Montana Department of
LABOR & INDUSTRY

JACOB & EMILY SKIP SCHOOL

A CAREER CLUSTERS ADVENTURE!

Montana Department of
LABOR & INDUSTRY
Career Resources

JACOB & EMILY SKIP SCHOOL

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For a set of twins, Jacob and Emily Cooper couldn't have been more different.

One look in their rooms would show you they were like night and day. In Jacob's room, the floor was vacuumed, the bed was made, and each of his more than one hundred books was shelved by subject and alphabetized.

In Emily's room you couldn't see the floor. You couldn't tell if she had a bed, or just a massive pile of clothes, magazines, games, and CDs. As for her books, they were scattered across her desk, shoved under the bed, piled in a chair, and one was stuck to the ceiling (only Emily knows how it got there).

Unlike her brother, Emily preferred movies to books, and preferred movies with kung fu to those without it. Jacob liked any music with a cello or trio of cellos. Emily liked any music that rattled the windows. They often thought the only thing they had in common was their birthday, which just so happens to be today.

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The twins' father was cooking their traditional birthday omelets with extra cheese and bacon, when an exasperated Jacob came downstairs and reported, "Dad, Emily won't get out of bed. She says she doesn't have to go to school because it's our birthday. She's going to miss the bus."

"Tell her if she doesn't go to school, she'll have to look for a job instead," said his father with a knowing grin. Jacob headed back upstairs to deliver the message. He returned in less than a minute.

"She says that's fine," said Jacob, "She's calling your bluff."

"I wasn't bluffing, Son. I called your school and told them you wouldn't be coming in today."

"Why did you do that?" Jacob asked, not nearly excited enough for a boy who has just been told he doesn't have to go to school,

"Now Emily's going to think she gets her birthday off every year."

"Oh, you 're not getting the day off," said his father with a wider version of that same grin, "Like I said, we're going to look for jobs."

Jacob, still wondering what his father had planned for them, tried to wake his sister once again. "Go away," Emily said grumpily, "I'm too tired to go to school."

"Dad's being weird," said Jacob, "He says we don't have to go to school today."

"Yeah right," said Emily skeptically, but the look on Jacob's face told her he was serious. "You mean it?" she asked. When Jacob nodded, Emily threw off her covers, leapt out of bed, and did a victory dance.

"Too tired, huh?" said Jacob.

"Yes," said Emily, "but not too tired to watch TV, listen to music, eat junk food, and all the other stuff you get to do when you don't have to go to school."

"Sorry," said Jacob, "but I think Dad has something else in mind for us. He says we're going to look for jobs. I think he's trying to be educational again."

"Oh," said Emily, clearly disappointed, "Well, whatever we're going to do, it beats going to school."

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Once the twins were downstairs, their father explained what was going on. "Emily, you've asked to stay home from school every day for the past three weeks."

"I guess persistence pays off," she said.

"Clearly," he continued, "something is wrong."

"Yeah," interrupted Emily, "math and history just aren't as interesting as TV. Even when it's turned off."

"Yes they are," Jacob protested.

"They can be, Emily," her father continued, "if you understand why learning those things is important."

"Because it will prepare me to get a good job later in life, and blah blah blah blah blah," she said dully.

"You know the words," said her father, "but I don't think you understand the idea. That's why we're going on an adventure today. We're going to explore the world of careers."

"Hel-lo, I'm in the fifth grade," Emily argued, "Don't you think it's a little early to decide what to do with the rest of my life?"

"You don't have to make any decisions yet," said her father, "but it's never too early to find out what kinds of jobs there are. That way, you'll be prepared when it's time to make those decisions.

"Why do I have to go, Dad?" asked Jacob, "I actually like school."

"That's great," said his father, "but you won't be a student forever. In high school, not everybody takes the same classes. You'll have some important decisions to make about the kinds of classes you're going to sign up for. If you have a good idea about what type of job you want to pursue, you'll be able to make better choices and take the best classes to help you reach your goals."

"Wait," interrupted Emily, "if we're getting jobs, why can't we just quit school and go to work instead?"

"I didn't say you'll be getting jobs today. I said we will be looking for jobs," her father corrected, "Besides, you wouldn't want the kind of jobs that only require a fifth grade education."

"When do we start?" asked Jacob.

"As soon as Emily showers, gets dressed, brushes her hair, and eats breakfast," replied her father. "You've got three minutes."

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Emily skipped the shower, left her hair messy, threw on yesterday's jeans, and put on her black T-shirt advertising the rock band Wrënch (which she wasn't allowed to wear to school). Down-

Cluster 1: Agriculture, Food, and Natural Resources

When people think of agriculture, the job that usually comes to mind is farmer. But farming is only one of many jobs included in the Agriculture, Food, and Natural Resources Career Cluster. In this group, you'll find hands-on occupations like loggers and miners. You'll also find scientific types, such as food, animal, and conservation scientists. More business-minded people might find jobs as livestock buyers and sellers, or Agri-Marketing Specialists. This cluster takes all kinds of people. In fact, there are seven different career specialties (called "pathways") to choose from.

Foods Products and Processing Systems

• Food Scientist • Bacteriologist • Food and Drug Inspector • Toxicologist • Biochemist • Food and Fiber Engineer • Produce Buyer • Meat Processor

Plant Systems

• Plant Breeder and Geneticist • Soil and Water Specialist • Certified Crop Advisor • Greenhouse Manager • Forest Geneticist • Tree Surgeon • Botanist

Agribusiness Systems

• Agricultural Loan Officer • Agricultural Commodity Broker • Farm/Ranch Manager • Agricultural Economist • Livestock Buyer/Seller • Agri-Marketing Specialist • Feed/Farm Supply Store Manager • Agricultural Salesperson

PATHWAYS

Environmental Service Systems

• Pollution Prevention & Control Manager • Environmental Sampling Technician • Health and Safety Sanitarian • Hazardous Materials Handler • Water Environment Manager • Water Quality Manager • Solid Waste Recycler • Toxicologist

Animal Systems

• Animal Geneticist • Animal Nutritionist • Embryo Technologist • Animal Scientist • Poultry Manager • Feed Sales Representation • Veterinarian

Natural Resource Systems

• Forest Manager • Fish and Game Officer • Logger • Natural History Interpreter • Park Manager • Water Monitoring Technician • Wildlife Manager

Power, Structural, & Technical Systems

• Global Positioning System Technician • Electronics Systems Technician • Equipment Parts Manager • Agricultural Engineer • Recycling Technician • Machinist • Welder

VALERIE THE VETERINARIAN

Average Wage (Montana): $54,590 annual

Knowledge: biology, medicine and dentistry, customer and personal service, mathematics, chemistry

Hours and Travel:

- **Often work 50 or more hours per week**
- **May be on-call for emergencies**
- **May travel between office and farms/ranches**

Preparation - To work as a veterinarian, you must:

- **Have a high school diploma or GED**
- **Complete 2 years pre-veterinary study**
- **Graduate from veterinary medicine school**
- **Pass a state licensing exam**

stairs, Jacob and Dad were trying to coax their dog, Clarence, out from under the sofa.

"Let me guess," said Emily, "the dog has to plan his career too."

"We have to take Clarence to the vet," said Jacob, adding testily, "You could help us get the leash on him."

"And betray his trust? No way. The vet will stick him full of needles. He'd never forgive me if I help you catch him."

"Clarence needs his shots, Emily. They don't give them just to be mean," her father explained.

"Wait a minute," Emily said suspiciously, "I thought we were 'exploring careers' today. What does taking Clarence to the vet have to do with careers? This sounds like some kind of trick to get us to run your errands for you."

"Veterinary science is a career," sneered Jacob.

"Oh yeah, holding down helpless animals and poking them with five-inch needles sounds like a great job."

"You can come with us, or you can go back to school," her father said, adding, "after you change your shirt."

"Fine," pouted Emily, "but I won't watch them stick Clarence."

On the way to the vet's office, the twins' father explained that they would be visiting sixteen workers in different occupations.

"Why sixteen, Dad?" Jacob asked.

"One for each career cluster," his father answered.

"What the heck's a career cluster?" asked Emily.

"Career clusters are groups of jobs that have something in common," their father explained, "The first cluster is Agriculture, Food, & Natural Resources. What kind of jobs do you think you'd find in that cluster?"

"Farmers," shouted Jacob excitedly, "That's agriculture."

"Good, Jacob," said his father. "How about you, Emily? Can you think of another?"

"I'm not in school, so I'm not taking any quizzes," Emily snorted.

"Butchers," continued Jacob, "fishermen, guys who fix tractors..."

"Don't forget veterinarians," his father added.

"Wait a minute," Emily protested, "what do vets have to do with food and farming? They don't raise dogs to eat."

"That's something you'll have to ask Valerie when we get to her office," said their father, smiling.

GARY THE GROUNDSKEEPER

Average Wage (Montana): $23,150 annual

Knowledge: mechanical, customer and personal service, safety and security

Hours and Travel:

- **May work part-time or full-time**
- **May work less or be laid off during winter**
- **May travel from site to site**

Preparation - To work as a groundskeeper, you must:

- **Complete on-the-job training**
- **Have a driver's license if you need to drive a truck**
- **Be in good physical condition**

Clarence was shaking when they entered the vet's office.

"Oh, look at him," said Emily, "he's scared to death. He knows what's coming."

"He certainly does," said her father, setting the dog on the floor, "He's shaking with excitement." Emily was about to protest when her father unfastened Clarence's leash and the dog bolted, tail wagging furiously, straight into the arms of his veterinarian.

"That's my good little Clarence. Oh yes, that's a good dog," the Veterinarian crooned, scratching the dog's head and accepting a barrage of licks.

"You were saying?" Jacob teased.

"She's still going to stick him," mumbled Emily.

The twins' father made the introductions. "Emily, Jacob--I'd like you to meet Clarence's friend, Valerie Grant."

"Hello Emily. Hello Jacob," she said. "I hear you're interested in learning more about my job."

"Yes, Ma'am," responded Jacob.

"Learning, yes. Watching you shove needles into our beloved pet, no," said Emily.

"Don't like needles, huh?" Valerie said, "Tell you what, I'll warn you before the shot so you can step outside, deal?"

"Deal," agreed Emily.

Setting Clarence on the examination table, Valerie said, "I'm going start the exam, and while I work, I'll tell you a bit about my job. If you have any questions, feel free to interrupt." And with that, she began.

"Whether the animal is sick or not, I always begin by asking the owner some questions. Since Clarence is just here for his yearly shots, I'll ask general questions. For example, how is Clarence doing? Has he been behaving normally, or have you noticed any changes in his mood?"

"No," said Emily, "He's just the same old Clarence as always."

"Good," said the vet. "I'll just check out his eyes, ears, and teeth. Then I'll weigh him and give him his shots."

"Is this what you do every day?" Jacob asked.

"I do check-ups and give shots regularly, yes, but no two days are exactly the same. Sometimes I'll do scheduled surgeries, like neutering or declawing. Other days I'll treat injured animals or perform emergency surgeries. You never know when an animal might need help. That's why I'm always on call, even on weekends and in the middle of the night."

Cluster 2: Architecture and Construction

Thus cluster includes anyone involved with creating and maintaining buildings and other structures. This cluster's three pathways can be thought of as coming before, during, and after the construction project. In the "Design/Pre-construction" pathway, you have the people who plan for the building, like the architects who design it, and the surveyors who map out the location. The "Construction" pathway includes the people who build the structure, along with those who inspect and oversee the project. The "Maintenance/Operations" pathway includes the workers who keep structures in working order after they have been built.

Design/Pre-Construction

• Architect • Computer Information System Manager/ Designer • Computer-Aided Drafter • Landscape Designer • Mechanical Engineer • Preservationist • Surveyor • Urban Planner • Designer

PATH-WAYS

Construction

• Carpenter • Education and Training Director • Electrician • General Contractor • Iron/Metalworker • Pipe Fitter • Project Manager • Project Inspector • Safety Director

Maintenance/ Operations

• Boilermaker • Demolition Engineer • Environmental Engineer • Equipment Operator • Highway Worker • Maintenance Planner/Scheduler • Millwright • Specialty Contractor • Thermal Control Technician

"What does this have to do with food and farming?" Emily asked.

"Excuse me?" Valerie asked, confused.

Emily's father explained, "I told her veterinarians belong in the Agriculture Career Cluster."

"Career clusters, huh?" Valerie said. "Well, there's a good reason we're grouped with agriculture, Emily. About half my business comes from farmers and ranchers with sick livestock. I spend a lot of time travelling to farms and caring for large animals like cows and horses."

"You have to know a lot about animals don't you?" asked Jacob.

"I'll say," laughed Valerie, "We vets like to think that we have it harder than physicians. They only learn one species; while we learn them all. And each animal is different, from the drugs they can take, to their anatomy, physiology, and surgical procedures."

"People think you just need to love animals to become a vet," continued Valerie, "but they don't know how much work it is. Not only do you need a lot of education, but you need good communication skills when you talk to owners. Animals can't tell you what hurts, so you have to ask the right questions of their owners and listen carefully to their answers. Sometimes you even have to convince them to get their pets the treatment they need, despite the cost."

"I wouldn't care what it costs," said Emily, "If you love your pet, you have to do what's good for them."

"Including taking them in for their shots," said her father.

"Speaking of which," said the vet, "Emily, you might want to step outside for a moment."

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Emily scowled as they left the vet's office. "I can't believe the nerve of that vet. You're not fat, are you Clarence?"

"She just said he was overweight for a dog his size and he needs more exercise," said Jacob. "We need to walk him more often."

"That's a fine idea," their father spoke up before Emily could argue. "There's a great park just around the block."

"Aren't we supposed to be exploring occupations?" Emily said. "This was your idea, you know."

"Yeah Dad, if we're going to talk to fifteen more people about their jobs, we don't have time for a trip to the park," said Jacob.

"Didn't you know?" said Dad, "occupations are everywhere."

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When they got to the park, Emily protested, "This is the dumbest thing I've ever heard of. Looking for jobs in the park. You don't go to the park to work, you come here to have fun and relax." Just then, a peal of laughter erupted from a nearby shrub.

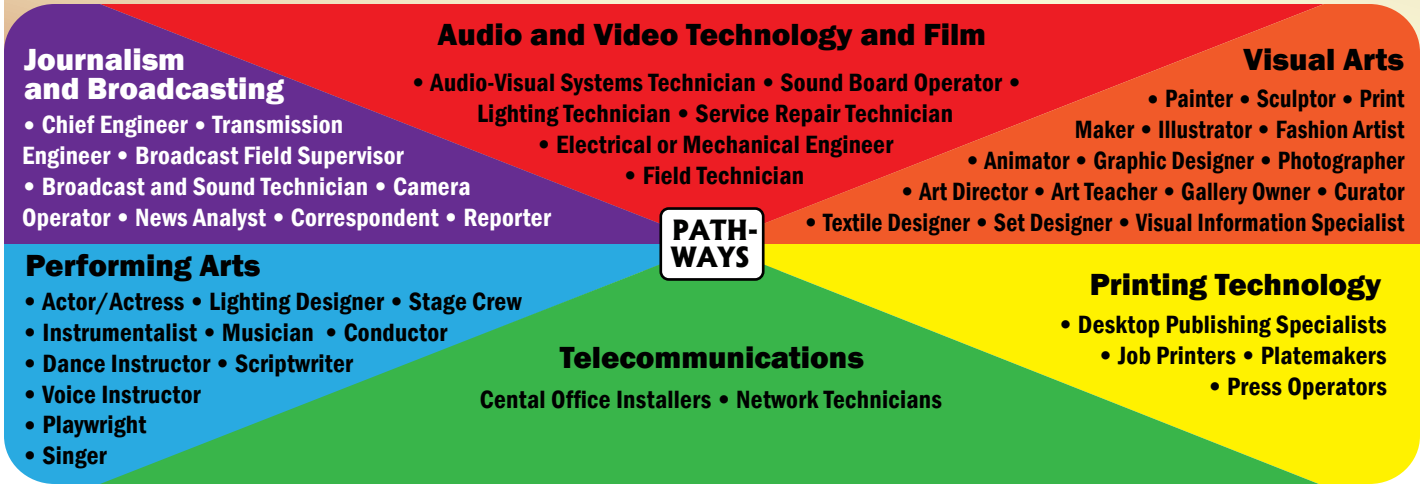
"So you think the park is all fun and games?" said the shrub.

"Dad, did that bush just talk to us?" asked Jacob nervously.

"No, I did," said a tall, muscular man popping out from behind the shrub with an intimidating pair of hedge clippers.

Cluster 3: Arts, Audio-Visual Technology, and Communication

This exciting career cluster has room for both the creative and the more technically-oriented people. Pathways like "Visual Arts" and "Performing Arts" include a lot of creative occupations, such as musicians, painters, scriptwriters, and photographers. The "Telecommunications" and "Audio-Visual Technology" pathways are great for those with a talent for math and science, and an interest in computers and other communication technology. Many occupations in this field bring the creative and the technical together by using the latest technology in creative and artistic ways.



"Hello Gary," said the twins' father.

"Hi Jack," Gary replied, "It seems your kids have a thing or two to learn about what goes on behind the scenes at the city park."

"Behind the scenes?" said Emily, "Isn't a park just grass and trees?"

"What!" Gary acted shocked. "You think grass mows and waters itself? You think that bed of flowers just happened to spring up in that artistic configuration?"

"Well, no," admitted Emily.

"Don't worry," Gary said, giving her a wink, "not many people think about us groundskeepers much. Let me educate you on what a groundskeeper does."

"The next time you stroll through a green park," Gary began, "think about who makes it look so pretty! Without our hard work, the grass would be brown, the flowers wilted, and the hedges wild and overgrown. I'm proud to be the chief groundskeeper for the biggest park in the city. I create green spaces for the whole community to enjoy. My crew and I plant flowerbeds, mow and water the lawns, pull weeds, put down fertilizer, and rake leaves. We also remove litter, maintain the pond, and repair the sidewalks and benches. As you can see, it's a pretty big job."

"Yeah," said Jacob, "but you get to spend all day at the park."

Gary nodded, "Yeah, I enjoy working outside, but in August when it gets to be ninety-five degrees or more, I sure feel wrung out by the end of the day! Also, groundskeeping jobs in Montana do tend to be seasonal. "

"So what do you do in the winter?" asked Emily.

"Groundskeepers do all sorts of other things in the winter. I have a small leather-working business. I make harnesses, holsters, belts, and that kind of thing. But come spring, I'm right back here at the park."

"Did you see that?" asked Emily, "Some guy just tossed a soda can into the duck pond."

"It happens more than you'd think. That's another reason my job's important. I have to clean up after inconsiderate people. Sometimes I get annoyed at folks who litter in the park. That's just rude as far as I'm concerned. But I do feel proud when I see the roses in full bloom and hear folks 'ooh' and 'aah' over my flowers. Then I know my hard work is appreciated."

"How do people become groundskeepers?" asked Jacob.

NICK THE NEWSREPORTER

Average Wage (Montana): $28,110 annual

Knowledge: English language, communications and media, computers and electronics, telecommunications, administration and management

Hours and Travel:

- **Sometimes have to change work hours to meet deadlines or follow late-breaking news stories**
- **May travel to gather information and report news**

Preparation - To work as a newsreporter, you must:

- **Have a Bachelor's Degree (4 years of college)**
- **Be aware of current events**
- **Be persistent, self-motivated, and poised**

"Most employees get on-the-job training. Groundskeepers can work many different places besides parks, like golf courses, cemeteries, and athletic fields. Some groundskeepers even learn how to landscape and start their own contracting business. As for myself, I'm happy just to keep our city park clean and green."

Before they left the park, Gary told the twins to stop by if they ever needed a summer job. Jacob was thrilled.

"You can send me back to school now," he said as they walked away, "I already know what I want to be when I grow up."

"I'm glad you're so enthusiastic," his father said, "but there are hundreds of other jobs that you haven't even discovered yet."

"Ones where you don't pick up other people's garbage," added Emily.

"I'll pick up litter if it means I get to work outside all day. I bet they'd let me wear headphones while I mowed the grass," said Jacob.

"You don't like to mow the grass at home," scoffed Emily.

"We don't have a riding lawnmower," retorted Jacob.

"Emily," said her father sternly, "Jacob has found something he's interested in. Why do you want to spoil it for him?"

"Okay," admitted Emily, "It does beat working in some stuffy office building. But it's like you said, Dad; there are a million other jobs out there, and Jacob picked the second one he learned about. I'll bet he likes the next one just as much."

"I think you'll both like the next career cluster. It has jobs in television, movies, newspapers, and books. It's the Arts, Audio-Visual Technology, and Communcations Cluster."

"Please tell me we're meeting with Johnny Depp," said Emily.

"Close," said her father, pointing them toward a building marked The Daily Gazette. "My friend Nick works here. He's a newspaper reporter."

"A reporter is nowhere close to Johnny Depp," scoffed Emily.

"You're right," said a voice from behind them, "I'm much better looking." The three turned to see a smiling young man with a notebook and tape recorder.

"Hey Nick," said the twins' father, "just getting back from investigating an exciting story?"

"Not really," said Nick, "Unless a high-speed car chase and police shootout is exciting."

OLIVIA THE OFFICE CLERK

Average Wage (Montana): $22,710 annual

Knowledge: customer and personal service, clerical, mathematics, economics and accounting, computers and electronics

Hours and Travel:

- **Usually work a set schedule, but may work overtime during busy periods**
- **May work on a temporary basis**
- **Rarely travel**

Preparation - To work as an office clerk, you must:

- **Have a high school diploma or GED**
- **Have basic computer and office skills**

"Wow," said Emily, "a real car chase?"

"No," admitted Nick, "Actually, it was a town meeting about the new water main on 12th Street."

"Oh," said Emily, not hiding her disappointment.

"But I did cover a car chase in August," said Nick, "Not every day is a big news day, but that's probably a good thing. Big news tends to be bad news, even if it is exciting to report on."

"Nick," said the twins' father, "Jacob and Emily are learning about careers today. What can you tell them about news reporting? What do you do on a typical day?"

"As a reporter, there's no such thing as a typical day. I work a standard 9 to 6 shift, but that can change if I've got evening meetings to attend. I'll come in and if I've got time in the office, I'll call sources and get information from them. But just as likely I'll take a trip up the river to interview someone for a story about kayaking."

"So, you just have to know how to write?" asked Emily.

"Well, that's the most important skill, but there are others. Because I work on several stories at a time, organization skills are important. You have to prioritize your responsibilities without getting stuck on any one thing. You also need good people skills to be a reporter. When you're interviewing someone, you have to make them feel comfortable talking to you, and know how to ask the right questions."

"Okay, so there's writing, talking, and organizing," said Emily, "That's it, right?"

"Basically, but it's not as easy as it sounds. Knowing how to write isn't the same as writing well. To write well, you've got to spend a lot of time writing on your own. The only way to get better is to do it. Write every day, even just for fun. And read a lot too. I think the best training I've had is just reading as much as possible: newspapers, magazines, books, blogs, everything. In any media job, you need to be up on all the current issues."

"So you have to do homework," Emily said, disappointed.

"That's one way to look at it," laughed Nick, "but I've always enjoyed reading and writing, so I don't mind. The best part about my job is telling people's stories. I like the idea that I represent people and present voices that wouldn't otherwise be heard. That's very rewarding to me."

★ ★ ★ ★ ★

"You know, Dad," said Emily as they walked Clarence back home, "on TV, reporters never go to town meetings. They're always hot on the trail of some killer or government cover-up."

"Well, television tries to make everything look more exciting than it really is," replied her father.

Cluster 4: Business, Management, and Administration

Are you a natural leader? Are you good at organizing people and resources? Maybe you'd like to start a business and be your own boss? The Business, Management, and Administration cluster might have the career you're looking for. Jobs in this cluster are all about making sure a business runs efficiently and profitably. Many occupations in this cluster involve working with people, such as public relations managers, human resources managers, and customer service assistants. Not a people person? There are also jobs for those who prefer to work with information or money and resources.

"Still," she continued, "it might not be so bad to go all around the city and talk to people for a living. I could do that."

"You'll need to work on your spelling if you want to be a professional writer," Jacob teased. Emily glared.

"I AM working on my spelling!" she snapped.

"Jacob," his father said, "she is working on her spelling. Just because it comes easier to you doesn't give you the right to make Emily feel bad. Need I remind you of all the things you still need to work on?"

"No, Dad," Jacob said quietly.

"If I DO decide to be a writer, I WILL work on my spelling until my brain hemmorhages," said Emily. But I'M keeping an open mind and haven't decided where to put my energy. Jacob puts all his energy into books and homework. That's the only reason he gets better grades. I put my energy into developing my social skills, which is why I have so many more friends than he does."

"You can keep those friends..." began Jacob.

"The both of you can keep quiet until we get to our next stop," growled their father.

Jacob and Emily threw each other dirty looks all the way home and did not speak until their Dad finally said, "Here we are." The twins looked to their right and saw an old building overgrown with creeping vines. The building stood back further from the other buildings, and had a well-kept lawn with a huge marble fountain and stone benches. I wish I could just hang out here while they went in and talked about jobs, Emily thought silently.

I'll bet this place has a great groundskeeper, thought Jacob as they crossed the narrow cobblestone walkway to a building marked New Life Charitable Foundation.

Olivia looked up from the file cabinet to see the twins' father. Her face lit up with recognition, and she waved cheerfully.

"How are you doing today Mr. Cooper?" she asked.

"Just great, Olivia," he said. "How's the new job working out?"

"Really well, I'm glad I took that skills assessment. This job is a perfect fit for me."

"The reason I'm here," explained the twins' father, "is to teach my kids about the different ways people make a living. I was hoping you could tell them a thing or two about your job."

★ ★ ★ ★ ★

SARAH THE SPECIAL EDUCATION TEACHER

Average Wage (Montana): $39, annual

Knowledge: education and training, psychology, mathematics, customer and personal service, computers and electronics, therapy and counseling

Hours and Travel:
- **Usually work more than 40 hours a week**
- **May get summers off**

Preparation - To work as a special ed teacher, you must:
- **Have a Bachelor's degree (4 years of college)**
- **Complete an approved teacher training program**
- **Complete additional training in special education**
- **Complete student teaching and pass state exam**

"No problem, Mr. Cooper," she said, "I work as an office clerk here at New Life. My job is to assist the staff in any way I can. For example, today I've been helping out with filing and answering telephones, mostly. On other days, I spend a lot of time making photocopies, sending outgoing faxes, and delivering incoming faxes to the right people. Each month we send out a lot of mail, and I help stuff the envelopes and deliver them to the mailroom. My work activities tend to change every day, depending on what needs to be done in the office."

"Well, I hope the other staff members appreciate all you do for them," the twins' father said.

"Oh, they do. Last week, my supervisor said she didn't know how they got along without me! When the secretaries and other staff don't have time to do something, I'm their go-to girl. I really like knowing that my work helps our association run more smoothly. The only frustrating part of my job is dealing with our copier machine! Every time I have to make a lot of copies, the machine seems to jam!"

"How did you get this job?" asked Jacob.

"I took some business courses in high school and was hired for this job when I graduated. Right now, I work full-time during the day and go to college at night so I can qualify for a better-paying job. Working as a clerk is a good entry-level job for anyone interested in gaining work experience."

On their way out of the New Life Building, Emily's father noticed she was scowling.

"Don't smile," he said, "your face might crack."

"Dad," Emily said sternly, "you're sending us mixed messages."

"What do you mean?" he asked.

"You always tell us that school is so important, but then you show us that you can get jobs where you don't need any math, or history, or science, or even writing. All Olivia needs to know is how to use a copy machine and stuff envelopes. I could do that job right now."

"But she also said she was trying to qualify for a better paying job," Emily's father reminded her. "She's gaining valuable work experience, but she doesn't want to be an office clerk forever."

"Yeah," Jacob added, "and you'd get sick of making copies in a week."

"I'm sick of you already," spat Emily.

"You'll be really sick of me when I graduate from college and you're cleaning toilets," Jacob taunted.

Cluster 5: Education and Training

Every student is familiar with this career cluster. Your teachers belong to it. So does your principal, your coach, and your school psychologist. But the Education and Training Career Cluster includes more than just the people who work at your school. There are also superintendents who run entire school districts, instructional media designers who create the textbooks, educational videos, and computer software that you use at school, and even specialized trainers who conduct seminars for private businesses. If you're good at explaining ideas and showing people how to do things, this might be the cluster for you.

Administration and Administrative Support

• Superintendent • Principal • Director of Training • Dean • Supervisor • Instructional Coordinator • College President • Test Measurement Specialist • Curriculum Developer • Education Researcher • Instructional Media Designer

PATH-WAYS

Professional Support Services

• Psychologists • Social Worker • Counselor • Parent Educator • Audiologist • Speech-Language Pathologist

Teaching and Training

• Preschool or Kindergarten Teacher • Elementary Teacher • Special Education Teacher • College Professor • Human Resource Trainer • Management Development Trainer • Child Life Specialist • Child Care Director • Coach

"Just because you go to college doesn't mean you'll get a better job," argued Emily.

"Actually," their father said, "it usually does. Jobs that require more education tend to pay better. Otherwise, who would spend the money to go to college?"

"But that's not fair," pouted Emily, "That means only smart people can get good jobs."

"Emily, you are smart," said her father.

"He doesn't think so," she said, glaring at Jacob.

Then Jacob surprised her by saying, "You are smart, Emily. You can argue better than anyone I know. You could be a lawyer."

Emily continued to scowl, being very careful not to show Jacob how happy she was to hear him say that. She walked in silence for several blocks before she recognized the neighborhood.

"Wait a minute," she said, stopping in her tracks, "I know where you're taking us. We're going back to school, aren't we."

"Calm down," said her father, "You don't have to go to class. This is just another stop on our job search. There's a teacher with a special job that I want you to hear about."

"If you think I'm ever going to be a teacher," Emily said as they passed through the front door of her school, "you're crazy."

★ ★ ★ ★ ★

As the twins passed their classroom, Jacob waved at their teacher, Mr. Lopez. Emily waited until his back was turned and stuck out her tongue. At the end of the hall, their father knocked on a door that Emily had never noticed before.

"That's the special education classroom," said Jacob.

"I know that," snapped Emily.

The door was opened by a teacher whom Emily had seen in the halls, but had never met. The woman gave them a warm smile.

"Just in time," she said, "I was about to take my morning break. If you'll join me, I can tell you all about my job." The twins followed her to the teachers' lounge, a room that they had heard rumors of, but had never seen with their own eyes."

"I'm Sarah Vonnegut," she said, "And I don't believe we've met before, but I work in your school as a special education teacher. I help the students with learning disabilities."

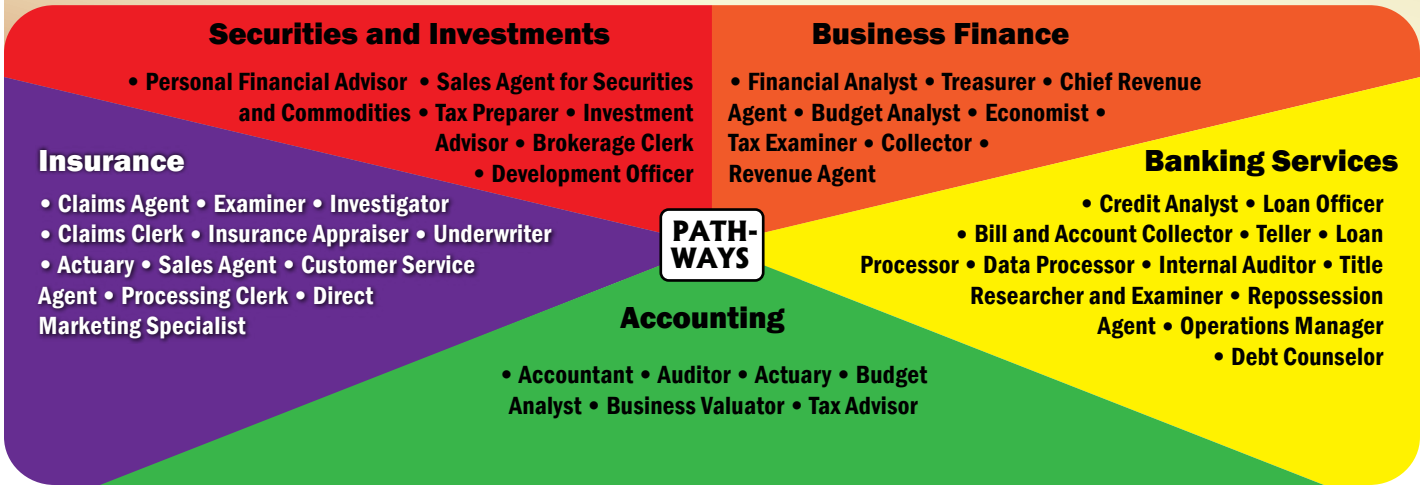
"Do you know my friend Walt?" asked Jacob.

"Walt is in Mr. Lopez's class with us, genius," mocked Emily.

"I do know Walt, Jacob," said Sarah. "You see Emily, at this school, students with disabilities attend classes along with everyone else, but they also spend time with me in our learning resource center. I develop an educational plan for each student, with personal goals, and I meet with their primary teachers on a regular basis. Keeping parents informed of their child's progress is another important part of my job."

Cluster 6: Finance

If you enjoy working with money, making calculations, and strategic planning, look into the Finance cluster for a possible career. Some employees in this cluster work closely with people by helping them get home loans, or choosing investments and planning for retirement. Many people in finance are "number crunchers," helping businesses keep track of their money and resources, and using creative problem-solving to figure out the best ways to use those resources. All occupations in this cluster use math extensively and call for strict attention to detail.



"Wait a minute," said Emily, "How could Walt have a learning disability? He always seemed pretty smart to me."

"He is smart," Jacob shot back, "He knows more about ancient Egypt than anyone at school, including the teachers. He just has a little trouble reading. But he doesn't go around advertising it"

"That's right," Sarah said, "Sometimes students get embarrassed or feel discouraged and frustrated over their disability. My challenge is to keep them motivated. I'm very devoted to my students and I love to see them succeed. And Walt is one of my success stories."

"Your job sounds really hard," said Emily, "I mean, how do you teach someone who has trouble learning?"

"Well, you go to college and study how kids learn. They teach you about different types of learning disabilities and how to recognize them. But every child is different, so most of all, you need to get to know each student personally. Then you figure out how they learn best, and develop learning strategies to fit their needs."

"How did you get interested in this career," Jacob asked.

"I became a special education teacher because of my sister. When she was a child, she had so much trouble reading. Later, however, she was diagnosed as dyslexic and received special help to overcome her disability. Her struggle inspired me to major in special education in college and, later, to get my master's degree. I can't imagine doing any other type of work!"

★ ★ ★ ★ ★

Leaving the school building, Emily breathed a sigh of relief, and Jacob one of regret. Mr. Lopez was starting a unit on dividing fractions that he didn't want to miss.

"What cluster are we on now, Dad?" he asked.

"Finance," answered his father, "which is everything to do with money, banking, economics, and insurance."

"Finally," said Emily, "something I'm interested in: money. I don't care what I end up doing. I just want to have a lot of money."

"What you'll be doing is a lot of math if you go into finance," said Jacob.

"As long as I get to count my money, I don't care," said Emily.

When the twins' reached the business district, their father waved to a young woman just returning from lunch. She flashed a smile as she waved back, and suddenly Jacob's heart fluttered and he decided he wanted to go into finance too. He stood slack-jawed and gaga-eyed as his father introduced them.

ANIKA THE ACTUARY

Average Wage (U.S.): $84,810 annual

Knowledge: mathematics, economics and accounting, computers and electronics, administration and management, law and government

Hours and Travel:

- **Often work at least 40 hours per week**
- **May travel to meet with clients**

Preparation - To work as an actuary, you must:

- **Have a Bachelor's Degree (4 years college)**
- **Pass several professional actuarial exams**
- **Major in actuarial science, math, statistics, economics, finance, accounting, or related area**

"Kids, this is my friend Anika. She works for the Security Collision and Medical Insurance Company."

"How much money do you make?" Emily asked eagerly.

"Emily!" Jacob cried, appalled. "You don't just ask somebody how much money they make!"

"Why not?" Emily asked.

"Manners," her father replied.

"It's alright," Anika said, "You're learning about jobs, right? Well, wages are one of the most important things to ask about when you're choosing a career."

"See?" Emily glared at her brother. "So how much?"

"Let's just say I'm not rich by any means, but I do pretty well," answered Anika.

"Oh," said Emily, "well, how do I get a job that will make me rich?"

Anika laughed, "Tell you what, when I'm company president I'll call you and let you know how I did it."

Embarrassed by his sister, Jacob turned the conversation away from Anika's salary. "What's your job title?" he asked.

"I'm an actuary," said Anika, "That's a mathematician who calculates probabilities for an insurance company."

"Probabilities for what?" Jacob asked.

"Well, insurance companies have to estimate how much money they will pay out in claims for any given year. They have to make sure they charge enough for their premiums to cover the cost of those claims. That's where I come in. As an actuary, I compile data about life expectancy, death, and disability. Using statistical analysis, I then estimate the dollar value of potential claims by policyholders. I help the company determine how much to charge for fees while also remaining competitive with other insurance firms."

"Dad," asked Emily, "Was that in English?" Anika laughed.

"It does get complex," she admitted, "but to me, that's the fun part. In high school, I thought algebra was fun, but wondered when I'd ever use it in real life. Now I use it every day."

"That sounds exciting," said Emily sarcastically. Jacob kicked her. Anika continued.

"I also like researching trends in health care that impact our industry. The hardest part of my job is studying for my professional exams while I'm working full-time. It takes some people ten years to pass the entire series of exams!"

"Doesn't the homework ever end?" cried Emily.

"No, it really doesn't," Anika said, "Haven't you heard about 'life-

MILES THE MAIL CARRIER

Average Wage (Montana): $49,800 annual

Knowledge: customer and personal service, public safety and security

Hours and Travel:

- **May work early in the morning**
- **May work Saturdays or overtime**
- **Work established schedules and routes**

Preparation - To work as a mail carrier, you must:

- **Have a high school diploma or GED**
- **Be at least 18 years old**
- **Pass a written and physical exam**
- **Have a safe driving record**

time learning?' There's always more to learn, and things change so fast these days that even professionals need to take classes and pass tests."

Emily looked as if she was about to explode. Jacob quickly asked another question before his sister could rant.

"What classes do you need to take to be an actuary?"

"Well, actuaries have to be excellent mathematicians. In high school and college, they should take courses in calculus, statistics, linear algebra, and probability. Economics and computer science are also useful courses."

★ ★ ★ ★ ★

Emily looked as though she was about to breathe fire as they walked away from the insurance company building. Jacob could practically see steam shooting from her ears she was so furious.

"Emily..." her father began.

"Why didn't somebody tell me!" she yelled.

"Emily..." said Jacob.

"All my life people have said that I'd graduate from school someday. What a bunch of liars!" Emily ranted.

"Not all jobs are like Anika's," said her father, "Besides, if you find something you're interested in, you won't mind learning more about it. I have the feeling that Anika actually enjoys studying for her exams."

"She's warped!" declared Emily.

"You could always get a physical job," suggested Jacob.

"A what?" asked Emily.

"A job where you do most of the work with your body rather than your mind," her father explained.

"Would there be homework?" she asked.

"Not so much," said her father. "You have to keep learning in nearly all jobs, though. Whenever there are new rules or equipment, you have to learn about them to be able to do your job correctly."

"Are there physical jobs in the next cluster, Dad?" asked Jacob.

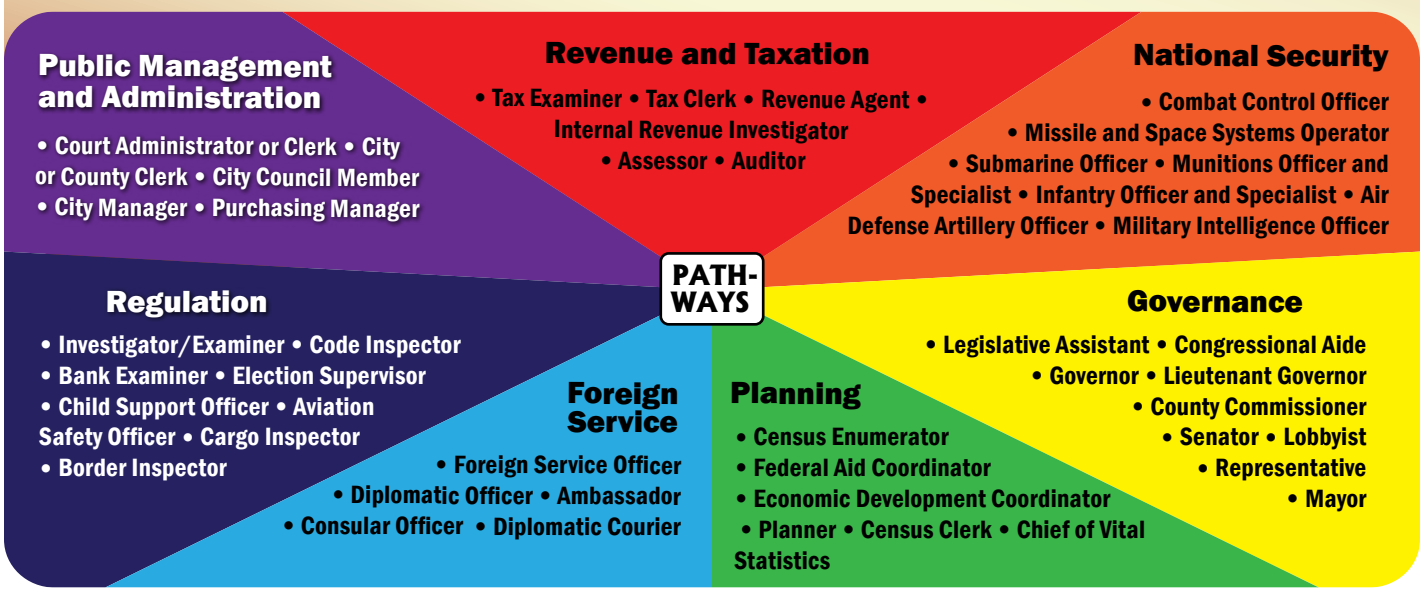
"Yes," his father said, "It's the Government cluster, and there are all kinds of different jobs in it. Just ask Miles here."

A nearby Mail Carrier looked up from sorting through letters. "Did I hear my name?" he asked.

"You sure did, Miles," the twins' father said with a broad smile, "How are you doing?"

Cluster 7: Government and Public Administration

This cluster is hugely diverse, including occupations as different as garbage collector and President of the United States. There are military occupations that involve combat, governance occupations that involve making laws, and even foreign service occupations that take people to other countries to live and work. To get some jobs in this cluster, you sign a contract at a recruitment office, for others you submit an application and have a job interview, and for still others you must run for office and win an election.



"You know me," Miles replied, "I can't complain. Not with the sunshine on my face and these new, cushioned cross-trainers on my feet."

"You work for the government?" Emily said, "I thought government agents did top secret missions and stuff."

"Maybe some do," laughed Miles. "I like to think that my job is just as important, though. I may not be a super-spy or anything that exciting, but since you're learning about jobs, let me tell you about mine."

"I'm a full-time letter carrier for the U.S. Postal Service," Miles began, "Maybe I don't chase down international criminals or anything, but my job is physically demanding. I endure long hours of uninterrupted standing and walking. I have to tolerate all kinds of weather, from subzero temperatures to pounding rain to blistering heat. And I do all this while carrying up to 35 pounds of mail on my shoulders."

"Don't you ever get to sit?" asked Jacob.

"Sure," said Miles, "Letter carriers spend around 3½ hours each morning in the office preparing mail for delivery on our routes. Most letter-size mail is placed in order of delivery by optical character-reading machines that scan addresses on the envelopes. The machines occasionally have trouble reading illegible addresses, so we postal workers organize the mail by hand, along with mail that won't fit through the machines. We also sort through mail that was previously sent to the wrong address and try to figure out where it should be delivered."

"I begin delivery from the post office. I load a 'push cart' with mail addressed to homes and businesses within my first delivery area, then walk out of the office to begin delivering mail. When I get to a relay box, I unlock it, retrieve the mail inside, and reload my cart. By the time I finish delivering that mail, I go to the next relay box and refill my cart again. I keep on repeating the process until I'm done with my route."

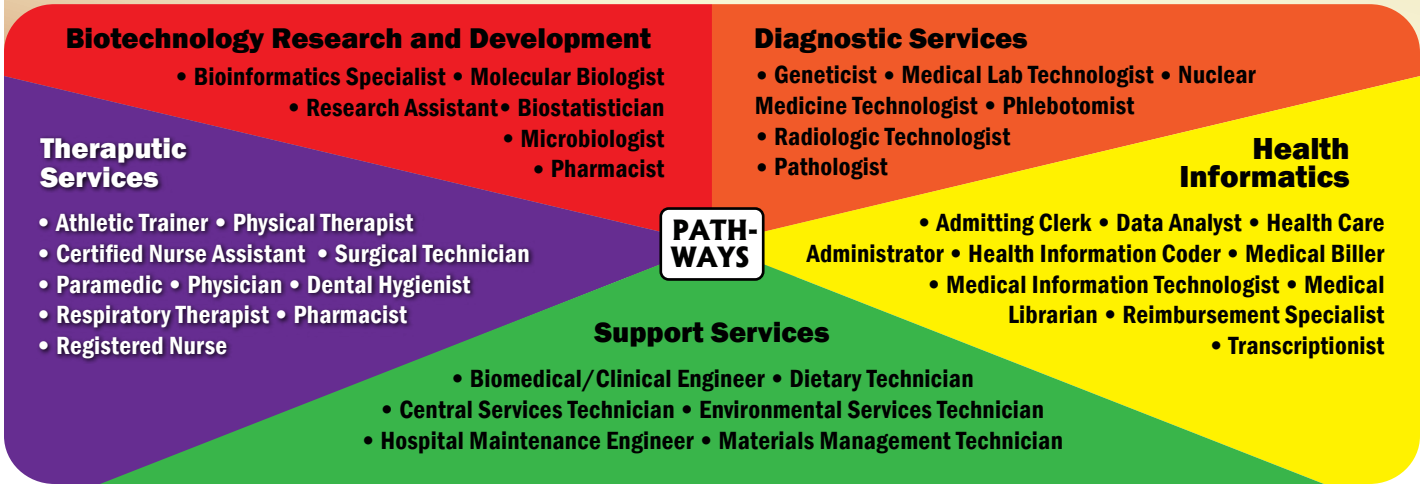
"Do you ever have to do homework?" asked Emily.

Miles chuckled, "No. That's one of the things I love about my job, I don't have to take it home with me. At the end of the day I can take off my shoes and relax."

"What about dogs?" asked Jacob.

Cluster 8: Health Science

Doctors, nurses, and dentists are the first occupations people think of in the Health Services Cluster, but this group is more diverse than you might think. It also includes other people who strive to keep you healthy, such as athletic trainers and nutritionists. There are people who handle the business part of health care, like hospital administrators and medical billing specialists. Then there are the people who organize and keep track of medical information, like medical librarians and information technologists. Many people in the Health Services cluster never see a patient, but all are essential to keeping us healthy.



"You mean do they chase and try to bite me? Only once, years ago. On a new route, you do want to be careful, but soon you get to know all the dogs in a neighborhood. They'll bark, but most of them are just saying hello. Every now and again you'll find a really protective, territorial dog, but I've learned a few tricks of the trade." Miles winked and pulled a handful of dog biscuits out of his pocket.

"All the dogs on my route love me. They see the walking treat dispenser and come running. The only problem with the dogs is that they make me jealous."

"Jealous of dogs?" asked Emily, "Why?"

"When the weather gets really nasty, they get to go inside the house," he said. "But I've got to deliver the mail no matter what. But hey, then there's gorgeous days like this, and it's all worth it."

When their father led the twins to a dentist's office, Emily gave him an accusing look. "Well, well," she said, "now we learn what you've really been up to today. An overly elaborate trick, don't you think?"

"I did not set up sixteen interviews just to get you to go to the dentist," her father said.

"No, you just set up seven. After this, I'm sure you'll take us right back to school," she said.

"Emily, that's dumb," argued Jacob, "Think about it, he wouldn't have taken us to see Sarah first, then brought us here just to take us back to school right after."

"That's what makes it so clever. It's the last thing we'd expect."

"Emily, that's ridiculous, I..." her father began.

"Geez, can't either of you take a joke?" said Emily, exasperated. She pushed past her father and brother and led the way into the waiting room.

Jacob leaned to his father and said quietly, "I didn't know she knew how to make a joke."

"Yeah," said his father, "me neither."

They checked in at the front desk, and it wasn't long before the receptionist called out, "Cooper, Jacob and Emily?"

"That's us," said Jacob jumping up from his seat.

"Such an obedient lap dog," taunted his sister, getting up slowly and stretching before following behind.

The receptionist led them to a man using a strange-looking

DANTE THE DENTAL ASSISTANT

Average Wage (Montana): $30,030 annual

Knowledge: medicine and dentistry, customer and personal service, clerical, chemistry

Hours and Travel:

- **May work part time or full time**
- **May work for more than one dental office**
- **Rarely travel**

Preparation - To work as a dental assistant, you must:

- **Have a high school diploma or GED**
- **Complete on-the-job training or a one-year training program**
- **Have good interpersonal and teamwork skills**

instrument on a boy's teeth. He was just finishing up.

"Looks good Mike," he said as the boy sat up, "I'll see you for another cleaning in about six months." As Mike climbed out of the chair, the man turned to Jacob and Emily and introduced himself. "Hello, my name is Dante and I'm a Dental Assistant here at Dr. Alighieri's office. You must be Jacob and Emily."

"Yes," said Jacob. "Did you say you were cleaning his teeth with that thing?"

"That's right," said Dante.

"How does it work?" asked Jacob, "Does it shoot out some kind of laser or something."

"Actually," said Dante, "It uses sound."

"Sound?" said Emily skeptically.

"It's true," Dante insisted, "This is called an ultrasonic scaler. It uses sound frequencies are too high for us to hear, and the vibrations break up and remove plaque and tartar without harming your teeth."

"Wow," said Jacob, "That's something straight out of Star Trek."

"Pretty cool, huh?" said Dante, "That's one thing I like about my job. I get to use state-of-the-art equipment to improve people's lives. Your father tells me you'd like to hear more about my job."

"Yeah," said Jacob eagerly.

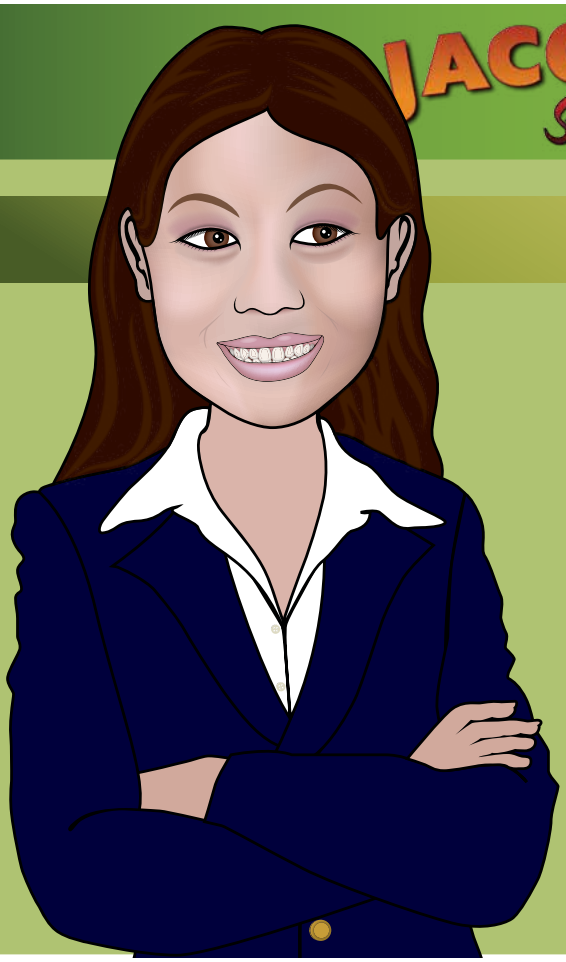
"Well, before the dentist arrives," began Dante. "I clean the patient's teeth with a variety of hand tools and ultrasonic intruments, as you saw. I also take x-rays of people's teeth, clean and prepare instruments for the dentist, and assist in dental procedures like fillings and root canals."

"So you work mostly with the equipment?" asked Jacob.

"I wouldn't say that," Dante explained, "I work with a lot of cool equipment, but I work just as closely with people. That's why communication skills are so critical. It's important to explain what you're doing to the patient. I always tell people to let me know if they have any sensitivity or questions and I'll stop. Watching their facial expressions and body language is very important. Even a little raise of the eyebrow can indicate you've hit a sensitive spot in a person's mouth. Then I stop and question them because each patient is different."

"Isn't it gross to work in a person's mouth?" Emily asked.

"I don't think so," said Dante, "In fact, I think it's exciting to see the difference I can make in the health of a person's mouth. It's very rewarding to help people and to educate them about how to take care of their teeth. It may not seem like cleaning teeth would affect a person's overall health, but gum disease has recently been linked to other health issues like heart disease and



HEATHER THE HOTEL MANAGER

Average Wage (Montana): $33,500 annual

Knowledge: customer and personal service, administration and management, sales and marketing, personnel and human resources, clerical, economics

Hours and Travel:

- **Usually work a set schedule**
- **Work 40 hour weeks with occassional overtime**
- **May work evenings and weekends**

Preparation - To work as a hotel manager, you must:

- **Have a high school diploma or GED**
- **Complete a two-year training program or work your way up over several years**

digestive problems. I feel even more responsibility to be thorough and do my very best for each patient."

"Speaking of which," Dante continued, "Hop in the seat, Emily. We've got to clean those teeth before the dentist sees you."

★ ★ ★ ★ ★

Emily was no longer speaking to either her father or her brother after they left the dentist's office. That suited Jacob just fine, because it gave him the chance to ramble on and on about how cool it must be to work in a dentist's office without his sister making fun of him.

Meanwhile, Emily had decided she was not uttering another word to either of them until at least the next morning, although a week of silence wasn't out of the question.

"Oh come on, Emily," Jacob had said on the way out of the dentist's office, "I had a check-up too, and I'm not mad about it."

Emily had to bite her tongue to keep from saying, "That's just because you're in love with the dentist's equipment."

★ ★ ★ ★ ★

As they approached the Mountainview Hotel, Emily was relieved to find that her father wasn't taking them back to school after all. When they entered the lobby, Emily's jaw dropped. She had never seen such luxury in her life. A huge crystal chandelier hung from a ceiling so high that there was room for full-grown trees in the waiting area. The far wall was made up of vast windows with a stunning view of the nearby mountain range.

"This is soooo cool," Emily said.

"The silent treatment's already over?" said Jacob, "I hoped it would last at least until we got home."

"Shut up, twit," she replied.

Just then, a woman in a stylish suit greeted them.

"Wonderful to see you, Jack," she said to their father, kissing him on each cheek. "And these must be Emily and Jacob." Emily was happy that someone had finally put her name first. "My name is Heather Boudreaux, and I'm the manager here at The Mountainview."

"This is the greatest place I've ever seen," Emily said.

"That's wonderful to hear," said Heather, "I've worked very hard to make it that way."

"How can I get a job like yours?" Emily asked.

"A little luck and a lot of hard work," Heather said, "But let's make ourselves comfortable and I can tell you all about my work."

Cluster 9: Hospitality and Tourism

The Hospitality and Tourism Career Cluster is perfect for those who like to make other people feel at home. From restaurant managers to zoo exhibit developers, this group of careers is all about helping people enjoy the finer things in life. This cluster is split into four pathways that are closely related to each other. People in "Travel and Tourism" occupations work closely with those in the "Lodging," "Restaurant and Food," and "Recreation, Amusement, and Attractions" pathways to help make your trip as hassle-free and enjoyable as possible. If you like showing people a good time, you may find a fulfilling career in this cluster.

"My first summer jobs were in hotels. I washed dishes, waited and bussed tables, and worked in catering for a long time."

"Wow," said Emily, "you went from washing dishes to this?"

"We all start somewhere," she said. "I worked my way up to desk clerk, and my employers paid for my university courses in accounting and business management. I just had to keep above a C average."

"C average, huh?" said Emily, "I could do that."

"With my education and on-the-job experience," continued Heather, "It didn't take long for another hotel to hire me as assistant general manager. Two years ago I was promoted to general manager, and here I am, loving every minute of it."

"What does a manager do?" asked Emily.

"A typical day means making sure that everything runs smoothly in each department. When I arrive in the morning, I go to the front desk and check how many people are coming in. I find out how many repeat customers we have. By now, I know many of them and I like to greet them when they come in the door."

"Then I touch base with the head housekeeper and make sure they're doing okay, because housekeeping is the toughest job in the entire hotel industry. Afterward, I check that the swimming pool is clean. If we have banquets going on during the day, I make sure the banquet room is set up and ready to go, and that the kitchen has all the food prepared."

"To keep the hotel full and to get feedback from visitors, I periodically go through my list of customers who have accounts with us. If they haven't stayed here in awhile, I personally contact them and figure out why. If they've started going to another hotel, I try to find out what they like about the other hotel. It might give us ideas for improvement. "

"What job skills are most important?" asked Emily's father.

"Customer service skills are very important," Heather said. "You have to keep a smile on your face all the time and communicate well with the guests. Computer knowledge and math are important too, because all of our records and accounts are kept on a computer. "

★ ★ ★ ★ ★

Cluster 10: Human Services

Are you are "People Person?" People who love to help others often seek careers in the Human Services Cluster. Do you like to help people with their problems? You might look into the "Counseling and Mental Health Services" pathway. Maybe you enjoy working with children, the elderly, or families. The "Early Childhood Development" or "Family and Community Services" pathways might suit you. The "Consumer Services" pathway is perfect for people who like to help others manage their money. People who take the "Personal Care Services like to work one-on-one with people, helping them exercise, cutting their hair, or doing their nails.

"I'm sorry, Emily," Jacob said as they left the hotel.

"For what?" Emily asked.

"That you won't get to be a hotel manager."

"What's that supposed to mean?" Emily growled.

"You heard Heather, you'd have to keep a smile on your face at all times. You'd be exhausted by the end of the day."

Fighting the urge to laugh aloud, the twin's father scolded Jacob. "Stop that," he said, "Emily didn't make fun of you when you were excited about being a dentist."

"But she wanted to," said Jacob.

"You got that right," Emily agreed.

"The two of you had better quit insulting each other right now, or I'll personally put both of you here."

The twins glanced up to see what their father was talking about, and found themselves walking along the edge of a cemetery.

"What, is there, like, a Death Cluster, and we're interviewing a grave digger?" asked Emily.

"Not quite," her father answered. "It's the Human Services Cluster, and my friend Frank is a funeral director."

"You sure know a lot a strange people, Dad," commented Emily.

"There he is at the graveside, comforting a family," said her father. "Let's keep a respectful distance, and when he's finished, we'll talk to him."

After a few minutes, a tall, bald, smiling man approached them and extended his hand to the twins. "I'm Frank Becker," he said, "pleased to meet you."

Jacob shook Frank's hand, but Emily just stared at it.

"Did you embalm the body yourself?" she asked.

"Not this time," Frank laughed, "And when I do, I wear surgical gloves, and I even wash my hands before and afterward. With soap, even."

Emily shook hands reluctantly.

"Well then," said Frank, "I have a few minutes. What would you like to know about funeral directors?"

★ ★ ★ ★ ★

FRANK THE FUNERAL DIRECTOR

Average Wage (Montana): $35,370 annual

Knowledge: customer and personal service, administration and management, clerical, chemistry, psychology, law and government, accounting

Hours and Travel:

- **Usually work business hours, along with odd hours when a death occurs**
- **Most work 40 hours per week or more**
- **May be on-call or work evenings and weekends**

Preparation - To work as a funeral director, you must:

- **Complete a college program or apprenticeship in mortuary science**

Jacob fought the urge to ask Frank if his job was gross, and instead asked what made him choose it as a profession.

Frank answered, "Well, my father started the business, but he never really encouraged me to go into this field because he realized I had to decide what I wanted to do on my own. When I first went to college, I was actually seeking an elementary education degree to become a teacher."

"What made you change your mind?" Jacob asked.

"I soon learned that you advance in the education system by becoming an administrator, and I became discouraged. That wasn't what I wanted to do; I wanted to be with the kids."

"So instead you drain blood from dead bodies?" said Emily.

"Like most funeral directors, I'm also a licensed embalmer, and occasionally I still take on that role. But my main job is that of funeral director. That means that I mostly work with people. Living ones," he added.

"A lot of work goes into planning a funeral, and unfortunately, that responsibility usually comes at the time when people are the least capable of handling it, emotionally. That's where I come in. I help families decide whether to bury or cremate the deceased, and help them choose a casket or urn. If they don't have a burial plot, I can arrange that as well. Some families get more involved in the details of the funeral than others. If necessary, I can make all of the arrangements so the family doesn't have to worry about it and can spend more time together."

"Is it hard to work with sad people all the time?" asked Jacob.

"It is a challenge," he said, "but one that I enjoy. In a short period of time you have the opportunity to get really close to people. You're helping them at one of the toughest times of their lives. They've lost someone they love. They can be somewhat directionless and numb, not knowing if they are going to get through it. Yet, if you share your advice and experience; are caring, sympathetic, and ethical; and truly go into this with an attitude of helping people, you really bond with those people. When they leave, they're giving you hugs. It's really fulfilling. There are very few jobs with that kind of reward."

★ ★ ★ ★ ★

"Okay Dad," Emily said, "that was creepy."

"No it wasn't," argued Jacob. "It was interesting."

"Maybe if you're a ghoul," Emily said, "Please Dad, tell me the next career isn't going to make my skin crawl."

"I can't guarantee anything," he said, "It depends on how you feel about computers."

SOPHIA THE SOFTWARE ENGINEER

Average Wage (Montana): $62,040 annual

Knowledge: computers and electronics, engineering and technology, mathematics, design, telecommunications

Hours and Travel:

- **Work 40 hours per week on a set schedule**
- **May work evenings and weekends to meet deadlines or to solve a problem for a client**

Preparation - To work as a software engineer, you must:

- **Earn a Bachelor's Degree (4 years of college)**
- **Be curious and detail-oriented**
- **Have strong problem-solving skills**
- **Be creative**

"Oh, computers are pretty cool," said Emily, "What kind of jobs are in the Computer Cluster?"

"Well, there's not really a computer cluster, since all of the clusters have jobs in which computers are used. In fact, almost all jobs require you to use a computer these days."

"So what's the next cluster?" asked Jacob.

"The Information Cluster," answered Dad, "It's sort of like a computer cluster, because most of the jobs center around computers, and the people who know the most about computers are in this cluster."

"I bet we're going to interview a former computer hacker that was caught by the FBI but didn't go to jail because he agreed to help them catch other hackers. Now he's hot on the trail of a former FBI agent turned computer hacker who just designed a computer virus that will cripple all of the world's missile defense systems, and he's holding the world hostage for 3 trillion dollars and the release of his girlfriend from prison," Emily blurted.

"Yep," said her father, "that's the guy."

"Where did you come up with that one?" asked Jacob.

"I saw it on a made-for-tv movie," she said, "but really, who are we going to see?"

"You mean you don't know?" Jacob asked.

"No," said Emily, "Why? Should I?"

"Yes," Jacob insisted, "We're going to see Grandma."

Emily was quiet when they got to Grandma Sophia's house. She was embarrassed that she didn't know what her grandma's job was, and she didn't want Jacob to say anything about it.

Grandma Sophia greeted them at the door with a plate full of fresh-baked cookies. "Fancy meeting you here," she said, "Well, come in, come in, just because you're in my office doesn't mean you can't make yourself at home."

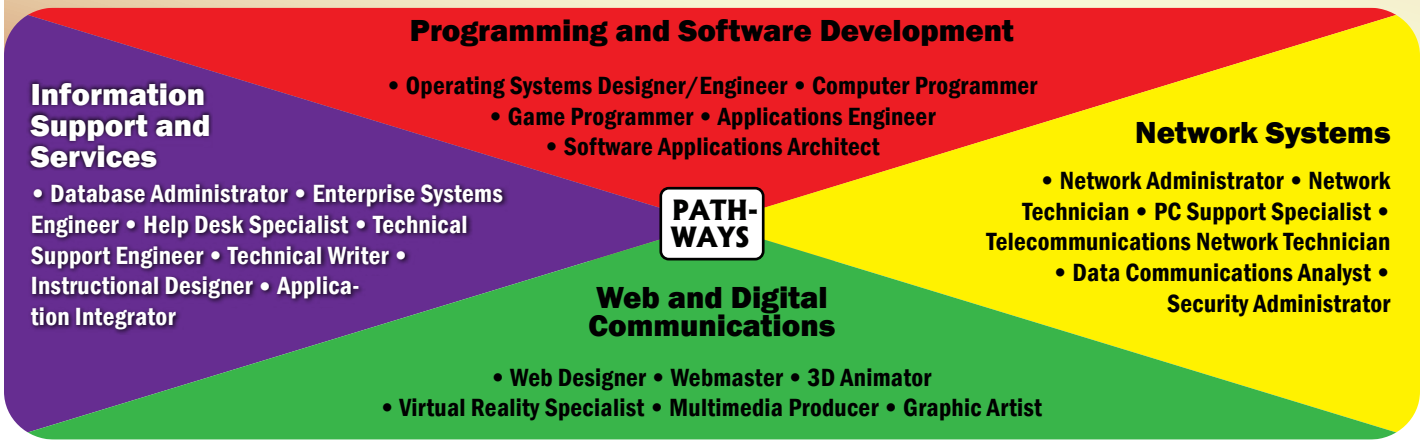
"Did they even have computers when you were young, Grandma?" asked Emily.

"Why Emily Cooper, your grandmother is still young. But no, I never touched a computer until 1982. I was a receptionist at a law firm, and the boss decided it was time to go electronic. So I had to learn about computers. I was facinated, and learned everything I could, not only about how to use them, but about how they work too."

"When your grandpa Bill died, bless his soul, I decided it was time to start a new life, so I quit my job and went back to school to learn programming. Since then, I've worked for several companies. I've even worked on military vehicles and airplanes?"

Cluster 11: Information Technology

Computers are everywhere. Chances are, you've got one in your pocket right now. From smart phones to ipads, ipods, and net-books, more people are getting their information and entertainment by using computers and electronic devices. That is why jobs in the Information Technology Cluster are so important. People in Information Technology occupations include programmers who create the applications we use, digital artists who create original images for websites, and PC support specialists who help us solve our computer problems at home. Career opportunities in this cluster will only continue to grow in the future.



"Wow," said Jacob, "what do you do now?"

"I work for a company that produces bar code scanners. I've been there for about five and a half years. Maybe it's not as exciting as fighter planes, but I still use many of the same skills. When building software, you need to go through the same process no matter what type of application. First you define your requirements. You ask, 'What is this software going to do?' Then you design and write the software to perform what you want it to do. After that, you need to test it to make sure it performs properly."

"Right now, I'm part of a software team that is developing the embedded software to control the bar code scanners. The team is divided into two major portions. One group writes the software, and one group tests it. I'm in the group that tests the software."

"Is it fun?" asked Emily.

"This work appeals to me because it is technical and requires quite a bit a mental concentration. My challenges are technical and mathematical. I get to create something that makes the company successful. That's what I enjoy."

Grandma Sophia wouldn't let the children leave until each of them had a quart-sized freezer bag filled to bursting with gooey peanut butter and chocolate chip cookies. When their father asked why he didn't get any, Grandma Sophia just patted his expanding tummy and said, "Because you're a grown-up." The kids laughed.

"Give me one of those," he said to Emily when Sophia had shut the door.

"Hands off," said Emily, "I don't want to be responsible for your heart attack."

"Here, Dad," said Jacob, handing his father a cookie.

"Pushover," said Emily.

★ ★ ★ ★ ★

"So we must be done," Emily commented as they returned to their neighborhood.

"We can't be," said Jacob. "We've only talked to people in eleven different clusters. We've got five left."

"Then why are we obviously headed home?" she asked.

"We're going to need the car for this next cluster," said her father, "we're going across town to the courthouse."

"At least we can rest our feet," complained Emily. "It feels like we've had all-day gym class, walking everywhere."

Cluster 12: Law, Public Safety, and Security

Who do you call when there's an emergency? Chances are, you call someone who works in the Law, Public Safety, and Security Cluster. Police officers, fire fighters, and emergency medical technicians all belong to this cluster. But not all occupations in this cluster are emergency responders. Many have to do with the legal system, such as judges, lawyers, court reporters, and legal secretaries. There are also workers who protect people, businesses, and even information by designing security systems, patrolling buildings, or evaluating the security of a computer network.

"The courthouse?" said Jacob, "We must be on the Law Cluster."

"That's right," said his father, "Law, Public Safety, and Security. What kind of professions do you suppose are included?"

"Lawyers," answered Jacob, "judges..."

"Cops," added Emily, "detectives..."

"Firefighters," said Jacob.

"Security guards," said Emily.

"I thought you weren't taking any quizzes today," said Jacob, annoyed that she was taking all his good answers.

"Shut up," his sister mumbled.

When they arrived at the courthouse, a young woman with cropped, blonde hair rushed up to them. She was speaking very fast. "I'm so glad you're here," she said, "that gives me just enough time to tell the kids about my job, but we've got to make it quick because we've really got a full docket this afternoon. So please, hold all questions until I finish, okay? Okay." Then she took a deep breath, and began...

"As a criminal case proceeds from an arrest to a trial, and then to a conviction or acquittal, the process involves a variety of different agencies, such as the police and the district attorney's office. My job is Court Clerk."

"Court clerks in different departments have different duties," she continued. "My main assignment is working on the 'sentencing docket.' People who have gone to trial and have been found guilty of crimes must come back to be sentenced by the same judge. If the judge, attorneys, defendants and plaintiffs are ready, a sentencing could happen that very day. But it usually takes longer to get everyone back in the same place. I have a list of which judges are available on which days. I try to schedule each sentencing within two weeks, just to keep the process flowing. Also, when defense attorneys have to attend multiple sentencings on the same day, I try to make sure they can do them all in a row, with the same judge, instead of scattered throughout the day in various courtrooms."

"Organization skills and being able to multi-task all day long are very important. If you're the type of court clerk that works with the public, you're often jumping from one subject to another and talking to different people. You need to be versatile, to speak

COURTNEY THE COURT CLERK

Average Wage (Montana): $27,020 annual

Knowledge: clerical, law and government, computers and electronics, customer and personal service

Hours and Travel:
- **Work 40 hours per week on a set schedule**
- **Rarely travel**

Preparation - To work as a court clerk, you must:
- **Have a high school diploma or GED**
- **Have experience with computers**
- **Have good communication skills**

in words that people understand. If you're helping a person not represented by legal counsel, or a person without a high school education, you may need to speak in non-technical terms. Five minutes later, you'll need the knowledge and vocabulary to discuss court-related matters with an attorney of 25 years. You also need a huge amount of patience and understanding. Many people who come to court are not happy to be here. Any questions? No? Good, gotta run. Bye." When she'd finished, she took a second breath, and rushed off.

"Kids," said their father, as they watched her stride down the hall, "I'd like you to meet Courtney."

★ ★ ★ ★ ★

When they got to their vehicle, the twins' father slapped his palm against his forehead and said, "Now I remember why I don't drive."

"You did it again, didn't you?" said Emily.

"What this city needs is a good bike path," declared their Dad as he pulled out his cell phone. "Luckily, I've got Lacey's number on speed dial."

"He left the keys in the ignition, didn't he?" asked Jacob.

"Either that or on the seat," Emily huffed.

"Hello Lacey. Yep, again," their father spoke into the phone, "The eleven-hundred block of Heinlein. Okay, see you soon."

After putting away the phone, he told the kids, "Not to worry, we've got someone from the manufacturing cluster on the way."

"Manufacturing Cluster?" said Jacob.

"Yes," said his father, "a locksmith."

"Doesn't manufacturing mean making things?" Jacob asked.

"Yes, and in addition to helping people who are locked out of their cars, locksmiths manufacture keys and repair locks. Funny how that's our next cluster, isn't it?"

"Yep, it's kind of weird," agreed Emily.

"Aren't you going to accuse me of setting this whole thing up as an elaborate plan to teach you about locksmiths?" he asked.

"Nope," said Emily, "I just think you're dumb."

★ ★ ★ ★ ★

"That should do it, Mr. Cooper," Lacey said as she popped open the lock with a slim jim. "I'd advise you to sew an extra key into the lining of your jacket, but you account for twenty percent of my net profit each month, so, keep up the good work."

LACEY THE LOCKSMITH

Average Wage (Montana): $27,890 annual

Knowledge: customer and personal service, administration and management, clerical, public safety and security, mechanical, sales and marketing, mathematics

Hours and Travel:

- **Are usually on-call to respond when customers lock themselves out**
- **Usually work more than 40 hours per week**
- **Travel to clients' homes and vehicles**

Preparation - To work as a locksmith, you must:

- **Have a high school diploma or GED**
- **Complete on-the-job training**

"Lacey," he said, "remember how I told you that the kids are learning about occupations today and that's why I really called you out here?"

"What are you talking about, Mr. Cooper?"

"Well, it was worth a try," he said. "Lacey, my kids are learning about occupations today. Would you mind telling them a little about what you do?"

"Well, what do you want to know? Should I tell you how I got started in the trade, or what my duties are?" asked Lacey.

"Both," said Jacob.

"Okay, well, my father is a veteran locksmith, so I've been picking up the skills of the trade since I was a kid. I've always been interested in working with small parts and models, putting things together and watching them work. Four years ago, the company that employs my father was looking to hire and train a new locksmith, so I jumped at the opportunity."

"Now I install locks at businesses and homes. It usually takes about ten minutes to install a new lock. Some businesses change all their locks whenever they let somebody go. They bring their locks to me, or I'll go out in the service truck and work at their location. Property managers often ask me to change locks in their apartment buildings. We also get a lot of business from car dealerships. They're constantly re-keying and repairing the locks on used cars, especially when a car's been broken into and the lock is ruined."

"What do you like most about your job?" asked Jacob.

"I really enjoy helping people when they bring in obsolete locks, maybe from an old iron gate. They've been to all the big hardware stores and nobody can repair what they have, and they don't want to replace their vintage lock with one that looks new. I get a sense of self-satisfaction from helping them fix their locks."

"How would someone become a locksmith if their dad wasn't one?" Emily asked.

"I was lucky to have my father's help in finding a job, but if you are interested in the trade, just put in an application at a locksmith company, and then go in and show them what you can do. Most locksmiths learn on the job. Those who are good at tinkering with things usually do the best. When I started, I assisted a guy who'd been at it for over 30 years. If I had a question, I'd ask him to give me a hand. It took about two or three years before I was ready to work on my own."

★ ★ ★ ★ ★

Cluster 13: Manufacturing

The Manufacturing Career Cluster is all about making things. From wood products like paper, lumber, and furniture to complex medical appliances, virtually everything we buy must be manufactured. But not all jobs in the Manufacturing Cluster involve directly making things. Some occupations in this cluster are about making the production process more efficient, repairing the machines used in manufacturing, or inspecting manufactured products to make sure they meet quality standards. Occupations in the Manufacturing Cluster are incredibly diverse. You might just find one that suits your own interests.

Once inside the car, Emily couldn't help making fun of her Dad for locking himself out. "So who were we going to interview before your plan derailed?" she asked.

"We were going to see someone who manufactures muzzles," said her Dad, "and then have you fitted for one."

"So where are we going now, Dad?" asked Jacob.

"To the mall," he said, "which should please your sister."

"Please me?" she said, "No way. We're just going to talk to a shoe salesman or something and then leave. We're not going to shop. You're just going to bring me within inches of shopping and not let me look at anything. What, are you trying to torture me?"

Her father smiled and said, "You never know."

★ ★ ★ ★ ★

After parading her past the music store, the DVD store, the video game shop, the cinnamon roll stand, the candy shop, and the ice cream stand, Emily's father led her to a store she'd never been remotely interested in: Kau and Hyde's Leather Emporium.

"You kids stay here," he told them, "I'll go find my friend, the merchandise displayer."

The twins waited there for several minutes before a well-dressed man with a goatee approached them.

"Do you know the best thing about being a merchandise displayer?" he asked.

"No," they said simultaneously.

"Art!" he shouted, "It's an art! Those crude merchant classes call it marketing, but what do they know? They buy and sell, and that's all they know. They don't understand the heart and soul that goes into creating an attractive display. Do you know, can you possibly fathom what it means to display merchandise?"

"I'm sure you'll tell us," said Emily, "That is why we're here, right?"

"Indeed," said the man, "Perhaps you do understand. That is why we're here. It's why we're all here."

"So are you going to tell us about your job?" she asked.

Cluster 14: Marketing, Sales, and Service

You might think that selling products is as easy as manufacturing them and shipping them to your favorite store. In reality, there is a whole army of people responsible for making sure you will want to buy those products. There are workers in the Marketing Cluster who conduct research about the types of products and advertising that are successful in different areas and age groups. They create slick packaging to make their products seem more exciting. They build brand names that people recognize and trust. Many stores even have professional buyers who choose the kinds of products they will stock.

"I once worked for a company that sold lawn and garden furniture. Our sales representatives would travel to trade shows where they displayed our products. My job was to design, construct, and arrange those displays. First, the sales representatives would tell me which merchandise they intended to feature at the show. Then I would obtain a floor plan of the exhibit hall and sketch a design based upon the space assigned to our company. We specialized in lawn and garden furniture, so I often set up a "patio" along with "props" such as potted plants, colorful cushions, even trellises. I made sure the display had the proper lighting so the products would look flawless. By showing our products to their best advantage, I helped to enhance company sales. But more than that, I was able to express my deepest, rawest emotion, to lay bare all that is me and say to the world, 'you look not upon the vulgar objects of commerce, but upon the desires of all mankind."

"My life was complete. I loved using creativity in my work. To design an exhibit that could catch someone's eye and make them want to stop and take a longer look at our merchandise, that was what I lived for. It also allowed me to see the world, traveling to different cities for trade shows."

"My biggest challenge was creating art within the confines of the paltry space we were provided. Some said my job looked easy, but it took real skill, bordering on genius. I've always had an eye for color and design, but I wanted to develop my skills further and become a professional. I went to college and earned an undergraduate degree in design. I recommend that anyone interested in this field do the same. Most companies prefer that applicants for design jobs have a college degree."

"Well, what happened?" asked Emily, "to your job, I mean."

"They fired me when I refused to dismantle my displays. Did they tell Michaelangelo to dismantle the Sistine Chapel when they were done with it? Art means nothing to them!"

The twins watched in disbelief as the man stalked off, mumbling to himself. Just then, their father walked up with a young man in a leather jacket. "Kids, I'd like you to meet Marvin. He puts together merchandise displays for the store."

★ ★ ★ ★ ★

"Dad, we're done," said Emily, "learning about careers is all well and good, but this is starting to get scary."

"How many times do I have to apologize?" he asked. "How could I know there were angry ex-merchandise displayers wandering around the mall?"

MARVIN THE MERCHANDISE DISPLAYER

Average Wage (Montana): $19,540 annual

Knowledge: customer and personal service, sales and marketing, design

Hours and Travel:

- **May work part time or full time**
- **May work overtime to finish a display**
- **Travel to store locations and to trade shows**

Preparation - To work as a merchandise displayer, you must:

- **Have a high school diploma or GED**
- **Complete on-the-job training**
- **Have artistic ability**
- **Not be crazy**

"Maybe you shouldn't have left us alone in the mall," she said.

"You're the one always begging Mom to let you and your friends shop alone," said Jacob.

"If I'm with my friends, I'm not alone, am I?" she countered.

"We'll discuss this later, with your mother. For now, we need to discuss our next stop," said their father.

"Our next stop is home," Emily said, "After practically being attacked by some weirdo in the leather store, we've earned it."

"We only have two more clusters to go," said her father. "But I've got to warn you about this next one."

"Warn us?" said Emily, "Why? Is it another psycho?"

"No, but it could be dangerous," said Dad.

"What do you mean dangerous?" asked Jacob, his eyes growing wide.

"Well, the next cluster is the Science, Technology, Mathematics, and Engineering..." his father began.

"He means we might be bored to death, Jacob," said Emily.

"What I mean," said their father sternly, "Is that we're going to talk with a chemist. We're going to visit his lab, and there are many dangerous chemicals around the lab. That means you're going to have to wear protective gear like gloves and goggles."

"I'm not..." began Emily.

"You WILL look a little silly," he interrupted, "which is why I'm telling you this ahead of time. You will both wear whatever protective clothing Caleb asks you to, and you will do so without argument or complaint. And you will not touch anything."

★ ★ ★ ★ ★

Caleb handed them each a pair of over-sized protective goggles. Emily wanted to cry. They looked so ridiculous. But when they got in the lab she saw that everyone was wearing them, and she didn't feel so self-conscious. Stepping into the lab, Caleb threw his arms out dramatically and said, "Welcome young Coopers. This is my world."

Caleb began, "I'm a research chemist for a major manufacturing company. I combine various chemicals to create new substances that can then be marketed by my company. Although I do a lot of research at work, the results are very practical and tangible. My time is usually divided between the lab and an office. Being in the lab is much more fun, because I get to do experiments! When I'm in the office, I'm usually writing up reports on my research."

CALEB THE CHEMIST

Average Wage (Montana): $37,120 annual

Knowledge: chemistry, mathematics, computers and electronics

Hours and Travel:

- **Usually work a standard 40 hour week**
- **May work longer hours to meet deadlines**
- **Rarely travel**

Preparation - To work as a chemist, you must:

- **Earn at least Master's Degree (6 years of college) in chemistry**
- **Have a good eye for detail**
- **Be self-motivated**

"Wait a minute," said Emily. "You not only have to know every possible thing about science and math, but you have to be a writer too?"

"Well, you don't have to be Shakespeare, but you must be able to write clearly, so that there is no mistake about what you mean," said Caleb. "I like being able to express my ideas to others, but what I really like is working with the chemicals."

"I also like developing useful new products for consumers. But sometimes I'm exposed to some pretty dangerous chemicals. That's when I really have to concentrate the hardest. One slip, and poof -- I'm history!"

"Doesn't that scare you?" asked Jacob.

"Not really," said Caleb, "I'm used to being around chemicals. When I was ten years old, my parents gave me a chemistry set for my birthday. I've been hooked on chemistry ever since! I took advanced math and science in high school and majored in chemistry in college. I also made sure to take computer courses because computers are important tools in the lab. Research chemists usually have Ph.D.'s, so I went to graduate school and earned my doctorate. I'm lucky to have a job I enjoy so much."

One last stop," said Dad, "and our career quest is complete."

"What could possibly be left?" asked Emily.

"The Transportation, Distribution, and Logistics Cluster," he answered, "I've got a freind who works at the airport..."

"Where do you know all these people from?" Emily interrupted. "I didn't even know you had friends, and suddenly you know everybody in town."

"I know them through work," her father said.

"How?" Emily demanded, "They all work in different places."

"Don't you even know what Dad's job is?" asked Jacob.

"Yes," snapped Emily, "He works in an office."

"That's where he works, but what's his job?" Jacob said.

Emily said nothing. She was embarrassed that she had never thought about it.

"Emily," said Dad, "I know all these people because I helped them find their jobs. I work for the local Job Service Workforce Center."

"That's why you know so much about jobs and career clusters," said Emily.

"Exactly," he said.

Cluster 15: Science, Technology, Engineering, and Mathematics

Try to imagine what our world would be like without science. Not only would you have no video games to play, televisions to watch, or phones to talk on, but you wouldn't even have toothpaste to keep your teeth from rotting, or vaccines to keep you from contracting horrible diseases. Even in a technologically advanced world like ours, there are countless problems to solve. Want to end air pollution? Or figure out how to store the endless energy of the sun in a usable form? How about feeding the world by inventing revolutionary new farming techniques? Scientists just might be the real-life superheroes of our time.

Science and Mathematics

• Biologist • Chemist • Geneticist • Physicist • Quality-Control Scientist • Statistician • Research Technician • Science Teacher • Scientific Visualization/ Graphics Expert • Lab Technician

PATH-WAYS

Engineering and Technology

• Aeronautical Engineer • Architectural Engineer • Biotechnology Engineer • Drafter • Chemical Engineer • Civil Engineer • Construction Engineer • Industrial Engineer • Mechanical Engineer • Materials Lab and Supply Technician • Quality Technician • Technical Writer

Walking into the airport, Emily said, "You know, I've never been in an airport before. It's too bad we're just here to talk to some flight attendant about his job instead of taking a trip to Hawaii."

"Some flight attendant, huh?" said a man standing by the escalators. "I think you mean Francisco Diego, undisputed champion of flight attendants."

"Of course she did," her father said, shaking Francisco's hand, "who hasn't heard of you?"

"Well, someday when they hold the world championship flight attendant competition, I will be a household name," said Francisco, "and you can say you knew me back in the day."

"Care to share your expertise with the twins?" said Dad.

"Anyone who's ever flown on an airplane knows what a flight attendant does," said Francisco.

"We've never flown," admitted Jacob.

"No?" said Francisco, "Jack, have you been hiding these kids in a closet? How old are you?"

"We turn eleven today," said Jacob.

"Eleven years old and never flown in an airplane?" Francisco said with mock surprise. "You'll just have to bug your Dad every day until he takes you somewhere."

"Not a bad idea," said Emily.

"If you're lucky, you might even get me as a flight attendant," said Francisco. "Flight attendants check your ticket, help you stow your luggage in overhead compartments, show you how to buckle your seatbelt, and serve drinks, snacks, or meals. Not only do we strive to make our passengers as comfortable as possible, we also strive to ensure their safety. Our most important job is protecting passengers in the event of an emergency. We know how to evacuate a plane, give first aid, and operate emergency equipment."

"That sounds dangerous," Jacob said.

"Are you kidding?" said Francisco, "Flying is safer than driving, and more fun too. I like my job because I love to travel. I get to go to new places and meet new people all the time."

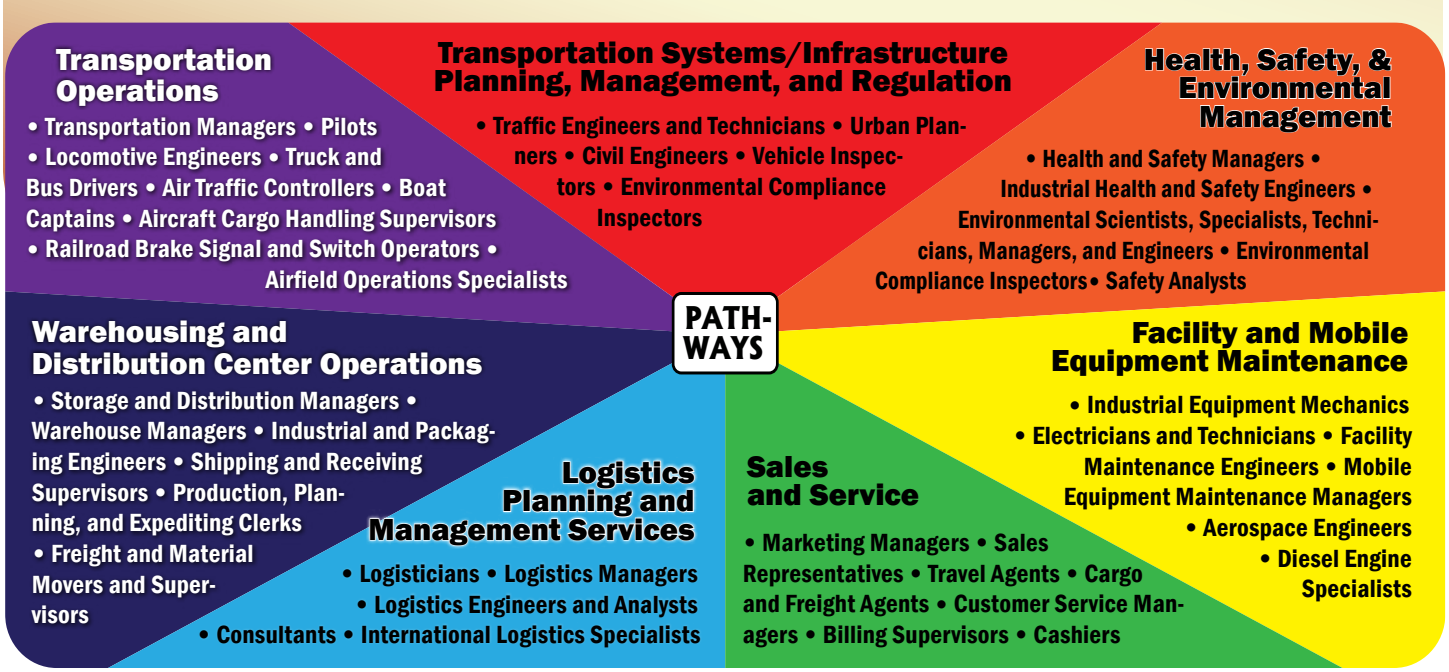
"I've got to admit, though, that some passengers can be difficult to deal with. They can make our job very stressful! And being a flight attendant is physically demanding even on the best of flights. Pushing a heavy beverage cart up and down the aisle, lifting bags into compartments, coping with jet lag and time changes -- all of it requires strength and stamina, which fortunately, I have in abundance."

"How do you get hired as a flight attendant?" asked Emily.

"Most airlines prefer applicants who have had experience working with the public and who have had several years of college. All airlines want candidates who are mature and poised, and who communicate clearly. To qualify for international flights, atten-

Cluster 16: Transportation, Distribution and Logistics

We've all seen the semi trucks on the highway, shipping all manner of products from seafood to plasma televisions. We tend to think of the truck drivers as the people who bring us stuff, but what about all the other people involved in the process? What about the diesel mechanics who keep the trucks running, or the clerks who keep track of the shipments? Then there's the warehouse managers who make sure there's enough space to store the cargo. And what about all the people who plan, design, and inspect the roadways that make shipping possible? No wonder there are seven pathways in the Transportation Cluster.



dants must speak a foreign language. I grew up speaking Spanish at home, so I work on a lot of flights to Spain, Mexico, South America, and Los Angeles."

★ ★ ★ ★ ★

The twins' Dad grinned broadly as Francisco said goodbye and left for his flight. "Well," he said, "We did it. Sixteen clusters, sixteen jobs, and all in one day. That's quite an accomplishment."

"I don't know, Dad," said Emily, looking bummed. "We spent all day talking to people about jobs, and I still don't know what I want to be when I grow up."

"Neither do I," said Jacob.

"What are you talking about?" said Emily. "I thought you wanted to be a groundskeeper."

"Well," said Jacob, "That was this morning. I didn't know so much about jobs back then."

"Don't feel bad, Emily," said her father. "Finding your dream job wasn't the point. I just wanted you to see how many different kinds of jobs are out there and how they are all interconnected. I also hoped you'd begin to understand why you have to work so hard in school."

"I guess I do," she said. "Almost everyone we met talked about having to study certain subjects in high school or college. Not even the Office Clerk would have been hired without a high school diploma."

"Probably not," agreed her father.

"I just wish I knew what kind of job I want, so I could just study the subjects I'll need," said Emily.

"But that's what's fun about school," said Jacob. "You get to learn all kinds of different things and find out which subjects you like.

"He's right," said Dad, "there's bound to be something you enjoy doing in school that can translate to the world of work."

FRANCISCO THE FLIGHT ATTENDANT

Average Wage (U.S.): $35,930 annual

Knowledge: customer and personal service, public safety and security, transportation, psychology, geography

Hours and Travel:

- **May work nights, holidays, and weekends**
- **Usually fly 75 to 85 hours a month. They spend another 75 to 85 hours a month preparing for flights, writing reports, and waiting for planes**

Preparation - A flight attendant must:

- **Have a high school diploma or GED**
- **Complete a flight attendant training program**

"I don't mind when we use computers," Emily admitted. "It's kind of fun to find out all the different things you can do with them."

"You see?" said Dad, "You could do all kinds of things with an interest like that. If you find out you like writing code, you could get into programming. If you like to use the computer to manipulate pictures, you might look into graphic design. There are so many possibilities."

"Yeah, I guess," said Emily, looking no more enthusiastic than before.

"You've got plenty of time to explore your interests, Emily," he reassured her. "No one expects you to decide anything yet."

"I know, but... did we have to do this today?" she said. "This was more work than going to school. It's almost five o'clock. If we'd have gone to school, we'd have been home two hours ago. We're hardly going to have time to enjoy our birthday at all."

"I didn't mean to ruin your birthday," said Dad, "But then, maybe this whole thing was just part of my elaborate plan."

"Plan for what?" asked Emily.

"To get you out to the airport for your birthday surprise," said a familiar voice behind them. The twins turned to see their mother standing in the lobby with four suitcases.

"What are you doing here?" asked Jacob.

"For the brain of the family, you aren't very quick," said Emily. "Don't the suitcases make it obvious?"

"That's right," said their mother, "We're sending you both to boarding school!" Their jaws dropped.

"For the smart-aleck of the family, you can't take a joke," Mom teased.

"Tell me we're going to Hawaii," Emily begged.

"Close," said her Dad, "We're touring famous Civil War battlefields."

Emily stopped smiling and glared at her father. "You're right, Diane, she really can't take a joke," he said.

"Seriously," Jacob said, "where are we going?"

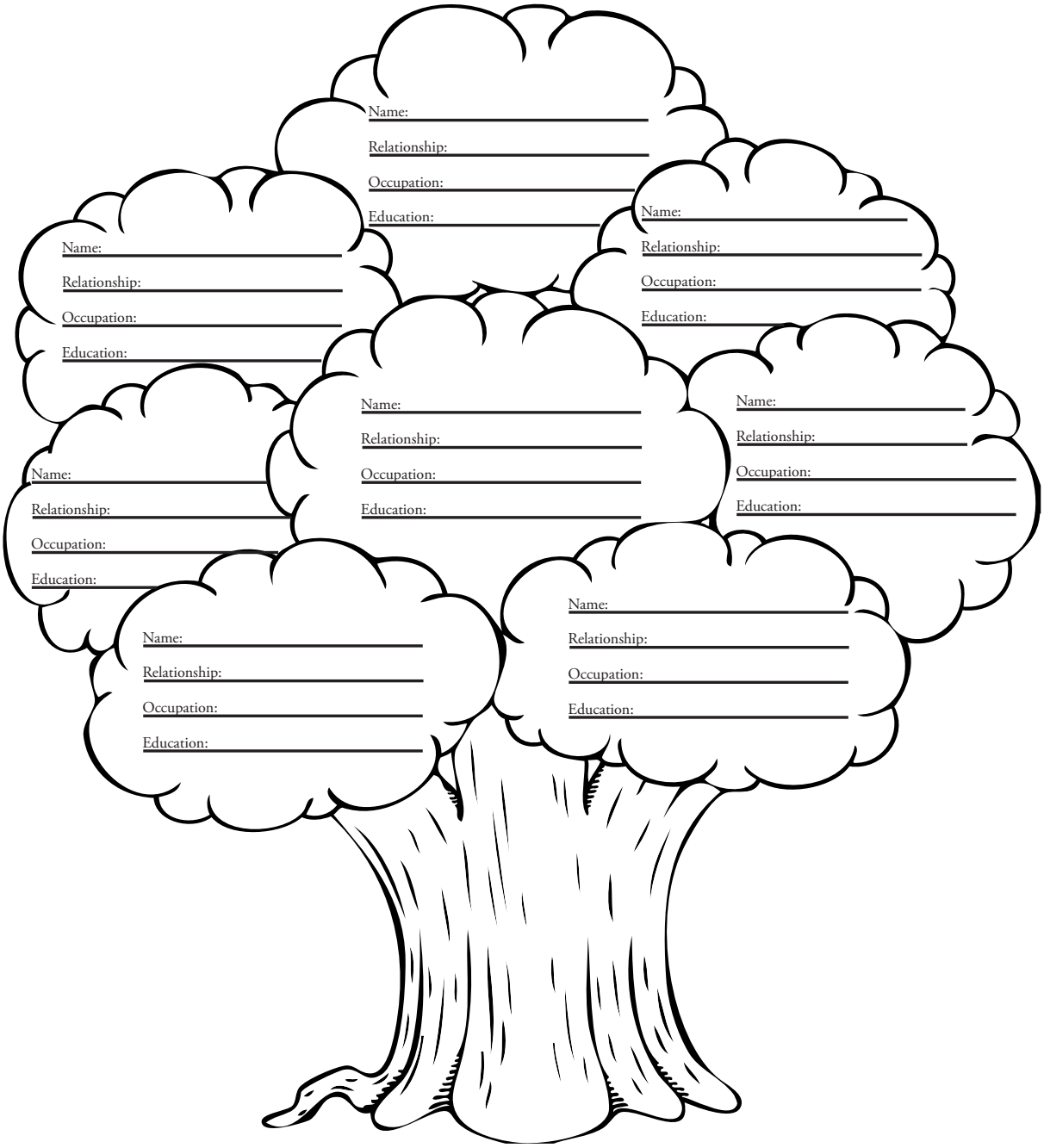
"We're going to get a first-hand look at a wide range of jobs in the Hospitality and Tourism Cluster," he said. "For instance, scuba instructors, helicopter tour guides, and luau caterers."

"Dad," said Emily with her first smile all day, "You're pretty weird, but you're my kind of weird. Hawaii, here we come!"

★ ★ ★ ★ ★

OCCUPATION FAMILY TREE

The work history of a person's family often affects the career they will choose. Ask your family member about their jobs and fill out the occupation family tree. Include your parents, grandparents, brothers, sisters, aunts, uncles, cousins, and anyone else in your family who works. Be sure to ask them what level of education they needed to get their jobs.



TROUT SURVEY

This activity gives students an idea of how a fish and game warden estimates wildlife populations using random sampling and mathematics.

Associated Cluster:
Agriculture, Food, and Natural Resources

Materials Provided:
Data Collection Sheet
(see following page)

Materials Needed:
One bag of dried beans
One cup for each group of 4 or 5 students
One spoon for each group
One marker for each group

Step One:

Fill your cup about half full with beans. These will represent all the trout in the lake.

Step Two:

Try to estimate the trout (beans) in the lake (cup) without disturbing the fish, or trying to count them. In other words, take a guess. Record it on your data collection sheet.

Step Three:

Next you will net a portion of the trout and tag them. Take your net (spoon) and scoop some fish out of the lake. Tag them by marking them with an "X". Write down how many trout you tagged, then release them back into the lake.

Step Four:

To simulate the movement of fish in a lake, cover the cup with your hand and shake the beans around until they are mixed together.

Step Five:

Take your first sample by netting another portion of trout. Record the total number of trout you have netted, and then record how many of them have been tagged.

Step Six:

Estimate the total trout population using the formula on your data collection sheet. Record your estimate on the data sheet.

Step Seven:

Release your trout back into the lake and mix them up again. Take a second sample and make another estimate. Compare the two estimates. Why are they different?

Step Eight:

Take an average of your two estimates by adding them together and dividing by two. Record the average.

Step Nine:

Make an actual count of the trout in your lake. How close were your estimates? Your average? Why is there a difference?

Trout Survey
Data Collection Sheet

Fish and Game Wardens conducting the survey:

_____

_____

_____

_____

Estimate of the Trout Population: _____

Total number of trout tagged: _____

Sample #1:

Total number of trout in net: _____

Number of tagged trout in the net: _____

Population estimated with formula: _____

Sample #2:

Total number of trout in net: _____

Number of tagged trout in the net: _____

Population estimated with formula: _____

Population Formula:

$$\text{Population} = \frac{\text{(Total number of trout tagged) x (Total number of trout in net)}}{\text{Number of tagged trout in net}}$$

Now find the average of the two samples using the following formula:

$$\text{Average} = \frac{\text{(Population Estimate \#1) + (Population Estimate \#2)}}{2}$$

Average of the two samples: _____

Actual count of trout in the lake: _____

CREATING AN ADVERTISEMENT!

Congratulations! Your company has been selected to create the advertising campaign for Universal Appliance Company's newest product, the Fridge™ Brand Ice Cream-Making Refrigerator.

Your job involves three tasks:

1. Give the product a catchy **name** and **slogan**. The slogan should be simple, but still communicate the new concept.

2. Design a **print ad** to appear in cooking and homemaking magazines. Be sure to direct the ad to the audience who would buy the product.

3. Prepare a **presentation** to introduce the product to the Fridge™ sales staff, whose job it is to convince stores to carry their new product. These presentations should feature your product's slogan and print ad, but also highlight the features of the product. Tell the sales staff who would likely buy this product, and explain the advantages of having a built-in ice cream-maker in your refrigerator. You will need to write a script for your presentation that includes everyone in your work group.

SCHOOL SCAVENGER HUNT

A school needs many people to help everything run efficiently. Break into groups and see how many people you can find on the list. Have each person sign their name on the line next to their occupation.

Teacher _____

Principal _____

Custodian _____

Secretary _____

Counselor _____

Crossing Guard _____

Librarian _____

Teacher Aide _____

Music Teacher _____

Physical Education Teacher _____

Nurse _____

Cafeteria Worker _____

UP IN SMOKE

Most people know the risks that smoking poses to their health, but do you know the financial burden smoking can cause? First, find the price per carton for three different brands of cigarettes. Then, use this worksheet to calculate the yearly cost of smoking.

THE YEARLY COST OF SMOKING

Brand			
Price (carton)	$		
Divide by 10 packs	/10		
Daily Cost (1 pack per day)	$		
(multiply by 365 days)	x 365		
Yearly Cost	$		

Cigarette Prices:

Brand Name	Price per Carton
Belair	$45.90
Benson & Hedges	$62.97
Camel	$51.95
Chesterfield	$62.85
Kool	$51.95
Lucky Strike	$65.00
Marlboro	$54.19

The totals you have calculated are only the costs of the cigarettes themselves. But cigarettes aren't the only cost of smoking. The cost of health insurance can be double for smokers. And if smoking should cause you an illness, you'll end up paying more, and so will your employer. If you miss five days of work per year due to a smoking-related illness, how much does this cost your employer in lost wages? First, find the yearly (or hourly) salary for three different occupations. Then, use this worksheet to calculate how much sick time an employer must pay for. How do these lost wages affect the financial well-being of a company?

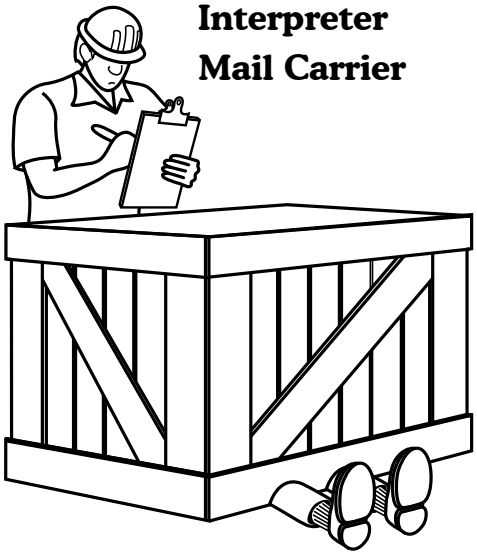
THE COST OF SMOKING FOR EMPLOYERS

Occupation			
Yearly Salary	$		
Divide by 52 weeks	/52		
Weekly Salary *(Lost Wages)*	$		
or			
Hourly Salary	$		
(multiply by 40 hours)	x 40		
Weekly Salary *(Lost Wages)*	$		

NAME THAT OCCUPATION

Complete each sentence by filling in the correct occupation from the following list:

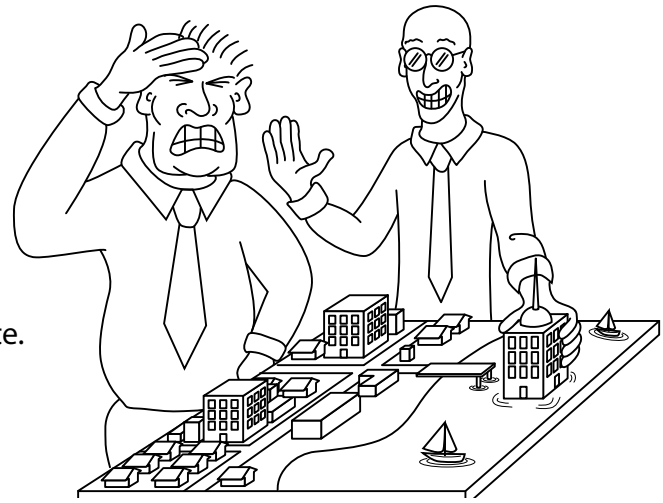
Social Service Manager
Building Inspector
Interpreter
Mail Carrier
Tax Examiner
Transportation Inspector
Occupational Health Specialist
City Planner



1. Someone who investigates workplaces and recommends ways to remove health hazards is called a(n) _____.

2. A _____ makes decisions about where to put buildings, streets, and parks.

3. A _____ checks for structural quality and fire safety.



4. Someone who listens to foreign language speakers, or watches sign language users, and translates what they say is called a(n) _____.

5. A _____ delivers letters and packages to homes and businesses along a certain route.

6. A _____ creates policies and decides what services to offer.

7. Someone who helps people figure out how much money they owe to the government is known as a(n) _____.

8. To enforce safety rules that protect people and cargo, hire a _____.

MEDICAL ABBREVIATIONS

Medical terms and abbreviations are used by doctors in creating medical notes for each patient. Medical records technicians then translate that information into medical records for patients.

Term	*Abbreviation*	*Term*	*Abbreviation*
carcinoma	**CA**	**emergency room**	**ER**
coronary heart disease	**CHD**	**ear, nose, and throat**	**ENT**
complains of	**c/o**	**intensive care unit**	**ICU**
diagnosis	**Dx**	**social services**	**SS**
murmur	**m**	**immediately**	**stat**
myocardial infarction	**MI**	**tablets, pills**	**tabs**
present illness	**PI**	**grams**	**g or gm**
symptoms	**Sx**	**milliliters**	**ml**
past history	**PH**	**liters**	**L**
operating room	**OR**	**ounces**	**oz**
radiology	**X-Ray**	**complete bed rest**	**CBR**
magnetic resonance imaging	**MRI**	**tender loving care**	**TLC**
pediatrics	**Peds**	**prescription**	**Rx**

Translate the statements below that contain medical abbreviations. Write the statements with no abbreviations.

1. Saw peds patient in ER. C/o severe headache. Sx included nausea and blurred vision. Sent to X-ray for MRI. Dx concussion. Rx CBR and TLC.

_____
_____
_____
_____

2. Patient c/o chest pains and shortness of breath. PH indicates CHD. Sx indicate possible MI. Put in ICU for monitoring.

_____
_____
_____
_____

3. Peds patient brought to ER by 13-year-old brother. C/o object lodged in throat. Sent to X-Ray. Called SS to find parents. Called in ENT specialist and reserved OR.

_____
_____
_____
_____

Translate the statements below into statements with abbreviations.

4. Patient came into the emergency room complaining of back pain. Patient has no past history of back pain. Other symptoms include shortness of breath and dizziness. Sent to radiology. Prescribed complete bed rest until final diagnosis.

_____
_____
_____
_____

5. Patient reported she fell in her house. Complained of neck pain and pain in the rib cage area upon arriving in the emergency room. Visible bruises around face and shoulders. Called social services because the injuries did not appear to match those one would receive in a fall. Sent to radiology. Diagnosis broken rib.

_____
_____
_____
_____

Let's Travel!

Your group is to plan a two-week trip in a foreign country where English is NOT the common spoken language. Go to the library and research its location, climate, interesting sites, unit of money, language, holidays celebrated, and cultural customs. Once your group completes its research, present your travel plans to the rest of the class using visual aids and any other creative approach you choose. Make sure to answer the following questions:

1. **What legal papers will you need (example: passport)?**
2. **What is the climate like? What clothes will you need to pack? Consider the culture of the country to decide what types of clothing are acceptable.**
3. **What places of interest would you like to visit?**
4. **How much money would you take, and what is the current exchange rate?**
5. **Where would you stay? How much would it cost?**
6. **What kinds of foods are available?**
7. **What language or languages are spoken there? Research the language and find three phrases that will help you in your travels (example: Where is the restroom?).**
8. **List all of the occupations that will be involved in the the planning and travel for this trip.**

HUMAN SERVICES WORD SEARCH

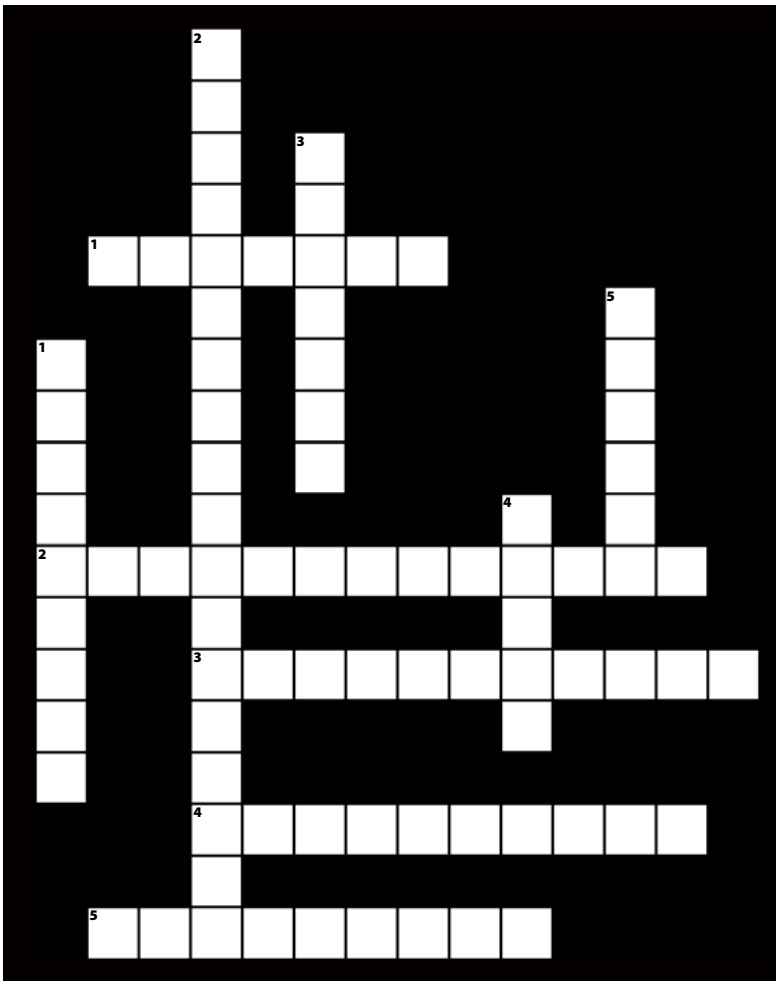
Circle the following occupations within the word search puzzle.

Manicurist	**Hairstylist**	**Clergy**	**Cosmetologist**
Barber	**Embalmer**	**Psychologist**	**Counselor**
Funeral Director	**Childcare Worker**		

C H I L D C A R E W O R K E R
O O E H L O F R V D S J M M O
U A S W D A W J K L M N A B G
N O Z M X C V Y H Y U I N A P
S K O L E O W G S E D H I L M
E Y H N Z T C R C F G E C M W
L B V G F S O E A M K I U E Q
O V W R T Y K L W S D G R R A
R E B R A B P C O L K J I W Z
Q W E T G D F X V G B O S T E
R E H A I R S T Y L I S T T W
T Q W S D C V N M K L S O I P
F U N E R A L D I R E C T O R
S I O P L K K E G D S O U Y W
Z X C T S I G O L O H C Y S P

LAW, PUBLIC SAFETY, & SECURITY CROSSWORD

Use the clues below to find the occupations that fit in the boxes.



ACROSS

1. A _____ enforces laws at the county level.
2. A _____ _____ stops traffic at schools crosswalks.
3. A _____ extinguishes burning buildings and gets the people inside to safety.
4. A _____ _____ prepares a docket of cases, secures information for judges, and contacts witnesses, attorneys, and litigants to get information.
5. A _____ investigates facts, and prepares legal documents, and conducts research to support a legal proceeding, to formulate a defense, or to initiate legal action.

DOWN

1. A _____ gathers facts and evidence for criminal cases.
2. A _____ _____ guards inmates in a prison or other institution.
3. A _____ enforces the rules of behavior in courtrooms.
4. A _____ presides over criminal and civil cases in a court of law.
5. A _____ represents clients in criminal and civil litigation, draws up legal documents, and advises clients on legal transactions.

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