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THE GREAT TEST

- So, the great test of life is to see whether we will hearken to and obey God's commands in the midst of the storms of life. It is not to endure storms, but to choose the right while they rage.
- We were promised that we would have Jehovah, Jesus Christ, as our Savior and Redeemer. He would assure that we would all be resurrected. And He would make it possible for us to pass the test of life if we exercised **faith in Him** by being obedient.
- Decisions now to exercise faith and be steady in obedience will in time produce great faith and assurance. That is the **spiritual preparedness** we all will need. And it will qualify us in the moments of crisis to receive the Lord's promise that "**if ye are prepared ye shall not fear**."
- (Henry B Eyring)

1

1

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The OTHER test: ACC 402 Exam 1

"if ye are prepared ye shall not fear"

- **Available at the Testing Center during Testing Center hours** (watch the closing time)
- All multiple-choice format, mostly computational questions.
  - M/C questions largely remove the ability to guess or confirm the answer. You should prepare for this exam like it was all open-ended.
  - These are "None of the Above"-type answer options, so you should use any time remaining at the end of the exam to carefully reread questions and check your answers.
- **3 hours (180 minutes) to finish the exam. Loss of 2 points per minute after 185 minutes.**
- You may only use a simple calculator or a business calculator for the exam. Programmable calculators of all types are not allowed (no smartphones).

2

2

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The OTHER test: ACC 402 Exam 1

"if ye are prepared ye shall not fear"

POINTS

Short (S) Multiple Choice (4 pts each)	3 questions _____	/ 12 points
Medium (M) Multiple Choice (6 pts each)	12 questions _____	/ 72 points
Long (L) Multiple Choice (8 pts each)	12 questions _____	/ 96 points
Total	27 questions _____	**/ 180 points**

CONTENT

Cost Flows	12 points
Job Order Costing	22 points
Support Department Costing	22 points
Joint Cost Allocation	8 points
Process Costing	66 points
Absorption Costing	50 points
Total	**180 points**

Last year's topical distribution.

3

3

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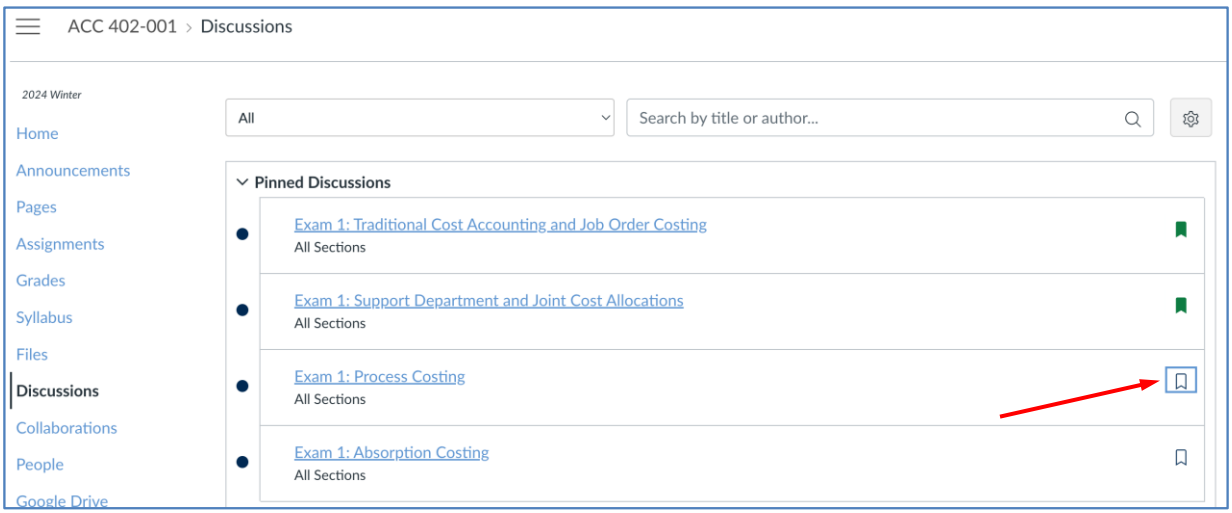
Preparing for Exam 1

Online Open Office Hours (using Discussion Boards on Canvas and Zoom) from 8:00 to 10:00am on Feb 9th. ZOOM ID: 801 422 1969 (Smith's Zoom Room)



4

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One More Time….

5

5

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Paper Airplanes and Cost Accounting

Team Roles

- Five-person teams have one warehouse supervisor, one accountant, and three folders
- Four-person teams have one warehouse supervisor/accountant and three folders

Accounting Data

- $10 sales price per plane
- $1 cost per sheet of paper (direct materials cost)
- $10 cost per employee per production period
- $100 in general overhead costs per production period

Big Change!

- Your market demand is capped at 5 planes
- **The most profitable team wins!**

Team Name	
# planes sold	x
Revenue	$
DM	($)
DL	($)
MOH	($)
Gross Profit	$

6

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Absorption (Full) vs. Variable Costing

- Absorption costing is a method of inventory costing in which
  - *all* **variable** manufacturing costs ….AND
  - *all* **fixed** manufacturing costs are included (*absorbed* = *capitalized*) as inventoriable costs
  - (GAAP hat is on)
- Variable costing is a method of inventory costing in which
  - *only* **variable** manufacturing costs are included (*absorbed*) as inventoriable costs
  - All fixed manufacturing costs are expensed as incurred (do NOT go into inventory)
  - (GAAP hat is off)

7

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Two Worlds of Income Measurement

From Cost Function		To Cost Behavior
Revenue	→	Revenue
− COGS (Exp.)	→	− Variable Costs (Exp.)
Gross Margin		Contribution Margin
− SG&A (Exp.)	→	− Fixed Costs (Exp.)
Operating Profit	≠	Operating Profit

Operating Profit will DIFFER under these two approaches due to changes in how Fixed Manufacturing Costs are treated.

8

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How are these statements different?

Required by GAAP

Variable Costing Income Statement

Sales		$ 45,000
Variable production costs	15,000	
Variable selling costs	5,000	20,000
Contribution Margin		25,000
Fixed production costs	10,000	
Fixed selling costs	1,500	11,500
Operating Income		$ 13,500

Absorption Costing Income Statement

Sales		$ 45,000
Cost of Goods Sold		
Variable COGS	15,000	
Fixed COGS	8,500	23,500
Contribution Margin		21,500
Fixed selling costs	1,500	
Variable selling Costs	5,000	6,500
Operating Income		$ 15,000

Why are these two numbers different?

*Under variable costing fixed production costs on the income statement = 100% what was incurred THIS PERIOD.

*Under absorption costing fixed production costs in COGS contain only SOME of the costs incurred <u>this</u> period and ALSO include some of the costs incurred in <u>prior</u> periods.

9

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Absorption Costing: Two problems (at least)

1. Distorted incentives
2. Bad business decisions
   a. **Cost per unit calculations when unitizing fixed costs**
   b. **BEWARE the DEATH SPIRAL!**

10

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Absorption Costing and Distorted Incentives

At the corporate level, performance measures such as operating margins (computed using absorption costing) and number of vehicles per employee are used. The performance measures that are used to evaluate manufacturing include: fixed cost, program spending, material cost, plant cost, variable cost, HPV, and cost per vehicle. As a result, there is an incentive to overproduce to improve cost per vehicle and justify the expenditures on fixed cost, program spending, and plant cost. All these costs have a fixed component that declines on a per-unit basis when production volume (the denominator) increases. As a result, even though production managers are aware that the demand estimates are optimistic, the performance measurement system discourages reducing production quantity if demand is lower than expected, because then unit costs increase…

Conservatively estimating that approximately one-fourth of the vehicles sold in 2004 sat longer than 60 days, this translates to a $5 million loss in 2004. Knowing that we pushed and held even more vehicles the following years, the numbers can't be prettier for 2005 or 2006.

Brüggen, Krishnan, and Sedatole
(Contemporary Accounting Research, 2011)

11

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Absorption Costing, Distorted Incentives, and Market Reaction

Prior research demonstrates that manufacturing firms increase production (relative to sales) to transfer fixed costs from cost of goods sold (COGS) to inventory accounts, thereby increasing income to reach or surpass earnings thresholds. We examine how the market reacts to this earnings management strategy. We find that investors respond positively to inventory growth based on an expectation of increased future sales; however, this signal is weaker for inventory manipulators. Further, the market premium from meeting or beating analyst earnings forecasts by manipulating inventory is smaller than the premium for achieving this threshold absent inventory manipulation or through accrual manipulation. Finally, we examine firms considered to be ''serial'' inventory manipulators, finding that the market consistently discounts earnings beats for these firms, suggesting that inventory manipulation erodes investor confidence in firms' earnings.

Cook, Huston, Kinney, and Smith
(*Journal of Management Accounting Research*, 2022)

12

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Differences in Income (can be higher or lower!)

- Operating Income will differ between Absorption and Variable Costing
- The amount of the difference reflects the amount of current period Fixed Product Costs capitalized (*"absorbed"*) as Inventory **and** previous period Fixed Product Costs "released" under Absorption costing
- Assume for now:
  1. FIFO cost flows (we'll always keep this one)
  2. Fixed overhead application rate = Fixed costs/Allocation base is constant from period to period (this will change)

13

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Comparative Income Effects when Both Assumptions from the last slide are true

Production = Sales (BI = EI)	Absorption Costing Income = Variable Costing Income
Production > Sales (BI < EI)	Absorption Costing Income > Variable Costing Income
Production < Sales (BI > EI)	Absorption Costing Income < Variable Costing Income

Today's Paper Airplanes!

Careful! These "Rules" are Simplistic!
If last year's FOH allocation rate is very different from this year, these results could flip!

14

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Quick Intuition Check

During the year Antionette Inc reports the following production information:

Beginning Inventory: 7
Ending Inventory: 5

Total units produced: 10
Total units sold: 12

Assume the applied FOH rate is constant (we will relax this assumption next class)

1. *Is Net income higher under an absorption costing or variable costing system? Why?*

Variable Income > Absorption Income

WHY?
Under absorption costing **12** units worth of fixed costs will show up on the income statement (in COGS) because 12 units were sold.

Under variable costing – fixed costs for only **10** units of production (this periods production costs) will show up on the Income Statement

Higher costs = Lower Income.

15

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Practice

Clementine: Variable and Absorption Costing with Over/Underapplied Overhead

Clementine, Inc. completed its first year of operations.

This means there is NO Beginning Inventory

At the beginning of the year Clementine estimated total manufacturing overhead costs would be $108,000 for fixed cost and $72,000 for variable costs. Both fixed and variable overhead are allocated based on an estimate of 12,000 direct labor hours.

During the year the company had the following actual activity:

Units produced	22,000
Units Sold	21,300
Unit selling price	$36
Direct labor hours worked	11,000
Actual Variable MOH	$77,000
Actual Fixed MOH	$96,000
Actual Fixed Selling & Administrative	$238,000
Actual Variable Selling & Administrative	$2/unit

Additionally, Clementine Inc has provided the following additional information based on their normal costing system about manufacturing and SG&A costs:

Manufacturing costs per unit:	Per unit
Direct materials (4lbs. @ $1.50/lb.)	$6.00
Direct labor (0.5 hr. @ $18/hr.)	9.00
Variable overhead	?
Fixed overhead	?
Total	$?

Clementine Inc has asked for your help determining the allocation of fixed and variable overhead to determine the total manufacturing cost per unit.

Additionally, Clementine would like to know how operating income would differ under an absorption costing vs variable costing income statement.

16

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(1) Calculate applied Manufacturing Overhead for both fixed and variable under absorption costing:

Fixed MOH Rate : $108000/12,000 = $9/labor hour

Applied Fixed MOH: $9/hr * 11,000 hrs = $99,000

Variable MOH Rate : $72,000/12,000 = $6/labor hour

Applied Variable MOH: $6/hr * 11,000 hrs = $66,000

(2) By how much was MOH over/under applied during the period?

Fixed overhead was overapplied by 99,000-96,000 = $3000

Variable overhead was underapplied by 77,000-66,000 = $11,000

17

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(3) Ignoring over/underapplied MOH what is the total manufacturing cost per unit under an absorption costing system?

Fixed OH cost/unit = 99,000/22,000 = $4.50/unit

Variable OH cost/unit = 66,000/22,000 = $3/unit

Total Man Cost per unit = $4.50 FMOH + $3 VMOH + $9 DL + $6 DM = $22.50

(4) Still ignoring over/underapplied MOH, what is the variable cost per unit under a variable costing system?

Total Var Cost per unit = $3 VMOH + $9 DL + $6 DM + $2 Var Selling = $20

(5) Given that all over/under applied MOH is closed to COGS, calculate Ending Inventory and COGS as it would be reported under an absorption costing system. (Hint – use your answers to #2 and #3)

Ending Inventory = $22.50 * 700 = $15,750

COGS = $22.50*21,300 -$3000 + $11,000 = $487,250

18

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(6) Prepare an Absorption Costing Income Statement and a Variable Costing Income Statement. What is the difference in operating income?

Absorption Costing Income Statement

Sales		$ 766,800
Unajusted COGS	479,250	
Adj for over/underapplied MOH	8,000	487,250
Gross Margin		279,550
Varaible Selling Costs	42,600	
Fixed selling costs	238,000	280,600
Operating Income		$ (1,050)

Variable Costing Income Statement

Sales		$ 766,800
Variable Costs	426,000	
Adj for over/underapplied MOH	11,000	437,000
Contribution Margin		329,800
Fixed Production Costs	96,000	
Fixed selling costs	238,000	334,000
Operating Income		$ (4,200)

Intuition Check: The difference in operating income is explained by the fixed MOH costs that are stuck in inventory under the absorption costing system (based on the rate we applied to those units!):

-1,050 Absorption Income – [700 units * $4.50/unit] = - 4,200 Variable Operating Income! This is only true when MOH is closed to COGS. (Doesn't work under the proration approach).

*Hard work is a blessing of God. It involves going after it "with all your heart, might, mind and strength." (D&C 4:2.) That alone is the difference between the average and the excellent. (**Elder F. David Stanley)***

Are we careful to be true? . . . When contempt is cast on the truth, do we smile? Wronged in our presence, do we make no sign that we hold by it? I do not say we are called upon to dispute, and defend with logic and argument, but we are called upon to show that we are on the other side. . . .

The soul that loves the truth and tries to be true, will know when to speak and when to be silent; but the true man [or woman] will never look as if he [or she] did not care. We are not bound to say all we think, but we are bound not even to look [like] what we do not think.

George MacDonald, quoted by Elder Jeffrey R. Holland

2018 Neal A. Maxwell Lecture

Here's how today will work

- Paper Airplanes is a closed book/note/computer, **group red assignment.**
- One submission per group, with names of participating students included
- **Due by end of class**
- You will also have a **INDIVIDUAL post class quiz**. We appreciate how hard you've been working – this quiz will be OPEN NOTES.

Paper Airplane Project Section: _____ Group: _____

Folding Department

1. New equivalent units of Direct Materials this period: _____
2. New equivalent units of Conversion this period: _____
3. Cost per Equivalent Unit of Direct Materials this period: _____
4. Cost per Equivalent Unit of Conversion this period: _____
5. Cost of Ending Work in Process in Folding Department: _____
6. Total cost of planes transferred to Painting Department: _____

Painting Department

7. Physical units of Normal Spoilage _____
8. Physical units of Abnormal Spoilage _____
9. New equivalent units of Direct Materials this period: _____
10. New equivalent units of Conversion this period: _____
11. New equivalent units of Transferred-In this period: _____
12. Cost per Equivalent Unit of Direct Materials this period: _____
13. Cost per Equivalent Unit of Conversion this period: _____
14. Cost per Equivalent Unit of Transferred-In this period: _____
15. Cost of Ending Work in Process in Painting Department: _____
16. Cost of Normal Spoilage: _____
17. Cost of Abnormal Spoilage: _____
18. Cost Transferred to **Cost of Goods Sold:** : _____

Welcome to the FIFO Airplane Factory

Let It Begin!

- Volunteers! (I need eight, but only one per group)
- One manager (will issue paper, motivate team and provide completeness estimates at round end)
- Two paper airplane folders
- Two painters
- One test pilot
- Two auditors (will keep count of “sold” and “scrap” planes).

Physical Units

Folding WIP

X ?	?
X	

Painting WIP

X ?	???
X	

Goods Sold

X	

X spoiled(Normal 1)

	Folding DM	Folding Conv.	Painting DM	Painting Conv.	Painting TI
Beginning WIP %	X%	X%	X%	X%	?
Ending WIP %	X%	X%	X%	X%	?
BWIP Cost	$3.00	$18.50	$5.50	$8.00	$32.75
Current Period Cost	$46.00	$475.00	$58.40	$300.00	??

Physical Units

Folding WIP

X ?	?
X	

Painting WIP

X ?	???
X	

Goods Sold

X	

X spoiled(Normal 1)

	Folding DM	Folding Conv.	Painting DM	Painting Conv.	Painting TI
Beginning WIP %	X%	X%	X%	X%	?
Ending WIP %	X%	X%	X%	X%	?
BWIP Cost	$3.00	$18.50	$5.50	$8.00	$32.75
Current Period Cost	$46.00	$475.00	$58.40	$300.00	??

Physical Units

Folding WIP

X ?	?
X	

Painting WIP

X ?	???
X	

Goods Sold

X	

X spoiled(Normal 1)

	Folding DM	Folding Conv.	Painting DM	Painting Conv.	Painting TI
Beginning WIP %	X%	X%	X%	X%	?
Ending WIP %	X%	X%	X%	X%	?
BWIP Cost	$3.00	$18.50	$5.50	$8.00	$32.75
Current Period Cost	$46.00	$475.00	$58.40	$300.00	??

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Ye cannot behold with your natural eyes, for the present time, the design of your God concerning those things which shall come hereafter, and the glory which shall follow after much tribulation.

For after much tribulation come the blessings. Wherefore the day cometh that ye shall be crowned with much glory; the hour is not yet, but is nigh at hand.

Doctrine & Covenants 58:3-4

1

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Process Costing

- Process costing is used when there are many identical or similar units
- Total costs are first tracked to a period of time and a department (versus tracked to a job)
- Unit costs are computed by dividing total costs incurred during the time period in the department by the number of units produced during the time period in the department
- Each unit in a given time period and given department receives the same cost

2

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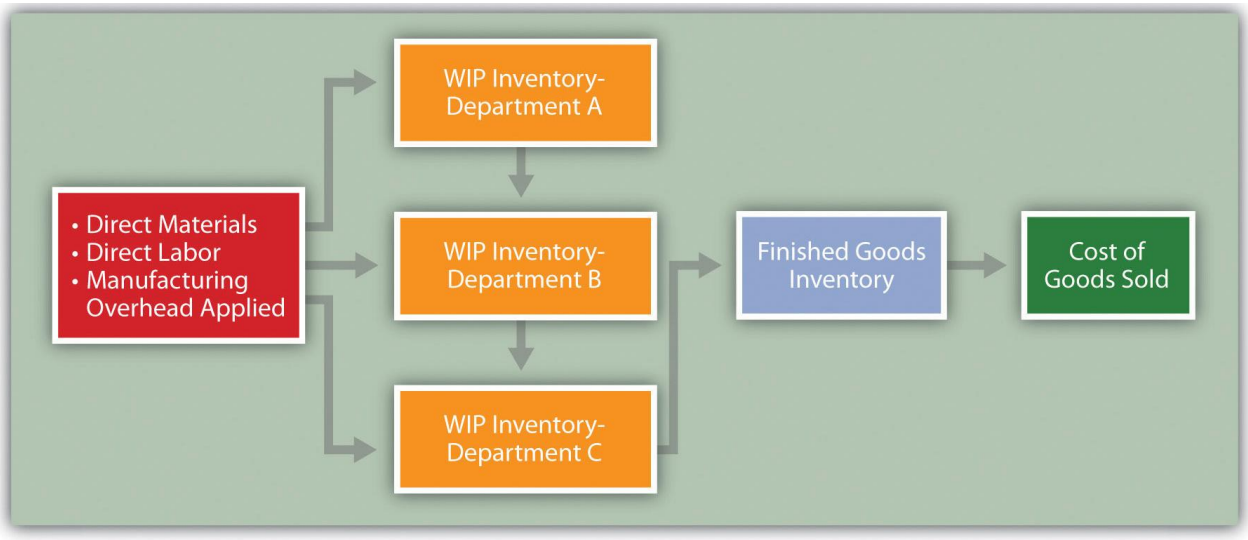

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3

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Another Cost Type: Transferred-in Costs

- Costs incurred in previous departments that are carried forward as the product's cost when it moves to the next process in the production cycle
- Also called Previous Department Costs
- We track transferred-in costs separately because units transferred in are (by definition) 100% complete with respect to their transferred-in costs!
  - We won't incur any new costs from the ***previous department*** for these units.
  - However, these units will incur new costs in the ***current department*** (DM, DL, and OH) — but with different timing than the transferred-in costs.

4

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Multiple Department Process Costing

Product Cost flow through sequential processing departments:

Process 1 - Cutting

Process 1 Direct Materials

Process 1 Conversion (DL and MOH)

Process 2 - Assembly

Transferred in Costs from Process 1

Process 2 Direct Materials

Process 2 Conversion (DL and MOH)

Process 3 - Finishing

Transferred in Costs from Process 2 (which includes ALL Process 1 costs!)

Process 3 Direct Materials

Process 3 Conversion (DL and MOH)

5

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Steps for Process Costing
(It's all about assigning the costs coming out of WIP!)

1. Account for the flow of physical units
2. Account for the flow of equivalent units
3. Compute costs per equivalent unit
4. Account for the flow of costs on units completed (COGM) and units in ending Work in Process (EWIP)

NOTE: Because DM and Conversion Costs may progress at different rates, we will track these separately as we go.

**Check figure: BWIP + Current Costs = COGM + EWIP

6

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Typical Process-Costing Assumptions (for Textbook Problems)

- Direct Materials are typically added at the beginning of the production process, or at the start of work in a subsequent department down the assembly line
  - ***But watch for materials added later!***
- Conversion Costs are typically added equally along the production process
  - ***But watch for labor costs and overhead costs being added at different rates!***

8

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Process Costing: Two-Department Analysis

Wahoo Company uses a process-costing system. The company manufactures a product that is processed in two departments: Molding and Assembly. In the Molding Department, direct materials are added at the beginning of the process; in the Assembly Department, additional direct materials are added at the end of the process. In both departments, conversion costs are incurred uniformly throughout the process. As work is completed, it is transferred out. The following table summarizes the production activity and costs for March:

	Molding	Assembly
Beginning inventories:		
Physical units	10,000	8,000
Costs:		
Transferred in	$ -	$ 45,200
Direct materials	$ 22,000	$ -
Conversion costs	$ 13,800	$ 16,800
Current production		
Units started	25,000	?
Units transferred out	30,000	35,000
Costs:		
Transferred in	$ -	?
Direct materials	$ 56,250	$ 39,550
Conversion costs	$ 103,500	$ 136,500
Percentage of completion:		
Beginning inventory	40%	50%
Ending inventory	80%	50%

10

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In the Molding Department, direct materials are added at the beginning of the process; in the Assembly Department, additional direct materials are added at the end of the process.

	Molding	Assembly
Beginning inventories:		
Physical units	10,000	8,000
Costs:		
Transferred in	$ -	$ 45,200
Direct materials	$ 22,000	$ -
Conversion costs	$ 13,800	$ 16,800

Current production		
Units started	25,000	?
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Costs:		
Transferred in	$ -	?
Direct materials	$ 56,250	$ 39,550
Conversion costs	$ 103,500	$ 136,500
Percentage of completion:		
Beginning inventory	40%	50%
Ending inventory	80%	50%

Phys Units WIP

10,000 units 25,000 units	30,000 units

Because all materials are added the beginning all WIP is 100% complete with regards to DM, so the EU for DM is the same as the physical units.

Equiv Units WIP – DM

Equiv Units WIP – CC

11

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In the Molding Department, direct materials are added at the beginning of the process; in the Assembly Department, additional direct materials are added at the end of the process.

	Molding	Assembly
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Percentage of completion:		
Beginning inventory	40%	50%
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Phys Units WIP

10,000 units 25,000 units	30,000 units
5,000 units	

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Equiv Units WIP – DM

10,000 units 25,000 units	30,000 units
5,000 units	

Equiv Units WIP – CC

12

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In the Molding Department, direct materials are added at the beginning of the process; in the Assembly Department, additional direct materials are added at the end of the process.

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Percentage of completion:		
Beginning inventory	40%	50%
Ending inventory	80%	50%

Phys Units WIP

10,000 units 25,000 units	30,000 units
5,000 units	

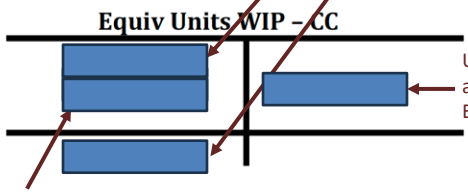
We use the %complete information to calculate Equiv Units (EU) for beginning and ending Inventory.

Equiv Units = %complete * Phys Units

Equiv Units WIP – DM

10,000 units 25,000 units	30,000 units
5,000 units	

Equiv Units WIP – CC



Units transferred out are always 100% complete so Equiv Units = phys Units.

Solve for Equiv. Units transferred in after we've filled in the other values.

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In the Molding Department, direct materials are added at the beginning of the process; in the Assembly Department, additional direct materials are added at the end of the process.

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Beginning inventories:		
Physical units	10,000	8,000
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Units started	25,000	?
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Costs:		
Transferred in	$ -	?
Direct materials	$ 56,250	$ 39,550
Conversion costs	$ 103,500	$ 136,500
Percentage of completion:		
Beginning inventory	40%	50%
Ending inventory	80%	50%

Equiv Units WIP – DM

10,000 units 25,000 units	30,000 units
5,000 units	

These values are given

$ WIP – DM

$22,000 $56,250	67,000

We can solve for either Ending Inventory (EI) or Inventory Transferred out directly and then plug the other:

To Solve EI in this problem:
Notice: Using FIFO (always in ACC 402) the 5000 units in EI for this problem are coming from the 25,000 units started during the period.

Step 1: Find the cost per EU of materials added during period (Cost added/Equiv Units started)
Step 2: Multiply the cost/EU from Step 1 * EU in ending inventory.

$56,250/25,000 = $2.25/unit

$2.25/unit * 5000 = $11,250

14

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In the Molding Department, direct materials are added at the beginning of the process; in the Assembly Department, additional direct materials are added at the end of the process.

	Molding	Assembly
Beginning inventories:		
Physical units	10,000	8,000
Costs:		
Transferred in	$ -	$ 45,200
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Transferred in	$ -	?
Direct materials	$ 56,250	$ 39,550
Conversion costs	$ 103,500	$ 136,500
Percentage of completion:		
Beginning inventory	40%	50%
Ending inventory	80%	50%

Equiv Units WIP – DM

10,000 units 25,000 units	30,000 units
5,000 units	

Two Parts

$ WIP – DM

$22,000 $56,250	$22,000 $45,000
$11,250	

To solve for Transfers out directly in this problem.
Notice that the 30,000 units transferred out reflect 10,000 from beginning inventory, and 20,000 from units started.

We already know the cost of the 10,000 units = $22,000 (given). We could also have solved this as 22,000/10,000 * 10,000 ☺. So we just need to solve for the cost associated with the 20,000 new units completed and transferred out.

Step 1 (the same): Find the cost per EU of materials added during period
Step 2: Multiply the cost/EU from Step 1* (EU transferred out – EU Beginning Inventory).
$56,250/25,000 = $2.25/unit

$2.25/unit * (30,000 – 10,000) = $45,000

$45,000 + 22,000 = 67,000

Notice: We will always use a FIFO assumption in this class! In this specific problem units transferred out > Units in Beginning inventory. This means that the cost in Ending inventory is all coming from new production while the cost transferred out is a blend of new production and last periods production. If Units in Beginning Inventory > Units transferred out then costs transferred out would be entirely based on last period (beg inventory) costs, while ending inventory would be a blend of this period and last period production costs. Make sure you ***understand*** the calculations, not just memorize.

15

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In the Molding Department, direct materials are added at the beginning of the process; in the Assembly Department, additional direct materials are added at the end of the process.

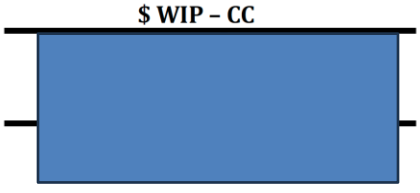
	Molding	Assembly
Beginning inventories:		
Physical units	10,000	8,000
Costs:		
Transferred in	$ -	$ 45,200
Direct materials	$ 22,000	$ -
Conversion costs	$ 13,800	$ 16,800

Current production		
Units started	25,000	?
Units transferred out	30,000	35,000
Costs:		
Transferred in	$ -	?
Direct materials	$ 56,250	$ 39,550
Conversion costs	$ 103,500	$ 136,500
Percentage of completion:		
Beginning inventory	40%	50%
Ending inventory	80%	50%

Equiv Units WIP – CC

4,000 units 30,000 units	30,000 units
4,000 units	

$ WIP – CC



16

School of Accountancy

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Percentage of completion:		
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Ending inventory	80%	50%

Equiv Units WIP – CC

4,000 units	
30,000 units	30,000 units
4,000 units	

We can solve for the cost per equivalent unit (cost/EU) related to conversion costs in exactly the same way!

$103,500/30,000 = $3.45/unit

Given in the problem

$ WIP – CC

$13,800	$13,800
$103,500	$89,700
$13,800	

$ Transferred out of WIP- CC is computed as:
$13,800 related to the 4000 EU in beginning inventory that was transferred out.
$3.45/unit * (30,000 – 4,000) = $89,700 related to the 26,000 new units started and completed during the period.
Total cost transferred out = $13,800 + 89,700 = $103,500.

$ WIP – CC ending inventory balance is computed as:

$3.45/unit * 4000 = $13,800

17

Wahoo Company – Molding Department

$ WIP – CC

$13,800	$13,800
$103,500	$89,700
$13,800	

$ WIP – DM

$22,000	$22,000
$56,250	$45,000
$11,250	

Combine these accounts

THE WIP Account

$35,800	
$159,750	$170,500
$25,050	

To Assembly

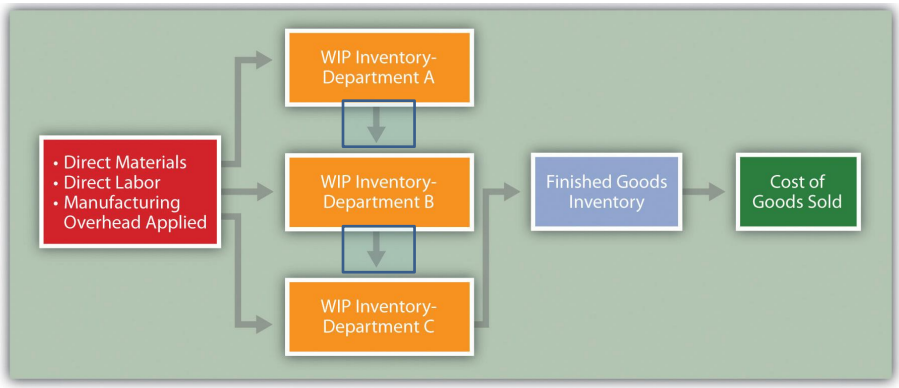
Remember this number – we will see it again!

18

School of Accountancy

For Assembly:

1. In a downstream department like Assembly, there is a third cost category: Transferred-in costs. These are always 100% complete.
2. Pay attention to new assumptions (in the specific problem it specifies that in assembly DM are added at the END of the production process).



19

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Conversion costs	$ 103,500	$ 136,500
Percentage of completion:		
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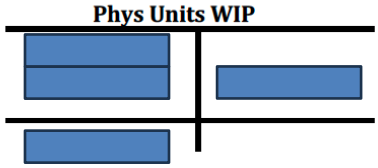
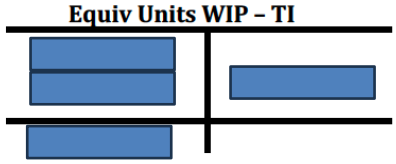
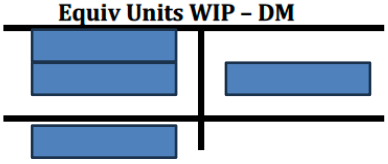
Phys Units WIP



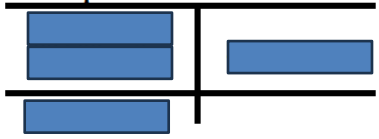
Equiv Units WIP – TI



Equiv Units WIP – DM



Equiv Units WIP – CC



HINTS:
1. Remember that Transferred in (TI) costs are always 100% complete.
2. When DM are added at the end, what are EU of DM in beginning and ending WIP? Zero.

20

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In the Molding Department, direct materials are added at the beginning of the process; in the Assembly Department, additional direct materials are added at the end of the process.

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Beginning inventories:		
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Transferred in	$ -	?
Direct materials	$ 56,250	$ 39,550
Conversion costs	$ 103,500	$ 136,500
Percentage of completion:		
Beginning inventory	40%	50%
Ending inventory	80%	50%

Phys Units WIP

8,000 units 30,000 units	35,000 units
3,000 units	

Always start by filling in the Physical Units.

Equiv Units WIP – TI

Equiv Units WIP – DM

Equiv Units WIP – CC

21

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In the Molding Department, direct materials are added at the beginning of the process; in the Assembly Department, additional direct materials are added at the end of the process.

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Costs:		
Transferred in	$ -	?
Direct materials	$ 56,250	$ 39,550
Conversion costs	$ 103,500	$ 136,500
Percentage of completion:		
Beginning inventory	40%	50%
Ending inventory	80%	50%

Phys Units WIP

8,000 units 30,000 units	35,000 units
3,000 units	

Equiv Units WIP – TI

8,000 units 30,000 units	35,000 units
3,000 units	

Now the easy part: Equivalent Units for TI are ALWAYS identical to the physical units!

Equiv Units WIP – DM

Equiv Units WIP – CC

22

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In the Molding Department, direct materials are added at the beginning of the process; in the Assembly Department, additional direct materials are added at the end of the process.

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Direct materials	$ 56,250	$ 39,550
Conversion costs	$ 103,500	$ 136,500
Percentage of completion:		
Beginning inventory	40%	50%
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Phys Units WIP

8,000 units 30,000 units	35,000 units
3,000 units	

Equiv Units WIP – TI

8,000 units 30,000 units	35,000 units
3,000 units	

Equiv Units WIP – DM

0 units 35,000 units	35,000 units
0 units	

Equiv Units WIP – CC

In this department because DM is added at the end of the process Beg and End Inventory balance for DM Equiv Units is 0!

23

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In the Molding Department, direct materials are added at the beginning of the process; in the Assembly Department, additional direct materials are added at the end of the process.

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Beginning inventories:		
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Direct materials	$ 56,250	$ 39,550
Conversion costs	$ 103,500	$ 136,500
Percentage of completion:		
Beginning inventory	40%	50%
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Phys Units WIP

8,000 units 30,000 units	35,000 units
3,000 units	

Equiv Units WIP – TI

8,000 units 30,000 units	35,000 units
3,000 units	

Equiv Units WIP – DM

0 units 35,000 units	35,000 units
0 units	

Equiv Units WIP – CC

4,000 units 32,500 units	35,000 units
1,500 units	

For Conversion Costs – use the % complete to fill in beg and end inventory balances.

Recall that transferred out Equivalent Units ALWAYS is equal to physical units.

Plug (solve for) units started.

24

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In the Molding Department, direct materials are added at the beginning of the process; in the Assembly Department, additional direct materials are added at the end of the process.

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Costs:		
Transferred in	$ -	?
Direct materials	$ 56,250	$ 39,550
Conversion costs	$ 103,500	$ 136,500
Percentage of completion:		
Beginning inventory	40%	50%
Ending inventory	80%	50%

Equiv Units WIP – TI

8,000 units	
30,000 units	35,000 units
3,000 units	

Given in the problem

$ WIP – TI

$45,200	
$170,500	

We just calculated this value – coming from Molding!

25

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In the Molding Department, direct materials are added at the beginning of the process; in the Assembly Department, additional direct materials are added at the end of the process.

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Costs:		
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Direct materials	$ 56,250	$ 39,550
Conversion costs	$ 103,500	$ 136,500
Percentage of completion:		
Beginning inventory	40%	50%
Ending inventory	80%	50%

Equiv Units WIP – TI

8,000 units	
30,000 units	35,000 units
3,000 units	

$ WIP – TI

$45,200	$45,200
From Molding $170,500	$153,450
$17,050	

$170,500/30,000 = $5.6833/unit
$5.6833/unit * (35,000 – 8,000) = $153,450
$153,450 + $45,200 = $198,650

$170,500/30,000 = $5.6833/unit
$5.6833/unit * 3000 = $17,050

26

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In the Molding Department, direct materials are added at the beginning of the process; in the Assembly Department, additional direct materials are added at the end of the process.

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Costs:		
Transferred in	$ -	?
Direct materials	$ 56,250	$ 39,550
Conversion costs	$ 103,500	$ 136,500
Percentage of completion:		
Beginning inventory	40%	50%
Ending inventory	80%	50%

Equiv Units WIP – DM

0 units	
35,000 units	35,000 units
0 units	

Given in the problem

$ WIP – DM

$0	
$39,550	
$0	

27

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In the Molding Department, direct materials are added at the beginning of the process; in the Assembly Department, additional direct materials are added at the end of the process.

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Costs:		
Transferred in	$ -	?
Direct materials	$ 56,250	$ 39,550
Conversion costs	$ 103,500	$ 136,500
Percentage of completion:		
Beginning inventory	40%	50%
Ending inventory	80%	50%

Equiv Units WIP – DM

0 units	
35,000 units	35,000 units
0 units	

Simplified because of 0 EU in BI and EI. Still we could do the math if we want… ☺

$39,550 ÷ 35,000 units
= $1.13 per unit

$ WIP – DM

$0	
$39,550	$39,550
$0	

Cost of Equiv Units Done this Period

35,000 units Transferred Out
– 0 units from Beg WIP
35,000 units × $1.13 = **$39,550**

28

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In the Molding Department, direct materials are added at the beginning of the process; in the Assembly Department, additional direct materials are added at the end of the process.

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Equiv Units WIP – CC

4,000 units 32,500 units	35,000 units
1,500 units	

$ WIP – CC

$16,800 $136,500	

29

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In the Molding Department, direct materials are added at the beginning of the process; in the Assembly Department, additional direct materials are added at the end of the process.

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Equiv Units WIP – CC

4,000 units 32,500 units	35,000 units
1,500 units	

Given in the problem

$ WIP – CC

$16,800 $136,500	$16,800 $130,200
$6,300	

$136,500/32,500 = $4.20/unit

$4.20/unit * (35,000-4,000) = $130,200

$130,200 + $16,800 = $147,000

$136,500/32,500 = $4.20/unit

$4.20/unit * 1500 = $6,300

30

Wahoo Company – Assembly Department

$ WIP – CC

$16,800	$16,800
$136,500	$130,200
$6,300	

$ WIP – TI

$45,200	$45,200
$170,500	$153,450
$17,050	

$ WIP – DM

$0	
$39,550	$39,550
$0	

THE WIP Account

$62,000	
$346,550	$385,200
$23,350	

31

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For Next Class: Basic Terminology

- Spoilage – units of production, either fully or partially completed, that do not meet the specifications required by customers for good units and that are discarded or sold for reduced prices
- Rework – units of production that do not meet the specifications required by customers, but which are subsequently repaired and sold as good finished goods
- Scrap – residual material that results from manufacturing a product.
  - Scrap has low or no sales value compared with the sales value of the product

32

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Types of Spoilage

- Normal Spoilage: spoilage inherent in a particular production process that arises under normal operating conditions
  - Management determines the normal spoilage rate
  - Costs of **normal** spoilage are i**ncluded as a component of the costs of good units manufactured** because good units cannot be made without also making some units that are spoiled
- Abnormal Spoilage: spoilage that is *not* inherent in a particular production process and would not arise under normal operating conditions
  - Abnormal spoilage is considered avoidable and controllable
  - Units of **abnormal** spoilage are calculated, and their cost is recorded in the **Loss from Abnormal Spoilage account**, which appears as a separate line item on the income statement

33

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Inspection Points and Spoilage

- Inspection Point – the stage of the production process at which products are examined to determine whether they are acceptable or unacceptable units
  - For measurement purposes, spoilage "happens" at the point of inspection
- Spoilage is typically assumed to occur in the period it was discovered
  - In other words, WIP products are assumed to be perfect (because they haven't been inspected yet)
  - Cost of spoiled units is based on the current period's production costs

34

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Steps for Process Costing with Spoilage
(It's all about assigning the costs coming out of WIP!)

1. Summarize the flow of physical units of output
   - **Identify both normal and abnormal spoilage.**
2. Summarize the flow in terms of equivalent units
   - **Spoiled equivalent units are included in the computation of output units.**
3. Compute cost per equivalent unit
4. Assign Total Costs to:
   - Units Completed
   - **Normal Spoiled Units** } **COGM**
   - **Abnormal Spoiled Units** } **Loss**
   - Units in Ending Work in Process } **Inventory**

*Check figure for cost flow: BWIP cost + New costs = EWIP cost + COGM **+ Abnormal Spoilage cost**

35

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Next Time!

- Paper Airplanes! → Team/Individual In-class Project →You gotta be here and be prepared!
  - Multiple Departments
  - Partially Completed DM
  - Spoilage
  - DO the pre-class assignment (Lyla's Ceramics) and watch the walk through video.

36

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Lyla's Ceramics: Normal and Abnormal Spoilage in Process Costing

Make sure you are prepared and understand this BEFORE next class!

It will take some time – so don't wait till the last minute.

Day 06 homework includes video walk through to help you.

Part I

Lyla's Ceramics, Inc. manufactures ceramic bowls, vases, figurines, etc. Each item starts as clay that is molded in different casts in the Molding Department. The finished mold is then transferred to the Assembly Department where the ceramic piece is assembled and packaged. The ceramics are sold to schools and art studios to be painted and put in a kiln. In June, the Molding Department reported the following data:

a. In the Molding Department, all direct materials are added at the beginning of the process.
b. Beginning work in process consisted of 2,500 units, 20 percent complete with respect to direct labor and overhead. Costs in beginning inventory included direct materials, $375; and conversion costs, $112.
c. Costs added to production during the month were direct materials, $1,010; and conversion costs, $2,350.
d. Inspection takes place at the end of the process. Malformed units are discarded. All spoilage is considered abnormal.
e. During the month, 7,000 units were started, and 8,000 good units were transferred out to Assembly. All other units finished were malformed and discarded. There were 1,000 units that remained in ending work in process, 25 percent complete.

Required:

1. Prepare a physical flow schedule.
2. Calculate equivalent units of production.
3. Calculate the unit cost.
4. What is the cost of goods transferred out? Ending work in process? Loss due to spoilage?
5. Prepare the journal entry to remove spoilage from the Molding Department.

37

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Lyla's Ceramics

Part II:

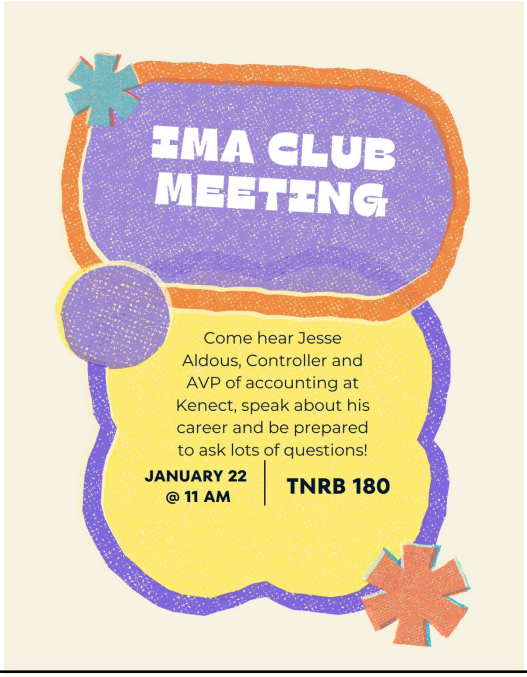
In June the Assembly Department reported the following data:

a. In the Assembly Department, all direct materials (packaging) are added at the end of the process.
b. Beginning work in process consisted of 500 units, 40% complete with respect to direct labor and overhead. Costs in beginning inventory included transferred-in costs from Molding of $180; and conversion costs of $305.
c. Costs added to production during the month were direct materials, $3,600; and conversion costs, $6,000.
d. Inspection takes place when the assembly is 75% complete. Spoiled units are scrapped. Normal spoilage is expected at 3% of the units transferred in from Molding (i.e., units started).
e. During the month, 7,900 units were transferred out to Finished Goods Inventory. There were 115 units remaining in ending work in process, 20% complete. All other units were scrapped as spoilage.

Required:

1. Prepare a physical flow schedule.
2. Calculate equivalent units of production.
3. Calculate the unit cost.
4. What is the cost of goods transferred out? Ending work in process? Loss due to spoilage?
5. Prepare the journal entry to remove spoilage from the Molding Department.

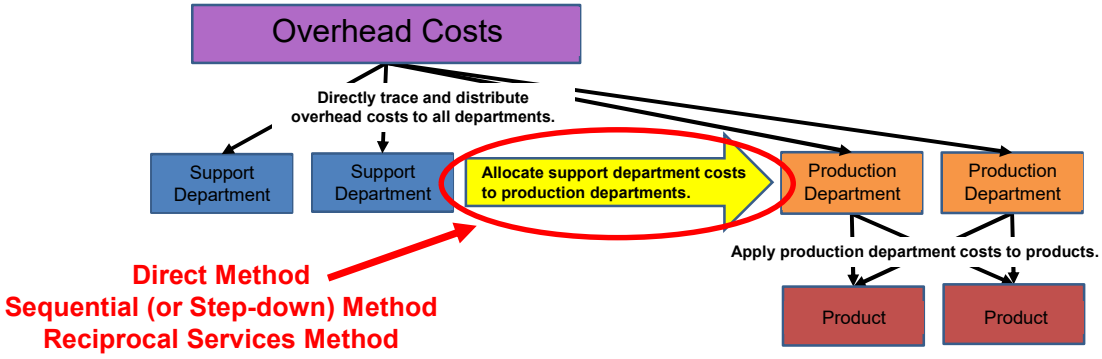
38



1

Traditional OH Cost Allocation

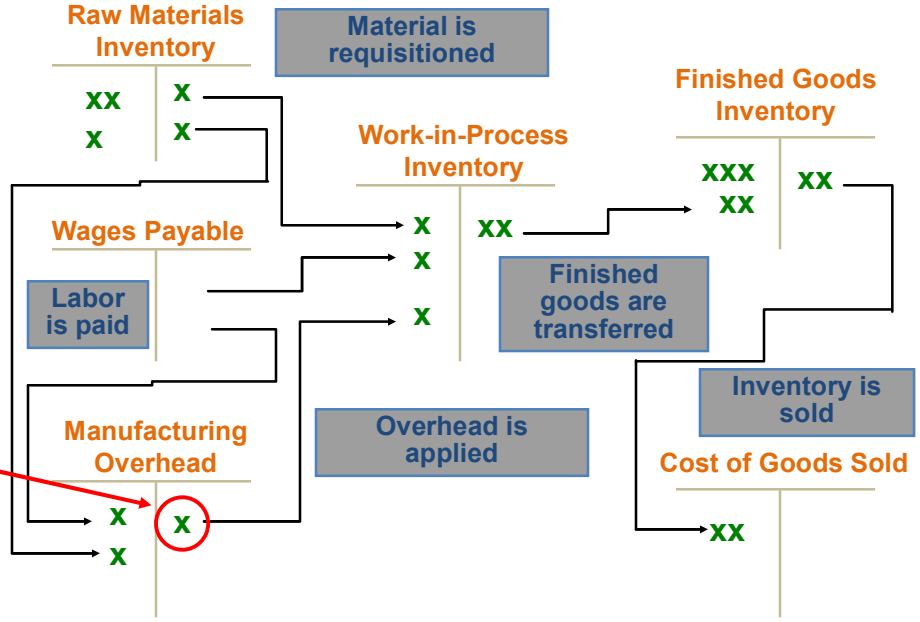
1. Directly trace and distribute (with an appropriate driver) overhead to all departments.
2. Allocate support department costs to production departments.
3. Apply production department costs to products (using job order or process costing).



2

Support Dept. Cost Allocation: Where are we?

We're building the numerator(s) of the rate(s) that will be used to apply OH during the period. All before the period starts!



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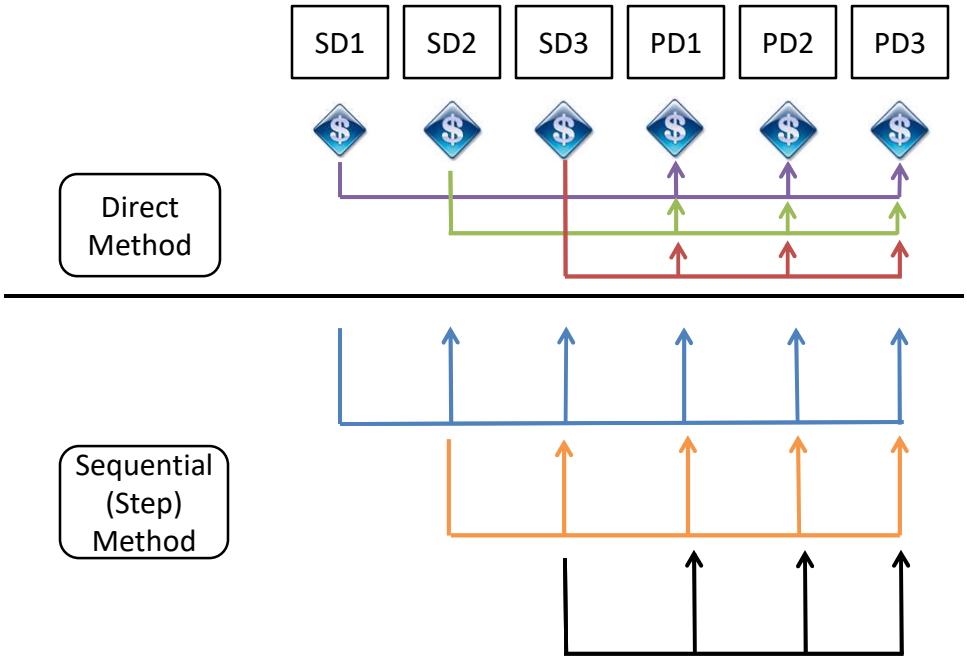

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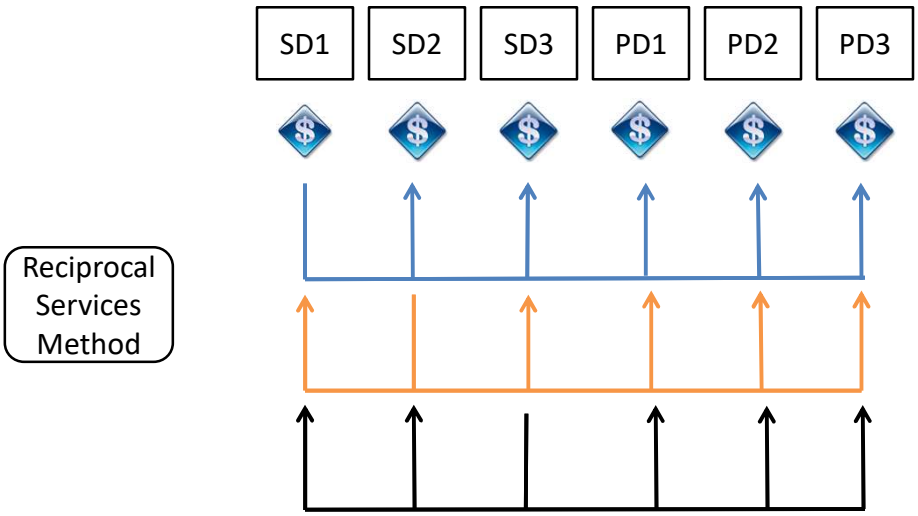

5

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Handout

	SD1	SD2	PD1	PD2	Total
Production costs	$310,000	$169,000	$1,504,000	$680,000	$2,663,000
Allocation bases:					
Sq Ft (SD1)	50	5000	1000	4000	10,050
# Employees (SD2)	10	3	30	10	53

What is the <u>total</u> cost in each production department after allocation of service department costs using each of the three allocation methods?

Check Figures for PD1:
Direct: $1,692,750
Sequential: $1,778,000
Reciprocal: $1,758,200

Check Figures for PD2:
Direct: $970,250
Sequential: $885,000
Reciprocal: $904,800

6

School of Accountancy

Direct Method

Handout

	SD1	SD2	PD1	PD2	Total
Production costs	$310,000	$169,000	$1,504,000	$680,000	$2,663,000
Allocation bases:					
Sq Ft (SD1)	50	5000	1000	4000	10,050
# Employees (SD2)	10	3	30	10	53

Allocation from SD1:

310,000 * 1000/5000 = 62,000 → PD1

310,000 * 4000/5000 = 248,000 → PD2

Allocation from SD2:

169,000 * 30/40 = 126,750 → PD1

169,000 * 10/40 = 42,250 → PD2

Totals:

PD1 = 1,504,000 + 62,000 + 126,750 = **1,692,750**

PD2 = 680,000 + 248,000 + 42,250 = **970,250**

8

School of Accountancy

Handout

	SD1	SD2	PD1	PD2	Total
Production costs	$310,000	$169,000	$1,504,000	$680,000	$2,663,000
Allocation bases:					
Sq Ft (SD1)	50	5000	1000	4000	10,050
# Employees (SD2)	10	3	30	10	53

What is the total cost in each production department after allocation of service department costs using each of the three allocation methods?

Check Figures for PD1:
Direct: $1,692,750
Sequential: $1,778,000
Reciprocal: $1,758,200

Check Figures for PD2:
Direct: $970,250
Sequential: $885,000
Reciprocal: $904,800

9

School of Accountancy

Sequential Method

Handout

	SD1	SD2	PD1	PD2	Total
Production costs	$310,000	$169,000	$1,504,000	$680,000	$2,663,000
Allocation bases:					
Sq Ft (SD1)	50	5000	1000	4000	10,050
# Employees (SD2)	10	3	30	10	53

Allocation from SD1:

310,000 * 1000/10,000 = 31,000 → PD1

310,000 * 4000/10,000 = 124,000 → PD2

310,000 * 5000/10,000 = 155,000 → SD2

New Total SD2:

169,000 + 155,000 = 324,000

Allocation from SD2:

324,000 * 30/40 = 243,000 → PD1

324,000 * 10/40 = 81,000 → PD2

Totals:

PD1 = 1,504,000 + 31,000 + 243,000 = **1,778,000**

PD2 = 680,000 + 124,000 + 81,000 = **885,000**

11

School of Accountancy

Handout

	SD1	SD2	PD1	PD2	Total
Production costs	$310,000	$169,000	$1,504,000	$680,000	$2,663,000
Allocation bases:					
Sq Ft (SD1)	50	5000	1000	4000	10,050
# Employees (SD2)	10	3	30	10	53

What is the <u>total</u> cost in each production department after allocation of service department costs using each of the three allocation methods?

Check Figures for PD1:

Direct: $1,692,750

Sequential: $1,778,000

Reciprocal: $1,758,200

Check Figures for PD2:

Direct: $970,250

Sequential: $885,000

Reciprocal: $904,800

13

Reciprocal Method

Handout

	SD1	SD2	PD1	PD2	Total
Production costs	$310,000	$169,000	$1,504,000	$680,000	$2,663,000
Allocation bases:					
Sq Ft (SD1)	50	★ 5000	★1000	★4000	10,050
# Employees (SD2)	★ 10	3	★ 30	★ 10	53

Reciprocal Relationship between SD1 and SD2:

SD1 = $310,000 + 10/50 SD2

SD2 = $169,000 + 5000/10000 SD1

Solving the Math:

SD1 = $310,000 + 10/50 * [$169,000+ 5000/10000 SD1]

SD1 = $310,00 + 33,800 + 1/10 SD1

SD1 – 1/10 SD1 = $343,800

SD1 = **382,000**

SD2 = $169,000 + 5000/10000 * [382,000]

SD2 = **$360,000**

14

Reciprocal Method

Handout

	SD1	SD2	PD1	PD2	Total
Production costs	$310,000	$169,000	$1,504,000	$680,000	$2,663,000
Allocation bases:					
Sq Ft (SD1)	50	★ 5000	★1000	★4000	10,050
# Employees (SD2)	★ 10	3	★ 30	★ 10	53

SD1 = **382,000** SD2 = **$360,000**

Allocation from SD1:

382,000 * 1000/10,000 = 38,200 → PD1

382,000 * 4000/10,000 = 152,800 → PD2

382,000 * 5000/10,000 = 191,000 → SD2

Allocation from SD2:

360,000 * 30/50 = 216,000 → PD1

360,000 * 10/50 = 72,000 → PD2

360,000 * 10/50 = 72,000 → SD1

Check for Accuracy:

SD1 = 310,000 + 72,000 = 382,000

SD2 = 169,000 + 191,000 = 360,000

Totals:

PD1 = 1,504,000 + 38,200 + 216,000 = **1,758,200**

PD2 = 680,000 + 152,800 + 72,000 = **904,800**

15

Handout

	SD1	SD2	PD1	PD2	Total
Production costs	$310,000	$169,000	$1,504,000	$680,000	$2,663,000
Allocation bases:					
Sq Ft (SD1)	50	5000	1000	4000	10,050
# Employees (SD2)	10	3	30	10	53

Different Allocation methods yield different results!

Check Figures for PD1:
Direct: $1,692,750
Sequential: $1,778,000
Reciprocal: $1,758,200

Check Figures for PD2:
Direct: $970,250
Sequential: $885,000
Reciprocal: $904,800

16

Allocating SD costs to PDs: Different activity levels for different cost types

	Allocation Basis
SD Variable Costs	
SD Fixed Costs	

17

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Activity Levels Used in Acc 402

- Actual Activity Level
- Expected Activity Level
  - Based on budgeted output for the year
- Normal Activity Level
  - Based on long-run output in the organization
- Two other levels to consider:
  - *Practical* levels are what can be achieved when everything runs *effectively*
  - *Theoretical* levels are what can be achieved when everything runs *perfectly*

Actual ≠ Expected ≠ Normal ≠ Practical ≠ Theoretical

18

School of Accountancy

Allocating SD Variable and Fixed Costs to PDs/SDs

- SD VC: allocate using predetermined VC rate × ***expected*** use of driver by PD/SD
  - SD predetermined VC rate = Budgeted SD VC ÷ **Expected** total use of driver
  - Thus, SD VC allocation =

$$\frac{Budgeted\ SD\ Variable\ Costs}{Expected\ Total\ Use\ of\ Driver} \times Expected\ Use\ of\ Driver\ by\ PD/SD$$

  - Why *expected*? Because VC should rise and fall with variation in activity

- SD FC: allocate using predetermined FC rate x ***normal*** use of driver by PD/SD
  - SD predetermined FC rate = Budgeted SD FC ÷ **Normal** total use of driver by PD/SD
  - Thus, SD FC cost allocation =

$$\frac{Budgeted\ SD\ Fixed\ Costs}{Normal\ Total\ Use\ of\ Driver} \times Normal\ Use\ of\ Driver\ by\ PD/SD$$

  - Why *normal*? Because FC should not change with variation in activity (allocating FC is arbitrary), so we look for a base that is stable over time

19

Allocating Budgeted SD costs to PDs (or other SDs)

SD Variable Costs	$\frac{\text{Budgeted SD Variable Costs}}{\text{Expected Total Use of Driver}} \times \text{Expected Use of Driver by PD \& SD}$
SD Fixed Costs	$\frac{\text{Budgeted SD Fixed Costs}}{\text{Normal Total Use of Driver}} \times \text{Normal Use of Driver by PD \& SD}$

On the exam you will be expected to compute allocations using these bases (and to know which to use when!)

20

Extra Practice: Allocating Variable and Fixed Support

	SD1	SD2	PD1	PD2	Total
Variable production costs	$110,000	$69,000			
Fixed production costs	$200,000	$100,000			
Total Costs	$310,000	$169,000	$1,504,000	$680,000	$2,663,000
Allocation bases:					
Expected IT Hours (SD1)	50	5,000	1,000	4,000	10,050
Normal IT Hours (SD1)	40	4,500	1,200	3,800	9,540
Expected Headcount (SD2)	10	3	30	10	53
Normal Headcount (SD2)	12	4	28	12	56

Check Figures for PD1:
Direct: $1,695,750
Sequential: $1,769,579
Reciprocal: Let's not!

Check Figures for PD2:
Direct: $967,250
Sequential: $893,421
Reciprocal: Let's not!

21

Accounting for Joint Production Processes

Physical Units Method

- Joint costs distributed based on a physical measure, e.g., pounds, tons, gallons, board feet, atomic weight, heat units, etc.

Weighted Average Method

- Similar to the physical units method, but weights physical units to more accurately assign joint costs (weight factors can be based on difficulty to manufacture, size of units, etc.)

Sales Value at Split-Off Method

- Allocates joint cost based on each product's proportionate share of market value or sales value at the split-off point
- The higher the sales value, the greater the share of joint cost charged against the product

Net Realizable Value Method (use the "BEST" NRV)

- Useful when one or more products can be processed further beyond the split-off point
- Be sure to **first** determine whether it is better to process further, **then** compute the NRV that the manager should pursue → **Review the posted solution for Chapter 7 Self-Study Problem!**

22

Net Realizable Value Method

Use the "best" NRV on a product-by-product basis

- If A and B achieve greater profit by being processed further, but C does not, then best NRV is

A:	Sales value after more processing minus additional processing costs
B:	Sales value after more processing minus additional processing costs
C:	Sales value at split-off
	Total Best NRV

- Allocation rate = Costs to be allocated ÷ Total Best NRV
- And the cost allocations are

A = Allocation rate × Best NRV_A

B = Allocation rate × Best NRV_B

C = Allocation rate × Best NRV_C

23

Accounting for By-Products

By-Products are products obtained from joint production processes that have relatively little sales value

By-Products do not receive an allocation of the joint costs

Two methods of accounting for by-product sales:

- Credit by-product revenue to "Other Income" or "Revenue from Sale of By-Product"
- Reduction of the joint costs allocated to the main products by the amount of the by-product revenue

Note: Scrap that has sales value should be treated as a by-product.

Joint Cost Allocation Handout

Alomar Company manufactures four products from a joint production process: colgene, delgene, prosone, and freol. The joint costs for one batch are as follows:

Direct Materials	$84,450
Direct Labor	42,000
Overhead	23,550

At the split-off point, a batch yields 1,200 colgene, 1,800 delgene, 3,000 prosone, and 3,600 freol. If all products are sold at the split-off point: colgene sells for $60 per unit, delgene sells for $75 per unit, prosone sells for $20 per unit, and freol sells for $29 per unit.

Alomar is considering using the following product weights:

Colgene	3.0
Delgene	4.0
Prosone	0.5
Freol	1.0

Alomar does have the option of processing each of the four products further for an increased ultimate selling price as follows:

	Added Cost	Ultimate sales price per unit
Colgene	$30,000	$90
Delgene	$25,000	$95
Prosone	$20,000	$25
Freol	$40,000	$40

Allocate joint costs using:

1. The physical units method
2. The weighted average method
3. The sales value at split-off
4. Net realizable value (best NRV)

Check Figures for Colgene:
Physical: $18,750
W/A: $33,962
Split-off: $29,079
NRV: $30,124

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Joint Cost Allocation Handout

TOTAL to Allocate **$150,000**

Physical Units Method

	Units
Colgene	1200
Delgene	1800
Prosone	3000
Freol	3600
TOTAL	**9600**

Allocation to Colgene:

$$150{,}000 \times \frac{1200}{9600} = 18{,}750$$

26

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Joint Cost Allocation Handout

TOTAL to Allocate **$150,000**

Weighted Average Method

	Units	Weight	Weighted Units
Colgene	1200	3	3600
Delgene	1800	4	7200
Prosone	3000	0.5	1500
Freol	3600	1	3600
TOTAL	**9600**		**15900**

Allocation to Colgene:

$$150{,}000 \times \frac{3600}{15900} = 33{,}962$$

27

Joint Cost Allocation Handout

TOTAL to Allocate **$150,000**

Sales Value at Splitoff

	Units	$/Unit at Split	$ Value at Split
Colgene	1200	60	72000
Delgene	1800	75	135000
Prosone	3000	20	60000
Freol	3600	29	104400
TOTAL	**9600**		**371400**

Allocation for Colgene:

$$150{,}000 \times \frac{72000}{371400} = 29{,}079$$

Joint Cost Allocation Handout

NRV Method

TOTAL to Allocate **$150,000**

	Units	$/Unit at Split	$ Value at Split	$/unit if process further	$ Value if Process Further	Extra $Rev Process Futher	Extra $ Cost Process Further	Difference	Best NRV
Colgene	1200 x	60	72000	90	108000	36000	30000	6000	78000
Delgene	1800 x	75	135000	95	171000	36000	25000	11000	146000
Prosone	3000 x	20	60000	25	75000	15000	20000	-5000	60000
Freol	3600 x	29	104400	40	144000	39600	40000	-400	104400
TOTAL	9600		**371400**						**388400**

Allocation for Colgene:

$$150{,}000 \times \frac{78000}{388400} = 30{,}124$$

My dear brothers and sisters, I promise that as you prayerfully study the Book of Mormon *every day,* you will make better decisions—*every day.* I promise that as you ponder what you study, the windows of heaven will open, and you will receive answers to your own questions and direction for your own life. I promise that as you daily immerse yourself in the Book of Mormon, you can be immunized against the evils of the day…

Russell M. Nelson

Management Accounting

"…the vast bulk of our economy's activity takes place within the walls of individual large business corporations, not in markets"

H.A. Simon, *Political Science and Politics*, 2000

''…it is not too great an exaggeration to say that management accounting and control systems are so important and ubiquitous today that if accountants and information people wrapped up their systems and took them home, the whole process of producing society's material goods and services along with the governance of social order would grind to a standstill''

N. B. Macintosh, *Management Accounting and Control Systems: An Organizational and Behavioral Approach*, 1994

Basic Cost Concepts

- **Costs**
  - Sacrifices made to obtain goods or services. As long as they remain unexpired, they are on the balance sheet as an asset.
    - Note: as costs generate *revenue,* they "expire."
- **Expenses**
  - Expired costs which are deducted from revenues on the income statement.
- **Cost Objects**
  - Anything for which costs are measured and assigned. Some cost objects are tangible, such as the product we make; others may be activities for which we wish to accumulate cost information.

Cost Assignment

- **Direct Costs**
  - Costs that can be easily and accurately traced to a cost object
  - We call this direct tracing
- **Indirect Costs**
  - Costs that cannot be directly traced to a cost object
  - Driver tracing, allocation

Traditional GAAP Income Statement Breakdown

- **Product Costs**
  - **Direct Costs**
    - Direct materials
    - Direct labor
  - **Indirect Costs**
    - Overhead
  - These costs make up Cost of Goods Sold for the computation of Gross Margin
  - If a cost is related to production, it is a product cost that should be capitalized until it flows out of the income statement through COGS.
- **Nonproduct Costs (Period Costs)**
  - From Gross Margin we deduct nonproduction costs (period costs, or SG&A) to compute Operating Income
  - These costs are all expensed in the period

Huntersville: Cost of Goods Manufactured and the Income Statement

Consider the following information for Huntersville, Inc. for the fiscal year ended December 31.

Depreciation expense—administrative office	$32,000
Depreciation expense—plant and equipment	86,000
Direct labor—wages	487,000
Materials Inventory, Dec. 31	26,000
Materials Inventory, Jan. 1	19,000
Direct materials purchases	155,000
Finished Goods Inventory, Dec. 31	38,000
Finished Goods Inventory, Jan. 1	15,000
Heat, light, and power—plant	44,000
Indirect labor	25,000
Property taxes—plant	34,000
Sales representatives' salaries	145,000
Sales revenue	1,495,000
Factory supervisor's salary	66,000
Supplies—administrative office	16,000
Supplies—plant	29,000
Work-in-Process inventory, Dec. 31	9,000
Work-in-Process inventory, Jan. 1	23,000

Manufacturing Cost Flows

- Cost Flows Example…Huntersville

Huntersville: Cost of Goods Manufactured and the Income Statement

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Sales representatives' salaries	145,000
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Factory supervisor's salary	66,000
Supplies—administrative office	16,000
Supplies—plant	29,000
Work-in-Process inventory, Dec. 31	9,000
Work-in-Process inventory, Jan. 1	23,000

Direct Materials Inventory

$ 19,000	
155,000	$148,000
$ 26,000	

Wages Payable

	$487,000

Manf. Overhead

$ 86,000	$284,000
44,000	
25,000	
34,000	
66,000	
29,000	

Work-in-process Inventory

$ 23,000	
487,000	$933,000
148,000	
284,000	
$ 9,000	

Finished Goods Inventory

$ 15,000	
933,000	$910,000
$ 38,000	

Cost of Goods Sold

$910,000	

Huntersville, Inc.
Income Statement
For the Year Ended December 31

Sales Revenue		$ 1,495,000
Cost of Goods Sold		
Beginning Finished Goods Inventory	$ 15,000	
Cost of Goods Manufactured	933,000	
Cost of Goods Available for Sale	948,000	
Ending Finished Goods Inventory	38,000	
Cost of Goods Sold		910,000
Gross Margin		585,000
Sales Representatives' Salaries	$ 145,000	
Supplies--Administrative Office	16,000	
Depreciation Expense--Admin. Office	32,000	
Total Selling & Administrative		193,000
Operating Income		$ 392,000

Where did we simplify here?

- Cost Flows Example… Huntersville

Direct Materials Inventory

$ 19,000	
155,000	$148,000
$ 26,000	

Work-in-process Inventory

$ 23,000	
148,000	$933,000
487,000	
284,000	
$ 9,000	

Finished Goods Inventory

$ 15,000	
933,000	$910,000
$ 38,000	

Wages Payable

	$487,000

Cost of Goods Sold

$910,000	

Manf. Overhead

$ 86,000	$284,000
44,000	
25,000	
34,000	
66,000	
29,000	

A Few Matters of Housekeeping

- Today's "pre-class" quizzes are unique (there are two):
  - Both close at 11:59pm tonight
  - After that, all pre-class quizzes are due by 7:30 am for morning sections, 12:00 pm for afternoon sections
- Note that Post-Class Quizzes (which are exam-level content):
  - Will be posted at 12:00am the day after class and will be available until the Saturday after class (due by 11:59pm)
  - Will always be closed book, closed Internet, and almost always closed Excel (unless specifically directed)
  - Will generally be a **group** quiz (there will be a few exceptions)
- All post-class quizzes are submitted individually, but must be completed with your group.
  - Question at the end confirms group participation

Homework

- Reading and HW problems before most sessions
- No HW submission, solutions are posted
- Self-reported preparation question on each pre-class quiz

The real incentive to do the homework as we go along:
It's very hard to cram for management accounting exams!

Pre-Class Quizzes

- Every day homework is due, there will be a pre-class quiz (top 18 scores count… top 17 if you do a lab session). These are individual red!
  1) Which of the following best reflects your preparation for this class session as of right now?
     - (1 pt) I have read the entire reading assignment (per the reading guide, if applicable) and I have completed all the homework problems (referring to the solutions only after making a good-faith effort on the problems).
     - (0 POINTS) I have NOT read the entire reading assignment and/or I have NOT completed all the homework problems.
  2) Question based on the homework (1 pt)
  3) Question based on the homework (1-2 pts)
  4) Review question from the previous session (1-2 pts)
  5) Reminder to prioritize spiritual observances (0 pts but infinite worth)

19

BYU University Conference 2022: President Worthen

Divine revelation and a century of experience teach that the educational future belongs not to those who withdraw from or secularize the sacred, but to those who sacramentalize the secular…In the final analysis, the entire University enterprise – its classrooms, its laboratories, and perhaps most of all the long hours spent in one-to-one counseling – is a sacramental act, a form of worship; even its demanding drudgery is a manifestation of the love of God for man and the love of man for God. In answer to the ever-recurring question of how BYU is different, perhaps we can say "Elsewhere, little if anything is sacred. *Here, everything is.*"

20

Memory and Gratitude

"We need the Spirit daily to help us remember daily. Otherwise, memory lapses will occur when we are most vulnerable. It is not natural to the natural man to remember yesterday's blessings gratefully, especially when today's needs of the flesh press steadily upon him."

Neal A. Maxwell

Housekeeping

- Sessions 2 & 3 post-class quizzes due by 11:59 pm on Saturday
  - Each is a group quiz, 30 minutes (always 30 minutes for group quizzes)
    - Be with your group (in person or online)
    - Everyone in your group should open the quiz at the same time
    - Each individual submits the quiz on their own
    - Do not complete quiz if you are not with your group
- Session 4 pre-class quiz due by 7:30am / 12:00pm on Wednesday (1/21)
  - Individual red
- Summit Pickleball: Cost Classification Group Project due by 7:30am / 12:00pm on Wednesday (1/21)
  - Group red assignment; only one group member should submit

A Note About Homework

- Some homework assignments include the chapter's "self-study problem."
  - Excel solutions to these problems are not available
  - If you use the book, the solution is also in the book at the very end of the chapter
  - If you use Connect, you will see an algorithmic version of the self-study problem (i.e., the numbers change for each user)
    - Connect will tell you whether you're right or not, but will not walk through the "algo" solution.

Rounding for ACC 402

- Carry calculations in your spreadsheet or calculator until the very final solution.
- Round final answer to the nearest penny or as specified.
- Make sure you know how to use ALL the memory keys on your calculator…
- We will do our best to avoid rounding penalties.

Junior Core TA office hours

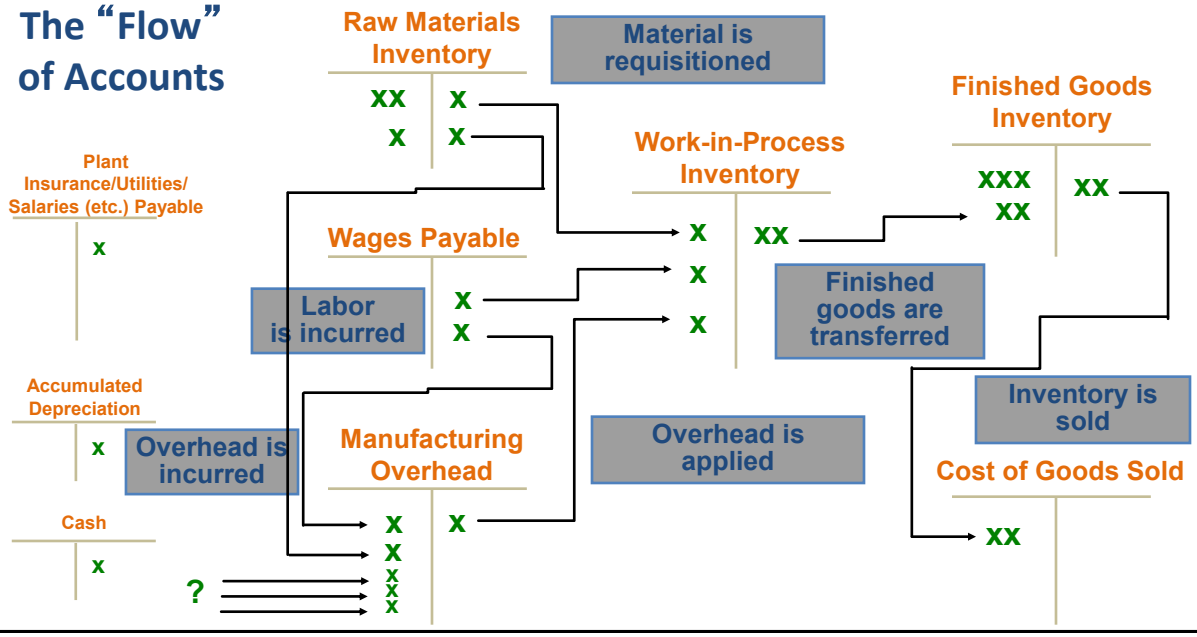
- Zoom office hours are available now
  - soahelphub.byu.edu
- In person office hours are coming
  - We can reserve rooms/times after add/drop, which is today
  - Watch for an announcement in the next few days

5

Costs and Love in The Hudsucker Proxy

6

The "Flow" of Accounts

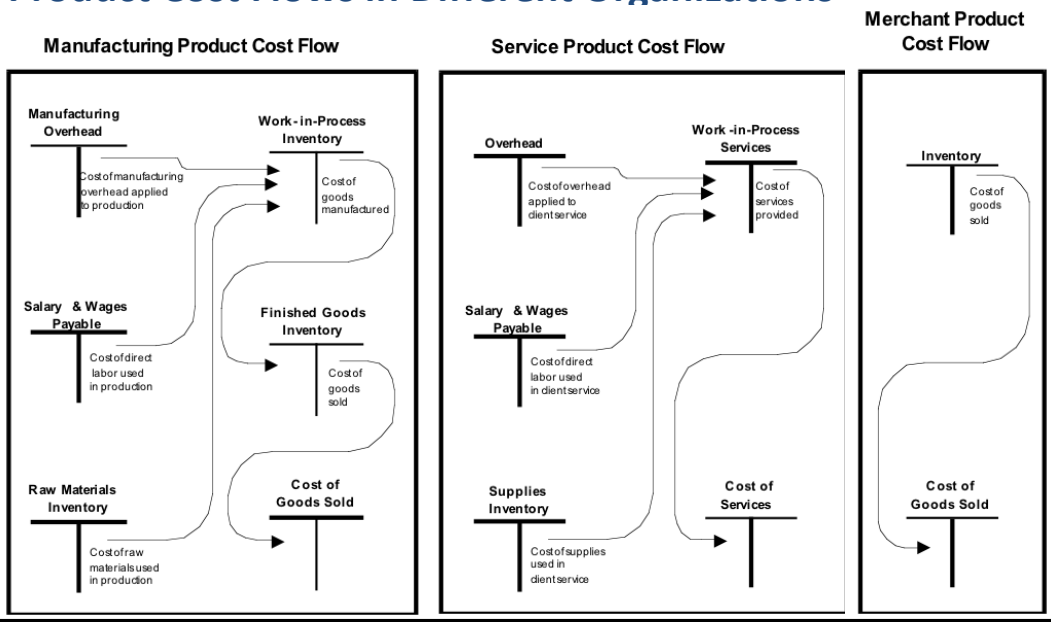


Manufacturing Then and Now:

https://thinktv.pbslearningmedia.org/resource/amex25.sci.engin.systems.assembly/the-first-automobile-assembly-line/

https://www.youtube.com/watch?v=OaTtWr04qUM

Product Cost Flows in Different Organizations



Costing Approaches

- **Actual Costing** – assigns:
  - All costs based on the *actual* cost rates × the actual activity consumption
- **Normal Costing** – assigns:
  - DM and DL based on the *actual* cost rates × the actual activity consumption
  - OH based on the *budgeted* cost rates × the actual activity consumption
- Note that Actual and Normal Costing handles OH differently: one by using *actual* cost rates, the other by using *budgeted* cost rates
- **Standard Costing** – assigns:
  - All costs based on the *budgeted* cost rates × the *standard activity allowed for actual production* (we'll come back to this later)

Costing Systems

- Job-Order Costing: accounting for distinct cost objects called jobs. Each job may be different from the next, and consumes different resources
  - The customer for each product or job is usually identified in advance
  - Costs are assigned to unique jobs
- Process Costing: accounting for mass production of identical or similar products
  - The customer is usually not specifically identified in advance
  - Costs are assigned to specific time periods

Seven Steps for Job Costing

1. Select the cost-allocation base(s) to use for allocating indirect costs to the job
   - Things to look for in selecting a cost driver:
     - High correlation between driver and cost
     - Simplicity
     - Low cost
     - Causality
     - Consider behavioral implications
   - Most common approach: Tradition = Direct Labor (bleh)

Seven Steps for Job Costing

1. Select the cost-allocation base(s) to use for allocating indirect costs to the job
2. Match indirect costs to their respective cost allocation base(s)
3. Calculate a budgeted overhead allocation rate:

   Rate = Budgeted OH Costs ÷ Budgeted OH Allocation Base
4. Identify the job to be costed
5. Allocate overhead costs to the job:

   OH Allocation Rate × Actual Base Activity For the Job
6. Assign the direct costs to the job
7. Compute total job costs by adding all direct and allocated costs together

Build a rate

Apply the rate

Note: Steps 1-3 take place before the year begins.
Steps 4-7 take place throughout the year for each job.
Also Note: Steps 1-3 are the same for Process Costing!

Manufacturing Overhead Accounting Timeline

Before the year starts:

$$\frac{\textit{Budgeted}\text{ Manufacturing Overhead}}{\textit{Budgeted}\text{ Activity Level (e.g., direct labor hours)}} = \text{Predetermined overhead rate}$$

During the year:

Predetermined overhead rate x Actual activity levels = Applied Manufacturing Overhead

WIP Inventory	XXX	
Manf. Overhead . . .		XXX

Also during the year:

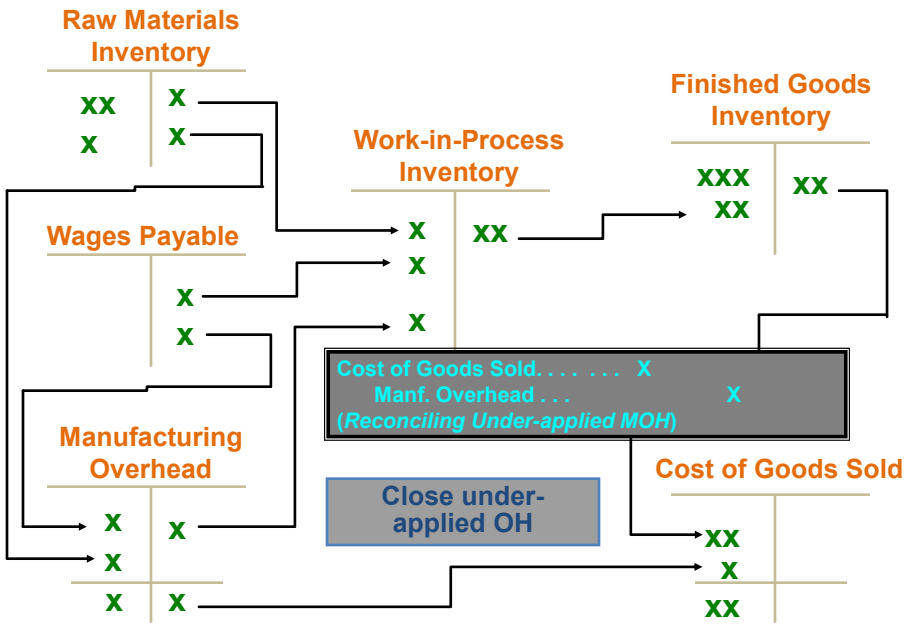
Incur and accumulate Actual Manufacturing Overhead

Manf. Overhead	XXX	
Accum. Deprec.		XXX

Manf. Overhead	XXX	
Salaries payable. . . .		XXX

No debits to expense accounts!

Year-End: Closing the MOH Account



Three Methods for Closing Over/Underapplied Overhead

- Write-Off Approach – the difference is simply written off to Cost of Goods Sold
- Proration Approach – the difference is allocated between Cost of Goods Sold, Work-in-Process, and Finished Goods based on their relative dollar value
- Adjusted Allocation Rate Approach – all allocations are recalculated with the actual and exact allocation rate per unit (We won't do this one – phew!)

Practice the Proration Approach

TipTop, Inc: Calculating and Closing Over/Under Applied Overhead (Practice)

TipTop, Inc. had the following ending balances at year end (before any closing of Manufacturing Overhead):

Raw Materials:	$46,000
Work-in-Process:	125,000
Finished Goods:	165,000
Cost of Goods Sold:	350,000

Before the year stated, TipTop management estimated that total manufacturing overhead for the year would be $500,000. TipTop management also estimated that total direct labor hours (the overhead driver) for the year would be 800,000.

Actual manufacturing overhead costs for the year were $515,000.

Actual direct labor hours for the year were 848,000.

If TipTop closes any over- or under-applied manufacturing overhead using the **proration approach**, what will the ending balances be in the Raw Materials, Work-in-Process, Finished Goods, and Cost of Goods Sold accounts?

17

Summit Pickleball Case

- 10 points total
- Group Red
- Due next class
- Read about a pickleball paddle manufacturing company
- Ten costs described
  - Categorize each cost as direct or indirect, assuming three different cost objects
  - Categorize each cost as fixed, variable, or mixed
  - Provide an explanation for your choices

- See additional textbook reading listed in the Canvas instructions for a review of direct and indirect costs and fixed, variable, and mixed costs

18

Cost Classification

Assume you own a McDonald's restaurant and want information on the costs of Big Macs (Big Macs are the cost object)

- Cost of Big Mac sauce squeezed on a Big Mac
- Cost of the two beef patties on a Big MAC
- Cost of Big Mac buns
- Electricity for running grill

- Direct Cost
- Indirect Cost

What if you own multiple stores and you now want information on the cost of the McDonald's store (e.g., the store is now the cost object)?

- Variable
- Fixed
- Mixed

Discussion Boards

- Please post all Summit Pickleball questions to the Summit Pickleball discussion board on Canvas
- We will respond as quickly as we can
- Broad benefit, avoid repetition, etc.
  - Click the Subscribe button or flag to be notified of discussion board activity

Using your knowledge of cost flows, identify what each of these numbers represent.

Raw Materials	
BB 210,000	100
50,000	35
	15,000

Accounts Payable	
	50,000

Wages Payable	
	80
	54
	20,000

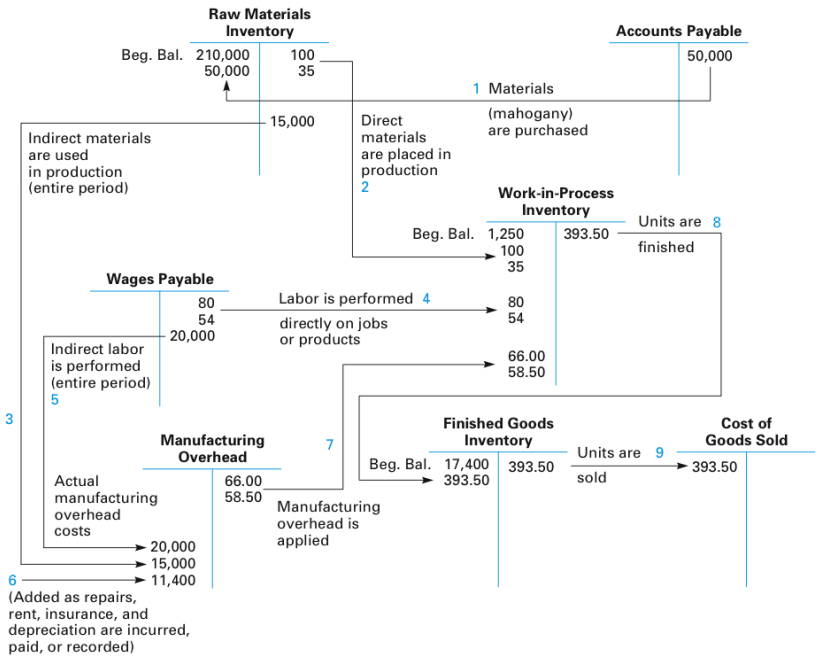
Work-In-Process Inventory	
BB 1,250	393
100	
35	
80	
54	
66	
58	

Man. Overhead	
20,000	66
15,000	58
11,400	

Finished Goods	
BB 17,400	393
393	

Cost of Goods Sold	
393	

21



22

Solution

Be sure to "see" the cost flow in journal entries

Journal Entries for Manufacturing Firms:

1	Raw Materials Inventory	50,000	
	Accounts Payable (or Cash)		50,000
	Purchased raw materials.		
2	Work-in-Process Inventory	100	
	Raw Materials Inventory		100
	Work-in-Process Inventory	35	
	Raw Materials Inventory		35
	Used direct materials in production (includes materials used in both the machining and finishing departments).		
3	Manufacturing Overhead	15,000	
	Raw Materials Inventory		15,000
	Used indirect materials in production (amount used during entire period).		
4	Work-in-Process Inventory	80	
	Wages Payable		80
	Work-in-Process Inventory	54	
	Wages Payable		54
	Incurred direct labor costs in the machining and finishing departments.		
5	Manufacturing Overhead	20,000	
	Wages Payable		20,000
	Incurred indirect labor costs (includes indirect labor costs for entire period).		
6	Manufacturing Overhead	11,400	
	Accounts Payable		1,200
	Rent Payable		6,450
	Prepaid Insurance		850
	Accumulated Depreciation		2,900
	Incurred manufacturing overhead costs (includes amounts for entire period).		
7	Work-in-Process Inventory	66.00	
	Manufacturing Overhead		66.00
	Work-in-Process Inventory	58.50	
	Manufacturing Overhead		58.50
	Applied manufacturing overhead from the machining and finishing departments to production.		
8	Finished Goods Inventory	393.50	
	Work-in-Process Inventory		393.50
	Completed production.		
9	Cost of Goods Sold	393.50	
	Finished Goods Inventory		393.50
	Sold finished goods.		

Product Costing Post-Class Quiz

ⓘ This is a preview of the published version of the quiz

Started: Feb 6 at 8:36pm

Quiz Instructions

You have **30 Minutes** to complete this quiz.

This is a **Group Quiz. Only the first quiz submitted will be graded for the group. Determine who in the group will submit the quiz. That student should open the quiz before any other students do.** The other students should **not submit** their quiz but let the timer run out so that the system automatically submits at the end of 30 minutes.

There is no partial credit for this Group Quiz, so no need to show your work.

REMEMBER, as soon as the quiz is submitted, complete the "All Here" group assignment that accompanies this quiz. Only one member of your group needs to submit. The **one** question on the assignment asks you to **indicate who (if anyone) is missing** from your group for this quiz. **Regardless of circumstances, only group members who are present and participate can receive quiz credit.** If there are no group members missing, you will indicate with **"All Here."**

Remember, unless specified, Excel is **not allowed** on post-class quizzes. (**No Excel for this quiz.**)

All five questions in this quiz are based on the information below.

A paper airplane manufacturer reports the following activities and costs for the last production period.

Airplane selling price	$10	per plane
Direct material cost	$1	per sheet of paper
Direct labor cost	$10	per production period per employee (4 folders)
Overhead cost - Indirect labor	$10	per production period per employee (2 staffers)
Overhead cost - Other	$100	per production period
Airplanes Started	18	planes
Airplanes Completed and Sold	15	planes
Ending work-in-process	20%	complete for direct labor and overhead

There was no beginning inventory for this production period.

Note: Please carry all computations four decimals so that you land on exactly the same solution. (That said, you won't be docked for simple differences in rounding.)

Question 1

2 pts

Compute the **Operating Profit** for the production period (based on traditional financial reporting standards).

Hint: It's an operating loss

(Note: the next three questions ask for specific items used to compute operating profit.)

- ◯ $28.00 Operating Loss
- ◯ $2.93 Operating Loss
- ◯ $25.00 Operating Loss
- ◯ $18.85 Operating Loss

Question 2

2 pts

Compute **Revenue** on the income statement for the production period.

- ◯ $120 revenue
- ◯ $180 revenue
- ◯ $150 revenue
- ◯ $100 revenue

Question 3

2 pts

Compute **Direct Labor Expense** on the income statement for the production period.

- ◯ $57.68 direct labor expense
- ◯ $40.00 direct labor expense
- ◯ $34.51 direct labor expense
- ◯ $38.46 direct labor expense

Question 4

2 pts

Compute **Overhead Expense** on the income statement for the production period.

- ◯ $106.47 overhead expense
- ◯ $120.00 overhead expense
- ◯ $115.38 overhead expense
- ◯ $96.15 overhead expense

Question 5

2 pts

Compute the value of **Ending Inventory** on the balance sheet at the end of the production period.

- ◯ $9.15 ending inventory
- ◯ $25.07 ending inventory
- ◯ $3.05 ending inventory
- ◯ $21.15 ending inventory

First Some Free Advice

1

Advice for Success in life:

*First, **resolve to strengthen your spiritual foundation**. This may involve setting a specific time and place to study the scriptures, praying more often, making temple worship a bigger priority, and letting God prevail in all aspects of your life.*

*Second, **resolve to be kind to others**. When the Savior Jesus Christ visited the Americas, as recorded in the Book of Mormon, one of the first things He taught was the need to eliminate contention in our lives. So, please be compassionate, be understanding, be slow to judge, and be quick to forgive.*

*Third**, resolve to be resolute. The Lord loves effort**. The Lord loves consistency. The Lord loves steadfastness. While we surely will come up short from time to time, our persistent efforts to hear Him and follow the inspiration He gives us will help us to "wax strong in the Spirit" (Mosiah 18:26).*

2

Advice for Success in this class:

First, resolve to strengthen your spiritual foundation. This may involve setting a specific time and place to study the scriptures, praying more often, making temple worship a bigger priority, and letting God prevail in all aspects of your life.

- **Put the first things first.** Years of experience has confirmed that it's always worth it to trade 10 minutes of accounting study time for 10 minutes of gospel time.
- **"Set a specific time and place"** Students who block out specific time to study do better than those who hope that time magically presents itself.

3

Advice for Success in this class:

Second, resolve to be kind to others. When the Savior Jesus Christ visited the Americas, as recorded in the Book of Mormon, one of the first things He taught was the need to eliminate contention in our lives. So, please be compassionate, be understanding, be slow to judge, and be quick to forgive.

- **This is a classroom where we value and respect each member as individuals.** Your peers and I are unlikely to remember in 5 years what you got on the exam – but will remember how you treated others.
- **Learn by teaching.** Use your groups and TA office hours. Understanding that the question asker is every bit as valuable to the learning experience as the question answerer.

4

Advice for Success in this class:

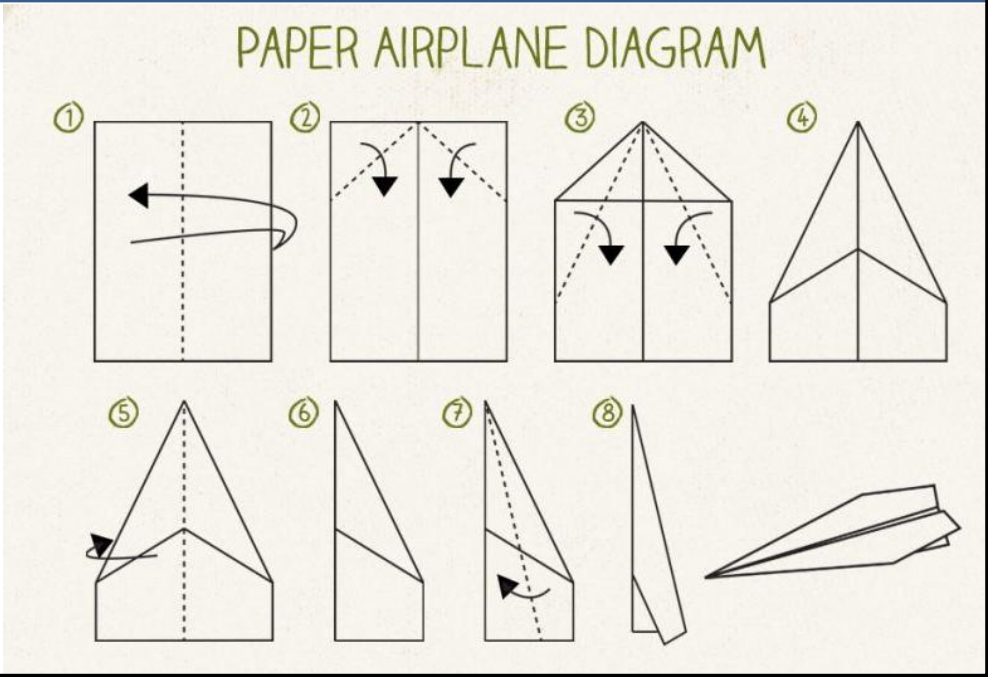
Third, resolve to be resolute. The Lord loves effort. The Lord loves consistency. The Lord loves steadfastness. While we surely will come up short from time to time, our persistent efforts to hear Him and follow the inspiration He gives us will help us to "wax strong in the Spirit" (Mosiah 18:26).

- **Stay Current:** You won't get nearly as much out of class if you haven't prepared to be here. And it's sad to see students miss a grade cutoff because they got behind (or forgetful) and missed quizzes.
- **Consistent Best Effort.** Students who study as we go perform better than those who "cram for the exam". Post class quizzes provide a good motivator for consistent study and can also highlight areas where you need more work. Don't wait till the last minute.

5

6

What Do You Remember?



Paper Airplanes and Cost Accounting

Team roles

- Five-person teams have one warehouse supervisor, one accountant, and three folders
- Four-person teams have one warehouse supervisor, one accountant and three folders

Accounting Data (your accountant will build out the P&L on the whiteboard)

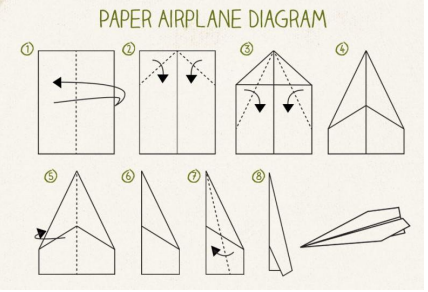
- $10 sales price per plane
- $1 cost per sheet of paper (direct materials cost)
- $10 cost per employee per production period
- $100 in general overhead costs per production period

Team Name	
# planes sold	x
Revenue	$
DM	($)
DL	($)
MOH	($)
Gross Profit	$

Paper Airplanes and Cost Accounting

The Production Process is Sequential

- Quickly figure out how you're going to fold your planes and what your handoff steps will be in the folding process!
- Each folder completes part of the plane and then hands it down the line to the next folder
- The last folder also performs quality assurance (it has to fly just a little bit to be "sold")
- Each plane requires a full sheet of paper



Team Name	
# planes sold	x
Revenue	$
DM	($)
DL	($)
MOH	($)
Gross Profit	$

Paper Airplanes and Cost Accounting

Team roles

- Six-person teams have one warehouse supervisor, one accountant, and four folders
- Five-person teams have one warehouse supervisor, one accountant, and three folders
- Four-person teams have one warehouse supervisor/accountant and three folders

Accounting Data (your accountant will build out the P&L on the whiteboard)

- $10 sales price per plane
- $1 cost per sheet of paper (direct materials cost)
- $10 cost per employee per production period
- $100 in general overhead costs per production period

Team Name	
# planes sold	x
Revenue	$
DM	($)
DL	($)
MOH	($)
Gross Profit	$

What is Yours?

- Only production costs attached to units sold flow to the income statement (COGS). Remaining costs are capitalized in inventory until sold.
- Beginning inventory + Total production costs = COGS + Ending Inventory (T-account math makes sense!)
- Equivalent units in WIP = % complete * count of partial units.
- Manufacturing overhead allocation often is done using direct labor as the activity base but doesn't have to be (more to come)
- Build a rate – apply a rate.

Post-Class Group Quiz

Build the Paper Airplanes P&L
with different numbers

13

My dear brothers and sisters, I promise that as you prayerfully study the Book of Mormon *every day,* you will make better decisions—*every day.* I promise that as you ponder what you study, the windows of heaven will open, and you will receive answers to your own questions and direction for your own life. I promise that as you daily immerse yourself in the Book of Mormon, you can be immunized against the evils of the day…

Russell M. Nelson

Management Accounting

"…the vast bulk of our economy's activity takes place within the walls of individual large business corporations, not in markets"

H.A. Simon, *Political Science and Politics*, 2000

''…it is not too great an exaggeration to say that management accounting and control systems are so important and ubiquitous today that if accountants and information people wrapped up their systems and took them home, the whole process of producing society's material goods and services along with the governance of social order would grind to a standstill''

N. B. Macintosh, *Management Accounting and Control Systems: An Organizational and Behavioral Approach*, 1994

Basic Cost Concepts

- **Costs**
  - Sacrifices made to obtain goods or services. As long as they remain unexpired, they are on the balance sheet as an asset.
    - Note: as costs generate *revenue,* they "expire."
- **Expenses**
  - Expired costs which are deducted from revenues on the income statement.
- **Cost Objects**
  - Anything for which costs are measured and assigned. Some cost objects are tangible, such as the product we make; others may be activities for which we wish to accumulate cost information.

Cost Assignment

- **Direct Costs**
  - Costs that can be easily and accurately traced to a cost object
  - We call this direct tracing
- **Indirect Costs**
  - Costs that cannot be directly traced to a cost object
  - Driver tracing, allocation

Traditional GAAP Income Statement Breakdown

- **Product Costs**
  - **Direct Costs**
    - Direct materials
    - Direct labor
  - **Indirect Costs**
    - Overhead
  - These costs make up Cost of Goods Sold for the computation of Gross Margin
  - If a cost is related to production, it is a product cost that should be capitalized until it flows out of the income statement through COGS.
- **Nonproduct Costs (Period Costs)**
  - From Gross Margin we deduct nonproduction costs (period costs, or SG&A) to compute Operating Income
  - These costs are all expensed in the period

Huntersville: Cost of Goods Manufactured and the Income Statement

Consider the following information for Huntersville, Inc. for the fiscal year ended December 31.

Depreciation expense—administrative office	$32,000
Depreciation expense—plant and equipment	86,000
Direct labor—wages	487,000
Materials Inventory, Dec. 31	26,000
Materials Inventory, Jan. 1	19,000
Direct materials purchases	155,000
Finished Goods Inventory, Dec. 31	38,000
Finished Goods Inventory, Jan. 1	15,000
Heat, light, and power—plant	44,000
Indirect labor	25,000
Property taxes—plant	34,000
Sales representatives' salaries	145,000
Sales revenue	1,495,000
Factory supervisor's salary	66,000
Supplies—administrative office	16,000
Supplies—plant	29,000
Work-in-Process inventory, Dec. 31	9,000
Work-in-Process inventory, Jan. 1	23,000

Manufacturing Cost Flows

- Cost Flows Example…Huntersville

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Work-in-Process inventory, Dec. 31	9,000
Work-in-Process inventory, Jan. 1	23,000

Direct Materials Inventory

$ 19,000	
155,000	$148,000
$ 26,000	

Wages Payable

	$487,000

Manf. Overhead

$ 86,000	$284,000
44,000	
25,000	
34,000	
66,000	
29,000	

Work-in-process Inventory

$ 23,000	
487,000	$933,000
148,000	
284,000	
$ 9,000	

Finished Goods Inventory

$ 15,000	
933,000	$910,000
$ 38,000	

Cost of Goods Sold

$910,000	

Huntersville, Inc.
Income Statement
For the Year Ended December 31

Sales Revenue		$ 1,495,000
Cost of Goods Sold		
Beginning Finished Goods Inventory	$ 15,000	
Cost of Goods Manufactured	933,000	
Cost of Goods Available for Sale	948,000	
Ending Finished Goods Inventory	38,000	
Cost of Goods Sold		910,000
Gross Margin		585,000
Sales Representatives' Salaries	$ 145,000	
Supplies--Administrative Office	16,000	
Depreciation Expense--Admin. Office	32,000	
Total Selling & Administrative		193,000
Operating Income		$ 392,000

Where did we simplify here?

- Cost Flows Example… Huntersville

Direct Materials Inventory

$ 19,000	
155,000	$148,000
$ 26,000	

Work-in-process Inventory

$ 23,000	
148,000	$933,000
487,000	
284,000	
$ 9,000	

Finished Goods Inventory

$ 15,000	
933,000	$910,000
$ 38,000	

Wages Payable

	$487,000

Cost of Goods Sold

$910,000	

Manf. Overhead

$ 86,000	$284,000
44,000	
25,000	
34,000	
66,000	
29,000	

A Few Matters of Housekeeping

- Today's "pre-class" quizzes are unique (there are two):
  - Both close at 11:59pm tonight
  - After that, all pre-class quizzes are due by 7:30 am for morning sections, 12:00 pm for afternoon sections
- Note that Post-Class Quizzes (which are exam-level content):
  - Will be posted at 12:00am the day after class and will be available until the Saturday after class (due by 11:59pm)
  - Will always be closed book, closed Internet, and almost always closed Excel (unless specifically directed)
  - Will generally be a **group** quiz (there will be a few exceptions)
- All post-class quizzes are submitted individually, but must be completed with your group.
  - Question at the end confirms group participation

Homework

- Reading and HW problems before most sessions
- No HW submission, solutions are posted
- Self-reported preparation question on each pre-class quiz

The real incentive to do the homework as we go along:
It's very hard to cram for management accounting exams!

Pre-Class Quizzes

- Every day homework is due, there will be a pre-class quiz (top 18 scores count… top 17 if you do a lab session). These are individual red!
  1) Which of the following best reflects your preparation for this class session as of right now?
     - (1 pt) I have read the entire reading assignment (per the reading guide, if applicable) and I have completed all the homework problems (referring to the solutions only after making a good-faith effort on the problems).
     - (0 POINTS) I have NOT read the entire reading assignment and/or I have NOT completed all the homework problems.
  2) Question based on the homework (1 pt)
  3) Question based on the homework (1-2 pts)
  4) Review question from the previous session (1-2 pts)
  5) Reminder to prioritize spiritual observances (0 pts but infinite worth)

19

BYU University Conference 2022: President Worthen

Divine revelation and a century of experience teach that the educational future belongs not to those who withdraw from or secularize the sacred, but to those who sacramentalize the secular…In the final analysis, the entire University enterprise – its classrooms, its laboratories, and perhaps most of all the long hours spent in one-to-one counseling – is a sacramental act, a form of worship; even its demanding drudgery is a manifestation of the love of God for man and the love of man for God. In answer to the ever-recurring question of how BYU is different, perhaps we can say "Elsewhere, little if anything is sacred. *Here, everything is.*"

20