EXPLORATORY TASKS STUDENT SAMPLES

CLUSTER: Health Sciences

PATHWAY: Biomedical Research and Development Pathway

Professionals in this pathway conduct bioscience (any of the life sciences) research as it applies to human health. They study diseases to discover new treatments, invent medical devices to use directly with patients or to improve the accuracy of diagnostic tests.

EXPLORATORY TASK: Health care is constantly changing as more is discovered about diseases. Search the history of medicine timeline. Create a top 10 list that you consider the most significant discoveries. Include a one or two sentence description of each.

OBJECTIVE: Introduce students to the constantly changing field of healthcare.

TEACHER SUPPORT:

- Collaborate with a healthcare professional, a CTE health science teacher or a science, health, PE teacher.

STUDENT SUPPORT:

- Provide links, examples, checklist and/or a template for students to use.

LEARNING EXTENSIONS:

- Invite a healthcare professional or CTE teacher to discuss the role of biomedical research and development in treating and/or preventing disease.
- Lead a discussion connecting school subjects and this pathway.
- Lead a discussion about personal qualities of a biomedical researcher or developer.
- Identify and research a career within this pathway.

CONNECTIONS TO KENTUCKY ACADEMIC STANDARDS

- Career Studies: ES.I.9, CI.2-8
- Science: LS1.A Structure and function – 6-8 grade band
- Reading and Writing: RI.6.4

NOTE:

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- A range of student performance is included within the complete body of work.

Top Ten Health Discoveries

By R[redacted] J[redacted] and I[redacted] J[redacted]

1. 1929- Antibiotics: Alexander Fleming discovered antibiotics, medicine to kill bacteria. They helped to turn uncontrollable bacteria and infections manageable.
2. 1953- DNA: Drs. Watson and Crick, as well as Maurice Wilkins won the Nobel Prize for discovering the double helix and how DNA worked.
3. 1799- Smallpox Vaccine: Edward Jenner helped to create the smallpox vaccine around 1796 and the vaccine was introduced to the USA in 1799. It was one of the first vaccines.
4. 1846- Anesthesia: John Collins Warren did the first public demonstration of anesthesia surgery.He was a founder of the New England Journal of Medicine and was the third president of the American Medical Association.
5. 1952- Kidney Transplant: Surgeon Joseph Murray performs the first successful kidney transplant on identical twins at Peter Bent Brigham. This made him get a nobel prize in medicine and has saved 100 of lives
6. 1928- Penicillin: Sir Alexander Fleming discovered penicillin. Penicillin is a group of antibiotics that helps treat certain infections caused by bacteria.
7. 1989- Tumor Blood Vessel Growth Compound: Judah Folkman and his research team at Boston Children's produce a synthetic compound that inhibits the growth of blood vessels associated with tumors.
8. 1899- Aspirin: Felix Hoffman, a German chemist working for the Bayer company discovered aspirin. They introduced it in a powdered form; it helped speed up the healing process.
9. 1885- Rabies Vaccine: Louis Pasteur invented it. This vaccine helped people stay immune from receiving diseases from animals.
10. 1816- Stethoscope: rene theophile a french physician who made the stethoscope. He investigated the sounds the heart and lungs make and determined his diagnosis was correct.

Names: F[redacted] S[redacted] H[redacted] O[redacted] R[redacted] J[redacted] L[redacted]

1. 1869 - Cholera and typhoid vaccines were first developed.
2. 1914 - Rabies vaccines were first licenced in the U.S.
3. Jan 3, 1978 - Yellow fever vaccine (YF- VAX by Connaught) was licenced in the U.S.
4. Dec 15, 1989 - A live, oral typhoid vaccine(Ty21a, Vivotif Berna by Swiss Serum Institute) was licensed.
5. 1992 First vaccine developed for hepatitis A
6. 2006 First vaccine to target a cause of cancer
7. 1967 First vaccine developed for mumps
8. First vaccine for smallpox was in 1796
9. First Hpv vaccine was developed in 2006

10 Discoveries

By I[redacted] 8,9 10, [redacted] 6,7 J[redacted].H[redacted]-1,2,5, and T[redacted] 3,4

5th period

1. **RSV -** Respiratory Syncytial Virus (RSV) is a common childhood illness that affects the respiratory system.In most children and adults, it causes mild cold-like symptoms including fever, coughing, runny nose, and sneezing.
2. **Bronchitis -** Bronchitis occurs when the airways in the lungs swell and produce mucus in the lungs.This causes coughing, soreness in the chest, fatigue, headaches, body aches, and sore throat.

3. **Covid-19-** Symptoms may include fever, or chills, cough, shortness of breath, fatigue, muscle and body aches, can't taste food, and headaches.
4. **Smallpox-** Benjamin Waterhouse introduces the smallpox vaccine to the United States and helps gain acceptance the quality or state of being accepted or acceptable His theories have gained widespread acceptance for the new procedure.
5. **Common cold-** Its not surprising that the common cold is one of the most common childhood illnesses. Colds are caused by viruses that spread easily in environments where people have close contact with one another.
6. so i think stay in your house before you catch a cold or a virus and if you stay inside you won't catch a cold so i suggest you stay inside.
7. im saying you can go outside just by wearing some heating clothes so you can stay warm.
8. **Tetanus -** In the United States Tetanus is rare because of vaccines and is a very severe illness. It does not spread from person to person and it spreads through spores getting into your body through cuts. Some symptoms are headaches, muscle stiffness, and a fever. In 2004 there was an outbreak of Tetanus. They came out with a vaccine in 1938
9. **Measles** - The Measles is a common illness it can be very severe. It is very contagious and spreads through mucus like sneezing. It's symptoms are coughing, runny noses, itchy or watery eyes, and fevers. There was an outbreak of the measles in 1989 to 1991 and it killed around 6000 people. Thomas Weller and Frederick Robbins created a vaccine in 1954
10. **Flu (Influenza) -** The Flu is a common illness that can be severe but it is usually not. It spreads from person to person when people talk or cough and it spreads to 6 feet away. Its symptoms are usually just coughing or/and wheezing. It triggered a very severe pandemic in 1918 that lasted for 1-2 years and millions of people died due to the outbreak of the Flu. They discovered a vaccine for it in 1933 and it was discovered by Jonas Slak and Tomas Fancis.

Sources:
https://www.wakeforestpediatrics.com/common-childhood-illnesses/

3,000 - smallpox originated from the Egyptian Pharaoh Ramses V. Smallpox is a viral disease that can give people a fever and usually leave permanent scars.

3/24/1882 - Dr. Robert koch discover tuberculosis, tuberculosis is caused by a certain bacteria.

1950- the whooping cough vaccination was introduced in the 1950's Dr. pearl kendrick created the whooping cough vaccine.

1951- Max theiler created the an effective vaccine against yellow fever

1793- yellow fever can cause your skin to turn yellow and can spread by animal or insects

1959- The salk vaccine is a polio vaccine developed by albert sabin

1971- A vaccine was licenced for mumps in the united states as a combined vaccine for measles mumps and rubella

1960- a rubella vaccine was administered in schools

1968- a vaccine for measles was developed by maurice hilleman

2006- the first vaccine to target the cause of cancer

1974- first vaccine developed for chickenpox

EXPLORATORY TASKS STUDENT SAMPLES

CLUSTER: Health Sciences

PATHWAY: Diagnostics Pathway

Diagnostic services is an umbrella term for careers that use a variety of tools and equipment to perform tests to help detect, diagnose and treat disease and injury.

EXPLORATORY TASK: What structures do doctors see when looking at an Xray? Find and print both a labeled skeleton and an X-ray image from the internet. Use the labeled skeleton to identify and label bones on the X-ray.

OBJECTIVE: Introduce students to skeletal images and their use in diagnostics.

TEACHER SUPPORT:

- Collaborate with a healthcare professional, a CTE health science teacher or a science, health, PE teacher.

STUDENT SUPPORT:

- Provide links, examples, checklist and/or a template for students to use.

LEARNING EXTENSIONS:

- Invite a healthcare professional or CTE health science teacher to discuss the types of diagnostic services and their use in medicine.
- Discuss the different types of diagnostic services and the professionals who perform those exams, e.g.:
    - Computerized Axial Tomography (CAT) Scan
    - Magnetic Resonance Imaging (MRI)
    - Laboratory (blood) tests
- Lead a discussion connecting school subjects and this pathway.
- Lead a discussion about personal qualities of a diagnostic professional.
- Identify and research a career within this pathway.

CONNECTIONS TO KENTUCKY ACADEMIC STANDARDS

- Career Studies: ES.I.9, CI.2-8
- Science: LS1.A Structure and function – 6-8 grade band
- Reading and Writing: RI.6.4

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Open up a google slides presentation

Share the presentation with your group

With your table group each one of you can do two slides

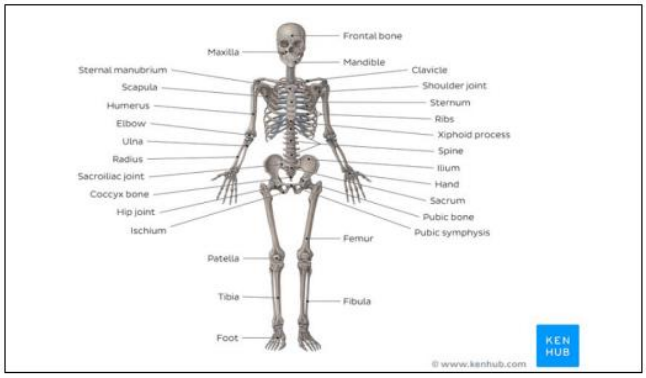
Find a picture of a human skeleton bone x ray

Identify the part of the body

And your name to your slides for credit.

Looking at Bones Through X-Ray

By: J[redacted], K[redacted], M[redacted], S[redacted]



These Are Hip Joints - K[redacted]

This is a neck - K[redacted]

M[redacted] it's a hand and which you can use for grabbing,holding pulling pushing thins you can do a lot of things with it.

M[redacted] it's a foot which is labbed so I really don't need to explained but I can explain so you use your foot for running walking etc.

S[redacted]

These are the bones in this knees. From the top down, they are the femur and the tibia. On the right lower side, the fibula is barely visible.

This is of a hand. There are a lot of bones that look like pebbles in the hand.

EXPLORATORY TASKS STUDENT SAMPLES

CLUSTER: Health Sciences

PATHWAY: Health Informatics Pathway

This pathway includes professionals who manage health care agencies as well as specialists who are responsible for managing patient data, financial information and computer applications related to health care. A basic understanding of the language of medicine is needed for their work.

TASK: Where is the plantar region or the buccal region? To read medical records, one must understand the terminology. Create a poster using medical terms to label body regions. Use a large sheet of paper to draw the outline of a body. Do a Google search to find medical terms for body regions. Label the image with the correct medical term.

OBJECTIVE: Introduce students to basic anatomy terminology required by health informatics professionals.

TEACHER SUPPORT:

- Collaborate with a healthcare professional, a CTE health science teacher or a science, health, PE teacher.

STUDENT SUPPORT:

- Provide links, examples, checklist and/or a template for students to use.

LEARNING EXTENSIONS:

- Invite a healthcare professional or CTE health science teacher to discuss the unique language of medicine.
- Lead a discussion to highlight:
    - differences in the terminology:
        - regions, e.g., cranial, patellar, femoral
        - cavities, e.g., spinal, cranial, orbital
        - directions, e.g., superior, lateral, superficial
    - the use of these terms to describe a patient's symptoms or injuries
- Identify and research a career within this pathway.

CONNECTIONS TO KENTUCKY ACADEMIC STANDARDS

- Career Studies: ES.I.9, CI.2-8
- Science: LS1.A Structure and function – 6-8 grade band
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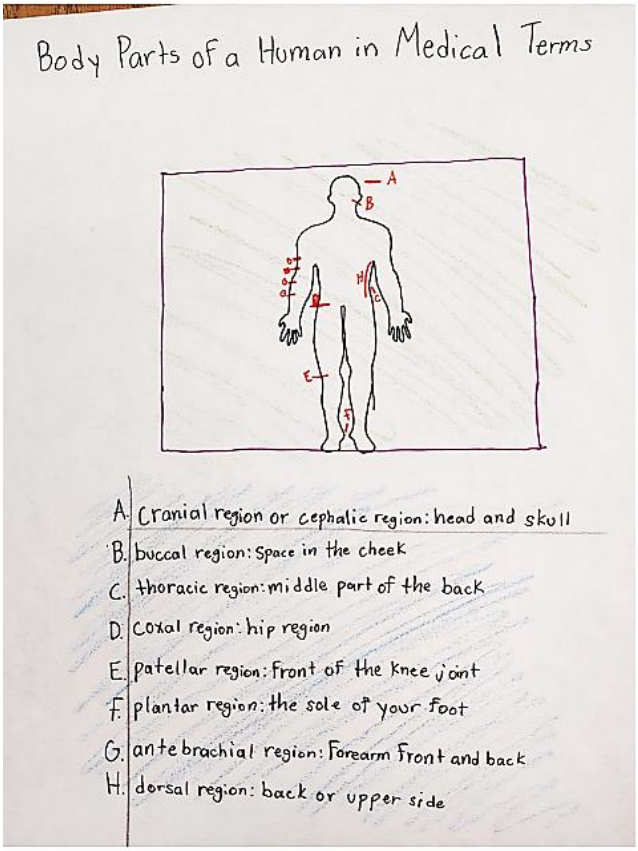
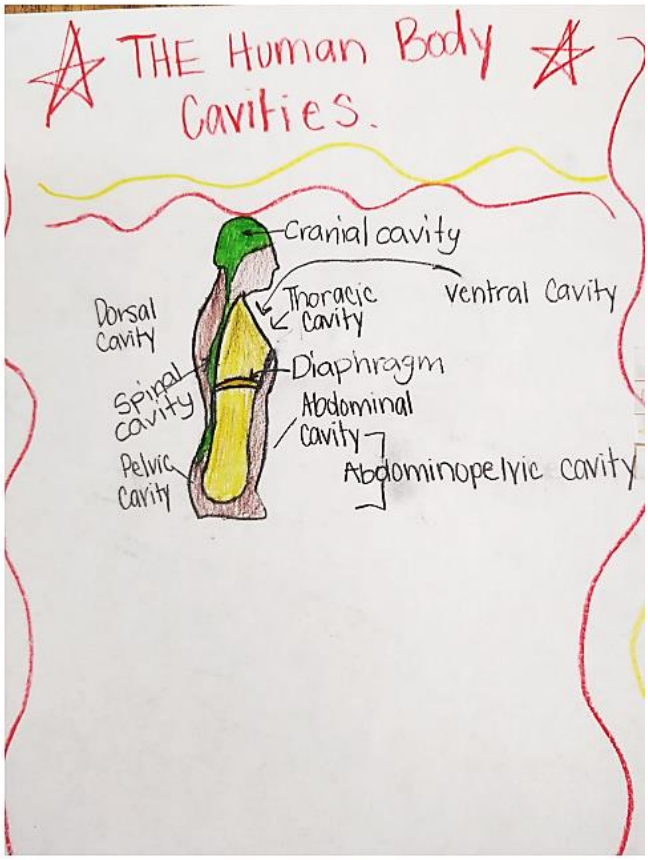
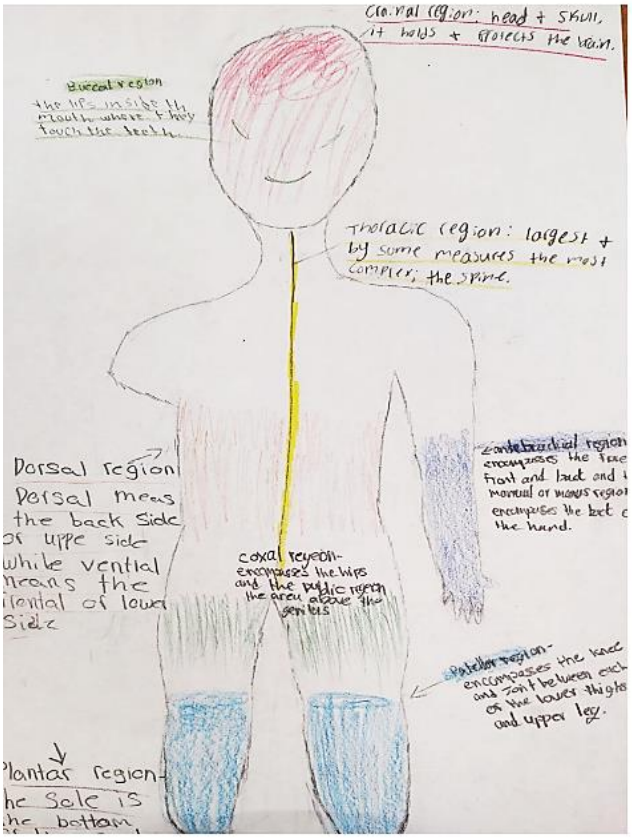
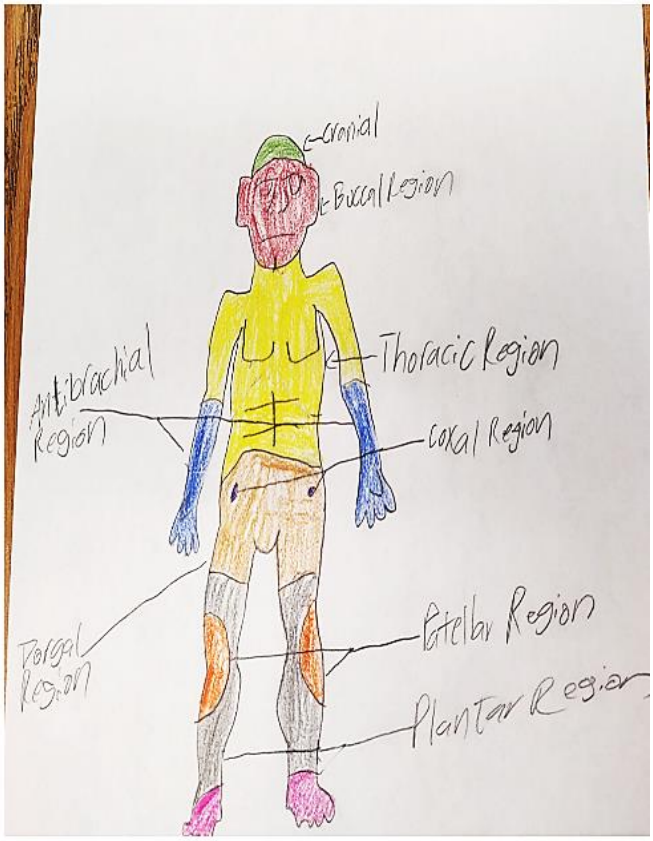

Body Parts of a Human in Medical Terms
A
B
C
D
E
F
A. Cranial region or cephalic region: head and skull
B. buccal region: space in the cheek
C. thoracic region: middle part of the back
D. coxal region: hip region
E. patellar region: front of the knee joint
F. plantar region: the sole of your foot
G. antebrachial region: Forearm front and back
H. dorsal region: back or upper side


THE Human Body Cavities.
Cranial cavity
Thoracic cavity
Ventral Cavity
Dorsal Cavity
Diaphragm
Spinal cavity
Abdominal cavity
Pelvic Cavity
Abdominopelvic cavity


Cranial region: head + skull, it holds + protects the brain.
Buccal region
the lips inside the mouth where they touch the teeth.
Thoracic region: largest + by some measures the most complex; the spine.
Dorsal region
Dorsal means the back side of upper side while ventral means the ventral of lower side
coxal region- encompasses the hips and the pelvic region the area above the genitals
Patellar region- encompasses the knee and joint between each of the lower thighs and upper leg.
Plantar region-
the sole is the bottom


Cranial
Buccal Region
Thoracic Region
Antibrachial Region
Coxal Region
Patellar Region
Dorsal Region
Plantar Region

EXPLORATORY TASKS STUDENT SAMPLES

CLUSTER: Health Sciences

PATHWAY: Support Services Pathway

Support service specialists work to maintain health care facilities, provide services for patients and manage supplies and equipment. This pathway offers career opportunities from the entry level to management positions.

EXPLORATORY TASK: Where do germs live? How are they spread? Create an infographic to show how germs are spread. Share with your class.

OBJECTIVE: Introduce students to germs (pathogens), methods of transmission and their role in illness.

TEACHER SUPPORT:

- Collaborate with a healthcare professional, a CTE health science teacher or a science, health, PE teacher.

STUDENT SUPPORT:

- Provide links, examples, checklist and/or a template for students to use.

LEARNING EXTENSIONS:

- Invite a healthcare professional or CTE health science teacher to discuss the role of support service professionals in reducing the transmission of infections within a healthcare facility.
- Lead a discussion connecting school subjects and this pathway.
- Lead a discussion about personal qualities of a support service professional.
- Identify and research a career within this pathway.

CONNECTIONS TO KENTUCKY ACADEMIC STANDARDS

- Career Studies: ES.I.9, CI.2-8
- Science: LS1.A Structure and function – 6-8 grade band
- Reading and Writing: RI.6.4, C.6.2

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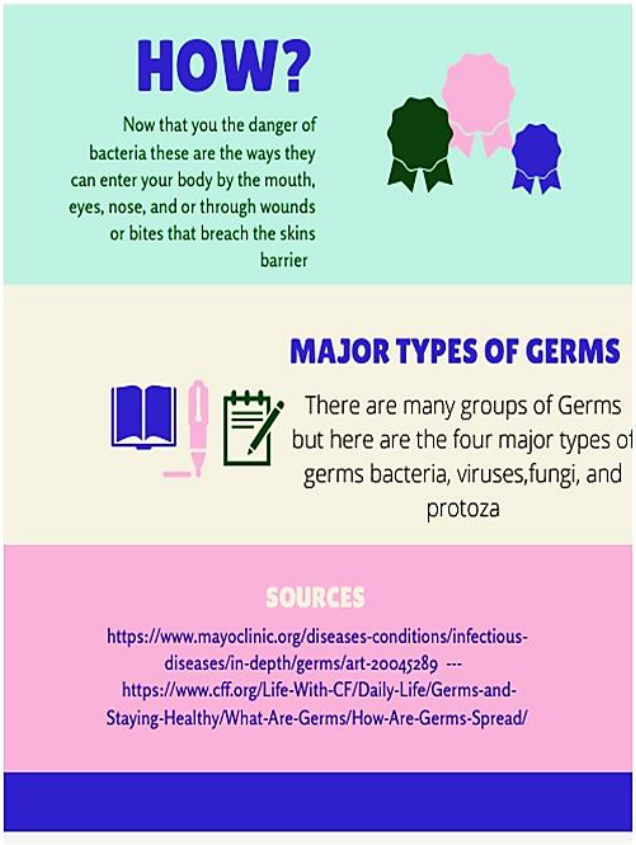


How Germs Spread

Key:A[redacted] A[redacted] A[redacted]

Germs can spread like crazy! Some big germs are called *Viruses*. Viruses are types of disease or illness that can be life risking

or even deadly.

Germs can spread if someone coughs or if someone sneezes on a person and then you get very sick or ill to the point where you might feel weak or sick in the

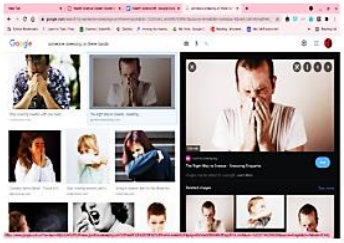
stomach.

Some people end up in hospitals because of these things. They are either getting healed or in a life risking or deadly situation. The most popular and deadly virus is the Coronavirus(Covid-19). This virus spreads mainly through the nose and mouth.

A[redacted] you got the corona then go get a shot and then get away and don't go near anyone or they will get sick or where they can die and when you don't get the virus and then you cant kill someone so don't get the Coronavirus(Covid-19).

A[redacted]: If you get the covid then you need to quarantine yourself and then you don't make other people and then you don't kill people with the viruses and then you get the coved shot and then you can't get sick no more and more people are safe in the world.

1. Germs can spread to the hands by sneezing, coughing, or rubbing the eyes and the germs can also spread to family members and friends.



2. Usually germs are transmitted from unclean hands to food because of people who don't wash their hands after using the bathroom

3. Germs are transmitted from raw foods, such as chicken, to hands while preparing a meal, cooking the raw food kills the initial germs.

4. Germs are passed from a child with diarrhea to the hands of the parent during diaper changing.

5. Wash your hands after petting animals or touching any surfaces they come into contact with.

This is an example of sperening germs.

M[redacted], K[redacted]<3

EXPLORATORY TASKS STUDENT SAMPLES

CLUSTER: Health Sciences

PATHWAY: Therapeutics Pathway

Professionals in this pathway treat injuries and illnesses. They work directly with individuals to provide care, treatment, counseling and health education information to improve the quality of life for their patients.

EXPLORATORY TASK: What do vital signs measure? What does it reveal about your health? Create a health information pamphlet for patients that explains each of the vital signs. Be sure to include:

- How and why each vital sign is measured
- Normal range of each
- Variations by age group, e.g., children, adults, elderly

OBJECTIVE: Introduce students to vital signs and their use in the therapeutic pathway.

TEACHER SUPPORT: Collaborate with a healthcare professional or a science, health, PE or health science teacher.

STUDENT SUPPORT:

- Provide links for student research.
- Share samples of health information pamphlet, brochure or flyer.

LEARNING EXTENSIONS:

- Invite a healthcare professional to demonstrate how vital signs are taken and how they are used to assess health.
- Lead a discussion connecting school subjects and this pathway.
- Lead a discussion about personal qualities of a therapeutic professional.
- Identify and research a career within this pathway.

CONNECTIONS TO KENTUCKY ACADEMIC STANDARDS

- Career Studies: ES.I.9, CI.2-8
- Science: LS1.A Structure and function – 6-8 grade band
- Reading and Writing: RI.6.4, C.6.2

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Vital Signs

Body Temperature- This Measures how hot or cold your body is. If your body is too hot that could be a bad sign. If your body is too cold that could also be a bad sign.

Pulse Rate- This measures how fast your heart is beating.How fast or slow your pulse is. If your pulse is too slow that could be a bad sign and if it is going too fast that could also be a bad sign. We have to make sure it's going at a good speed.

Respiration Rate- This Measures how your breathing is. You have to make sure your breathing is fluent.

Blood Pressure- This measures how good your blood is pumping. You want it to go at a speed not too low but not too high.

This doc is about 3 vitals and what they measure and its about if it changes when you get older.

Body temperature measures how hot your body is. It reveals that if your body is too hot or too cold it means there's something wrong with your body. A normal body temperature is 98.2 and 98.6 and for a fever your body temperature is 100 or more your body temperature doesn't really change when you get older.

Your pulse rate measures how many times your heart beats in a minute. It reveals how much your heart beats per minute and it tells how fast your blood flows. For a normal adult your heart should beat 60 to 100 times per minute and a kids heartbeats around 118 times per minute.

Blood pressure: blood pressure is a force of blood pushing against the artery wall contraction and it helps relax the heart. There are two numbers recorded for blood pressure. A normal blood pressure is less than 120, stage 1 high blood pressure is systolic is 130 to 139 diastolic between 80, stage 2 high blood pressure is when systolic is 140 higher or diastolic is 90 or higher.

Table 1 C[redacted] C[redacted] N[redacted] D[redacted]

Is a Career in Health Sciences for Me?

Would you be interested in a career in Health Sciences? Below are knowledge and skill statements related to the careers in this cluster. Read each statement. Decide if this describes you by checking the Yes, No or Maybe box.

THINGS I LIKE TO DO	YES	NO	MAYBE
Work under pressure		X	
Help sick people and animals		X	
Make decisions based on logic and information	X		
Participate in health and science classes			X
Respond quickly and calmly in emergencies			X
Work as a member of a team	X		
Follow guidelines precisely	X		
Meet strict standards of accuracy			X
PERSONAL QUALITIES THAT DESCRIBE ME	**YES**	**NO**	**MAYBE**
Compassionate and caring	X		
Good at following directions	X		
Conscientious and careful	X		
Patient			X
Good listener	X		
SCHOOL SUBJECTS THAT INTEREST ME	**YES**	**NO**	**MAYBE**
Life sciences			X
Chemistry			X
Math		X	
Health class	X		
Language arts	X		

Did you check YES most often? If so, continue to explore careers and opportunities in this cluster. And don't forget to focus on your math and science classes to build the academic skills you need for these careers.

Did you check NO most often? If so, don't worry. There are hundreds of jobs to explore in the other 15 career clusters.

Did you check MAYBE most often? If so, continue to explore in this cluster as well as investigating how your skills and interests may be a good match in other clusters.

Is a Career in Health Sciences for Me?

Would you be interested in a career in Health Sciences? Below are knowledge and skill statements related to the careers in this cluster. Read each statement. Decide if this describes you by checking the Yes, No or Maybe box.

THINGS I LIKE TO DO	YES	NO	MAYBE
Work under pressure	■		
Help sick people and animals	■		
Make decisions based on logic and information	■		
Participate in health and science classes			■
Respond quickly and calmly in emergencies			■
Work as a member of a team	■		
Follow guidelines precisely			■
Meet strict standards of accuracy			■
PERSONAL QUALITIES THAT DESCRIBE ME	**YES**	**NO**	**MAYBE**
Compassionate and caring	■		
Good at following directions	■		
Conscientious and careful	■		
Patient	■		
Good listener	■		
SCHOOL SUBJECTS THAT INTEREST ME	**YES**	**NO**	**MAYBE**
Life sciences	■		
Chemistry			■
Math			■
Health class	■		
Language arts	■		

Did you check YES most often? If so, continue to explore careers and opportunities in this cluster. And don't forget to focus on your math and science classes to build the academic skills you need for these careers.

Did you check NO most often? If so, don't worry. There are hundreds of jobs to explore in the other 15 career clusters.

Did you check MAYBE most often? If so, continue to explore in this cluster as well as investigating how your skills and interests may be a good match in other clusters.