



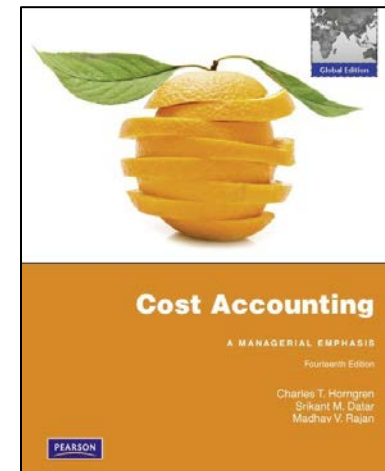
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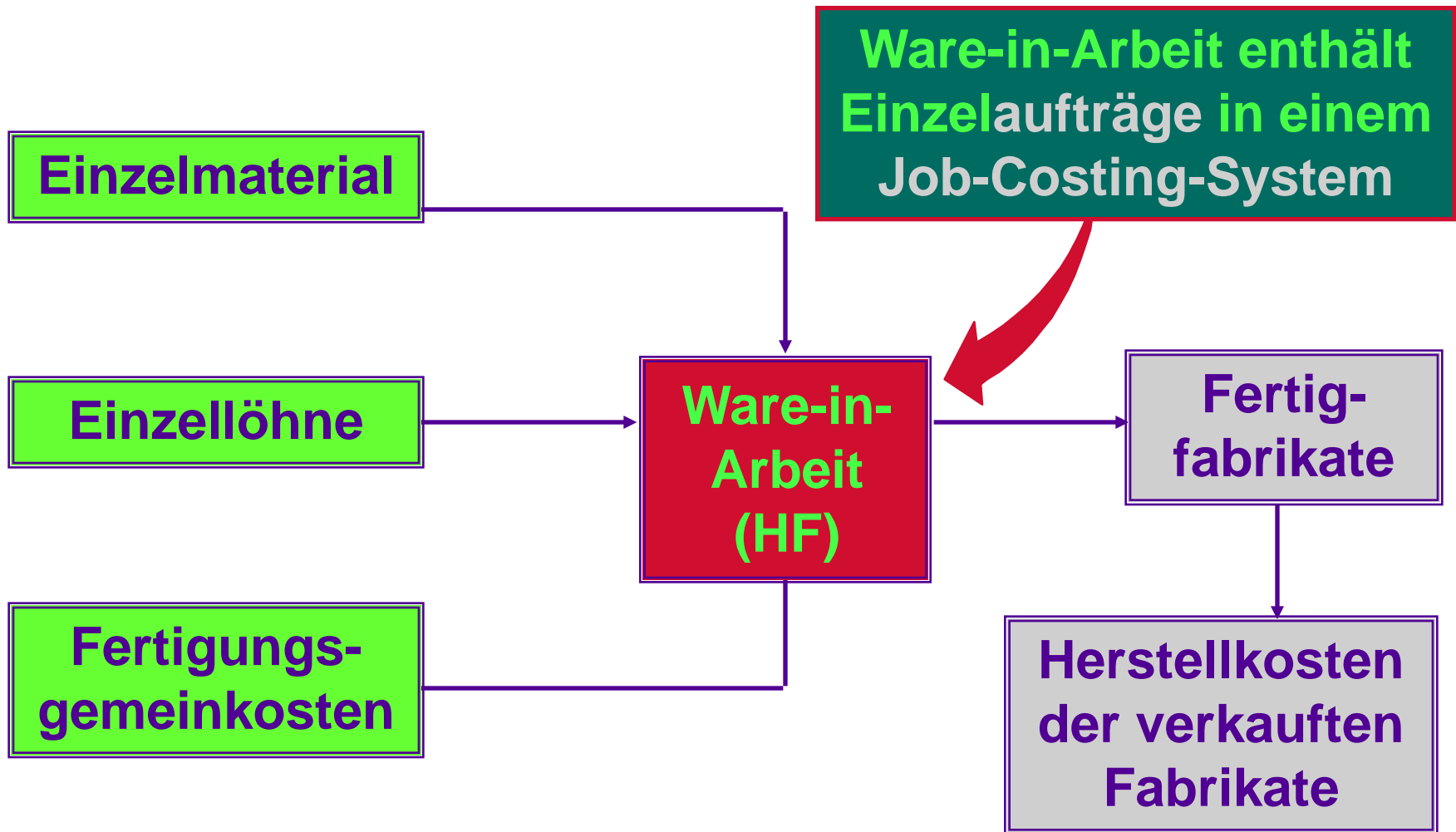
MAccFin – Master of Arts in Accounting and Finance
Pflichtwahlfach
7,116,1.00 Techniken im Management Accounting

Process Costing Theorie & Cases

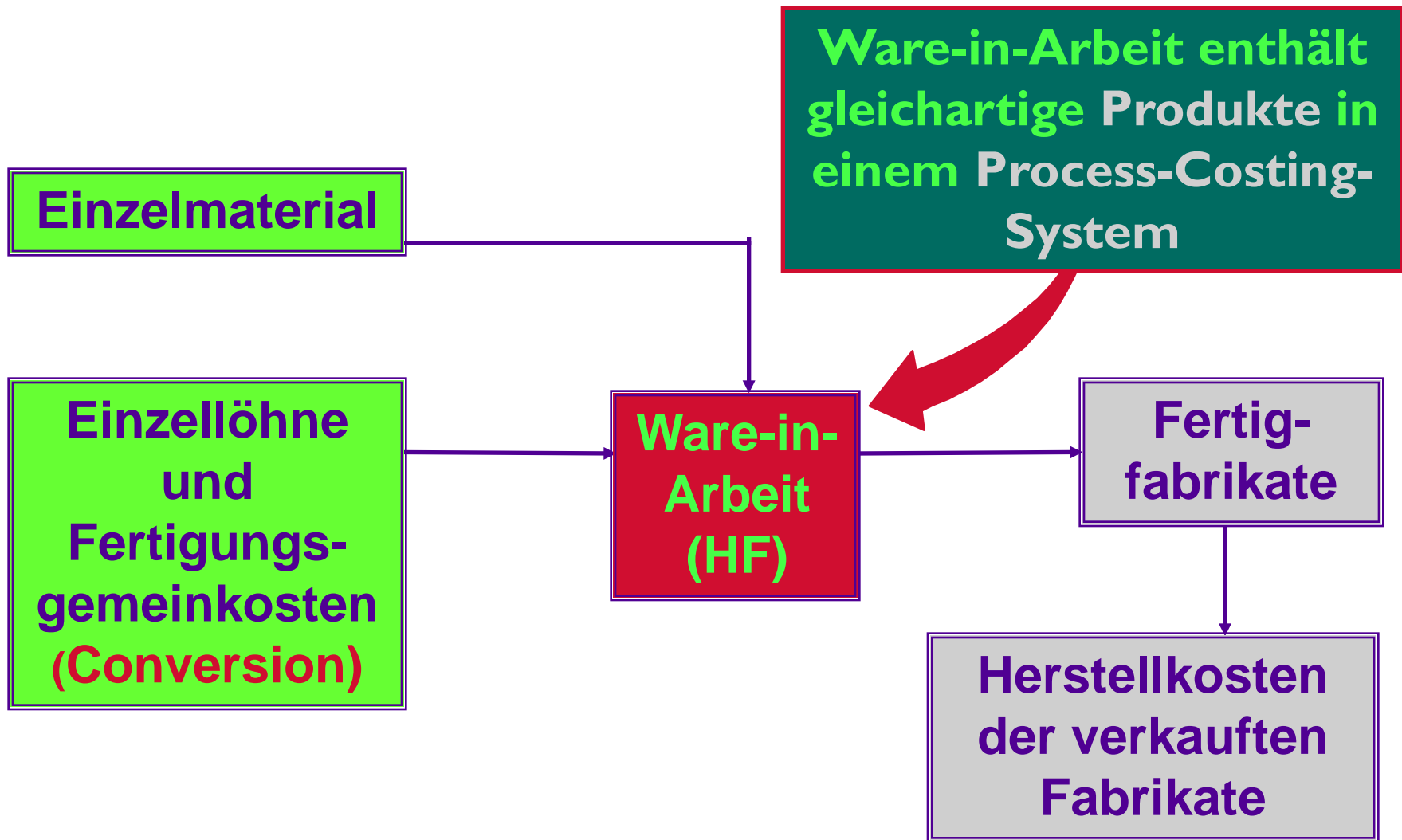
HDR, 14ed, Chapter 17



Job Costing versus Process Costing - Forts.



Job Costing versus **Process Costing** - Forts.

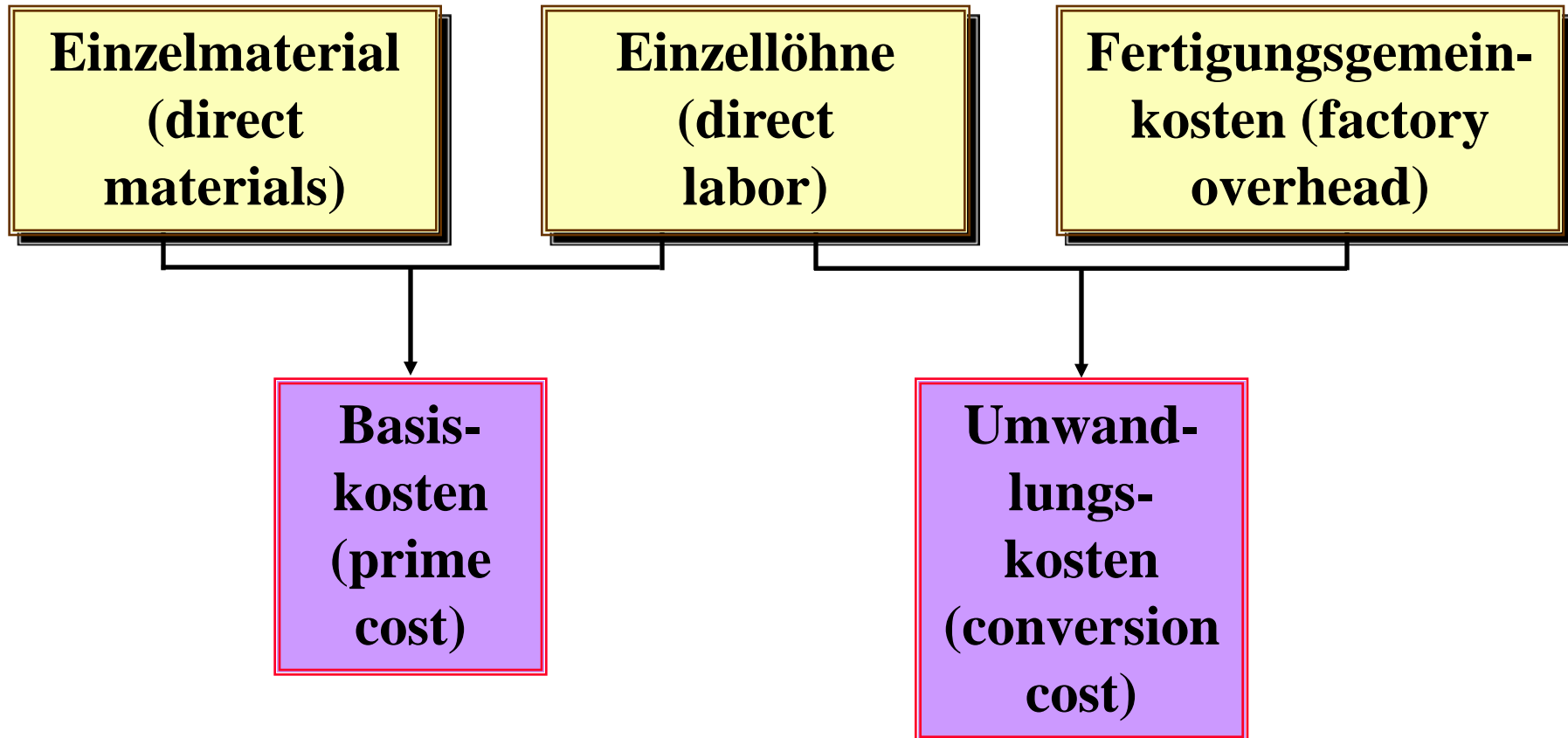


Exkurs: Basiskosten (prime costs) und Umwandlungskosten (conversion costs)

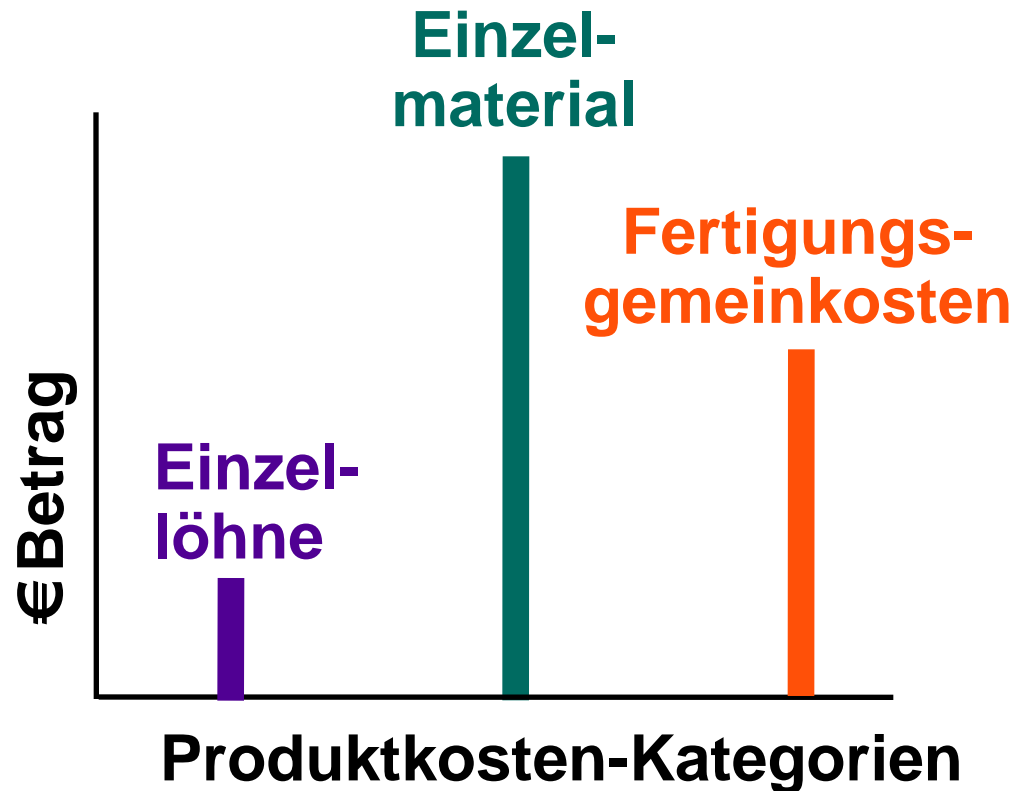
- ❖ Einzelne Komponenten der Herstell- bzw. Fertigungskosten eines Produktionsunternehmens werden häufig aus Gründen der Relevanz zusammengefasst.
- ❖ Die zwei bekanntesten «Bündel» sind:
 - Basiskosten (prime costs): Diese umfassen alle Herstell- bzw. Fertigungs-Einzelkosten, also die Materialeinzelkosten und Einzellöhne, und
 - Umwandlungskosten (conversion costs): Diese umfassen alle Herstell- bzw. Fertigungskosten ausgenommen die Materialeinzelkosten, also die Einzellöhne, Gemeinkostenlöhne und übrige Fertigungsgemeinkosten (inkl. Materialgemeinkosten).
- ❖ Im Zuge der fortschreitenden Automatisierung und der daraus folgenden betragsmässig geringen Einzellöhne konzentrieren sich Unternehmen vermehrt auf die Materialeinzelkosten und die Umwandlungskosten.

Exkurs: Basiskosten (prime costs) und Umwandlungskosten (conversion costs) - Forts.

Herstellkosten werden oft wie folgt zusammengefasst:

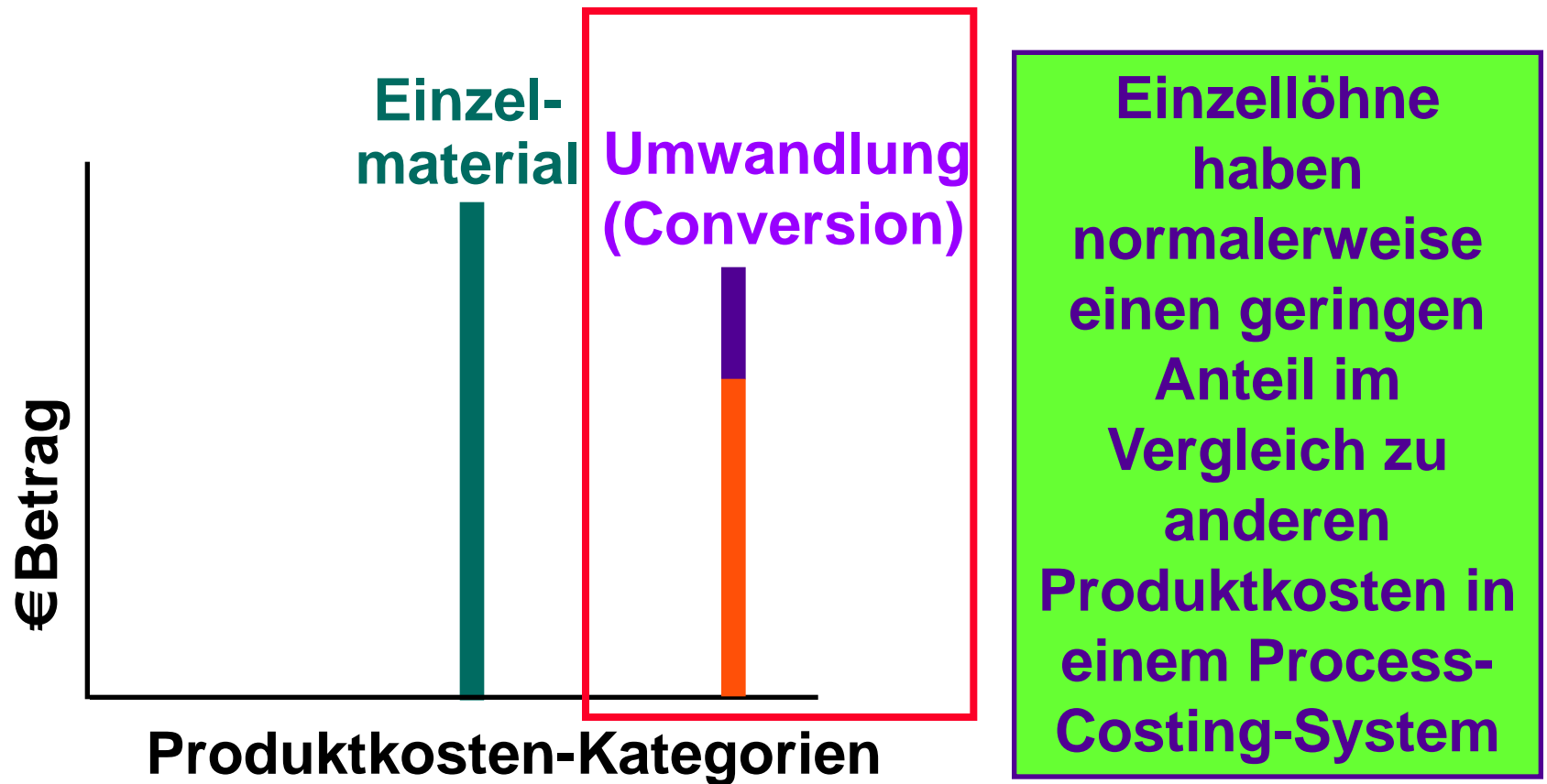


Process Costing - Forts.



**Einzellöhne
haben
normalerweise
einen geringen
Anteil im
Vergleich zu
anderen
Produktkosten in
einem Process-
Costing-System**

Process Costing - Forts.



Aus diesem Grund werden Einzellöhne und Fertigungsgemeinkosten in einer Kategorie zusammengefasst, nämlich in die Umwandlungskosten (conversion costs)

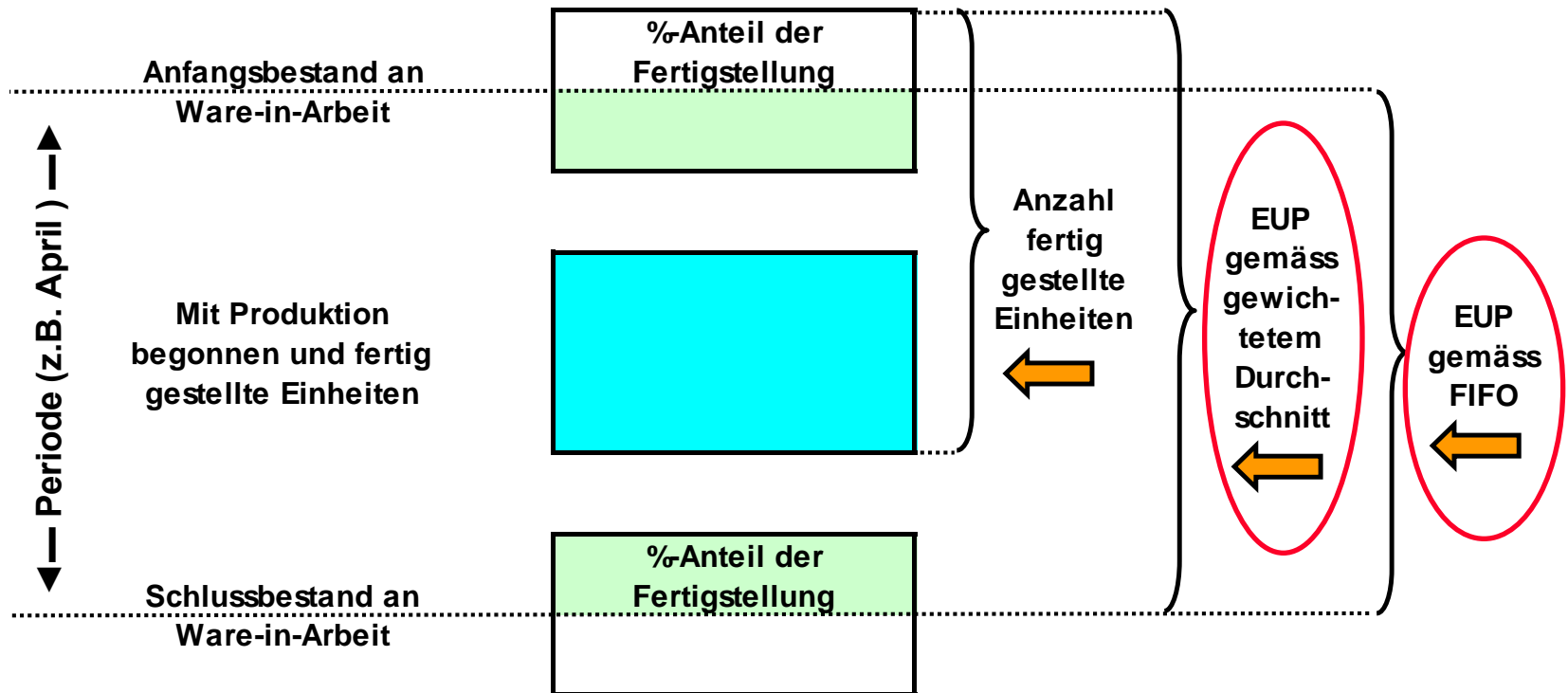
Äquivalenz-Einheiten der Produktion (Equivalent Units of Production (EUP))

- ❖ Aufgrund des Matching-Prinzips ist es für den Periodengerechten Abschluss wesentlich, eine korrekte Bewertung der Ware-in-Arbeit (work-in-process) sowie der Fertigfabrikate (finished goods) bzw. fertig gestellten Fabrikate (cost of goods transferred out) vorzunehmen.
- ❖ Beim **Job-Costing** wird jeder Einzelauftrag kostenmässig klar erfasst. Es besteht somit auch keine Schwierigkeit bei der Bewertung der Ware-in-Arbeit (Halbfabrikate) und der fertig gestellten Fabrikate.
- ❖ Beim **Process-Costing** hingegen werden die Produktkosten für die gleichartigen Produkte insgesamt erfasst. Somit ist es auch nur möglich, die Bewertung der Ware-in-Arbeit pauschal bzw. Prozent-mässig vorzunehmen.
- ❖ Um dies doch möglichst genau vorzunehmen zu können bedient man sich der sogenannten Äquivalenz-Einheiten der Produktion (Equivalent Units of Production (EUP)).

Äquivalenz-Einheiten der Produktion (Equivalent Units of Production (EUP)) - Forts.

❖ Dabei bedient man sich zweier Methoden:

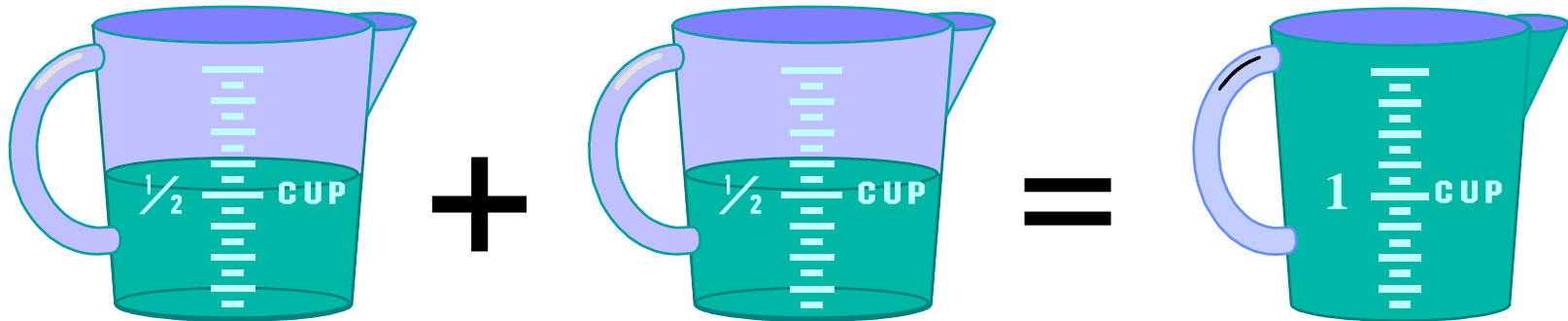
- **FIFO (First-In, First-Out)**
- **gewichteter Durchschnitt (weighted average)**



Äquivalenz-Einheiten der Produktion (Equivalent Units of Production (EUP)) - Forts.

BLOCHER, CHEN, COKINS, LIN. 32005. Cost Management. PowerPoint-Präsentation, Chapter 11, Folie 17.

**Two one-half filled cups are
equivalent to one full cup.**



**So, 10,000 units 70 percent complete
are equivalent to 7,000 complete units.**

Äquivalenz-Einheiten der Produktion (Equivalent Units of Production (EUP)) - Beispiel 1

BLOCHER, CHEN, COKINS, LIN. 32005. Cost Management. PowerPoint-Präsentation, Chapter 11, Folie 18.

During its first month of business, Jones started 15,000 units and completed 10,000 units, leaving 5,000 units in process 30 percent complete. How many equivalent units of production did Jones have for the month?

- a. 10,000**
- b. 11,500**
- c. 13,500**
- d. 15,000**

Äquivalenz-Einheiten der Produktion (Equivalent Units of Production (EUP)) - Beispiel 1 - Lösungsvorschlag

BLOCHER, CHEN, COKINS, LIN. 32005. Cost Management. PowerPoint-Präsentation, Chapter 11, Folie 19.

During its first month of business, Jones started 15,000 units and completed 10,000 units, leaving 5,000 units in process 30 percent complete. How many equivalent units of production did Jones have for the month?

- a. 10,000
- b. 11,500**
- c. 13,500
- d. 15,000

$$10,000 \text{ units} + (5,000 \text{ units} \times .30) = 11,500 \text{ equivalent units}$$

Äquivalenz-Einheiten der Produktion (Equivalent Units of Production (EUP)) - Beispiel 2

BLOCHER, CHEN, COKINS, LIN. 32005. Cost Management. PowerPoint-Präsentation, Chapter 11, Folie 20.

Now assume that Jones incurred \$27,600 in production costs for the 11,500 equivalent units. What was Jones' cost per equivalent unit for the period?

- a. \$1.84**
- b. \$2.40**
- c. \$2.76**
- d. \$2.90**

Äquivalenz-Einheiten der Produktion (Equivalent Units of Production (EUP)) - Beispiel 2 - Lösungsvorschlag

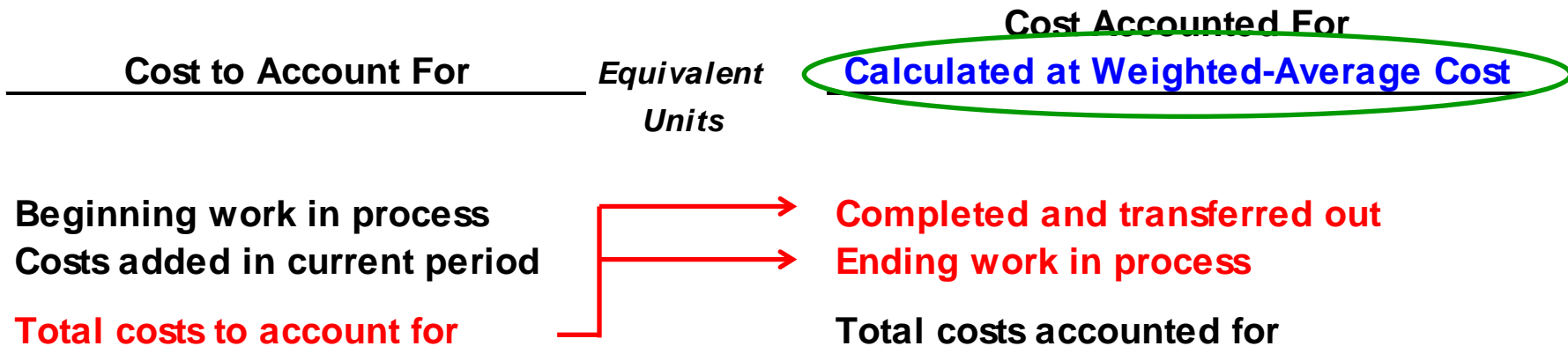
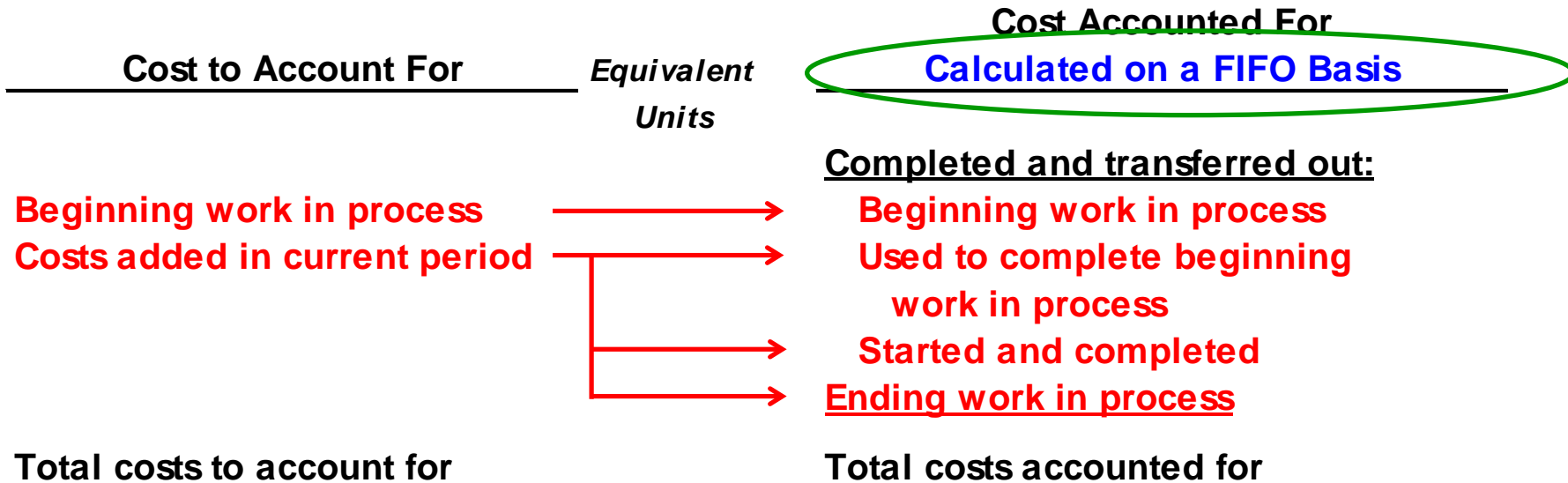
BLOCHER, CHEN, COKINS, LIN. 32005. Cost Management. PowerPoint-Präsentation, Chapter 11, Folie 21.

Now assume that Jones incurred \$27,600 in production costs for the 11,500 equivalent units. What was Jones' cost per equivalent unit for the period?

- a. \$1.84
- b. \$2.40**
- c. \$2.76
- d. \$2.90

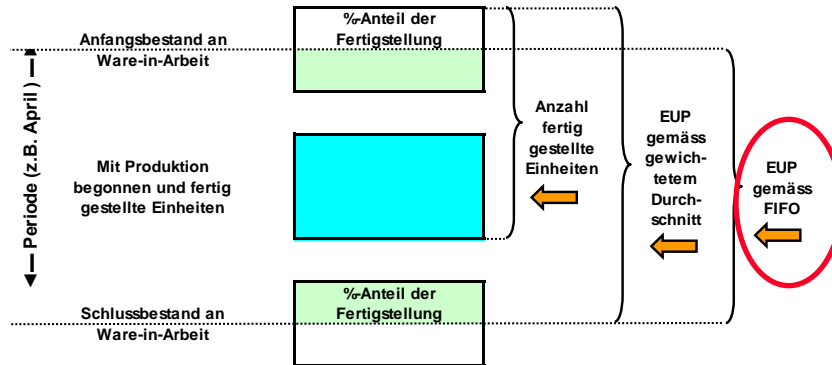
**$\$27,600 \div 11,500 \text{ equivalent units}$
 $= \$2.40 \text{ per equivalent unit}$**

Äquivalenz-Einheiten der Produktion (Equivalent Units of Production (EUP)) - Forts.



Äquivalenz-Einheiten der Produktion (Equivalent Units of Production (EUP))

Schematische Vorgehensweise



EUP-Berechnungs-Schema: FIFO

	total # of units	for materials	for conversion costs	EUP for materials	EUP for conversion costs
WIP Beginning inventory, May 1	xxx	$\alpha\%$ used to complete	$\beta\%$ used to complete	$(xxx) \cdot (\alpha\% \text{ used to complete})$	$(xxx) \cdot (\beta\% \text{ used to complete})$
+ Started and Completed during May	yyy	always 100%	always 100%	yyy	yyy
+ WIP Ending inventory, May 31	zzz	$\varepsilon\%$ used	$\gamma\%$ used	$(zzz) \cdot (\varepsilon\% \text{ used})$	$(zzz) \cdot (\gamma\% \text{ used})$
= Total	Σ (total # of units)			Σ (EUP for materials)	Σ (EUP for conversion costs)

WIP Beginning inventory costs	aaa.aa	ccc.cc
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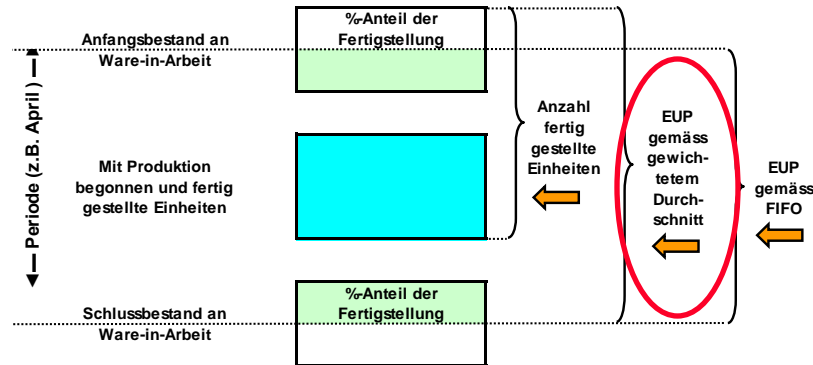
Costs incurred during period	bbb.bb	ddd.dd
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Ø EUP costs

$bbb.bb / (\Sigma \text{ (EUP for materials)})$
 $ddd.dd / (\Sigma \text{ (EUP for conversion costs)})$

Äquivalenz-Einheiten der Produktion (Equivalent Units of Production (EUP))

Schematische Vorgehensweise



EUP-Berechnungs-Schema: Weighted Average

	total # of units	for materials	for conversion costs	EUP for materials	EUP for conversion costs
WIP Beginning inventory, May 1	xxx	always 100%	always 100%	xxx	xxx
+ Started and Completed during May	yyy	always 100%	always 100%	yyy	yyy
+ WIP Ending inventory, May 31	zzz	ε% used	γ% used	(zzz)·(ε% used)	(zzz)·(γ% used)
= Total	Σ (total # of units)			Σ (EUP for materials)	Σ (EUP for conversion costs)

WIP Beginning inventory costs and
costs incurred during period

eee.aa = (aaa.aa) + (bbb.bb)
fff.bb = (ccc.cc) + (ddd.dd)

Ø EUP costs

eee.aa / (Σ (EUP
for materials))
fff.bb / (Σ (EUP for
conversion costs))

EUP

Audit Company

Total Total
66'000.00 66'000.00

Beginning WIP

4 audits
16'000.00 value
30% degree of
completion

Costs Incurred during period

Started 11 audits
50'000.00 value

Ending WIP

6 audits
??? value
40% degree of
completion

FIFO WACA
11'764.71 13'894.74

Completed & Transferred Out

9 audits
??? value

FIFO WACA
54'235.29 52'105.26

**FIFO Cost Allocation to WIP Ending & Cost of Goods
Transferred Out**

	audits		EUP	EUP costs	
BWIP completion	4	70%	2.8	13'725.49	
Started and Completed	5	100%	5	24'509.80	
Ending WIP	6	40%	2.4	11'764.71	
	15		10.2	50'000.00	per EUP 4'901.96

Beginning WIP
16'000.00

Costs Incurred during period 50'000.00

Beginning WIP 16'000.00
BWIP completion 13'725.49
Started and Completed 24'509.80 54'235.29
Ending WIP 11'764.71

**Weighted-Average Cost Allocation to WIP Ending &
Cost of Goods Transferred Out**

	audits		EUP	EUP costs	
BWIP completion	4	100%	4	23'157.89	
Started and Completed	5	100%	5	28'947.37	
Ending WIP	6	40%	2.4	13'894.74	
	15		11.4	66'000.00	per EUP 5'789.47

Beginning WIP
16'000.00

Beginning WIP 16'000.00
Costs Incurred during period 50'000.00
Total costs to account for 66'000.00

BWIP completion 23'157.89
Started and Completed 28'947.37 52'105.26
Ending WIP 13'894.74

Beispiel: Kimbeth Manufacturing

CMA [Certified Management Accountants] 695 3, in: CMA Test Prep. 4.1, Gleim's CMA/CFM Test Prep.

- ❖ Kimbeth Manufacturing uses a process cost system to manufacture Dust Density Sensors for the mining industry. The following information pertains to operations for the month of May.

	<u>Units</u>
♦ Beginning work-in-process inventory, May 1	16,000
♦ Started in production during May	100,000
♦ Completed production during May	92,000
♦ Ending work-in-process inventory, May 31	24,000

- ❖ The beginning inventory was 60% complete for materials and 20% complete for conversion costs. The ending inventory was 90% complete for materials and 40% complete for conversion costs.
- ❖ Costs pertaining to the month of May are as follows:
 - Beginning inventory costs are materials, \$54,560; direct labor, \$20,320; and factory overhead, \$15,240.
 - Costs incurred during May are materials used, \$468,000; direct labor, \$182,880; and factory overhead, \$391,160.

Beispiel: Kimbeth Manufacturing

Lösungsvorschlag - FIFO-Methode

EUP calculation FIFO

WIP Beginning inventory, May 1
+ Started and Completed during May
+ WIP Ending inventory, May 31
= Total

total # of units	for materials	for conversion costs	EUP for materials	EUP for conversion costs	Total
16'000	40%	80%	6'400	12'800	
76'000	100%	100%	76'000	76'000	
24'000	90%	40%	21'600	9'600	
<u>116'000</u>			<u>104'000</u>	<u>98'400</u>	

WIP Beginning inventory costs, May 1

Costs incurred during May

Ø EUP costs

FIFO Cost Allocation to WIP

Ending & Cost of Goods

Transferred Out

WIP Beginning inventory costs, May 1
+ Allocated costs for completion of WIP Beginning inventory, May 1
+ Allocated costs for Started and Completed during May
= Total costs for Cost of Goods Transferred Out

Allocated costs for WIP Ending inventory, May 31

54'560.00	35'560.00	90'120.00
468'000.00	574'040.00	1'042'040.00
4.500	5.834	
		1'132'160.00
Cost of materials	Cost of Conversion	Total
54'560.00	35'560.00	90'120.00
28'800.00	74'671.87	103'471.87
342'000.00	443'364.23	785'364.23
425'360.00	553'596.10	978'956.10
97'200.00	56'003.90	153'203.90
		1'132'160.00

468'000.00 /
104'000

574'040.00 /
98'400

Beispiel: Kimbeth Manufacturing

Lösungsvorschlag - FIFO-Methode - Forts.

<u>Cost to Account For</u>		<u>Equivalent Units</u>	<u>Cost Accounted For Calculated on a FIFO Basis</u>	
90'120.00	Beginning work in process	<i>materials</i> 9'600	<u>Completed and transferred out:</u>	
		<i>conversion</i> 3'200	Beginning work in process 90'120.00	
<u>1'042'040.00</u>	Costs added in current period	<i>materials</i> 6'400	Used to complete beginning work in process	103'471.87
		<i>conversion</i> 12'800		
		<i>mat. & conv.</i> 76'000	Started and completed	785'364.23
		<i>materials</i> 21'600		
		<i>conversion</i> 9'600	Ending work in process	<u>153'203.90</u>
<u>1'132'160.00</u>	Total costs to account for		Total costs accounted for	<u>1'132'160.00</u>

Beispiel: Kimbeth Manufacturing

Lösungsvorschlag - Weighted-Average-Methode

EUP calculation Weighted Average

WIP Beginning inventory, May 1
+ Started and Completed during May
+ WIP Ending inventory, May 31
= Total

total # of units	for materials	for conversion costs	EUP for materials	EUP for conversion costs
16'000	100%	100%	16'000	16'000
76'000	100%	100%	76'000	76'000
24'000	90%	40%	21'600	9'600
<u>116'000</u>			<u>113'600</u>	<u>101'600</u>

WIP Beginning inventory costs, May 1,
and costs incurred during May
Ø EUP costs

Weighted-Average Cost Allocation to WIP Ending & Cost of Goods Transferred Out

Total costs for Completed and
Transferred Out (including WIP
Beginning inventory costs, May 1)

Allocated costs for WIP Ending inventory, May 31

54'560 +
468'000

35'560 +
574'040

522'560.00 /
113'600

609'600.00 /
101'600

522'560.00 609'600.00 1'132'160.00
4.600 6.000

Cost of materials	Cost of Conversion	Total
423'200.00	552'000.00	975'200.00
99'360.00	57'600.00	156'960.00

1'132'160.00

Beispiel: Kimbeth Manufacturing

Lösungsvorschlag - Weighted-Average-Methode - Forts.

<u>Cost to Account For</u>		<u>Equivalent Units</u>	<u>Cost Accounted For Calculated at Weighted-Average Cost</u>	
90'120.00	Beginning work in process	mat. & conv. 92'000	Completed and transferred out	975'200.00
<u>1'042'040.00</u>	Costs added in current period	materials 21'600	Ending work in process	<u>156'960.00</u>
		conversion 9'600		
<u><u>1'132'160.00</u></u>	Total costs to account for		Total costs accounted for	<u><u>1'132'160.00</u></u>

HDR, 14ed, Problem 17-19 bis 17-22, Fenton Watches, Inc.

17-19 Weighted-average method, equivalent units. Consider the following data for the assembly division of Fenton Watches, Inc.:

The assembly division uses the weighted-average method of process costing.

	Physical Units (Watches)	Direct Materials	Conversion Costs
Beginning work in process (May 1) ^a	80	\$ 493,360	\$ 91,040
Started in May 2012	500		
Completed during May 2012	460		
Ending work in process (May 31) ^b	120		
Total costs added during May 2012		\$3,220,000	\$1,392,000

^aDegree of completion: direct materials, 90%; conversion costs, 40%.

^bDegree of completion: direct materials, 60%; conversion costs, 30%.

Compute equivalent units for direct materials and conversion costs. Show physical units in the first column of your schedule.

HDR, 14ed, Problem 17-19 bis 17-22, Fenton Watches, Inc. - Forts.

❖ Required

17-20 Weighted-average method, assigning costs (continuation of 17-19).

For the data in Exercise 17-19, summarize total costs to account for, calculate cost per equivalent unit for direct materials and conversion costs, and assign total costs to units completed (and transferred out) and to units in ending work in process.

17-21 FIFO method, equivalent units. Refer to the information in Exercise 17-19. Suppose the assembly division at Fenton Watches, Inc., uses the FIFO method of process costing instead of the weighted-average method. Compute equivalent units for direct materials and conversion costs. Show physical units in the first column of your schedule.

17-22 FIFO method, assigning costs (continuation of 17-21).

For the data in Exercise 17-19, use the FIFO method to summarize total costs to account for, calculate cost per equivalent unit for direct materials and conversion costs, and assign total costs to units completed (and transferred out) and to units in ending work in process.

HDR, 14ed, Problem 17-19 und 17-20, Fenton Watches, Inc. - Lösungsvorschlag

EUP calculation Weighted Average

	total # of units	for materials	for conversion costs	EUP for materials	EUP for conversion costs
WIP Beginning inventory, May 1	80	100%	100%	80	80
+ Started and Completed during May	380	100%	100%	380	380
+ WIP Ending inventory, May 31	120	60%	30%	72	36
= Total	<u>580</u>			<u>532</u>	<u>496</u>

WIP Beginning inventory costs, May 1,
and costs incurred during May
Ø EUP costs

3'713'360.00	1'483'040.00	5'196'400.00
6'980.000	2'990.000	

Weighted-Average Cost Allocation to WIP Ending & Cost of Goods Transferred Out

Total costs for Completed and
Transferred Out (including WIP
Beginning inventory costs, May 1)

Allocated costs for WIP Ending inventory, May 31

Total cost accounted for

Cost of materials	Cost of Conversion	Total
3'210'800.00	1'375'400.00	4'586'200.00
502'560.00	107'640.00	610'200.00
3'713'360.00	1'483'040.00	5'196'400.00

HDR, 14ed, Problem 17-21 und 17-22, Fenton Watches, Inc. - Lösungsvorschlag

EUP calculation FIFO

	total # of units	for materials	for conversion costs	EUP for materials	EUP for conversion costs	Total
WIP Beginning inventory, May 1	80	10%	60%	8	48	
+ Started and Completed during May	380	100%	100%	380	380	
+ WIP Ending inventory, May 31	120	60%	30%	72	36	
= Total	<u>580</u>			<u>460</u>	<u>464</u>	

WIP Beginning inventory costs, May 1	493'360.00	91'040.00	584'400.00
Costs incurred during May	3'220'000.00	1'392'000.00	4'612'000.00
Ø EUP costs	7'000.000	3'000.000	
			5'196'400.00

FIFO Cost Allocation to WIP

Ending & Cost of Goods

Transferred Out

	Cost of materials	Cost of Conversion	Total
WIP Beginning inventory costs, May 1	493'360.00	91'040.00	584'400.00
+ Allocated costs for completion of WIP Beginning inventory, May 1	56'000.00	144'000.00	200'000.00
+ Allocated costs for Started and Completed during May	2'660'000.00	1'140'000.00	3'800'000.00
= Total costs for Cost of Goods Transferred Out	3'209'360.00	1'375'040.00	4'584'400.00
Allocated costs for WIP Ending inventory, May 31	504'000.00	108'000.00	612'000.00
Total cost accounted for	3'713'360.00	1'483'040.00	5'196'400.00

HDR, 14ed, Problem 17-19 bis 17-22, Fenton Watches, Inc. - Lösungsvorschlag Überblick

Fenton Watches, Inc.

Cost to Account For		Equivalent Units	Cost Accounted For Calculated on a FIFO Basis	
584'400.00	Beginning work in process	materials 72	Completed and transferred out: Beginning work in process	584'400.00
		conversion 32		
<u>4'612'000.00</u>	Costs added in current period	materials 8	Used to complete beginning work in process	200'000.00
		conversion 48		
		mat. & conv. 380	Started and completed	3'800'000.00
		materials 72	Ending work in process	<u>612'000.00</u>
		conversion 36		
<u>5'196'400.00</u>	Total costs to account for		Total costs accounted for	<u>5'196'400.00</u>

Cost to Account For		Equivalent Units	Cost Accounted For Calculated at Weighted-Average Cost	
584'400.00	Beginning work in process	mat. & conv. 460	Completed and transferred out	4'586'200.00
<u>4'612'000.00</u>	Costs added in current period	materials 72	Ending work in process	<u>610'200.00</u>
		conversion 36		
<u>5'196'400.00</u>	Total costs to account for		Total costs accounted for	<u>5'196'400.00</u>