Northeastern University
College of Engineering

Funletter 2: Pharmacy

Pharmacy is a **health science** (think of it as a combination of medicine + chemistry) that deals with the discovery, production, and effective use of drugs. Pharmacists **mix, measure, and dispense drugs** that are prescribed by a doctor and help patients manage their medications. They are the experts on drugs and understand all of its **physical and chemical properties**. Therefore, if you have questions about whether two drugs interact, the pharmacist is the person to ask! You may have interacted with a pharmacist at your local **CVS or Walgreens**, dressed in their white coat. Pharmacists can also work in a variety of areas, such as in a **hospital**, alongside doctors and nurses, or within **pharmaceutical companies** to assist with the development of drugs. There are even pharmacists who work for **NASA**, creating medication kits for astronauts! In some settings and other countries, pharmacists are even able to prescribe medications to patients.

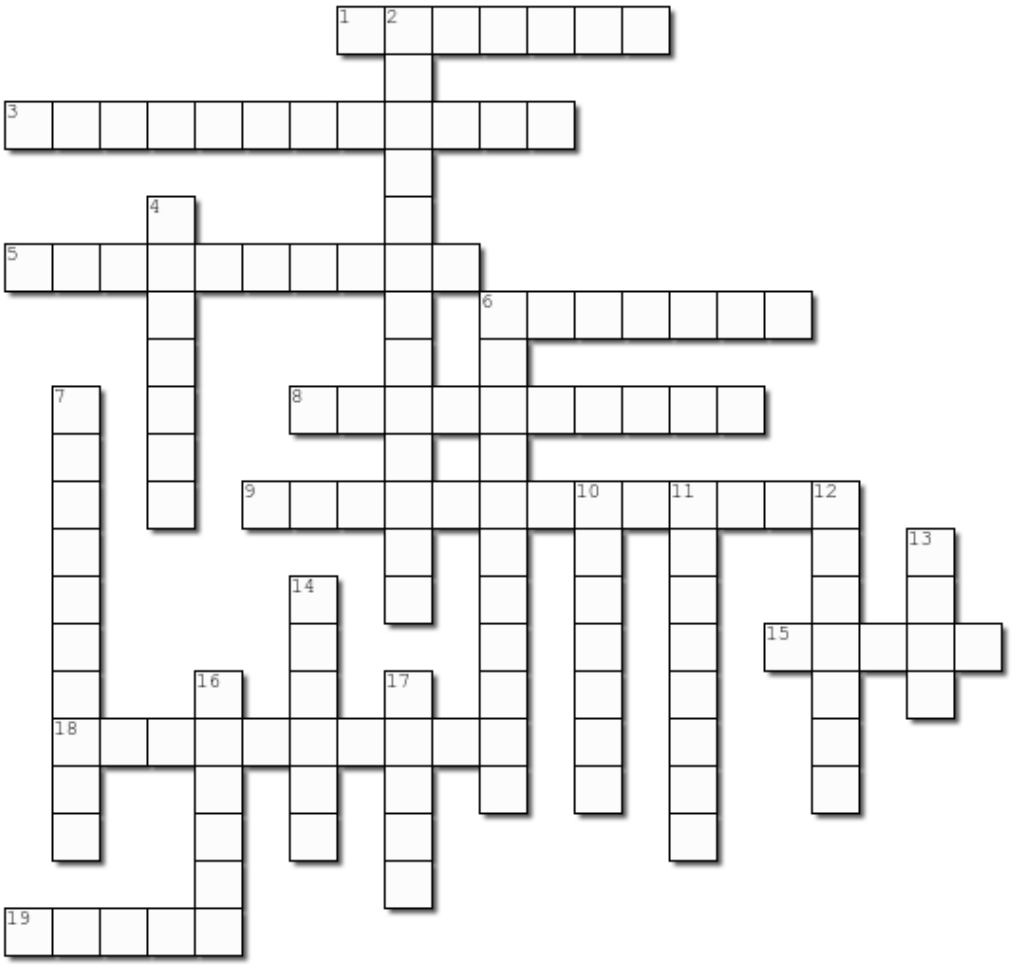
Activity 1: Learn the Terms

Complete the crossword puzzle below to learn some fun facts about pharmacy!

Name:_____

Pharmacy

Complete the crossword puzzle below while learning some important terminology!



Created using the Crossword Maker on TheTeachersCorner.net

Pharmacist | Antihistamine | Capsule | Penicillin | Dose | Prescription | Lozenges | Anticoagulant | PharmD | Vaccine | Compounding | HIPPA | NSAID | Tylenol | Pepsi | Technician | Typing | Filling | Generic | Antibiotic

Across

1. Pharmacists are licensed to administer this type of service
3. Doctor's instructions for dispensing medication
5. First true antibiotic
6. Medicine contained inside of a shell
8. Professional who dispenses medication
9. Medication to treat blood clots
15. This popular soda was invented by a pharmacist
18. The assistant to the pharmacist who prepares the medication
19. Aspirin belongs to this drug class

Down

2. Medication to treat allergies
4. The act of preparing the medication to be dispensed
6. Combining two or more medications for a treatment
7. Medication to treat infections
10. A medication similar, but usually cheaper than the brand name
11. A small candy like medicine that dissolves in your mouth
12. Brand name for acetaminophen
13. Quantity of medication to take
14. The act of entering a prescription into a computer system
16. Pharmacy degree
17. Government law to protect patient privacy

Activity 2: Medication Math

One skill pharmacists use when preparing prescriptions is **math**. Calculations are performed to determine how much medication a patient needs, and this is referred to as a **dose.** It is important to note that dose can vary depending on age, weight, gender, and other factors. The units for dose are typically in milligrams (mg).

Now let's practice some pharmaceutical calculations!

Problem 1: A doctor writes a prescription for Patient A that says he needs to take 3 capsules every day for one month (30 days). How many capsules should the pharmacist prepare?

Problem 2: Patient B receives a bottle of medication with 60 tablets. She was instructed to take two tablets twice daily. How long will the bottle last her?

Problem 3: The pharmacist receives a prescription for a patient who needs to take 200 milligrams of a capsule medication every day for two weeks. One capsule has a strength of 100mg. How many capsules should the pharmacist dispense? ***Hint: remember, the patient needs to take 200mg worth of drug!***

Activity 3: Learn the Language of Pharmacy - Sig Codes!

When a prescription is processed in the pharmacy, a special "language" is used, known as **sig codes**. Sig codes are abbreviations (derived from Latin) used to communicate the medication directions you see on a bottle of medication. We use sig codes so the patient understands **how to take** their medication, the **frequency**, and any other **special instructions**. Below, you can find a table of some common sig codes you may see in the pharmacy:

AC: before meals	PRN: as needed
QAM: in the morning	QD: everyday (once daily)
BID: twice daily	QH: every hour
HS: at bedtime	QOD: every other day
PC: after meals	TLD: three times daily
PO: by mouth	1T: take one tablet
QPM: in the evening	1C: take one capsule

Using the table above, write the following medication instructions in sig codes:

1) Take one capsule by mouth in the evening daily.

2) Take two tablets by mouth at bedtime every other day.

3) Take three capsules by mouth twice daily after meals as needed.

Now let's do the reverse. Translate the following medication instructions:

1) 3T PO TID

2) 2C QAM AC PRN

3) 1T PO QOD

Activity 4: Pharmaceutical Cooking

Pharmaceutical compounding is the act of making a medication for a specific patient. It can be in the form of a capsule, solution, etc. Here, let's practice pharmaceutical compounding by making a **simple syrup**! A syrup is a concentrated solution of sucrose (common sugar) in water. A simple syrup contains only **sucrose and purified water**. Syrups containing pleasantly flavored substances are known as flavoring syrups (e.g. Cherry Syrup).

1 gram of sucrose dissolves in 0.5 ml water. For example, only 425 ml of water would be required to dissolve 850 gm sucrose. Prepare a syrup in the amount of your liking (remembering the 2:1 ratio) using the following steps:

1) Combine the sugar/water in a saucepan
2) Bring the water to a boil, allowing for the sugar to dissolve
3) Removing the saucepan from the heat and let it cool

Activity 5: Medication Safety Portrait

In the space below, draw what you think the safe use of medication looks like! Here are some tips to give you ideas:

- ★ Sharing is caring, **except** when it comes to medication. **Never** share your medicine or take another person's medicine.
- ★ Store medication in a safe place, away from **heat, light, and moisture**.
- ★ Take your medication **as prescribed** by the doctor.

Resources:

- ★ https://pharmacyforme.org/kids-corner/
- ★ https://generationrx.org/toolkits/elementary/
- ★ https://www.poehealth.org/educational-topics/general-health/prescription-medicine-safety-resources-for-young-children-prek-3rd-grade/
- ★ https://www.youtube.com/watch?v=lu9fdXmtK_Q

Answer Key:

Activity 2

Problem 1: 3 capsules x 30 days = 90 capsules

*Problem 2: 60 tablets / (2 tablets * 2) = 15 days*

Problem 3: Patient C needs to 2 capsules for one dose (100mg x 2 = 200mg)
2 capsules x 14 days = 28 capsules

Activity 3

1) 1C PO QPM

2) 2T PO HS QOD

3) 3C PO BID PC PRN

1) Take three tablets by mouth twice daily.

2) Take two capsules in the morning before meals as needed.

3) Take one tablet by mouth every hour.