

ACCT 101: Bookkeeping, accruals, and adjusting

Session 2

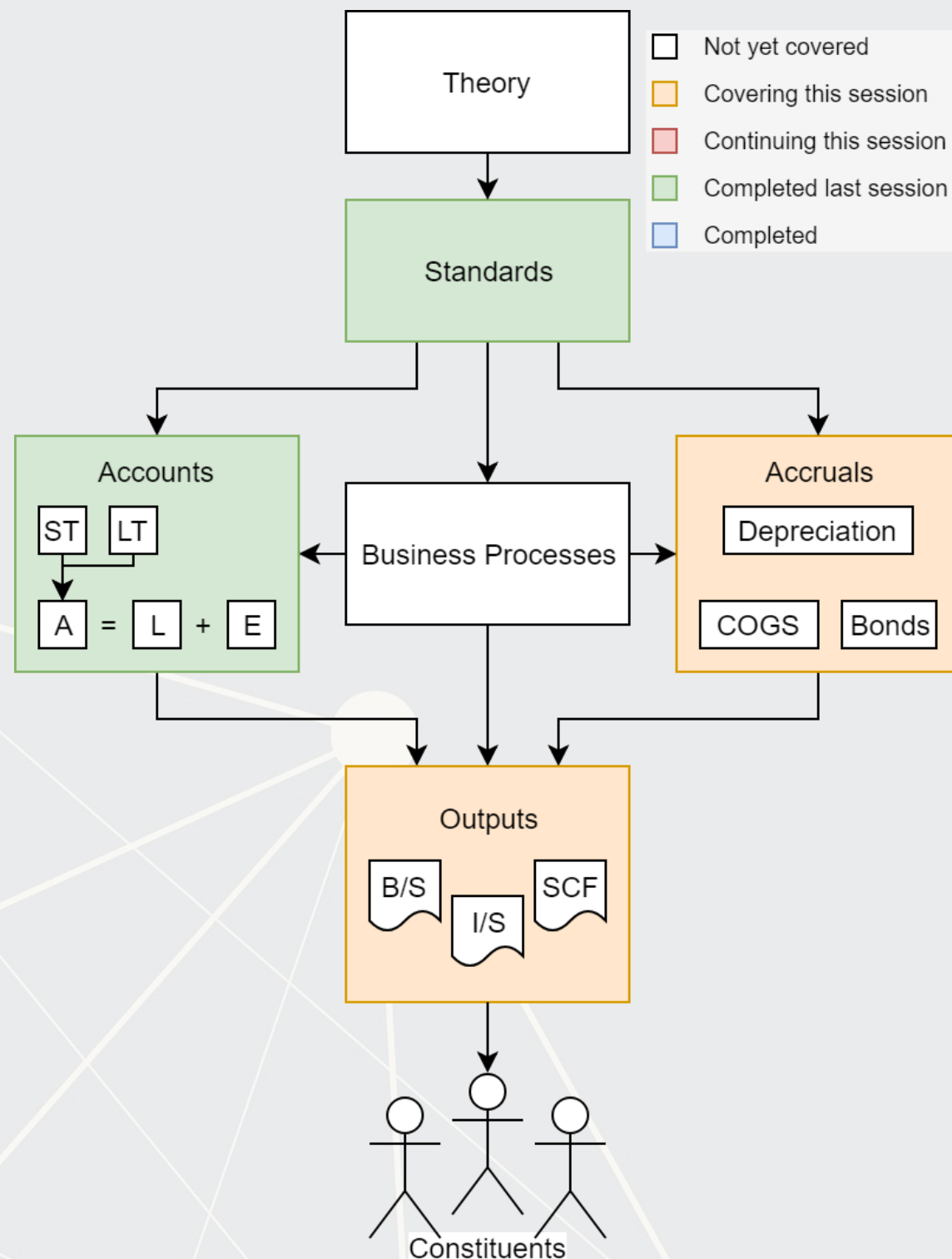
Richard M. Crowley

Frontmatter

Frontmatter

- Homework 1 due next week
 - Available on eLearn
 - Submit on eLearn
- Covers topics from today's session

Learning objectives



- Bookkeeping (Chapter 2)
 1. Understand how accounting works
 2. Record transactions in the journal
 3. Construct a trial balance
- Accruals and Adjustments (Chapter 3)
 1. Relate accrual accounting and cash flows
 2. Apply the revenue and matching principals
 3. Adjust accounts

Debits and credits

History: Before double entry

- 8500 BCE: Shaped clay tokens represent commodities
- 200 BCE: Arabic numerals (except 0)
- 600 CE: 0 developed
- 800 CE: 10-digit numerals spread throughout Europe



MS 4631

Bulla-envelope with 11 plain and complex tokens inside
Near East, ca. 3700-3200 BC

<http://www.schoyencollection.com/mathematics-collection/pre-literate-counting/bulla-envelope-ms-4631>

*Note: This slide is based on a history lecture by Dr. Pierre Liang at Carnegie Mellon from October 2017

History: Double entry

- 1400s CE: First evidence of *double entry* accounting in Italy
- 1494 CE Italian monk and scholar Luca Pacioli publishes first text on *double entry* bookkeeping
 - Summa de Arithmetica, Geometria, Proportioni et Propotionalita



*Note: This slide is based on a history lecture by Dr. Pierre Liang at Carnegie Mellon from October 2017

History: Journal entries

(1491)

7. *Faro debetore* Tomasone del Buono e *creditors* spese di mercanzie di s. iiij d'oro per spese fatta a un fardello di panno corsato mandato da Lucca da Bonaccorsi a Libro 203/100 lib—siiiij d—

7. *I make debtor* Tomaso del Buono and *creditor* Merchandise Expenses for 4 s. in gold, for expenses incurred on a bale of cloth sent by Lucca da Bonaccorsi in the book 203/100 lib. —s4d—

(1553)

10. Devonshire Kerseys is debtor to Laurance Fabian, draper, and is for 10 pieces at 36 s. a piece—etc.—L. 108 s—d—

(1570)

14. Roggen *soll an* Hering, hab ich mit Andreas Klur von Thorn einen stick getroffen—etc. fl. 472.15—

14. Rye *owes to* Herring, which I have bartered with Andreas Klur of Thorn—etc...fl. 472.15

(1595)

11. Cassa van ghereden ghelde is *schuldich aen* Cappital van my 8000 guld. Ende is voor verscheyden panninghen van gout ende silver, so ick in mynen handen hebbe, omme daermede te dryuen den handel van coopmanchap. Godt wil my verleenen ghewin, ende behaeden voor verlies. Amen...g. 8000

11. Ready money is *indebted to* Capital for my 8000 guilders. And is for different coins of gold and silver that I have in hand to use in pursuing the trade of merchandise. God will grant me profit and preserve me from loss. Amen...g. 8000

Images from Littleton 1928 TAR.

History: Journal entry evolution

(8)			
<i>English Journal Entries After 1600</i>			
	(1684)		
19.	George Pinchback Debitor to Kettles £75-8d for 5 barrels—etc.	75/-/8	
	(1717)		
20.	P. Q. at Gibraltar my accompt current Debtor to Voyage to Gibraltar, consigned to P. Q. £322.9.7½—etc.....	322/9/7½	
	(1754)		
21.	William Wife £360 to Sherry for 10 pipes delivered to him in barter.....	360/-/-	
	(1788)		
22.	Charges merchandise Dr. to paper taken for use in shop.....	-/10/6	
	(1841)		
23.	Dr. Mdse. 1000	B/P 500 Cash 500	
	(1848)		
24.	Cash to Sundries to Bills Receivable Profit and Loss	1590 " 1500 " 90	
	(1864)		
25.	Merchandise Dr. to James Munroe	Dr. 5000 " 5000	Cr. 5000
	(1900)		
26.	Merchandise to Cash	400	400

Shakespeare likely did this sort of work for the British Navy! (Source: [Reynolds 1974 JAR](#))

History: Impact

The Principles of Book-keeping by Double Entry constitute a theory which is mathematically by no means uninteresting: it is in fact like Euclid's theory of ratios an absolutely perfect one, and it is only its extreme simplicity which prevents it from being as interesting as it would otherwise be.

– Arthur Cayley, FRS, *The Principles of Book-keeping by Double Entry*, 1894.

Bookkeeping has become a real technology instead of a simple clerical routine, and in addition there has grown up a profession of accounting which reaches quite beyond bookkeeping.

– A. C. Littleton, *The Evolution of the Journal Entry*, 1928.

← Debit | Credit →

Debits

on
the
left

Credits

on
the
right

Memorize this!

This is double entry accounting

Debits and credits

Debits (DR)

- Increase assets
- Decrease liabilities
- Decrease equity
 - Decrease revenue
 - Increase expenses

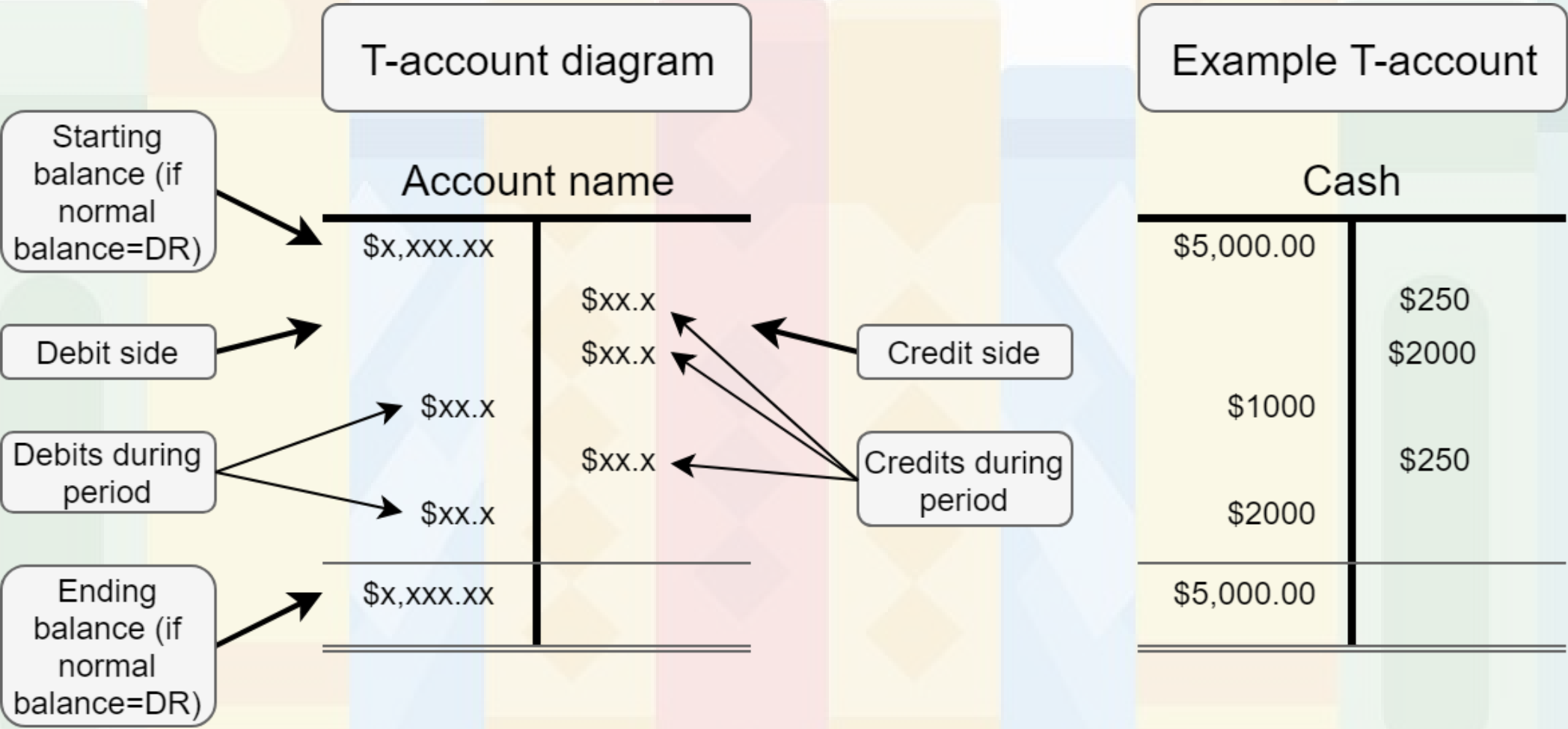
Credits (CR)

- Decrease assets
- Increase liabilities
- Increase equity
 - Increase revenue
 - Decrease expenses





























The side of an account that increases its balance is called the account's *normal balance*

Debits **always** equal credits for a transaction

Representing accounts: T-accounts



Normal balances

Normal Balances	Accounts following normal balances		Reversed accounts
Assets  DR  CR	Cash  DR  CR	Inventory  DR  CR	Contra Asset  DR  CR
Liabilities  DR  CR	Accounts Payable  DR  CR	Notes Payable  DR  CR	Contra Liability  DR  CR
Equity  DR  CR	Revenue  DR  CR	Share Capital  DR  CR	Expense  DR  CR
	Retained Earnings  DR  CR		Dividends  DR  CR

Review: Debits & credits

1. Where do debits go?
2. Where do credits go?
3. What do debits equal?
4. What do credits equal?

Why does this all matter?

$$A = L + E \quad A, L, E \in (-\infty, \infty)$$

$$DR = CR \quad DR, CR > 0$$

- Both of these equations inherently require that *at least* two changes are made with each transaction
 - For the top equation, the changes must either:
 - Affect both sides in the same direction, or
 - Cancel out within one side
 - For the bottom equation, the change must have a debit and a credit
- As these hold at the smallest element of the system, they aggregate up to hold for any amount of transactions
 - I.e., for a whole company or any subset thereof

Now we have a robust way to check for mistakes anywhere in our accounting system – just check each equation!

Bookkeeping

Accounts

- Assets: Cash, A/R, inventory, equipment, ...
- Liabilities: A/P, debt, expenses payable, ...
- Equities: Expenses, revenue, capital, ret. earnings, ...
- Documented granularly in the *Chart of Accounts*

The screenshot displays a software interface for a Chart of Accounts. The main window is titled "Assets" and contains a list of accounts organized into several categories. A sidebar on the right side of the window features a vertical stack of buttons representing the major account categories: Assets, Liabilities, Equity, Revenues, Cost of Sales, Expenses, Financing, and Other Revenues and Expenses. The account "12511000-01-001-01 - Meal Expenses (HO, USA, GA)" is highlighted in yellow.

Account Number	Description
Current Assets - Current Assets	
Cash and Equiv - Cash and Cash Equivalents	
11100000-01-001-01	Cash on Hand (HO, USA, GA)
11200000-01-001-01	Cash at Bank - Checking (HO, USA, GA)
11210000-01-001-01	Cash at Bank - Payroll (HO, USA, GA)
11220000-01-001-01	Cash at Bank - Savings (HO, USA, GA)
11230000-01-001-01	Cash at Bank - Credit Card (HO, USA, GA)
11300000-01-001-01	Checking Account Clearing (HO, USA, GA)
11400000-01-001-01	Credit Card Clearing (HO, USA, GA)
11500000-01-001-01	Short Term Investments (HO, USA, GA)
11600000-01-001-01	Exchange Account (HO, USA, GA)
Receivables - Receivables	
12100000-01-001-01	Accounts Receivable - Domestic (HO, USA, GA)
12200000-01-001-01	Accounts Receivable - Foreign (HO, USA, GA)
12400000-01-001-01	Allowance for Doubtful Debts (HO, USA, GA)
12500000-01-001-01	Interest Receivable (HO, USA, GA)
12510000-01-001-01	Other Receivables (HO, USA, GA)
12511000-01-001-01	Meal Expenses (HO, USA, GA)
12540000-01-001-01	Travel Expenses - Advances (HO, USA, GA)
Inventory - Inventory	
13100000-01-001-01	Inventory - Raw Material (HO, USA, GA)
13200000-01-001-01	Inventory - Work In Progress (HO, USA, GA)
13300000-01-001-01	Inventory - Semi Finished Goods (HO, USA, GA)
13400000-01-001-01	Inventory - Finished Goods (HO, USA, GA)
13500000-01-001-01	Inventory - Returns (HO, USA, GA)
13900000-01-001-01	Goods Clearing Account (HO, USA, GA)
Other Current - Other Current Assets	
14100000-01-001-01	Prepaid Expenses (HO, USA, GA)
14200000-01-001-01	Prepaid Taxes (HO, USA, GA)
15100000-01-001-01	Loans Receivable - Short Term (HO, USA, GA)
15200000-01-001-01	Accrued Expenses - Short Term (HO, USA, GA)

General journal

- Where everything is recorded first
 - Everything
 - Every little transaction
- Specifies the accounts, values, and document for each transaction
 - We will skip references
 - We will be doing journal entries through session 9
- Always *list debits first*

Date	Account Title and Description	Ref.	Debit	Credit
20X1				
Aug. 1	Cash		50,000	
	Notes Payable			50,000
	Borrowed \$50,000			
3	Equipment		30,000	
	Cash			30,000
	Purchased equipment			
6	Vehicles		20,000	
	Notes Payable			18,000
	Cash			2,000
	Purchased delivery truck			

DR = CR for *each entry*

Constructing journal entries

Sum of DR = Sum of CR

Date	Account	DR	CR
DATE HERE	Debit 1	XX.XX	
	Debit 2 (if needed)	XX.XX	
	
	Credit 1		XX.XX
	Credit 2 (if needed)		XX.XX

Explanation of above transaction here			

Date at the start of entry (points to DATE HERE)

Debits listed first (points to Debit 1)

Credits indented (points to Credit 1)

Values paired with accounts (points to XX.XX values)

Examples: Cash sale, inventory purchase, and paying wages

Date	Account	DR	CR
20XY.01.01	Cash	100.00	
	Revenue		100.00
Cash sale of \$100			
20XY.01.02	Inventory	250.00	
	Accounts payable (A/P)		250.00
Purchased \$250 of inventory on account			
20XY.01.03	Wage expense	500.00	
	Wages payable	500.00	
	Cash		1,000.00
Paid \$1,000 in wages; \$500 was previously recognized (prerecorded)			

In order by date (points to 20XY.01.01, 20XY.01.02, 20XY.01.03)

Constructing journal entries

1. Get the in class activity spreadsheet
 - Session_2_Activity.xlsx
2. We'll go through the first three transactions together
 - Journal entries
3. Journal (i.e., right out journal entries for) the next 11 transactions with your group in the **blue tab** of the spreadsheet
 - We'll do the rest of the activity throughout the class today

TEAMWORK

General ledger

- An aggregation of all the accounts
- Shows all account balances
- Includes details of each account
- T-accounts sufficient for this course

Cash	Accounts payable	Revenue	Inventory	Wages payable	Wage expense	Share capital
\$5,000			\$100			
\$100	\$2,000	\$100	250	\$500	\$500	\$2,600
\$1,000	\$250			\$500		
\$4,100	\$2,250	\$100	\$350	--	\$500	\$2,600

Starting balances listed in grey. Note that Revenues and Expenses always start with 0 balance.

$DR = \$4,100 + \$350 + \$500 = \$4,950$
 $CR = \$2,250 + \$100 + \$2,600 = \$4,950$
 $DR = CR \checkmark$

$A = \$4,100 + \$350 = \$4,450$
 $L = \$2,250 + \0
 $E = \$100 - \$500 + \$2600 = \$2,200$
 $A = L + E \checkmark$

Trial Balance

- Shows all account balances just like the general ledger
 - Make sure they add up!
- Use it to verify **DR = CR**
- Use it to verify the **accounting equation**
- Usually prepared at the end of a period
- Can prepare income statement and balance sheet from it

ShineBrite Car Wash, Inc.
Trial Balance
April 30, 20X4

Account Title	Balance	
	Debit	Credit
Cash.....	\$33,300	
Accounts receivable.....	2,000	
Supplies.....	3,700	
Land.....	20,000	
Accounts payable.....		\$ 1,800
Share capital.....		50,000
Dividends.....	2,100	
Service revenue.....		10,000
Gain on sale of land.....		2,000
Rent expense.....	1,100	
Salary expense.....	1,200	
Utilities expense.....	400	
Total.....	<u>\$63,800</u>	<u>\$63,800</u>

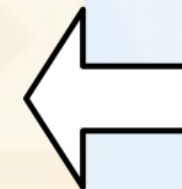
DR = CR for totals

Constructing the trial balance

Date	Account	DR	CR
20XY.01.01	Cash	100.00	
	Revenue		100.00
Cash sale of \$100			
20XY.01.02	Inventory	250.00	
	Accounts payable (A/P)		250.00
Purchased \$250 of inventory on account			
20XY.01.03	Wage expense	500.00	
	Wages payable	500.00	
	Cash		1,000.00
Paid \$1,000 in wages; \$500 was previously recognized (prerecorded)			



Cash		Wages payable	
5,000			500
100		500	
	1,000		
4,100			0
Inventory		Revenue	
100			100
250			
350			100
Accounts payable		Wage expense	
	2,000	500	
	250		
	2,250	500	
Share capital			
	2,600		
	2,600		



Trial Balance		
Month DD, YYYY		
Account Title	Debit	Credit
Cash	4,100	
Inventory	350	
Accounts payable		2,250
Wages payable		0
Share capital		2,600
Revenue		100
Wage Expense	500	
Total	4,950	4,950

Limits of the trial balance

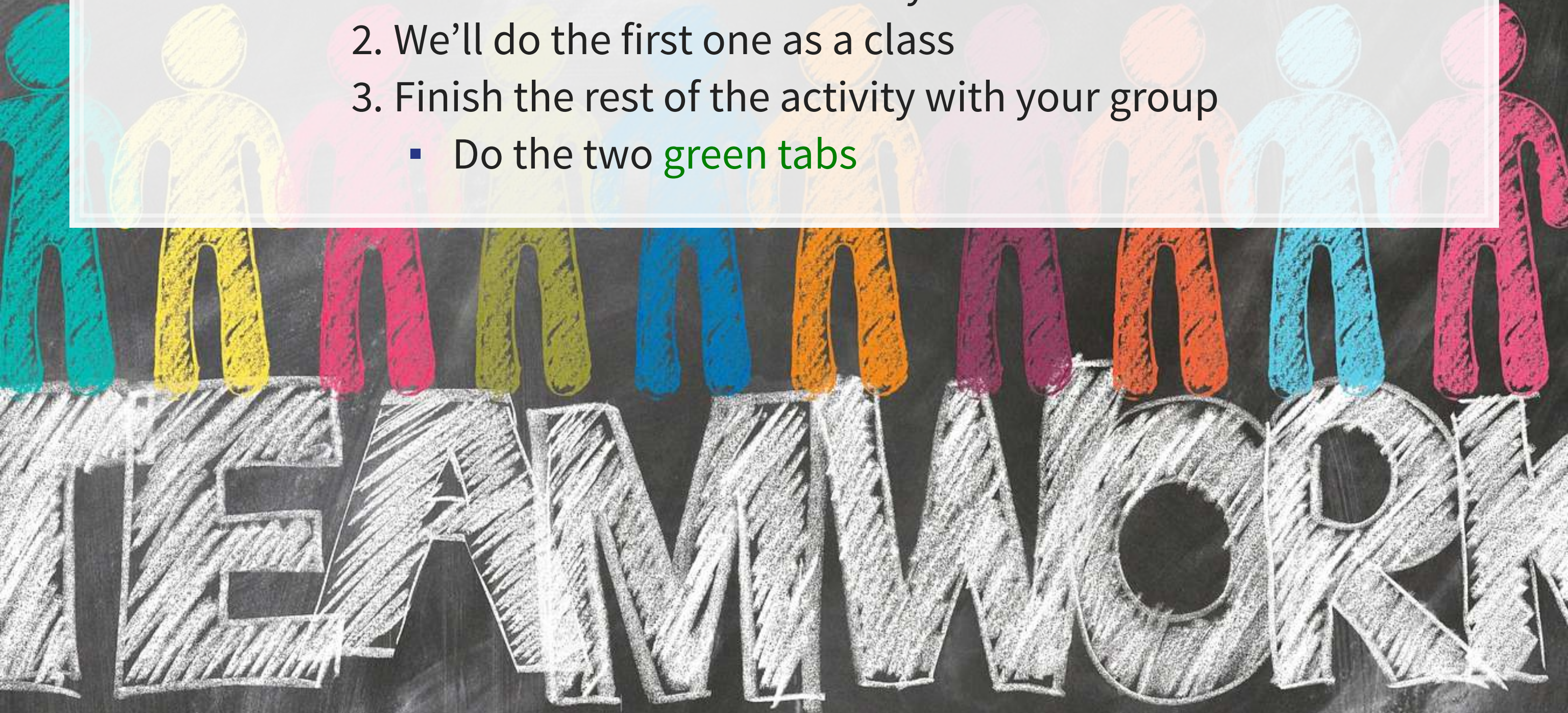
- Can't catch:
 - Unrecorded transactions
 - Because there's no trace of them
 - Wrong amounts in transactions that balance in the journal
 - Everything still balances
 - Wrong accounts of the same type used in the journal
 - Everything still balances
 - $A = L + E$ holds

What you can catch

- Let the *Out of balance* (OOB) amount be:
 - $OOB = Assets - Liabilities - Equity$
- If $OOB / 2$ is an integer
 - DR and CR in a transaction may be flipped
 - Ex.: Recorded a cash sale as a CR to cash and a CR to revenue
 - Should be a DR to cash and a CR to revenue
- If $OOB / 9$ is an integer, there may be a:
 - Slide error (multiplied by 10 or divided by 10):
 - Ex.: Recorded 5,400 instead of 54,000
 - Transposition error (flipped the first 2 digits)
 - Ex.: Recorded 45,000 instead of 54,000

T-accounts and the trial balance

1. Return to the in class activity
2. We'll do the first one as a class
3. Finish the rest of the activity with your group
 - Do the two **green tabs**



Accruals vs. Cash

Cash basis accounting

- Records cash only transactions
- Used by small companies
- *Profit = Cash in – Cash out*

PROBLEM

- This ignores underlying economic activity
 - If we make a sale on credit, that doesn't add to profit
 - If we put an expense on credit, it doesn't lower profit

Accrual accounting

- Records impact of transactions *as they occur*
- Required per IAS1, “Presentation of Financial Statements”
- Revenue recorded when it is “*more likely than not*”
- Expenses recorded as *incurred*
- Profit = Revenue - Expenses

PROBLEM

- Profit may not be indicative of cashflows
 - This is a concern for lenders
 - If there’s no cash, profit doesn’t matter, as the company will go bankrupt

Accrual transaction examples

Cash Transactions

Cash sale

Borrowing money

Paying expenses such as wages and rent

Receiving cash from interest earned

Paying off loans

Receiving cash from shares issued

Noncash Transactions

Sales on account (A/R)

Inventory purchases on account (A/P)

Expenses incurred but not yet paid

Depreciation expense

Usage of prepaid expenses (rent, utilities, etc.)

Revenue from long-term projects with up-front cash collection

Periodicity

- Divides time into *artificial* segments to understand a firm's changes over time
 - Fiscal year, fiscal quarter
 - Breadtalk: Jan 1 - Dec 31
 - Citigroup: Jan 1 - Dec 31
 - Microsoft: Jul 1 - Jun 30
 - Walt Disney
 - 2016: Oct 2 - Oct 1
 - 2015: Oct 4 - Oct 1
 - 2014: Sept 28 - Oct 3



Don't focus on this too much for this class

Revenue recognition principal

- Recognize revenue in the **period** it was earned
 - This may not be when cash is received
- Goods revenue recorded when it is *more likely than not*
- Service revenue recorded at the percentage complete
 - If 50% of the work is finished, record 50% of the revenue
 - If 20% of the work is finished, record 20% of the revenue

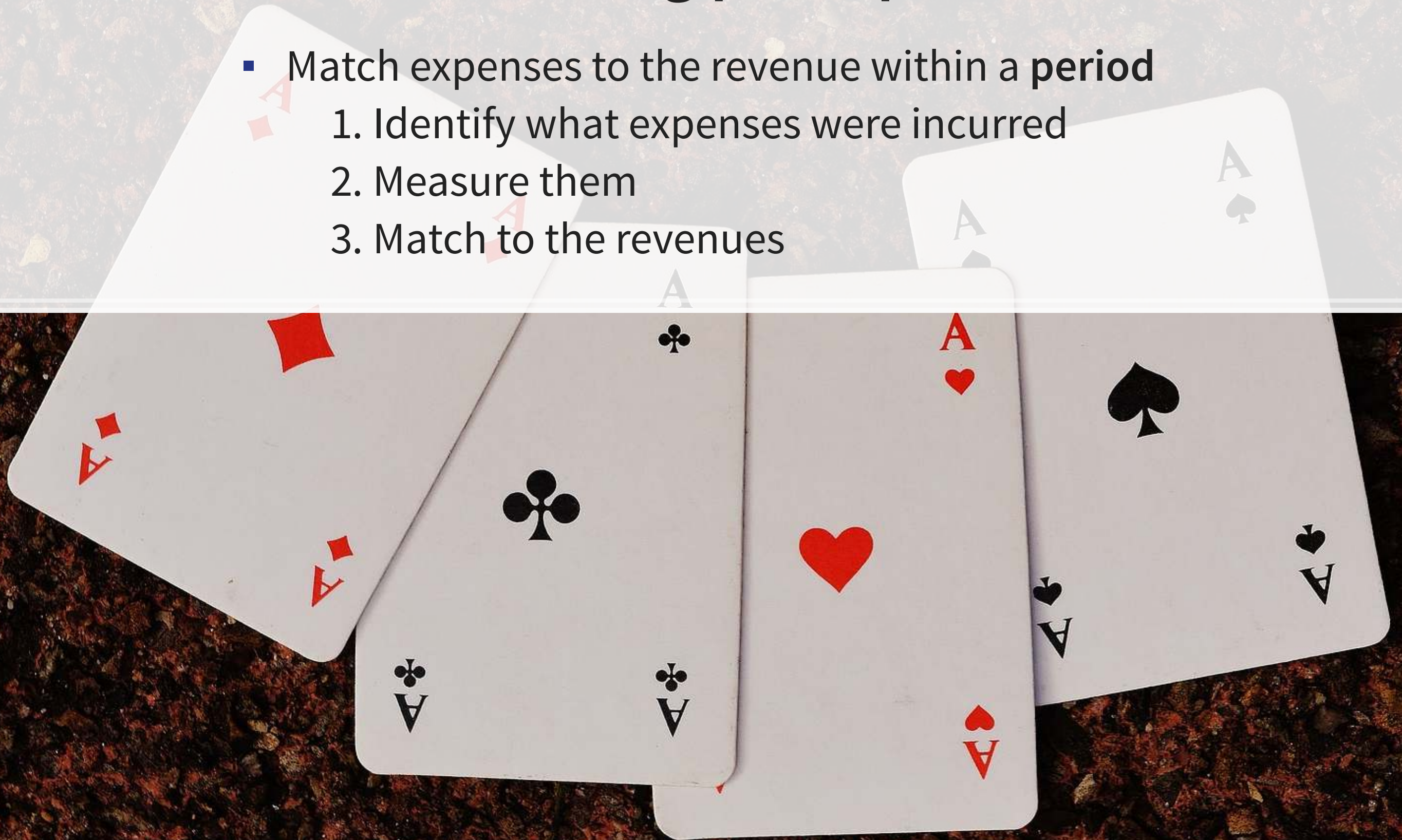
This will lead to a lot of tricky accounting, but mostly around period ends

Recognizing revenue

- Record revenue when:
 - Revenue can be measured *reliably*
 - Economic benefits are *more likely than not*
- For goods, you also need to:
 - Transfer any *significant risks* to buyer
 - If we are shipping [FOB destination], wait until received
 - If they handle shipping [FOB shipping point], wait until picked up for delivery
 - Have no continuing managerial involvement (*to an extent*)
 - Be able to *reliably* measure all costs incurred from the transaction
- For services, you also need to be able to *reliably* measure:
 - The stage of completion
 - The costs incurred to date and costs to finish

Matching principal

- Match expenses to the revenue within a period
 1. Identify what expenses were incurred
 2. Measure them
 3. Match to the revenues

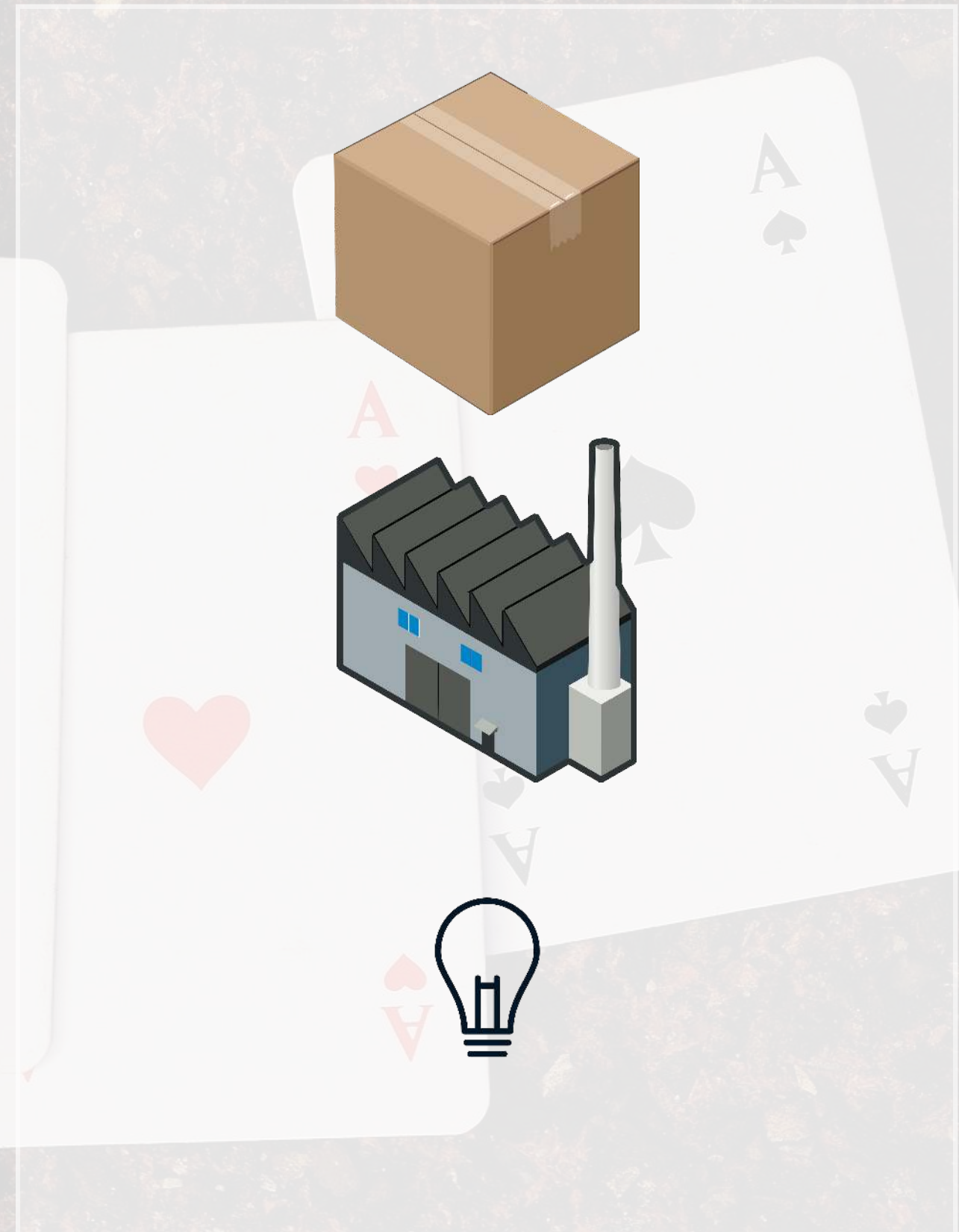


Expense recognition

- Recognize expenses **only** when an asset is used up
 - Asset purchase \neq expense
 - Can record partial usage
- Formally, expenses are recognized when:
 1. Obligations are incurred, such as when services have been received
 2. Obligations are offset against recognized revenues (matching principle)

Expense matching

- 3 ways to match
- Directly
 - The expense is easy to track to an account
 - Ex.: Inventory
- Indirectly (over a period)
 - The asset has a long life or is difficult to track
 - Ex.: Buildings
- With acquisition
 - Simultaneous usage and acquisition
 - Ex.: Utilities, rent, labor
 - Often *prepaid expenses*



When should we record...

1. A sale we are shipping at our expense
2. A sale we are shipping at the buyer's expense
3. Revenue for a week long consulting project paid for up front
4. Electricity usage
5. Building usage (our building)
6. Sale of inventory for revenue

Adjustments

Why do we need to adjust?

- The matching principle
 - Everything needs to be matched at period end
- Do before balance sheet and income statement
 - Adjustments will go to the trial balance once we record them
 - We call this an *Adjusted trial balance*
- Why not do this continuously?
 - Too costly – some accounts continuously change
 - Investors only see period-end statements anyway

We'll only do this at period end

What do we need to adjust?

- Adjustments needed to:
 - Asset values
 - Prepaid expenses
 - Inventory, supplies, etc.
 - Noncurrent assets
 - Liabilities
 - Payables we have yet to recognize
 - Unearned revenues
 - Balanced by:
 - Revenues
 - Expenses

- All adjustments affect:
 - 1 B/S account
 - Assets
 - Liabilities
 - Equity excluding revenues/expenses
 - 1 I/S account
 - Revenue or expense
 - **NEVER** affects cash

Adjusting entry types

- *Deferral*
 - Adjust for prepaid expense (some used)
 - Adjust for unearned revenue (some may be earned)
- *Depreciation*
 - Some long term assets have been used up
- *Accrual*
 - Record an expense in advance

Deferral

- Adjustment for cash paid or received in advance
 - Expense or revenue has yet to occur
 - We *defer* some of it to the next period

Example: Deferred expense (previously recorded payment)

Date	Account	DR	CR
20YY.MM.DD	Rent expense	1,000	
	Prepaid rent		1,000
<i>Prepaid rent of \$2,000/month, 1/2 month passed</i>			

Example: Deferred revenue

Date	Account	DR	CR
20YY.MM.DD	Unearned revenue	3,000	
	Revenue		3,000
<i>Received compensation for 100 consulting hours at \$100/hour, 30 hours complete</i>			

Depreciation

- Adjustment for allocating the cost of *Property, Plant and Equipment* (PP&E) over its useful life
- Record to *accumulated depreciation*
- Asset's book value is asset account minus accumulated depreciation
- Depreciate to *salvage value*
 - What you expect to get when it is used up

Example: Depreciation of equipment

Date	Account	DR	CR
20YY.MM.DD	Depreciation expense	5,000	
	Accumulated depreciation -- Equipment		5,000
<i>Equipment depreciated by \$5,000 during the year</i>			

Depreciation methods

- Straight line
 - Same amount each period
 - If N periods, S salvage value, H historical cost:
 - $(H - S)/N$ per period
- Units of activity
 - Expense based on units produced
 - Good if capacity is known and tracked
- Declining balance
 - More depreciation early on, less later



Accrual

- Accrued expense: debit expense, credit liability

Example: Accruals: utilities expense and tax expense

Date	Account	DR	CR
20YY.MM.DD	Utilities expense	250	
	Utilities payable		250
<i>1/2 month of unpaid utilities expense, typical month is \$500</i>			
20YY.MM.DD	Tax expense	20,000	
	Tax payable		20,000
<i>Expect to owe \$20,000 in income tax for the period</i>			

- Accrued revenue: debit asset, credit revenue

Example: Accrued service revenue

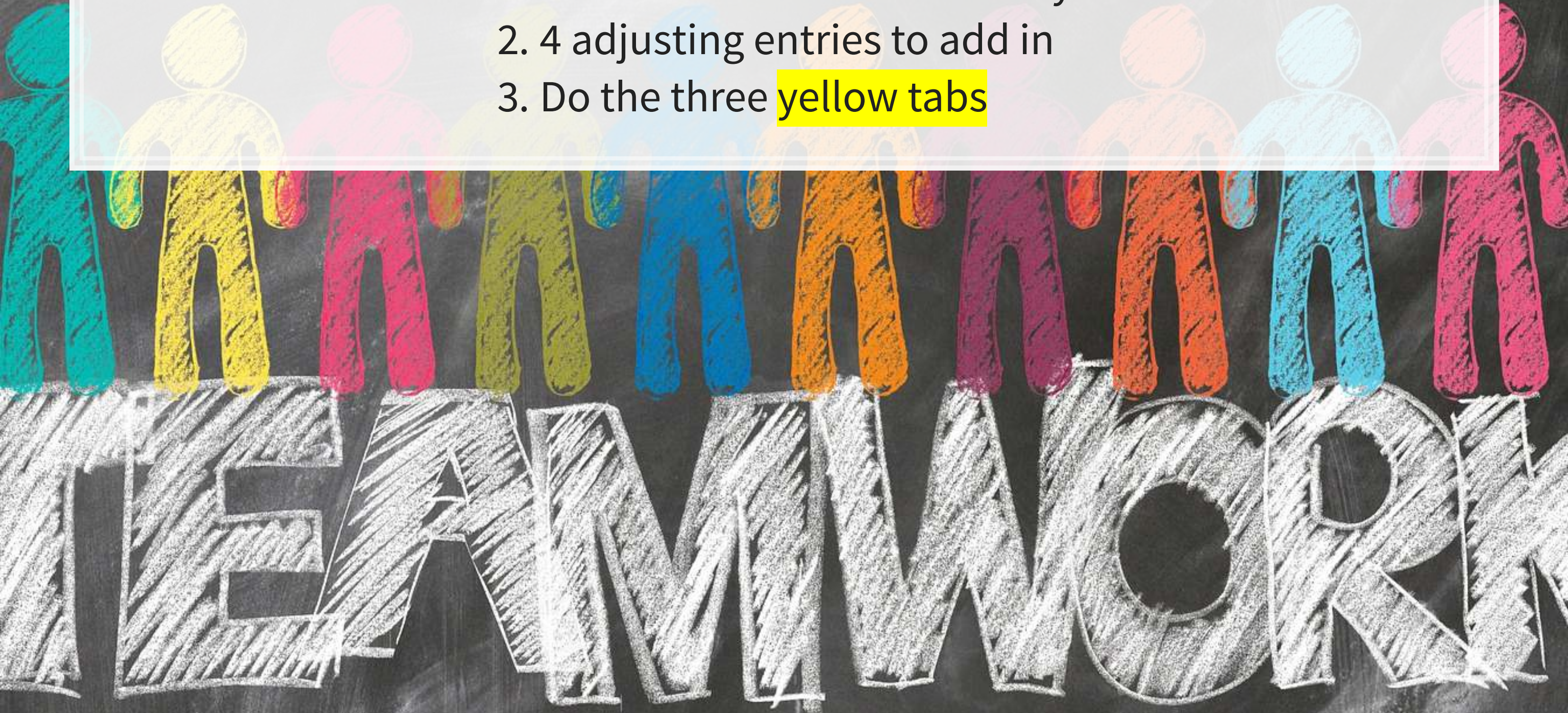
Date	Account	DR	CR
20YY.MM.DD	Accounts Receivable	1,000	
	Revenue		1,000
<i>Performed 10% of \$10,000 contract, with payment on completion</i>			

Overall effects

Type	Asset (↑=DR)	Liability (↑=CR)	Expense (↑=DR)	Revenue (↑=CR)
Deferral: prepaid expense	↓		↑	
Deferral: unearned revenue		↓		↑
Depreciation	↓		↑	
Accrual: accrued expense		↑	↑	
Accrual: accrued revenue	↑			↑

Adjusting entries

1. Return to the in class activity
2. 4 adjusting entries to add in
3. Do the three **yellow tabs**



Closing the books

Closing the books

- Reset all temporary accounts to 0
 - All revenues
 - All expenses
 - Dividends
- Record a credit to temporary accounts with debit balances
 - Expenses, losses, dividends
- Record a debit to temporary accounts with credit balance
 - Revenues, gains
- Helps to track income through each period
 - Since all income-related accounts start each period with 0 balance

Reset temporary accounts at period end

- We close the accounts into *retained earnings* directly
 - Or close into *income summary*, and then close that into retained earnings
- Debit Revenue, Credit Retained earnings
- Debit Retained earnings, Credit Expense
- Debit Retained earnings, Credit Dividends

Example: Format for closing entry

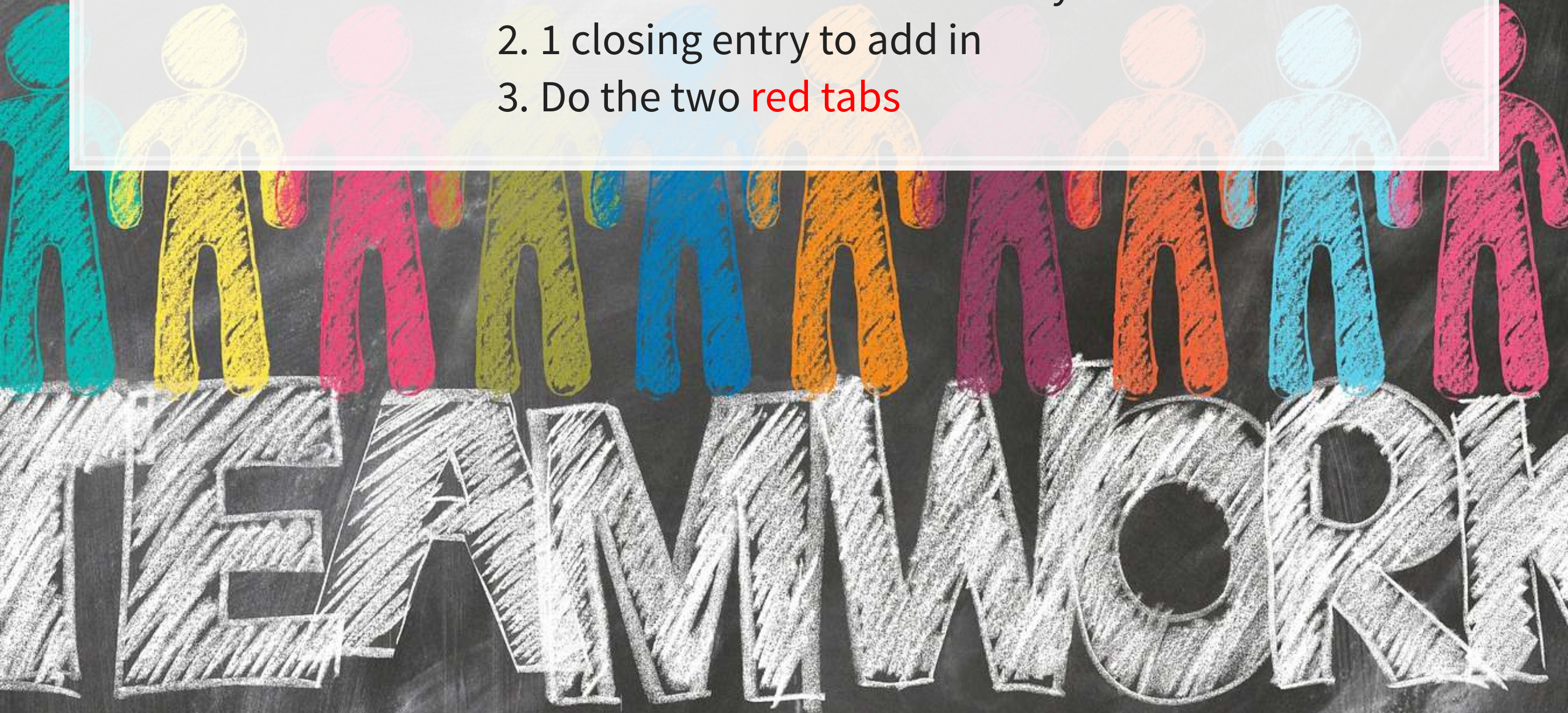
Date	Account	DR	CR
20YY.MM.DD	Revenue	XX	
	Retained earnings (if decreased)	XX	
	Retained earnings (if increased)		XX
	Expense 1		XX
	Expense 2		XX

	Dividends		XX
<i>Closing entry</i>			

Retained earnings is a plug to make this journal entry balance. Include as a debit or a credit, but not both.

Closing entry

1. Return to the in class activity
2. 1 closing entry to add in
3. Do the two **red tabs**



End Matter

For next week

1. Recap the reading for this week
2. Read the pages for next week
 - Capital Structure (Chapter 10)
 - Accounting Statements (Chapter 3, Part B)
3. Homework to *turn in next week*
 - Available on eLearn
 - Submit on eLearn
4. Practice on eLearn
 - Practice on journal entries
 - Automatic feedback provided