units to account for	<u>300 000</u>			
Units completed and transferred out during	220 000		220 000	220 000
Units spoiled during April	60 000	25%	60 000	15 000
Work in process, 30 April	<u>20 000</u>	80%	<u>20 000</u>	<u>16 000</u>
Total units accounted for	<u>300 000</u>			
Total equivalent units			<u>300 000</u>	<u>251 000</u>

2 Unit cost and cost of goods completed and transferred out during April

	Direct material	Conversion	Total
Work in process, 1 April	\$ 58 500	\$ 24 000	\$ 82 500
Costs incurred during April	<u>114 000</u>	<u>76 400</u>	<u>190 400</u>
Total costs to account for	<u>\$172 500</u>	<u>\$100 400</u>	<u>\$272 900</u>
Equivalent units	300 000	251 000	
Cost per equivalent unit	\$0.575	\$0.40	\$0.975

3 Cost of goods completed and transferred out during April

	Direct material	Conversion	Total
Cost of goods transferred (spoilage not included):			
Material (220 000 units @ \$0.575)	\$126 500		
Conversion (220 000 units @ \$0.40)		\$88 000	\$214 500

4 Cost of spoiled units in April

Material	60 000 units @ 0.575	\$34 500
Conversion	15 000 units @ \$0.40	<u>6 000</u>
		<u>\$40 500</u>

5 Costs remaining in WIP at 30 April

Material	20 000 units @ \$0.575	\$11 500
Conversion	16 000 units @ \$0.40	<u>6 400</u>
		\$17 900

6 Journal entries

(a) Normal spoilage:

Finished goods inventory	\$255 000	
WIP		\$255 000

(b) Abnormal spoilage:

Finished goods inventory	\$214 500	
Loss on abnormal spoilage	40 500	
WIP		\$255 000

- 7 If the FIFO method had been used, in the production report the new equivalent units accomplished for the current month would need to be calculated by reducing the total equivalent units by the number of equivalent units in the opening WIP inventory. Also we would usually need to make an assumption as to whether the spoiled units were started in the previous period or in the current period. In this example, as the opening WIP is at the 60% completion stage we know that these are all good units. Spoiled units are detected at the 25% stage, so that means that the spoiled units all came from units started in the current month.

CASE 5.45 (60 minutes) (appendix) Sequential production departments; FIFO method; JIT: manufacturer

**Production report: Grading Department
(FIFO method)**

	Physical units	Percentage of completion with respect to conversion	Equivalent units	
			Direct material	Conversio n
Work in process, 1 November	0	--		
Units started during November	<u>36 000</u>			
Total units to account for	<u>36 000</u>			
Units completed and transferred out during November	36 000	100%	36 000	36 000
Work in process, 31 November	<u>0</u>	--	--	0
Total units accounted for	<u>36 000</u>			
Total equivalent units			36 000	36 000
Less: Equivalent units represented in 1 November work in process			<u>0</u>	<u>0</u>
New equivalent units accomplished in November only			<u>36 000</u>	<u>36 000</u>