

CHAPTER 14

PHARMACY BUSINESS MATH



Money is always there, but the pockets change.

--unknown author

Being skilled in the art and practice of pharmacy is both exciting and important, but for the long term success of any pharmacy (even a non-profit pharmacy) it must achieve good cash flow and be able to meet its financial goals. This is an area where pharmacy technicians are rapidly expanding their roles in both community and institutional settings.

Today, technicians commonly handle inventory purchasing and receiving while assuring proper turnover and any necessary data maintenance involved with such responsibilities. They work with insurance companies on behalf of their pharmacy (sometimes technicians also work directly for insurance companies). Also, qualified technicians may have an opportunity to move into management positions where they need to give consideration to capital expenditures and justify professional fees. A pharmacy technician with solid business skills can achieve many things for the various practice settings they may work in.

In this chapter we will look at the following concepts:

- Terminology,
- Inventory management processes,
- Storage requirements,
- Markups/discounts,
- Gross profits and net profits,
- Third party reimbursement,
- Daily cash reports,
- Calculating dispensing fees, and
- Depreciation.

Terminology

To understand the concepts of this chapter you need to familiarize your self with some basic terminology as it relates to pharmacy business math.

inventory - This is simply the entire stock on hand for sale at a given time.

inventory value - The total value of the drugs and merchandise in stock on a given day.

perpetual inventory - A system that maintains a continuous count of every item in inventory so that it always shows the stock on hand. Some pharmacies maintain perpetual inventories on all products while others only do this with their schedule II medications.

reorder point - Minimum and maximum stock levels which determine when a reorder is placed and for how much.

formulary - A list of medications available for use within a health care system. There are two major types of formularies, open formularies and closed formularies.

open formulary - The pharmacy must stock or have ready access to, all drugs that may be written by the physicians in their practice area.

closed formulary - The drug inventory is limited to a list of approved medications.

purchasing - Purchasing is the ordering of products for use or sale by the pharmacy and is usually carried out by either an independent or group process.

direct purchasing - This entails ordering medications directly from the original drug manufacturer. This typically requires completion of a purchase order, generally a preprinted form with a unique number, on which the product name(s), amount(s), and price(s) are entered.

wholesaler purchasing - Wholesaler purchasing enables the pharmacy to use a single source to purchase numerous products from numerous manufacturers. Most drug ordering of this fashion is done on-line.

prime vendor purchasing - This involves an agreement made by a pharmacy for a specified percentage or dollar volume of purchases in exchange for being given lower acquisition costs.

schedule II medications - Schedule II medications must be stocked separately in a secure place or distributed throughout your inventory and require a DEA 222 form for reordering. Their stock must be continually monitored and documented.

Occupational Safety and Health Administration (OSHA) - OSHA is a government agency within the United States Department of Labor responsible for maintaining safe and healthy work environments.

Material Safety Data Sheet (MSDS) - OSHA required notices on hazardous substances which provide hazard, handling, clean-up, and first aid information.

gross profit - Gross profit is calculated as sales minus all costs directly related to those sales or in simpler terms we can think of it as the difference between the selling price and the acquisition price.

net profit - Net profit is the difference between the gross profit and the sum of all the costs associated with filling the prescription. The costs associated with filling the prescription are accounted for with a dispensing fee or a professional fee. With that in mind you can determine the net profit by subtracting a professional fee from the gross profit.

dispensing fee - This represents the charge for the professional services provided by the pharmacy when dispensing a prescription and includes a distribution of the costs involved in running the pharmacy such as salaries, rent, utilities, costs associated with maintaining the computer system, etc.

This is sometimes also referred to as a professional fee.

average wholesale price - This is the average price at which wholesalers typically sell medications to pharmacies.

usual and customary price – Usual and customary price is commonly known as the retail price and is the price paid for a prescription by a patient without insurance.

third party reimbursement - This is reimbursement for services rendered to a person in which an entity other than the receiver of the service is responsible for the payment. Third-party reimbursement for the cost of a subscriber's prescriptions are commonly paid in part by a health insurance plan or other prescription benefit manager, such as Highmark, Medco, Medicare, or Medicaid.

capitation fee - A method of payment for health services in which an individual or institutional provider is paid a fixed amount without regard to the actual number or nature of services provided to each patient. A common example would be a pharmacy in a long term care home receiving a fixed amount of money per month regardless of whether the patient required no pharmaceuticals or if there prescriptions exceeded the money allotted by a capitation fee.

capital expenditures - Money spent to acquire or upgrade physical assets such as property, fixtures, or machinery (i.e., a building, shelving, and computers). Capital expenditures are not for day-to-day operations such as payroll, inventory, maintenance and advertising. This is also called capital spending or capital expense.

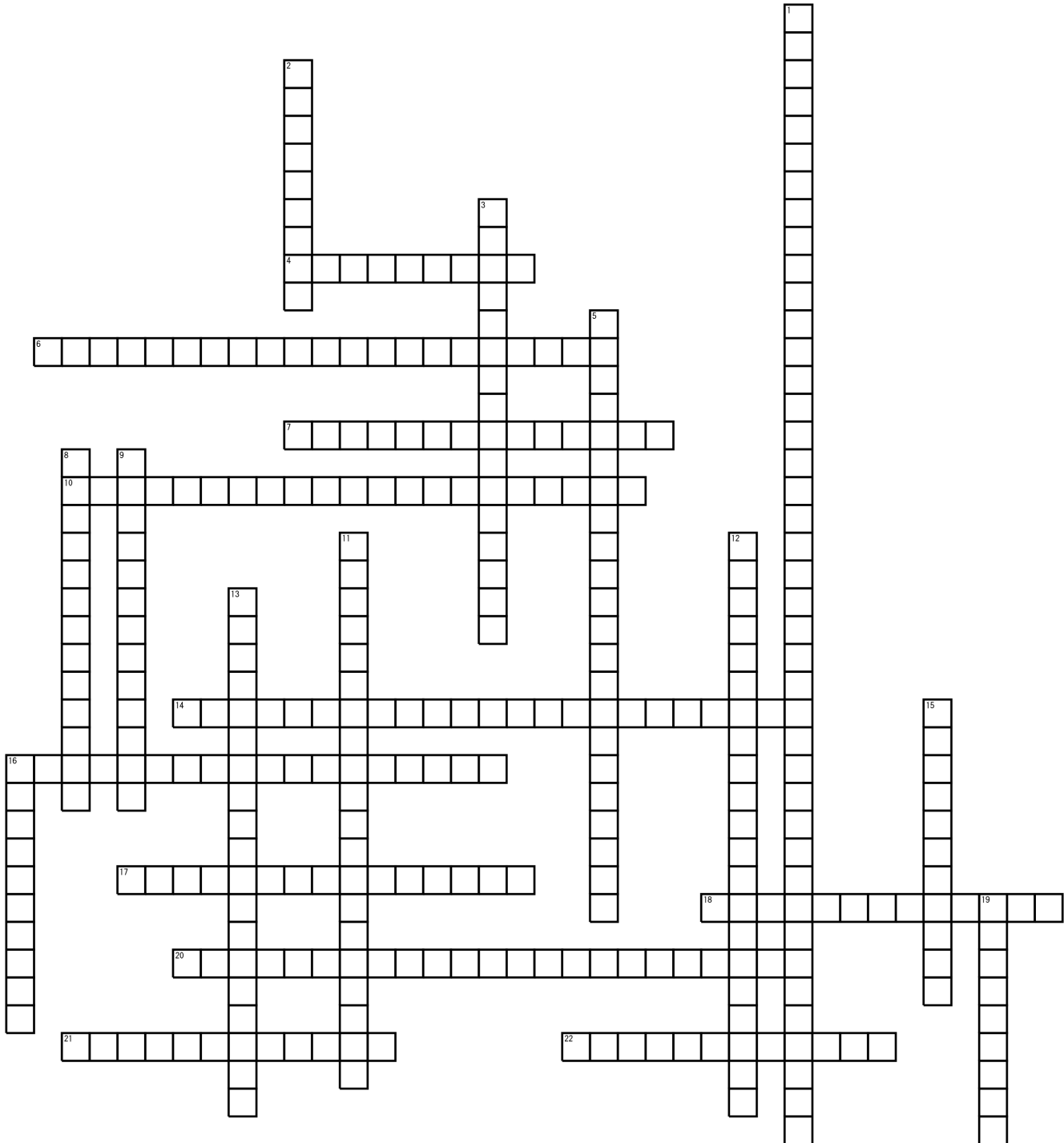
depreciation - This is the decline in value of assets. As an example, a pharmacy delivery car declines in value as it becomes older and obtains more mileage.

Worksheet 14-1

Name:

Date:

Fill in the following crossword puzzle using the terminology presented in this chapter. The clues are on the back of this worksheet.



Across

- 4) This is simply the entire stock on hand for sale at a given time.
- 6) These must be stocked separately in a secure place or distributed throughout your inventory and require a DEA 222 form for reordering. Their stock must be continually monitored and documented.
- 7) The total value of the drugs and merchandise in stock on a given day.
- 10) This involves an agreement made by a pharmacy for a specified percentage or dollar volume of purchases in exchange for being given lower acquisition costs.
- 14) OSHA required notices on hazardous substances which provide hazard, handling, clean-up, and first aid information.
- 16) A system that maintains a continuous count of every item in inventory so that it always shows the stock on hand.
- 17) The drug inventory is limited to a list of approved medications.
- 18) A method of payment for health services in which an individual or institutional provider is paid a fixed amount without regard to the actual number or nature of services provided to each patient.
- 20) This is reimbursement for services rendered to a person in which an entity other than the receiver of the service is responsible for the payment.
- 21) Minimum and maximum stock levels which determine when a reorder is placed and for how much.
- 22) This is the decline in value of assets.

Down

- 1) A government agency within the United States Department of Labor responsible for maintaining safe and healthy work environments.
- 2) This is the difference between the gross profit and the sum of all the costs associated with filling the prescription.
- 3) This entails ordering medications directly from the original drug manufacturer.
- 5) This is commonly known as the retail price and is the price paid for a prescription by a patient without insurance.
- 8) The pharmacy must stock or have ready access to, all drugs that may be written by the physicians in their practice area.
- 9) This represents the charge for the professional services provided by the pharmacy when dispensing a prescription and includes a distribution of the costs involved in running the pharmacy such as salaries, rent, utilities, costs associated with maintaining the computer system, etc.
- 11) This enables the pharmacy to use a single source to purchase numerous products from numerous manufacturers. Most drug ordering of this fashion is done on-line.
- 12) This is the average price at which wholesalers typically sell medications to pharmacies.
- 13) Money spent to acquire or upgrade physical assets such as property, fixtures, or machinery.
- 15) This is calculated as sales minus all costs directly related to those sales or in simpler terms we can think of it as the difference between the selling price and the acquisition price.
- 16) This is the ordering of products for use or sale by the pharmacy and is usually carried out by either an independent or group process.
- 19) A list of medications available for use within a health care system.

Inventory management processes

The primary purpose of inventory management is the timely purchase and receipt of pharmaceuticals and to establish and maintain appropriate levels of materials in stock. Purchasing, receiving, and inventory should be as uncomplicated as possible so as not to disrupt or to interfere with the other activities of the pharmacy. Community pharmacies usually maintain an open formulary, which means they must stock or have ready access to all drugs that may be written by the physicians in their practice area. In the community pharmacy most pharmaceutical products are purchased through a local wholesaler. Specialty pharmacies and hospital pharmacies use a closed formulary, which means the drug inventory is limited to a list of approved medications. To minimize the cost of doing business, inventory levels must be adequate but not excessive with a rapid turnover of drug stock on the shelf. The purchasing, receipt, and inventory of controlled-drug substances requires special procedures and record-keeping requirements.

Purchasing

Purchasing is the ordering of products for use or sale by the pharmacy and is usually carried out by either an independent or group process. In independent purchasing, the pharmacist or technician deals directly with a drug wholesaler (or rarely the pharmaceutical manufacturer) regarding matters such as price and terms. In group purchasing, a number of pharmacies work together to negotiate a discount for high-volume purchases and more favorable contractual terms. Several purchasing methods are used in pharmacy including Direct Purchasing, Wholesaler Purchasing, and Prime Vendor Purchasing.

Direct purchasing entails ordering medications directly from the original drug manufacturer. This typically requires completion of a purchase order, generally a preprinted form with a unique number on which the product name(s), amount(s), and price(s) are entered.

Advantages to direct purchasing

- lower cost
- lack of add-on fees

Disadvantages to direct purchasing

- a commitment of time as it will take longer than other methods to receive drugs
- a commitment of staff since there are multiple requisitions to be completed and mailed to multiple pharmaceutical companies

Wholesaler purchasing enables the pharmacy to use a single source to purchase numerous products from numerous manufacturers. Most drug ordering of this fashion is done on-line, although gathering information may be done in a number of different ways such as writing items on a 'want book', walking the shelves and scanning items that need reordered into a portable bar code scanner (an example is pictured to the right), or many pharmacy management software programs will automatically populate a reorder list when the pharmacy stock reaches a predetermined reorder point. A system that maintains a continuous inventory record is known as perpetual inventory.



Advantages to wholesaler purchasing

- reduced turnaround time for orders
- lower inventory and associated costs
- reduced commitment of time and staff

Disadvantages to wholesaler purchasing

- a higher purchase cost
- supply difficulties
- loss of control provided by in-house purchase orders
- unavailability of some pharmaceuticals

Sometimes to offset some of the increased costs associated with using a wholesaler, as opposed to direct purchasing, pharmacies will establish a contract identifying a particular wholesaler as a prime vendor purchaser. Prime vendor purchasing involves an agreement made by a pharmacy for a specified percentage or dollar volume of purchases in exchange for being given lower acquisition costs.

Advantages to prime vendor purchasing

- lower acquisition costs
- competitive service fees
- electronic order entry
- often, emergency delivery services
- promotes just in time (JIT) purchasing

Disadvantages to prime vendor purchasing

- limits ability to use other wholesalers
- in term of JIT, it can only be used when supplies are readily available and needs can be accurately predicted

Controlled substances, as expected, require special consideration when it comes to purchasing. The Controlled Substance Act (CSA) defines procedures for purchasing and receiving and requirements for inventory and record keeping.

Schedule III – V drugs (see Chapter 8 for information on drug schedules) may be ordered by a pharmacy or other appropriate dispensary on a general order from a wholesaler and you should check the delivery in against the original order.

Schedule II drugs have much more stringent requirements. A pharmacy must register with the Drug Enforcement Administration (DEA) to purchase Schedule II medications. The purchase of such controlled substances must be authorized by a pharmacist and executed on either a triplicate DEA 222 order form or an electronic 222 form through a controlled substances ordering system (CSOS)

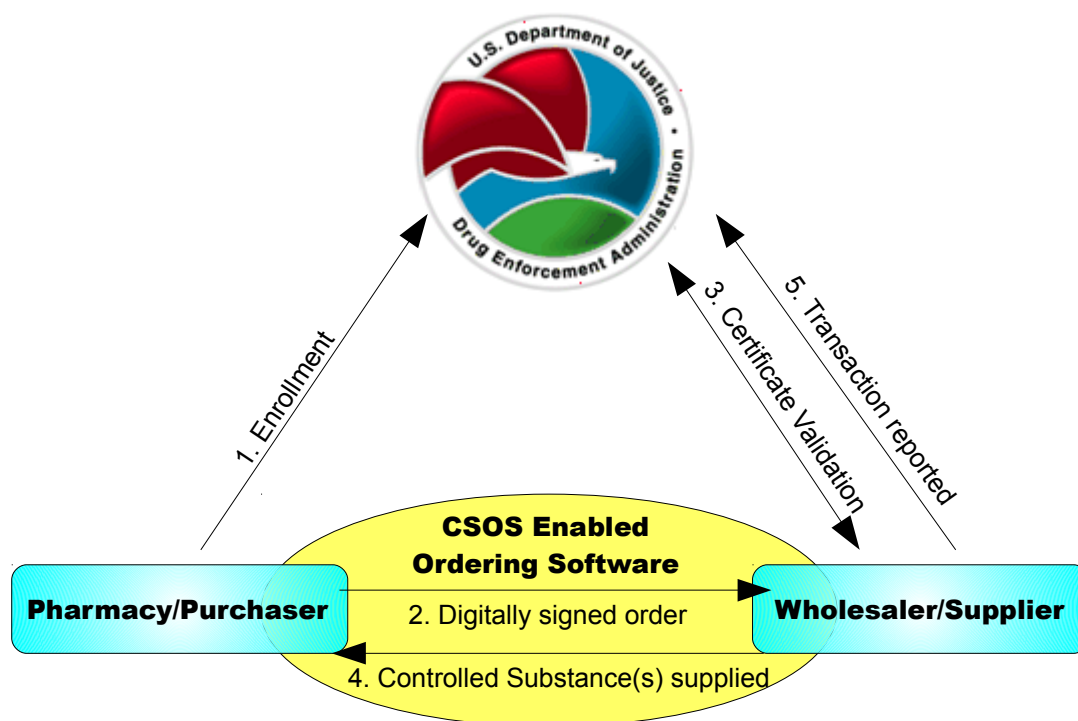
The DEA form 222 (pictured to the right) is a triplicate form. The pharmacy retains the third sheet while sending the first and second pages to the wholesaler. The wholesaler is responsible for sending the second page to the DEA while retaining the first page for its own records. When the Schedule II medications arrive in the pharmacy they should be checked in against the DEA form.

On the next page is a chart explaining how an electronic 222 form works using CSOS.

Sample DEA Form 222									
See Reverse of PURCHASER'S Copy for Instructions			No order form may be issued for Schedule I and II substance unless completed application form has been received. (21 CFR 1305.61)				OMB APPROVAL NO. 1117-0010		
TO: STREET ADDRESS									
CITY AND STATE			DATE		TO BE FILLED IN BY SUPPLIER				
					SUPPLIER DEA REGISTRATION No.				
TO BE FILLED IN BY PURCHASER									
No. of Packages	Size of Package	Name of Item			National Drug Code		Packaging Supplied	Date Shipped	
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									

LAST LINE COMPLETED (MUST BE 10 OR LESS)		SIGNATURE OF PURCHASER OR ATTORNEY OR AGENT	
Date Issued	DEA Registration No.	Name and Address of Registrant	
Schedules			
Registered as a	No. of this Order Form		

DEA Form 222 (Oct. 1996) **US OFFICIAL ORDER FORMS - SCHEDULES I & II**
CRUG ENFORCEMENT ADMINISTRATION
SUPPLIER'S Copy 1



- 1) An individual enrolls with the DEA and, once approved, is issued a personal CSOS Certificate.
- 2) The purchaser creates an electronic 222 order using an approved ordering software. The order is digitally signed using the purchaser's personal CSOS Certificate and then transmitted to the suppliers. The paper 222 is not required for electronic ordering.
- 3) The supplier receives the purchase order and verifies that the purchaser's certificate is valid with the DEA. Additionally, the supplier validates the electronic order information just like it would a paper order.
- 4) The supplier completes the order and ships to the purchaser. Any communications regarding the order are sent electronically.
- 5) The order is reported by the supplier to the DEA within two business days.

Receiving

The pharmaceutical received should be carefully checked in against the purchase order including product name, quantity, strength, and package size. Controlled substances are shipped in separate containers and should be checked in by a pharmacist, although pharmacy technicians may assist with this process under the direct supervision of a pharmacist. Schedule II medications need to be checked in against your DEA 222 form (whether the paper triplicate form, or the electronic form on your CSOS enabled software).

If something is damaged in shipment or improperly shipped, it must be reported to the pharmacist and vendor immediately.

Inventory

Inventory, simply put, is the entire stock on hand for sale at a given time. Inventory typically includes prescription drugs, over the counter medications, dietary supplements, and front end merchandise.

Traditionally, inventory is the single largest expense in pharmacy, and so proper management of it is essential to the success of any pharmacy. As such, inventory value is the total value of the drugs and merchandise in stock on a given day.

Several things a technician should keep in mind while working with their inventory are:

- appropriate maximum and minimum levels on products,
- turnover rates on inventory, and
- days' supply of inventory.

Most pharmacies must borrow and pay interest in order to keep an adequate quantity of medications on the shelves in order to meet anticipated needs. Most pharmacies establish maximum and minimum inventory levels to try and assure an adequate but not excessive quantity of medicines are on the shelf so that they do not need to borrow too much money (or even if they aren't using loans, they don't want too much money tied up in non moving inventory). Often, max and min levels are monitored by computer systems, but pharmacy staff will need to initially establish those levels and may occasionally need to intervene and adjust those levels. Furthermore, some pharmacies still do not have automated inventory systems. When you establish a max level, that is the most you want to have on the shelves and you should not exceed that quantity. When you establish a minimum level (or par level) that is the point when you order more (commonly called your reorder point), but not till you reach that minimum quantity. Based on this information fill in the chart below with the appropriate number of vials you should purchase.

Practice Problems

	Medications	Package Size	Minimum # Units	Maximum # Units	Current Inventory	Re-order
1)	tetracycline 250 mg cap	500	120	700	80	
2)	metronidazole 500 mg tab	50	30	120	12	
3)	doxycycline 50 mg cap	50	30	150	42	

1 bottle 1 2 bottles 2 3 bottles 3

Determining the inventory turnover rate is a good method of measuring the overall effectiveness of the purchasing and inventory control programs. The inventory turnover rate is calculated by dividing the total dollars spent to purchase drugs for one year by the actual value of the pharmacy inventory at any point in time. The number produced by this calculation offers an indication of how many times a year the inventory may have been used or replaced.

Example

A pharmacy does a quarterly inventory count and has an average inventory value of \$100,000.00. Annual inventory purchases are \$500,000.00. What is the turnover rate, and what does that number mean?

$$\frac{\$500,000.00}{\$100,000.00} = 5 \text{ turnovers}$$

Looking at that number we can say that this pharmacy turns over all its inventory approximately 5 times per year. Most community pharmacies usually have a goal of turning over their inventory 12 times a year and institutional pharmacies may push for even higher turnover rates. Solve the practice problem below.

Practice Problem

- 1) If Bidwell Pharmacy's average inventory for the last year was \$132,936.00 and the annual cost total was \$1,612,000.00, what was the turnover rate?

1) Bidwell Pharmacy has a turnover rate of 12.1

Often, pharmacies have \$75,000.00 to \$200,000.00 (or more) in inventory sitting on the shelves as drug products. Pharmacies often set goals for lowering the inventory to improve cash flow. A common method used is to set inventory goals called days' supply of inventory, which refers to making the value of the inventory approximately equal to the cost to the pharmacy sold in a certain number of days. A common number for pharmacies to shoot for is in the 25-35 day range. Let's look at an example problem.

Example

Bidwell Pharmacy has a total inventory value of \$132,936.00. Last week it had sales of \$45,813.00, and the cost to the pharmacy of the products sold came to \$36,592.00. Bidwell's current goal is 25 days' supply. How close is Bidwell to its goal, and how much inventory value does this difference represent? (Hint: Inventory value is based on how much you paid for it, not how much you can sell it for.)

$$\frac{\$132,936.00}{1} \times \frac{7 \text{ days}}{\$36,592.00} = 25.43 \text{ days}$$

The pharmacy is very close to achieving its goal but it is a little over where it wants to be. Let's calculate how much more money is invested in inventory than it wants.

$$\$132,936.00 - \left(\frac{25 \text{ days}}{1} \times \frac{\$36,592.00}{7 \text{ days}} \right) = \$2,250.29$$

Therefore the pharmacy has \$2,250.29 more dollars tied up in inventory than it wants.

Let's go to the next page where you can attempt a practice problem with days' supply of inventory.

Practice Problem

- 1) Adam's Pharmacy has a total inventory value of \$183,445.00. Last week the pharmacy had sales of \$47,293.00, and the cost to the pharmacy for the products sold came to \$38,207.00. Adam's goal is to have a 28 days' supply of inventory. How many days' supply does Adam have? How much is he over or under his goal in dollars?

1) Adam's Pharmacy has 33.6 days' supply of inventory which is \$30,617.00 over Adam's goal.

Inventory requirements

While individual pharmacies may have various frequencies in which they verify their inventory levels it is worth mentioning the requirements that the DEA sets for controlled substances. A pharmacy is required by the DEA to take an inventory of controlled substances every 2 years (biennially). This inventory must be done on any date that is within 2 years of the previous inventory date. The inventory record must be maintained at the registered location in a readily retrievable manner for at least 2 years for copying and inspection by the Drug Enforcement Administration. An inventory record of all Schedule II controlled substances must be kept separate from those of other controlled substances. Submission of a copy of any inventory record to the DEA is not required unless requested.

When taking the inventory of Schedule II controlled substances, an actual physical count must be made. For the inventory of Schedule III, IV, and V controlled substances, an estimate count may be made. If the commercial container holds more than 1000 dosage units and has been opened, however, an actual physical count must be made.

State law may strengthen this requirement with annual actual physical counts of all controlled substances. It also may require such an inventory be submitted before reregistration by the board of pharmacy.

Worksheet 14-2

Name:

Date:

Determine how much of each medication to reorder based on the package size and the minimum and maximum quantities the pharmacy wants to stock. Reorder medications when they reach the minimum.

	<i>Medications</i>	<i>Package Size</i>	<i>Minimum # Units</i>	<i>Maximum # Units</i>	<i>Current Inventory</i>	<i>Re-order</i>
1)	albuterol inh sol vial-neb	25	50	150	25	
2)	carisoprodol 350 mg tab	20	24	100	48	
3)	E.E.S. 400 mg tab	100	60	240	57	
4)	fluoxetine 20 mg cap	100	2000	6000	1870	
5)	glyburide 5 mg tab	100	200	800	400	
6)	levothyroxine 100 mcg tab	100	180	720	140	
7)	metformin 500 mg tab	500	200	800	250	
8)	metoprolol tar. 50 mg tab	100	120	480	90	
9)	ondansetron 4 mg/5 mL	50	100	400	100	
10)	quetiapine 200 mg tab	100	200	800	100	
11)	risperidone 2 mg tab	100	120	480	60	
12)	sertraline 50 mg tab	100	200	800	120	
13)	sildenafil cit. 100 mg tab	30	60	240	69	
14)	tramadol 50 mg tab	100	200	800	150	
15)	zidovudine 300 mg tab	60	20	80	24	

Calculate how many times each of the following pharmacies turnover their inventory on an annual basis.

- 16) If Epocrates's Apothecary has an average inventory for the last year was \$112,936.87 and the annual cost total was \$1,298,774.13, what was the turnover rate?
- 17) If Frank's Pharmacy has an average inventory for the last year was \$187,639.11 and the annual cost total was \$2,251,669.30, what was the turnover rate?
- 18) If Lou's Legend Drug has an average inventory for the last year was \$97,812.50 and the annual cost total was \$1,222,656.33, what was the turnover rate?

Perform the following days' supply of inventory calculations.

- 19) Epocrates's Apothecary has a total inventory value of \$112,937.00. Last week the pharmacy had sales of \$29,971.71, and the cost to the pharmacy for the products sold came to \$24,976.43. Epocrates's goal is to have a 35 days' supply of inventory. How many days' supply does Epocrates have? How much is he over or under his goal in dollars?
- 20) Frank's Pharmacy has a total inventory value of \$187,638.87. Last week the pharmacy had sales of \$51,061.60, and the cost to the pharmacy for the products sold came to \$43,301.33. Frank's goal is to have a 30 days' supply of inventory. How many days' supply does Frank have? How much is he over or under his goal in dollars?
- 21) Lou's Legend Drug has a total inventory value of \$97,812.50. Last week the pharmacy had sales of \$28,215.14, and the cost to the pharmacy for the products sold came to \$23,512.62. Lou's goal is to have a 25 days' supply of inventory. How many days' supply does Lou have? How much is he over or under his goal in dollars?

Answer the following questions.

22) Do you think most pharmacies use wholesaler purchasing or direct purchasing and why?

23) How are Schedule III – V medications ordered?

24) How are Schedule II medications ordered?

25) What should be done if something is damaged in shipment or improperly shipped?

26) Whom is allowed to check in controlled substances from the medication delivery?

Storage requirements

Now that we've discussed how to purchase and receive various pharmaceuticals we need to start looking at how to properly store our inventory as this is another area in which pharmacy technicians have great responsibility. There are three main concepts to discuss in this section:

- environmental considerations,
- security issues, and
- safety requirements.

Environmental considerations

Environmental considerations include proper temperature, ventilation, humidity, light and sanitation. Specific storage conditions are required to be printed in product literature, on drug packaging, and drug labels to ensure proper storage and product integrity. The conditions are defined by the following terms¹:

Cold: any temperature not exceeding 8° C (45° F)

Freezer: -25° to -10° C (-13° to 14° F)

Refrigerator: 2° to 8° C (36° to 46° F)

Cool: 8° to 15° C (46° to 59° F)

Room temperature: the temperature prevailing in a working area

Controlled room temperature: 15° to 30° C (59° to 86° F)

Warm: 30° to 40° C (86° to 104° F)

Excessive heat: any temperature above 40° C (104° F)

The temperatures that you will need to be most concerned with are freezer, refrigerator, and controlled room temperature. Pharmacies should maintain some sort of daily log for the refrigerators and freezers that medications are stored within.

Volatile or flammable substances such as the alcohols that a pharmacy may use for compounding or other purposes must be stored in an area with proper ventilation to prevent build up of fumes in case of accidental spill or damaged storage container.

Humidity can cause a tablet to become moist and powdery. While all medications should not be exposed to excessive levels of humidity some medications, such as acyclovir, mycophenolate, and zidovudine, seem to be more sensitive to degradation from humidity.

There are more than 200 different medications which are light sensitive. The chemical composition of these medications can be altered by exposure to direct light. As an example, when nitroprusside is exposed to direct sun light it will breakdown into cyanide. Some common light sensitive medications include acetazolamide, doxycycline, linezolid, and zolmatriptan. While many drugs need to be protected from light while in storage, their original package from the manufacturer should suffice. If you need to repackage any medications always be sure to consult the manufacturers recommendations to determine if you need to place the medication in light resistant packaging or not.

¹ These important standards are contained in a combined publication that is recognized as the official compendium, the *United States Pharmacopeia* (USP) and the *National Formulary* (NF).

Sanitation standards are usually set by the state that your pharmacy practices in. Below is an example of what various states request as a sanitation standard. The standard quoted comes from the Commonwealth of Pennsylvania².

§ 27.15. Sanitary standards.

- (a) The pharmacy and equipment shall be maintained in a clean and orderly condition and in good repair.
- (b) The pharmacy shall comply with the health and sanitation statutes of the Commonwealth and of the municipality and county in which the pharmacy is located.
- (c) Waste material may not be permitted to collect upon the floor, counter or other area of the pharmacy. The pharmacy shall have a waste removal system adequate to maintain clean and sanitary conditions.
- (d) The prescription area shall be dry and well ventilated, free from rodents, insects, dirt and foreign material, and well lighted.
- (e) Plumbing shall be in good repair and working order.
- (f) The prescription area shall contain only appliances, instruments, equipment, materials, drugs, medicines, chemicals and supplies necessary for the practice of pharmacy, as set forth in section 2(11) of the act (63 P. S. § 390-2(11)), and other equipment and supplies deemed reasonable for the operation and management of a pharmacy as established by the Board.
- (g) Persons working in the prescription area shall be required to keep themselves and their apparel in a clean, sanitary and professional manner.

Security issues

Security requirements that restrict access to medications to “authorized personnel only” is often the result of legal requirements, institutional policy, and established standards of practice. All drugs in an institutional setting must be maintained in restricted locations so that they are only accessible to professional staff who are authorized to receive, store, prepare, dispense, distribute, or administer such products. Whereas, in a community pharmacy the public has ready access to various over the counter medications.

Prescription (legend) drugs require a prescription and are otherwise restricted to “authorized personnel only” such as pharmacists and pharmacy technicians in all pharmacy settings.

As should be expected, there are additional security measures with respect to controlled substances. Schedule III – V medications must either be stored in a secured vault or be distributed throughout the pharmacy stock. By dispersing your controlled substances throughout your inventory you effectively prevent someone from being able to steal all your scheduled medications. Schedule II medications must also either be stored in a secured vault or be distributed throughout the pharmacy stock; although,

² The Pennsylvania Code, Chapter 27. State Board of Pharmacy, The provisions of this § 27.15 amended September 4, 1998, effective September 5, 1998, <http://www.pacode.com/secure/data/049/chapter27/s27.15.html>

some states specifically require Schedule II medications to be stored in a secured vault.

Safety requirements

The safety requirements include everything from the proper inventory rotation to avoid dispensing expired products, to material safety data sheets to provide the necessary information for safe clean up after accidental spills, to appropriate handling of oncology materials, and proper storage of chemicals and flammable items.

Proper rotation of inventory and periodic checking of expirations help to reduce the potential for dispensing expired medications. It also maximizes the utilization of inventory before medications become outdated. When looking at expirations on medication vials it is important to note that if a medication only mentions the month and year but not the day, then you are to treat it as expiring at the end of the month. As an example, if a medication is marked as expiring on 02/2016 then you would treat it as expiring on February 29, 2016.

The Occupational Safety and Health Administration (OSHA) requires all work places, including pharmacies, to carry material safety data sheets (MSDS) for all hazardous substances that are stored on the premises. This includes oncology drugs and volatile chemicals along with other hazardous chemicals. The MSDS provide handling, clean-up, and first-aid information.

Segregating inventory by drug categories help to prevent potentially harmful errors. The Joint Commission on Accreditation of Healthcare Organizations (JCAHO) requires that internal and external medications must be stored separately. This reduces the potential that someone will dispense or administer an external product for internal use. The JCAHO also has requirements for separate storage of oncology drugs and volatile or flammable substances.

Hazardous drugs (i.e., oncology drugs) should have a separate space on the shelves and be labeled in such away that it will alert staff of the hazardous potential of these medications. Oncology drugs are often cytotoxic themselves and must be handled with extreme care. They should be received in a sealed protective outer bag that restricts dissemination of the drug if the container leaks or is broken. When potential exists for exposure to hazardous drugs all personnel involved must wear appropriate personal protective equipment while following a hazardous materials cleanup procedure. All exposed materials must be properly disposed of in hazardous waste containers.

Volatile or flammable substances (including tax free alcohol) require careful storage. They must have a cool location that is properly ventilated. Their storage area must be designed to reduce fire and explosion potential.

Worksheet 14-3

Name:

Date:

Fully answer the following questions.

- 1) What are the major environmental considerations for medications?

- 2) List the storage ranges in both Celsius and Fahrenheit for freezer, refrigerator, and controlled room temperature.

- 3) Approximately how many medications are considered light sensitive?

- 4) What happens to nitroprusside when it is exposed to direct sun light?

- 5) Whom usually sets the sanitation standards for your pharmacy?

- 6) What is a legend drug and who should have access to it?

- 7) How should Schedule III – V medications be stored in the pharmacy?

- 8) How should Schedule II medications be stored in the pharmacy?
- 9) Create a short list of safety requirements as pertaining to medication storage.
- 10) If a medication had an expiration of 10/2020, what day does it expire?

Markups and discounts

Most pharmacies need to provide a markup on their products in order to be profitable. Usually a product will be given a percent markup although an item may be given a flat rate markup instead. Even when the markup is given as a flat rate it is a common practice to want to determine what kind of percent markup it equals. Let's look at an example of each.

Examples

- 1) A tube of ointment that cost the pharmacy \$10 is given a flat rate markup of \$2.25. What is the selling price?

$$\text{purchase price} + \text{flat rate markup} = \text{selling price}$$

$$\text{\$ } 10.00 + \text{\$ } 2.25 = \text{\$ } 12.25$$

- 2) What is the percent markup in the previous problem?

$$\frac{(\text{selling price} - \text{purchase price})}{\text{purchase price}} = \frac{\% \text{ markup}}{100}$$

$$\frac{(\text{\$ } 12.25 - \text{\$ } 10.00)}{\text{\$ } 10.00} = \frac{N}{100}$$

$$N = \text{a markup of } 22.5 \%$$

- 3) An unmedicated lip balm cost the pharmacy \$0.83, and it wants to sell it for a 20% markup. What is the unmedicated lip balm's selling price?

$$\text{purchase price} + (\text{purchase price} \times \text{percent markup}) = \text{selling price}$$

$$\text{\$ } 0.83 + \left(\text{\$ } 0.83 \times \frac{20}{100} \right) = \text{\$ } 1.00$$

As percent markups are more common, we will focus on those. Please attempt the following practice problems working with percent markups.

Practice Problems

Several items are listed below with the price that Bidwell Pharmacy paid for each item. Perform the appropriate markup calculations below.

- 1) Bidwell Pharmacy purchased a 120 mL bottle of acetaminophen elixir 160 mg/5 mL \$3.15. What would its selling price be if it were marked up 200%?

- 2) Bidwell Pharmacy purchased 2 packets of Goody's extra strength headache powder extra for \$0.39. What would its selling price be if it were marked up 200%?
- 3) Bidwell Pharmacy purchased a 120 mL bottle of guaifenesin syrup 100 mg/5 mL for \$2.50 and sold it for \$7.50. What is the percent markup on this product?

(1) \$9.45 (2) \$1.17 (3) 200% markup

Another common concept in a pharmacy is to add a percent markup and a professional fee for prescription medications. The professional fee (or dispensing fee) is intended to displace the pharmacy's costs and then the markup would provide the pharmacy with its profit. Typically if a professional fee is included, then the percent markup tends to be lower. Let's look at an example problem.

Example

- 1) A pharmacy purchases a product for \$10 adds a 50% markup and applies a \$3.50 professional fee, how much will the product be sold for?

$$\text{purchase price} + (\text{purchase price} \times \text{percent markup}) + \text{professional fee} = \text{selling price}$$

$$\$10.00 + \left(\$10.00 \times \frac{50}{100} \right) + \$3.50 = \mathbf{\$18.50}$$

Let's look at a couple of practice problems.

Practice Problems

Calculate the selling price if the pharmacy is charging a 50% markup and a \$5 professional fee.

- 1) The pharmacy purchases 500 tablets of 25 mg metoprolol tartrate for \$40 and is dispensing 60 tablets to a patient. How much should the pharmacy charge?
- 2) The pharmacy purchases 30 capsules of 300 mg rifampin capsules for \$56.70 and is dispensing 8 capsules to a patient. How much should the pharmacy charge?

(1) \$12.20 (2) \$27.68

Additionally, pharmacies may receive and/or offer various special discounts. There may be a reduced price offered by a wholesaler if a purchase exceeds a particular amount or some pharmacies may have a sale or reduced prices for various groups such as a discount for senior citizens. Maybe there is a discount for patients that transfer their prescriptions into a particular pharmacy. Let's look at several practice discount problems.

Examples

- 1) The pharmacy has switched wholesalers for its over the counter medications and want it wants to get rid of its old inventory. Normally the pharmacy sells its generic ibuprofen for \$11.99 but is offering a flat rate discount of \$3.00. What is the selling price?

$$\text{retail price} - \text{flat rate discount} = \text{discount price}$$

$$\$ 11.99 - \$ 3.00 = \$ \mathbf{8.99}$$

- 2) For marketing purposes, the pharmacy wants to state what the percent discount is on the ibuprofen in the previous problem.

$$\frac{(\text{retail price} - \text{discount price})}{\text{retail price}} = \frac{\% \text{ discount}}{100}$$

$$\frac{(\$ 11.99 - \$ 8.99)}{\$ 11.99} = \frac{N}{100}$$

$$N = \mathbf{25\% \text{ discount}}$$

- 3) The pharmacy offers a 10% discount to senior citizens on Wednesdays. On Wednesday a senior citizen purchases \$32.87 worth of products. How much will they pay after their 10% discount?

$$\text{retail price} - (\text{retail price} \times \text{percent percent}) = \text{discount price}$$

$$\$ 32.87 - \left(\$ 32.87 \times \frac{10}{100} \right) = \$ \mathbf{29.58}$$

Percent discounts tend to be very common and are therefore worth focusing on. Perform the necessary discount calculations below as we look at several practice problems.

Practice Problems

Several items are listed below with the price that Bidwell Pharmacy normally charges for each item. Perform the appropriate discount calculations below.

- 1) At Bidwell Pharmacy a 120 mL bottle of acetaminophen elixir 160 mg/5 mL retails for \$9.45. What would the sale price be if it were given a 5% discount?

- 2) At Bidwell Pharmacy 2 packets of Goody's extra strength headache powder retail for \$1.17. What would the sale price be if it were given a 5% discount?

- 3) Ordinarily Bidwell Pharmacy charges \$7.50 for a 120 mL bottle of guaifenesin syrup 100 mg/5 mL 120 mL bottle but it is on sale for \$7.13. What is the percent discount?

1) \$8.98 2) \$1.11 3) 5% discount

Worksheet 14-4

Name: _____

Date: _____

Perform the following markups for problems 1-10 with a 200% markup rate.

- | | |
|---|--|
| 1) The purchase price for a medication is \$4.99 after a 200% markup the selling price is _____ | 6) The purchase price for a medication is \$27.50 after a 200% markup the selling price is _____ |
| 2) The purchase price for a medication is \$12.47 after a 200% markup the selling price is _____ | 7) The purchase price for a medication is \$68.50 after a 200% markup the selling price is _____ |
| 3) The purchase price for a medication is \$35.20 after a 200% markup the selling price is _____ | 8) The purchase price for a medication is \$153.50 after a 200% markup the selling price is _____ |
| 4) The purchase price for a medication is \$89.90 after a 200% markup the selling price is _____ | 9) The purchase price for a medication is \$67.12 after a 200% markup the selling price is _____ |
| 5) The purchase price for a medication is \$120.47 after a 200% markup the selling price is _____ | 10) The purchase price for a medication is \$127.30 after a 200% markup the selling price is _____ |

Perform the following markups for problems 11-20 with a 75% markup rate.

- | | |
|---|---|
| 11) The purchase price for a medication is \$25.50 after a 75% markup the selling price is _____ | 13) The purchase price for a medication is \$195.20 after a 75% markup the selling price is _____ |
| 12) The purchase price for a medication is \$118.70 after a 75% markup the selling price is _____ | 14) The purchase price for a medication is \$162.50 after a 75% markup the selling price is _____ |

15) The purchase price for a medication is \$188.95 after a 75% markup the selling price is _____

18) The purchase price for a medication is \$207.33 after a 75% markup the selling price is _____

16) The purchase price for a medication is \$135.20 after a 75% markup the selling price is _____

19) The purchase price for a medication is \$211.65 after a 75% markup the selling price is _____

17) The purchase price for a medication is \$199.41 after a 75% markup the selling price is _____

20) The purchase price for a medication is \$472.50 after a 75% markup the selling price is _____

Determine the selling price of the prescriptions in problems 21-25 if the pharmacy is charging a 50% markup and a \$5 professional fee.

21) The pharmacy purchases 100 tablets of diltiazem 90 mg for \$10 and is dispensing 90 tablets to a patient. How much should the pharmacy charge?

22) The pharmacy purchases 90 capsules of acyclovir 200 mg for \$13.50 and is dispensing 90 capsules to a patient. How much should the pharmacy charge?

23) The pharmacy purchases 1000 tablets of metformin 1000 mg for \$50 and is dispensing 180 tablets to a patient. How much should the pharmacy charge?

24) The pharmacy purchases 30 tablets of amiodarone 200 mg for \$99 and is dispensing 30 tablets to a patient. How much should the pharmacy charge?

25) The pharmacy purchases 100 tablets of atenolol 25 mg for \$10 and is dispensing 30 tablets to a patient. How much should the pharmacy charge?

Perform the following discounts for problems 26-35 with a 5% discount rate.

26) The retail price for a medication is \$14.97
after a 5% discount the discount price is

31) The retail price for a medication is \$82.50
after a 5% discount the discount price is

27) The retail price for a medication is \$37.41
after a 5% discount the discount price is

32) The retail price for a medication is \$205.50
after a 5% discount the discount price is

28) The retail price for a medication is \$105.60
after a 5% discount the discount price is

33) The retail price for a medication is \$460.50
after a 5% discount the discount price is

29) The retail price for a medication is \$269.70
after a 5% discount the discount price is

34) The retail price for a medication is \$201.36
after a 5% discount the discount price is

30) The retail price for a medication is \$361.41
after a 5% discount the discount price is

35) The retail price for a medication is \$381.90
after a 5% discount the discount price is

Perform the following discounts for problems 36-45 with a 10% discount rate.

36) The retail price for a medication is \$44.63
after a 10% discount the discount price is

39) The retail price for a medication is \$284.38
after a 10% discount the discount price is

37) The retail price for a medication is \$207.73
after a 10% discount the discount price is

40) The retail price for a medication is \$330.66
after a 10% discount the discount price is

38) The retail price for a medication is \$341.60
after a 10% discount the discount price is

41) The retail price for a medication is \$236.60
after a 10% discount the discount price is

42) The retail price for a medication is \$348.97
after a 10% discount the discount price is

44) The retail price for a medication is \$370.39
after a 10% discount the discount price is

43) The retail price for a medication is \$362.83
after a 10% discount the discount price is

45) The retail price for a medication is \$826.88
after a 10% discount the discount price is

Solve the following problems.

46) If a medication is purchased for \$25 and sold for \$30 what was the percent markup?

47) If the purchase price for 100 tablets of a medication was \$49.25 and the percent markup is 15%, then what is the selling price for 30 tablets?

48) If the discount on a wholesaler invoice for \$9,300 was \$310, what was the percent discount?

49) If your wholesaler offers you a 5% discount on orders over \$5,000 how much would you expect your invoice to be for if you purchased \$5,500 worth of product?

50) A senior citizen is paying for a prescription for penicillin VK 250 mg #30. The usual and customary price is \$8.49. However this patient qualifies for a 10% discount. How much will the patient pay?

51) A wholesaler offers the pharmacy a 10% discount on orders of \$14,400 or more, or a 15% discount on orders of \$28,800. The pharmacy makes an \$18,000 purchase, how much should its invoice be for?

Gross profits and net profits

In this section we will look at gross profits and net profits. Gross profit is calculated as sales minus all costs directly related to those sales or in simpler terms we can think of it as the difference between the selling price and the acquisition price.

$$\text{selling price} - \text{acquisition price} = \text{gross profit}$$

Net profit is the difference between the gross profit and the sum of all the costs associated with filling the prescription. The costs associated with filling the prescription are accounted for with a dispensing fee or a professional fee. With that in mind you can determine the net profit by subtracting a professional fee from the gross profit.

$$\text{gross profit} - \text{dispensing fee} = \text{net profit}$$

While many pharmacies will have a standard dispensing fee on all prescriptions, others may have a tiered dispensing fee placing a lower fee on less expensive medications and a higher fee on more expensive medications. Let's look at a couple of examples of each examples of each.

Examples

- 1) The pharmacy purchases 30 tablets of amiodarone 200 mg for \$99 and is dispensing 30 tablets to a patient for \$153.50. What is the gross profit? If the pharmacy charged a \$5.00 dispensing fee what is the net profit?

$$\text{selling price} - \text{acquisition price} = \text{gross profit}$$

$$\text{\$ } 153.50 - \text{\$ } 99 = \text{\$ } 54.50 \text{ gross profit}$$

$$\text{gross profit} - \text{dispensing fee} = \text{net profit}$$

$$\text{\$ } 54.50 - \text{\$ } 5.00 = \text{\$ } 49.50 \text{ net profit}$$

- 2) The pharmacy purchases 100 tablets of diltiazem 90 mg for \$10 and is dispensing 90 tablets to a patient for 18.50. What is the gross profit? If the pharmacy charged a \$5.00 dispensing fee what is the net profit?

$$\text{selling price} - \text{acquisition price} = \text{gross profit}$$

$$\text{\$ } 18.50 - \left(\frac{90 \text{ tablets}}{1} \times \frac{\text{\$ } 10}{100 \text{ tablets}} \right) = \text{\$ } 9.50 \text{ gross profit}$$

$$\text{gross profit} - \text{dispensing fee} = \text{net profit}$$

$$\text{\$ } 9.50 - \text{\$ } 5.00 = \text{\$ } 4.50 \text{ net profit}$$

Some pharmacies may use a sliding scale for their dispensing fees based on the average wholesale price of a medication. Let's do a couple of example problems using this chart:

<i>AWP</i>	<i>Dispensing Fee</i>
Less than \$20.00	\$3.50
\$20.00 - \$50.00	\$5.00
Greater than \$50.00	\$7.50

- 3) The pharmacy purchases 30 tablets of amiodarone 200 mg for \$99 (its AWP is \$112.00) and is dispensing 30 tablets to a patient for \$153.50. What is the gross profit? If the pharmacy charges a tiered dispensing fee based on the average wholesale price what is the net profit?

$$\text{selling price} - \text{acquisition price} = \text{gross profit}$$

$$\$153.50 - \$99 = \$54.50 \text{ gross profit}$$

$$\text{gross profit} - \text{dispensing fee} = \text{net profit}$$

The AWP for 30 tablets is \$112.00 so the dispensing fee is \$7.50.

$$\$54.50 - \$7.50 = \$47.00 \text{ net profit}$$

- 4) The pharmacy purchases 100 tablets of diltiazem 90 mg for \$10 (its AWP is \$11 for 100 tablets) and is dispensing 90 tablets to a patient for \$18.50. What is the gross profit? If the pharmacy charges a tiered dispensing fee based on the average wholesale price what is the net profit?

$$\text{selling price} - \text{acquisition price} = \text{gross profit}$$

$$\$18.50 - \left(\frac{90 \text{ tablets}}{1} \times \frac{\$10}{100 \text{ tablets}} \right) = \$9.50 \text{ gross profit}$$

$$\text{gross profit} - \text{dispensing fee} = \text{net profit}$$

$$\text{The AWP for is } \frac{90 \text{ tablets}}{1} \times \frac{\$11}{100 \text{ tablets}} = \$9.90 \text{ so the dispensing fee is } \$3.50.$$

$$\$9.50 - \$3.50 = \$6.00 \text{ net profit}$$

Now that we've looked at some examples you should try several practice problems.

Practice Problems

- 1) The pharmacy purchases 90 capsules of acyclovir 200 mg for \$13.50 and is dispensing 90 capsules to a patient for \$25.25. What is the gross profit? If the pharmacy charged a \$5.00 dispensing fee what is the net profit?

- 2) The pharmacy purchases 1000 tablets of a medication for \$50 and is dispensing 180 tablets to a patient for \$18.50. What is the gross profit? If the pharmacy charged a \$5.00 dispensing fee what is the net profit?

Some pharmacies may use a sliding scale for their dispensing fees based on the average wholesale price of a medication. Let's do a couple of practice problems using this chart:

<i>AWP</i>	<i>Dispensing Fee</i>
Less than \$20.00	\$3.50
\$20.00 - \$50.00	\$5.00
Greater than \$50.00	\$7.50

- 3) The pharmacy purchases 90 capsules of acyclovir 200 mg for \$13.50 (its AWP is \$15.00) and is dispensing 90 capsules to a patient for \$25.25. What is the gross profit? If the pharmacy charges a tiered dispensing fee based on the average wholesale price what is the net profit?
- 4) The pharmacy purchases 1000 tablets of a medication for \$50 (its AWP is \$55.00 for 1000 tablets) and is dispensing 180 tablets to a patient for \$18.50. What is the gross profit? If the pharmacy charges a tiered dispensing fee based on the average wholesale price what is the net profit?

1) gross profit = \$11.75; net profit = \$6.75
 2) gross profit = \$9.50; net profit = \$4.50
 3) gross profit = \$11.75; net profit = \$8.25
 4) gross profit = \$9.50; net profit = \$6.00

Worksheet 14-5

Name:

Date:

Solve for the gross profit and the net profit for problems 1-20 using a set dispensing fee of \$5.

- 1) The pharmacy purchased 25 nebulizer vials of albuterol inhalation solution for \$27.90 and sold 25 vials for \$46.85. What is the gross profit? What is the net profit?
- 2) The pharmacy purchased 20 tablets of carisoprodol 350 mg for \$37.26 and sold 20 tablets for \$60.89. What is the gross profit? What is the net profit?
- 3) The pharmacy purchased 100 tablets of E.E.S. 400 mg for \$21.06 and sold 28 tablets for \$12.35. What is the gross profit? What is the net profit?
- 4) The pharmacy purchased 100 capsules of fluoxetine 20 mg for \$223.56 and sold 30 capsules for \$108.10. What is the gross profit? What is the net profit?
- 5) The pharmacy purchased 100 tablets of glyburide 5 mg for \$25.48 and sold 30 tablets for \$16.47. What is the gross profit? What is the net profit?
- 6) The pharmacy purchased 100 tablets of levothyroxine 100 mcg for \$26.87 and sold 30 tablets for \$15.59. What is the gross profit? What is the net profit?
- 7) The pharmacy purchased 1000 tablets of metformin 500 mg for \$633.40 and sold 60 tablets for \$62.01. What is the gross profit? What is the net profit?
- 8) The pharmacy purchased 100 tablets of metoprolol tartrate 25 mg for \$6.48 and sold 60 tablets for \$9.33. What is the gross profit? What is the net profit?

- 9) The pharmacy purchased a 50 mL bottle of ondansetron oral solution 4 mg/5 mL for \$242.77 and sold 1 fl. oz. for \$225.99. What is the gross profit? What is the net profit?
- 10) The pharmacy purchased 100 tablets of quetiapine 200 mg for \$631.49 and sold 30 tablets for \$291.67. What is the gross profit? What is the net profit?
- 11) The pharmacy purchased 100 tablets of risperidone 2 mg for \$638.96 and sold 30 tablets for \$295.03. What is the gross profit? What is the net profit?
- 12) The pharmacy purchased 100 tablets of sertraline 50 mg for \$244.11 and sold 30 tablets for \$117.35. What is the gross profit? What is the net profit?
- 13) The pharmacy purchased 30 tablets of sildenafil citrate 100 mg for \$324.81 and sold 4 tablets for \$72.46. What is the gross profit? What is the net profit?
- 14) The pharmacy purchased 100 tablets of tramadol 50 mg for \$27.61 and sold 60 tablets for \$28.34. What is the gross profit? What is the net profit?
- 15) The pharmacy purchased 60 tablets of zidovudine 300 mg for \$197.12 and sold 60 tablets for \$303.18. What is the gross profit? What is the net profit?
- 16) The pharmacy purchased 100 tablets of atenolol 50 mg for \$9.52 and sold 30 tablets for \$7.78. What is the gross profit? What is the net profit?
- 17) The pharmacy purchased 100 capsules of benzonatate 100 mg for \$39.48 and sold 30 capsules for \$21.27. What is the gross profit? What is the net profit?
- 18) The pharmacy purchased 100 tablets of cyclobenzaprine 5 mg for \$147.81 and sold 30 tablets for \$71.51. What is the gross profit? What is the net profit?

- 19) The pharmacy purchased 100 tablets of furosemide 20 mg for \$5.07 and sold 30 tablets for \$5.78. What is the gross profit? What is the net profit?
- 20) The pharmacy purchased 100 tablets of hydrochlorothiazide 25 mg for \$1.58 and sold 60 tablets for \$4.92. What is the gross profit? What is the net profit?

Solve for the gross profit and the net profit for problems 21-40 using the tiered dispensing fees on the chart below based on the average wholesale price.

<i>AWP</i>	<i>Dispensing Fee</i>
Less than \$20.00	\$3.50
\$20.00 - \$50.00	\$5.00
Greater than \$50.00	\$7.50

- 21) The pharmacy purchased 25 nebulizer vials of albuterol inhalation solution for \$27.90 (the AWP is \$31.00 for 25 vials) and sold 25 vials for \$46.85. What is the gross profit? What is the net profit?
- 22) The pharmacy purchased 20 tablets of carisoprodol 350 mg for \$37.26 (the AWP for 20 tablets is \$41.40) and sold 20 tablets for \$60.89. What is the gross profit? What is the net profit?
- 23) The pharmacy purchased 100 tablets of E.E.S. 400 mg for \$21.06 (the AWP for 100 tablets is \$23.46) and sold 28 tablets for \$12.35. What is the gross profit? What is the net profit?
- 24) The pharmacy purchased 100 capsules of fluoxetine 20 mg for \$223.56 (the AWP for 100 capsules is \$248.40) and sold 30 capsules for \$108.10. What is the gross profit? What is the net profit?
- 25) The pharmacy purchased 100 tablets of glyburide 5 mg for \$25.48 (the AWP for 100 tablets is \$28.31) and sold 30 tablets for \$16.47. What is the gross profit? What is the net profit?

- 26) The pharmacy purchased 100 tablets of levothyroxine 100 mcg for \$26.87 (the AWP for 100 tablets is \$29.85) and sold 30 tablets for \$15.59. What is the gross profit? What is the net profit?
- 27) The pharmacy purchased 1000 tablets of metformin 500 mg for \$633.40 (the AWP for 1000 tablets is \$703.78) and sold 60 tablets for \$62.01. What is the gross profit? What is the net profit?
- 28) The pharmacy purchased 100 tablets of metoprolol tartrate 25 mg for \$6.48 (the AWP for 100 tablets is \$7.20) and sold 60 tablets for \$9.33. What is the gross profit? What is the net profit?
- 29) The pharmacy purchased a 50 mL bottle of ondansetron oral solution 4 mg/5 mL for \$242.77 (the AWP for 50 milliliters is \$269.74) and sold 1 fl. oz. for \$225.99. What is the gross profit? What is the net profit?
- 30) The pharmacy purchased 100 tablets of quetiapine 200 mg for \$631.49 (the AWP for 100 tablets is \$701.65) and sold 30 tablets for \$291.67. What is the gross profit? What is the net profit?
- 31) The pharmacy purchased 100 tablets of risperidone 2 mg for \$638.96 (the AWP for 100 tablets is \$709.96) and sold 30 tablets for \$295.03. What is the gross profit? What is the net profit?
- 32) The pharmacy purchased 100 tablets of sertraline 50 mg for \$244.11 (the AWP for 100 tablets is \$271.23) and sold 30 tablets for \$117.35. What is the gross profit? What is the net profit?
- 33) The pharmacy purchased 30 tablets of sildenafil citrate 100 mg for \$324.81 (the AWP for 30 tablets is \$360.90) and sold 4 tablets for \$72.46. What is the gross profit? What is the net profit?
- 34) The pharmacy purchased 100 tablets of tramadol 50 mg for \$27.61 (the AWP for 100 tablets is \$30.68) and sold 60 tablets for \$28.34. What is the gross profit? What is the net profit?

- 35) The pharmacy purchased 60 tablets of zidovudine 300 mg for \$197.12 (the AWP for 60 tablets is \$219.02) and sold 60 tablets for \$303.18. What is the gross profit? What is the net profit?
- 36) The pharmacy purchased 100 tablets of atenolol 50 mg for \$9.52 (the AWP for 100 tablets is \$10.58) and sold 30 tablets for \$7.78. What is the gross profit? What is the net profit?
- 37) The pharmacy purchased 100 capsules of benzonatate 100 mg for \$39.48 (the AWP for 100 capsules is \$43.87) and sold 30 capsules for \$21.27. What is the gross profit? What is the net profit?
- 38) The pharmacy purchased 100 tablets of cyclobenzaprine 5 mg for \$147.81 (the AWP for 100 tablets is \$164.23) and sold 30 tablets for \$71.51. What is the gross profit? What is the net profit?
- 39) The pharmacy purchased 100 tablets of furosemide 20 mg for \$5.07 (the AWP for 100 tablets is \$5.63) and sold 30 tablets for \$5.78. What is the gross profit? What is the net profit?
- 40) The pharmacy purchased 100 tablets of hydrochlorothiazide 25 mg for \$1.58 (the AWP for 100 tablets is \$1.75) and sold 60 tablets for \$4.92. What is the gross profit? What is the net profit?

Third party reimbursement

Currently, approximately 80% of Americans have health care insurance including some kind of prescription benefits and this number is expected to increase in coming years due to the Affordable Health Care for America Act. With this in mind we need to look at how we should be billing prescriptions for patients with insurance. Insurance companies know that for most medications the average wholesale price (AWP) is less than what the typical usual and customary (U&C) price, but they are also aware that some pharmacies offer certain prescriptions below their AWP (such as \$4.00 generics offered by some of the chains). Most insurances are going to reimburse the pharmacy based on whichever is less.

Every pharmacy and insurance company may negotiate their own reimbursement rates, so there is no singular set formula for all insurances. A typical formula may be something along the lines of:

$$87\% \text{ AWP or } 100\% \text{ U\&C (whichever is less)} + a \$ 3.50 \text{ dispensing fee} = \text{reimbursement rate}$$

Let's use the above formula for an example.

Example

- 1) A patient receives a prescription for thirty hydrochlorothiazide 25 mg. The retail price for 30 tablets is \$0.72 whereas the AWP for 100 tablets is \$1.75. Determine the charge for this medication based on the aforementioned insurance calculation.

$$\begin{array}{l} \text{87\% of AWP} \\ \frac{30 \text{ tablets}}{1} \times \frac{\$ 1.75}{100 \text{ tablets}} \times \frac{87}{100} = \$ 0.46 \end{array}$$

$$\begin{array}{l} \text{100\% of U\&C} \\ \frac{30 \text{ tablets}}{1} \times \frac{\$ 0.72}{30 \text{ tablets}} = \$ 0.72 \end{array}$$

87% of the AWP is less so then we can add our \$3.50 dispensing fee.
 $\$ 0.46 + \$ 3.50 = \$ 3.96$

Now you should attempt a couple of practice problems.

Practice Problems

Continue using the following sample equation for the practice problems:

$$87\% \text{ AWP or } 100\% \text{ U\&C (whichever is less)} + a \$ 3.50 \text{ dispensing fee} = \text{reimbursement rate}$$

- 1) A patient receives a prescription for sixty 500 mg metformin tablets. The pharmacy offers certain medications on their \$4.00 prescription plan including these 60 tablets. The AWP for this medication is \$703.78 for 1000 tablets. How much will the patient's insurance reimburse for this medication?

- 2) A patient receives a prescription for thirty furosemide 20 mg tablets. The U&C on this product before a dispensing fee is added is \$2.28. The AWP for 100 tablets is \$5.07. How much should the patient's insurance reimburse for this prescription?

\$4.82 (2) \$7.50 (1)

Capitation fee

A capitation fee is another concept to give consideration to for third-party reimbursement. A capitation fee is a method of payment for health services in which an individual or institutional provider is paid a fixed amount without regard to the actual number or nature of services provided to each patient. A common example would be a pharmacy in a long term care home receiving a fixed amount of money per month regardless of whether the patient required no pharmaceuticals or if there prescriptions exceeded the money allotted by a capitation fee.

To demonstrate this concept attempt the practice problems below.

Practice Problems

- 1) Bidwell Senior Care Pharmacy receives a monthly capitation fee of \$250.00/month for Theophyllus Monk. Last month Mr. Monk's prescriptions totaled \$198.75. How much did the pharmacy make off of his capitation fee?

- 2) Bidwell Senior Care Pharmacy receives a monthly capitation fee of \$250.00/month for Alopecia Allen. Last month Mr. Allen's prescriptions totaled \$301.25. How much did the pharmacy make off of his capitation fee?

1) The pharmacy had a profit margin of \$51.25 on Theophyllus Monk's prescriptions. 2) The pharmacy had a loss of \$51.25 on Alopecia Allen's prescriptions.

Worksheet 14-6

Name:

Date:

Solve problems 1-20 using the sample formula below for third-party reimbursement:

$87\% \text{ AWP or } 100\% \text{ U\&C (whichever is less)} + a \$ 3.50 \text{ dispensing fee} = \text{reimbursement rate}$

- 1) A pharmacy receives a prescription for 25 nebulizer vials of albuterol inhalation solution. The U&C on this product before a dispensing fee is added is \$41.85. The AWP for 25 vials is \$31.00. How much should the patient's insurance reimburse for this prescription?

- 2) A pharmacy receives a prescription for 20 tablets of carisoprodol 350 mg. The U&C on this product before a dispensing fee is added is \$55.89. The AWP for 20 tablets is \$41.40. How much should the patient's insurance reimburse for this prescription?

- 3) A pharmacy receives a prescription for 40 erythromycin 400 mg tablets. This product is part of this pharmacy's \$4.00 plan. The AWP for 100 tablets is \$23.46. How much should the patient's insurance reimburse for this prescription?

- 4) A pharmacy receives a prescription for 30 capsules of fluoxetine 20 mg. The U&C on this product before a dispensing fee is added is \$100.60. The AWP for 100 capsules is \$248.40. How much should the patient's insurance reimburse for this prescription?

- 5) A pharmacy receives a prescription for 30 tablets of 5 mg glyburide. This product is part of this pharmacy's \$4.00 plan. The AWP for 100 tablets is \$28.31. How much should the patient's insurance reimburse for this prescription?

- 6) A pharmacy receives a prescription for 30 tablets of levothyroxine 100 mcg tablets. The U&C on this product before a dispensing fee is added is \$12.09. The AWP for 100 tablets is \$29.85.

How much should the patient's insurance reimburse for this prescription?

- 7) A pharmacy receives a prescription for 30 tablets of metoprolol succinate 25 mg tablets. The U&C on this product before a dispensing fee is added is \$35.29. The AWP for 1000 tablets is \$871.40. How much should the patient's insurance reimburse for this prescription?
- 8) A pharmacy receives a prescription for 60 tablets of metoprolol tartrate 25 mg tablets. The U&C on this product before a dispensing fee is added is \$5.83. The AWP for 100 tablets is \$7.20. How much should the patient's insurance reimburse for this prescription?
- 9) A pharmacy receives a prescription for 1 fl. oz. of ondansetron oral solution 4 mg/5 mL. The U&C on this product before a dispensing fee is added is \$218.49. The AWP for 50 mL is \$269.74. How much should the patient's insurance reimburse for this prescription?
- 10) A pharmacy receives a prescription for thirty quetiapine 200 mg tablets. The U&C on this product before a dispensing fee is added is \$284.17. The AWP for 100 tablets is \$701.65. How much should the patient's insurance reimburse for this prescription?
- 11) A pharmacy receives a prescription for 30 tablets of risperidone 2 mg. The U&C on this product before a dispensing fee is added is \$295.03. The AWP for 100 tablets is \$709.96. How much should the patient's insurance reimburse for this prescription?
- 12) A pharmacy receives a prescription for 30 tablets of sertraline 50 mg. The U&C on this product before a dispensing fee is added is \$109.85. The AWP for 100 tablets is \$271.23. How much should the patient's insurance reimburse for this prescription?

- 13) A pharmacy receives a prescription for 4 tablets of sildenafil citrate 100 mg. The U&C on this product before a dispensing fee is added is \$64.96. The AWP for 30 tablets is \$72.46. How much should the patient's insurance reimburse for this prescription?
- 14) A pharmacy receives a prescription for 60 tablets of tramadol 50 mg. The U&C on this product before a dispensing fee is added is \$23.34. The AWP for 100 tablets is \$30.68. How much should the patient's insurance reimburse for this prescription?
- 15) A pharmacy receives a prescription for 60 tablets of zidovudine 300 mg. The U&C on this product before a dispensing fee is added is \$295.68. The AWP for 60 tablets is \$219.02. How much should the patient's insurance reimburse for this prescription?
- 16) A pharmacy receives a prescription for 30 tablets of atenolol 50 mg. This product is part of this pharmacy's \$4.00 plan. The AWP for 100 tablets is \$10.58. How much should the patient's insurance reimburse for this prescription?
- 17) A pharmacy receives a prescription for 30 capsules of benzonatate 100 mg. The U&C on this product before a dispensing fee is added is \$17.77. The AWP for 100 capsules is \$43.87. How much should the patient's insurance reimburse for this prescription?
- 18) A pharmacy receives a prescription for 30 tablets of cyclobenzaprine 5 mg. The U&C on this product before a dispensing fee is added is \$64.01. The AWP for 100 tablets is \$164.23. How much should the patient's insurance reimburse for this prescription?
- 19) A pharmacy receives a prescription for 30 tablets of furosemide 40 mg. This product is part of this pharmacy's \$4.00 plan. The AWP for 100 tablets is \$5.99. How much should the patient's insurance reimburse for this prescription?

- 20) A pharmacy receives a prescription for 60 tablets of hydrochlorothiazide 25 mg. The U&C on this product before a dispensing fee is added is \$1.42. The AWP for 100 tablets is \$1.75. How much should the patient's insurance reimburse for this prescription?

Determine the profit margin based on the capitation fees in problems 21 and 22.

- 21) Fred's Pharmacy receives a capitation fee of \$500.00 for filling Senile Sally's prescriptions each month. Last month she required six medications with the following associated costs:

Aricept 10 mg = \$200
Lipitor 40 mg = \$125
Digoxin 250 mcg = \$7
Furosemide 20 mg = \$4
Celebrex 200 mg = \$115
Nexium 40 mg = \$170

What was the profit margin for Sally's prescriptions last month?

- 22) The Grainger House pays a capitation fee of \$275.00 per month per patient to Epocrates's Apothecary. Epocrates's Apothecary services 10 patients for the Grainger House. The pharmacy filled prescriptions for five clients last month (the other five had no prescriptions). The costs for these patients' prescriptions are as follows:

Patient ABK: \$89.63
Patient BTC: \$126.54
Patient MBC: \$420.45
Patient SEP: \$170.85
Patient BRS: \$39.90

- a) What is the total capitation received?
- b) What is the cost to the Epocrates's Apothecary?
- c) What was the loss or gain to Epocrates's Apothecary for servicing the Grainger House?

Daily cash reports

In many community pharmacy settings you will be expected to assist with the the daily cash reports for the store. The process of counting the money, reconciling the receipts and balancing the cash drawer creates an accountability of the day's transactions.

In order to do the cash report you will need to collect the following data:

- opening and closing readings for each register
- cash and checks
- bank charges and credit cards
- other charges
- paid outs
- coupons
- discounts
- voids
- refunds
- and over-rings

Whenever you are balancing a cash report, you should always double check your vertical and horizontal totals. Below is an example cash report, please finish filling it in and compare it to the cash report on the next page to see if you filled everything out correctly. This report include operators to help.

	Register 1	Register 2	Register 3	Total
+ Cash and Checks	1513.12	45.12	2002.02	
+ Bank Charges	120.00	---	350.44	
+ House Charges	---	---	---	
+ Paid Outs	---	---	---	
Total				
+ Closing Reading	1,760.02	95.12	2402.50	
- Opening Reading	50.00	50.00	50.00	
= Difference				
- Coupons	1.10	---	---	
- Discounts	8.90	---	---	
- Voids	10.00	---	---	
- Refunds	---	---	---	
- Over-Rings	56.65	---	---	
Total				
Over + or Short -				

The following table is the completed version of the cash report on the previous page.

	Register 1	Register 2	Register 3	Total
+ Cash and Checks	1,513.12	45.12	2002.02	3,560.26
+ Bank Charges	120.00	---	350.44	470.44
+ House Charges	---	---	---	0.00
+ Paid Outs	---	---	---	0.00
Total	1,633.12	45.12	2,352.46	4,030.70
+ Closing Reading	1,760.02	95.12	2,402.50	4,257.64
- Opening Reading	50.00	50.00	50.00	150.00
= Difference	1,710.02	45.12	2,352.50	4,107.64
- Coupons	1.10	---	---	1.10
- Discounts	8.90	---	---	8.90
- Voids	10.00	---	---	10.00
- Refunds	---	---	---	0.00
- Over-Rings	56.65	---	---	56.65
Total	1,633.37	45.12	2,352.50	4,030.99
Over + or Short -	-0.25	0.00	-0.04	-0.29

All the answers that you should have filled in on the previous page are italicized above. You can achieve all of your vertical numbers by following the operators listed in the first column and then you can determine if the register is over or short by subtracting the total on the bottom half from the total on the top half. Horizontally all your numbers are achieved by adding across. The highlighted points on the table are excellent places to check your numbers both vertically and horizontally to make sure you didn't make any simple mistakes.

Something worth noting is that two of the registers are off (register 1 is short \$0.25 and register 3 is short \$0.04). Most stores are forgiving up to some small amount (typically \$2.00 per register). If the register is off by more than that someone will have to figure out, "Why?", which could range from a missing credit card receipt, to human error or even employee theft!

Worksheet 14-7

Name:

Date:

Balance the following cash reports.

1)	Register 1	Register 2	Register 3	Total
+ Cash and Checks	513.12	---	300.44	
+ Bank Charges	120.00	90.00	---	
+ House Charges	---	---	52.02	
+ Paid Outs	---	5.12	---	
Total				
+ Closing Reading	760.02	145.12	402.50	
- Opening Reading	50.00	50.00	50.00	
= Difference				
- Coupons	---	---	---	
- Discounts	8.90	---	---	
- Voids	10.00	---	---	
- Refunds	---	---	---	
- Over-Rings	56.65	---	---	
Total				
Over + or Short -				

2)	Register 1	Register 2	Register 3	Total
+ Cash and Checks	3,897.65	12.00	1,533.12	
+ Bank Charges	2,111.05	96.67	140.00	
+ House Charges	25.00	---	---	
+ Paid Outs	---	---	---	
Total				
+ Closing Reading	6,121.47	158.70	1,800.02	
- Opening Reading	50.00	50.00	50.00	
= Difference				
- Coupons	14.25	---	1.10	
- Discounts	23.47	---	8.90	
- Voids	---	---	10.00	
- Refunds	---	---	---	
- Over-Rings	---	---	56.65	
Total				
Over + or Short -				

3)	Register 1	Register 2	Register 3	Total
+ Cash and Checks	1,713.12	45.12	2,002.18	
+ Bank Charges	240.00	20.00	350.44	
+ House Charges	---	---	---	
+ Paid Outs	---	---	10.00	
Total				
+ Closing Reading	2,172.67	115.12	2,429.66	
- Opening Reading	50.00	50.00	50.00	
= Difference				
- Coupons	---	---	7.00	
- Discounts	130.00	---	---	
- Voids	27.50	---	---	
- Refunds	12.00	---	---	
- Over-Rings	---	---	10.00	
Total				
Over + or Short -				

4)	Register 1	Register 2	Register 3	Total
+ Cash and Checks	1234.56	789.01	234.56	
+ Bank Charges	789.01	234.56	78.90	
+ House Charges	---	---	25.00	
+ Paid Outs	20.00	10.00	---	
Total				
+ Closing Reading	2,116.45	1,091.03	390.43	
- Opening Reading	50.00	50.00	50.00	
= Difference				
- Coupons	2.50	1.75	---	
- Discounts	12.34	5.67	---	
- Voids	---	---	---	
- Refunds	8.00	---	---	
- Over-Rings	---	---	---	
Total				
Over + or Short -				

Calculating dispensing fees

Pharmacies need to offset the costs of doing business through dispensing fees. This represents the charge for the professional services provided by the pharmacy when dispensing a prescription and includes a distribution of the costs involved in running the pharmacy such as salaries, rent, utilities, costs associated with maintaining the computer system, etc. This is sometimes also referred to as a professional fee. While some pharmacies will create tiered dispensing fees (like we did in some of our earlier worksheets) most pharmacies will use just a flat rate dispensing fee for all prescriptions as it requires the same amount of labor to fill a low cost medication as it does to fill a higher cost medication.

A common formula for calculating a pharmacy's dispensing fee is:

$$\frac{\text{Labor Expenses} + \text{Direct Expenses} + \text{Indirect Expenses}}{\text{Quantity of Prescriptions Filled Annually}} = \text{dispensing fee}$$

- *Labor Expenses* = These are the wages paid to all pharmacy staff.
- *Direct Expenses* = This include items like the cost of the vials and the costs involved in maintaining the pharmacy computer system.
- *Indirect Expenses* = This are fixed items such as rent and utilities.

Let's use this formula for an example problem.

Example

- 1) Calculate the dispensing fee for a pharmacy with the following annual expenses if they filled 54,000 prescriptions annually.

Labor Expenses:

Wages for 1.6 pharmacists = \$129,600.00

Wages for 1.0 technician = \$43,200.00

5% match into 401k = \$8,640.00

Healthcare contribution = \$29,664.00

Total = \$129,600.00 + \$43,200.00 + \$8,640.00 + \$29,664.00 = **\$211,104.00**

Direct Expenses:

Vials and caps = $\frac{\$0.12}{\text{prescription}} \times \frac{54,000 \text{ prescriptions}}{1} = \$6,480.00$

Labels, patient information, bags = \$5,614.39

Computer system = \$2,000.00

Total = \$6,480.00 + \$5,614.39 + \$2,000.00 = **\$14,094.39**

Indirect Expenses:

Rent = \$33,600.00

Utilities = \$9,000.00

Property insurance = \$1,800.00

Total = \$33,600.00 + \$9,000.00 + \$1,800.00 = **\$44,400.00**

$$\frac{\text{Labor Expenses} + \text{Direct Expenses} + \text{Indirect Expenses}}{\text{Quantity of Prescriptions Filled Annually}} = \text{dispensing fee}$$

$$\frac{\$211,104.00 + \$14,094.39 + \$44,400.00}{54,000} = \$5.00 \text{ dispensing fee}$$

Now that the calculation for determining a dispensing fee has been demonstrated, use the same method to calculate the dispensing fee in a practice problem below.

Practice Problem

- 1) Calculate the dispensing fee for a pharmacy with the following annual expenses if they filled 79,800 prescriptions annually.

Labor Expenses:

Wages for pharmacists = \$132,192.00

Wages for technicians = \$58,752.00

Cost of benefits = \$50,088.00

Direct Expenses:

Vials and caps = $\frac{\$0.12}{\text{prescription}} \times \frac{79,800 \text{ prescriptions}}{1} = \$9,576.00$

Labels, patient information, bags = \$8,296.83

Computer system = \$2,000.00

Indirect Expenses:

Rent = \$33,600.00

Utilities = \$9,000.00

Property insurance = \$1,800.00

Depreciation

(1) \$3.83 dispensing fee

Depreciation is the decline in value of assets over time. Some items in a pharmacy lose value and eventually need to be replaced due to use, obsolescence, and the passage of time. The straight-line method of calculating depreciation uses the total cost, the estimated life of the property (in years), and the disposal value. Below is the formula you will need for this method:

$$\frac{\text{total cost} - \text{disposal value}}{\text{estimated life}} = \text{annual depreciation}$$

Let's look at an example using the aforementioned formula.

Example

- 1) A pharmacy purchases a 4 cylinder sedan for drug deliveries to customers. The cost of the car is \$11,965.00. Its estimated useful life is five years, and the resale value after five years is expected to be \$2,632.30. What is the annual depreciation?

$$\frac{\$11,965.00 - \$2,632.30}{5} = \$1,866.54 \text{ is the annual depreciation}$$

Now you should attempt a practice problem below.

Practice Problem

- 1) A Pharmacy purchases 3 workstations, a server, a printer, and various scanners in order to process prescriptions, maintain medication inventories, and various other functions related to running the pharmacy. These items cost the pharmacy approximately \$6,000.00. The pharmacy's expectations is that this equipment will last five years and have negligible value after those five years are up (use \$0.00 for the disposal value). What is the annual depreciation?

(1) \$1,200.00 is the annual depreciation of this computer equipment

Worksheet 14-8

Name:

Date:

Solve the following problems.

- 1) Calculate the dispensing fee for a pharmacy with the following annual expenses if they filled 54,900 prescriptions annually.

Labor Expenses:

Wages for pharmacists = \$108,000.00

Wages for technicians = \$48,000.00

Cost of benefits = \$35,772.00

Direct Expenses:

$$\text{Vials and caps} = \frac{\$0.12}{\text{perscription}} \times \frac{54,900 \text{ prescriptions}}{1} = \$6,588.00$$

Labels, patient information, bags = \$5,707.97

Computer system = \$2,000.00

Indirect Expenses:

Rent = \$12,600.00

Utilities = \$2,400.00

Insurances = \$5,520.00

- 2) Calculate the dispensing fee for a pharmacy with the following annual expenses if they filled 79,800 prescriptions annually.

Labor Expenses:

Wages for pharmacists = \$132,192.00

Wages for technicians = \$58,752.00

Cost of benefits = \$50,088.00

Direct Expenses:

$$\text{Vials and caps} = \frac{\$0.12}{\text{perscription}} \times \frac{79,800 \text{ prescriptions}}{1} = \$9,576.00$$

Labels, patient information, bags = \$8,296.83

Computer system = \$2,000.00

Indirect Expenses:

Rent = \$12,600.00

Utilities = \$2,400.00

Insurances = \$5,520.00

- 3) The pharmacy has a new point of sale (POS) system. The system cost \$8,294.00 and should last six years. Its disposal value is \$2,138.00. What is the annual depreciation?
- 4) A pharmacy purchased a new barrier isolator for \$9,175.00 and is expected to last 12 years if properly maintained. Its disposal value is \$1,567.00. What is the annual depreciation?

Worksheet 14-9

Name:

Date:

Match the definitions with their proper terms.

- | | |
|---|---|
| _____ 1) This represents the charge for the professional services provided by the pharmacy when dispensing a prescription. | a) average wholesale price |
| _____ 2) The pharmacy must stock or have ready access to, all drugs that may be written by the physicians in their practice area. | b) capital expenditures |
| _____ 3) This is reimbursement for services rendered to a person in which another entity is responsible for the payment. | c) capitation fee |
| _____ 4) OSHA required notices on hazardous substances. | d) closed formulary |
| | e) depreciation |
| | f) direct purchasing |
| | g) dispensing fee |
| | h) formulary |
| _____ 5) This is calculated as sales minus all costs directly related to those sales. | i) gross profit |
| | j) inventory |
| _____ 6) A system that maintains a continuous count of every item in inventory so that it always shows the stock on hand. | k) inventory value |
| _____ 7) This involves an agreement for a specified percentage or dollar volume of purchases. | l) Material Safety Data Sheet (MSDS) |
| _____ 8) The ordering of products for use or sale by the pharmacy and is carried out an independent or group process. | m) net profit |
| _____ 9) This enables the pharmacy to use a single source to purchase products from numerous manufacturers. | n) Occupational Safety and Health Administration (OSHA) |
| _____ 10) This is the difference between the gross profit and the sum of all the costs associated with filling the prescription. | o) open formulary |
| _____ 11) A government agency within the U.S. Department of Labor responsible for maintaining safe & healthy work places. | p) perpetual inventory |
| _____ 12) The total value of the drugs and merchandise in stock on a given day. | q) prime vendor purchasing |
| | r) purchasing |
| | s) reorder point |
| _____ 13) This is commonly known as the retail price and is the price paid for a prescription by a patient without insurance. | t) schedule II medications |
| _____ 14) This is the decline in value of assets. | u) third party reimbursement |
| | v) usual and customary price |
| | w) wholesaler purchasing |
| _____ 15) These require a DEA 222 form for reordering. Their stock must be continually monitored and documented. | |
| _____ 16) This is the average price at which wholesalers typically sell medications to pharmacies. | |
| _____ 17) Money spent to acquire or upgrade physical assets such as property, fixtures, or machinery | |
| _____ 18) The drug inventory is limited to a list of approved medications. | |
| _____ 19) A list of medications available for use within a health care system. | |
| _____ 20) This entails ordering medications directly from the original drug manufacturer. | |
| _____ 21) This is simply the entire stock on hand for sale at a given time. | |
| _____ 22) Minimum and maximum stock levels which determine when a reorder is placed and for how much. | |
| _____ 23) A method of payment for health services in which an individual or institutional provider is paid a fixed amount without regard to the actual number or nature of services provided to each patient. | |

Determine how much of each medication to reorder based on the package size and the minimum and maximum quantities the pharmacy wants to stock. Reorder medications when they reach the minimum.

	<i>Medications</i>	<i>Package Size</i>	<i>Minimum # Units</i>	<i>Maximum # Units</i>	<i>Current Inventory</i>	<i>Re-order</i>
24)	ramipril 5 mg cap	100	120	240	64	
25)	captopril 50 mg tab	100	150	300	76	
26)	doxazosin 2 mg tab	100	80	240	83	
27)	simvastatin 20 mg tab	100	360	500	190	
28)	simvastatin 40 mg tab	100	180	440	304	

Calculate how many times each of the following pharmacies turnover their inventory on an annual basis.

29) If April's Apothecary has an average inventory for the last year was \$101,643.18 and the annual cost total was \$1,168,896.70, what was the turnover rate?

30) If Drummond's Drug Store has an average inventory for the last year was \$168,875.20 and the annual cost total was \$2,026,402.40, what was the turnover rate?

Perform the following days' supply of inventory calculations.

31) April's Apothecary has a total inventory value of \$101,643.30. Last week the pharmacy had sales of \$26,974.54, and the cost to the pharmacy for the products sold came to \$22,478.79. April's goal is to have a 35 days' supply of inventory. How many days' supply does April have? How much is she over or under her goal in dollars?

32) Drummond's Drug Store has a total inventory value of \$168,874.98. Last week the pharmacy had sales of \$45,955.44, and the cost to the pharmacy for the products sold came to \$38,971.20. Drummond's goal is to have a 30 days' supply of inventory. How many days' supply does Drummond have? How much is he over or under his goal in dollars?

Answer the following questions.

33) How are Schedule II medications ordered?

34) How are Schedule III-V medications ordered?

35) How are controlled substances checked into the pharmacy?

36) How are controlled substances to be stored?

37) What are the major environmental considerations with respect to medications?

38) Define freezer, refrigerated, and controlled room temperature.

39) If two medications had an expiration of 02/2020 and 02/28/2020 which medication would expire first and why?

Solve the following markup and discount questions.

40) If a medication is purchased for \$25 and sold for \$35 what was the percent markup?

41) If the purchase price for 100 tablets of a medication was \$49.25 and the percent markup is 25%, then what is the selling price for 30 tablets?

42) If the discount on a wholesaler invoice for \$12,300 was \$369, what was the percent discount?

43) If your wholesaler offers you a 5% discount on orders over \$5,000 how much would you expect

your invoice to be for if you purchased \$6,500 worth of product?

- 44) A senior citizen is paying for a prescription for furosemide 30 mg #30. The usual and customary price is \$5.00. However this patient qualifies for a 10% discount. How much will the patient pay?
- 45) A wholesaler offers the pharmacy a 10% discount on orders of \$14,400 or more, or a 15% discount on orders of \$28,800. The pharmacy makes an \$19,800 purchase, how much should its invoice be for?

Solve for the gross profit and the net profit for problems 46-51 using a set dispensing fee of \$5.

- 46) The pharmacy purchased 25 nebulizer vials of albuterol inhalation solution for \$25.90 and sold 25 vials for \$46.85. What is the gross profit? What is the net profit?
- 47) The pharmacy purchased 20 tablets of carisoprodol 350 mg for \$35.26 and sold 20 tablets for \$60.89. What is the gross profit? What is the net profit?
- 48) The pharmacy purchased 100 tablets of E.E.S. 400 mg for \$19.06 and sold 28 tablets for \$12.35. What is the gross profit? What is the net profit?
- 49) The pharmacy purchased 100 capsules of fluoxetine 20 mg for \$213.56 and sold 30 capsules for \$108.10. What is the gross profit? What is the net profit?
- 50) The pharmacy purchased 100 tablets of glyburide 5 mg for \$22.48 and sold 30 tablets for \$16.47. What is the gross profit? What is the net profit?
- 51) The pharmacy purchased 100 tablets of levothyroxine 100 mcg for \$24.87 and sold 30 tablets for \$15.59. What is the gross profit? What is the net profit?

Solve the following problems using the sample formula below for third-party reimbursement:

$87\% \text{ AWP or } 100\% \text{ U\&C (whichever is less)} + a \$ 3.50 \text{ dispensing fee} = \text{reimbursement rate}$

- 52) A pharmacy receives a prescription for 125 nebulizer vials of albuterol inhalation solution. The U&C on this product is \$129.00. The AWP for 25 vials is \$31.00. How much should the patient's insurance reimburse for this prescription?
- 53) A pharmacy receives a prescription for 20 tablets of carisoprodol 350 mg. The U&C on this product before a dispensing fee is added is \$38.12. The AWP for 20 tablets is \$41.40. How much should the patient's insurance reimburse for this prescription?
- 54) A pharmacy receives a prescription for 40 erythromycin 400 mg tablets. This product's usual and customary price is 12.51. The AWP for 100 tablets is \$23.46. How much should the patient's insurance reimburse for this prescription?
- 55) A pharmacy receives a prescription for 30 capsules of fluoxetine 20 mg. The U&C on this product before a dispensing fee is added is \$64.62. The AWP for 100 capsules is \$248.40. How much should the patient's insurance reimburse for this prescription?
- 56) A pharmacy receives a prescription for 30 tablets of 5 mg glyburide. This product's usual and customary price is \$11.79. The AWP for 100 tablets is \$28.31. How much should the patient's insurance reimburse for this prescription?

Determine the profit margin for the following capitation fee problem.

- 57) April's Apothecary receives a monthly capitation fee of \$210.00/month for Nauseous Nancy. Last month Nancy's prescriptions totaled \$188.75. How much did the pharmacy make off of her capitation fee?

Solve the following depreciation problem using the straight-line method.

- 58) The pharmacy a 1 year old compact car for drug deliveries. The car cost \$9,420.00 and is expected to last four years from date of purchase. Its disposal value is \$4,867.00. What is the annual depreciation?

Balance the following cash report.

59)	Register 1	Register 2	Register 3	Total
+ Cash and Checks	1264.56	790.01	233.56	
+ Bank Charges	789.03	235.56	78.90	
+ House Charges	---	---	25.00	
+ Paid Outs	20.00	10.00	---	
Total				
+ Closing Reading	2,151.47	1,095.03	389.47	
- Opening Reading	50.00	50.00	50.00	
= Difference				
- Coupons	7.50	1.75	---	
- Discounts	12.34	7.67	---	
- Voids	---	---	---	
- Refunds	8.00	---	---	
- Over-Rings	---	---	---	
Total				
Over + or Short -				

Solve the following dispensing fee problem.

60) Calculate the dispensing fee for a pharmacy with the following annual expenses if they filled 80,000 prescriptions annually.

Labor Expenses:

Wages for pharmacists = \$138,801.60

Wages for technicians = \$61,689.60

Cost of benefits = \$51,340.20

Direct Expenses:

Vials and caps = $\frac{\$0.12}{\text{perscription}} \times \frac{80,000 \text{ prescriptions}}{1} = \$9,600.00$

Labels, patient information, bags = \$8,317.63

Computer system = \$2,000.00

Indirect Expenses:

Rent = \$13,860.00

Utilities = \$2,400.00

Insurances = \$5,520.00