STEM CAREERS ARE EVERYWHERE!

LESSON PLAN

LESSON OBJECTIVE: Students will explore different career opportunities in STEM fields in Washington state.

GRADE LEVEL: High School

TIME: One class period (40 minutes)

HANDOUTS: Warm Up Math Problems; STEM Occupation Chart; Washington State Largest and STEM Employers List; STEM Careers Are Everywhere! Exit Ticket; STEM Career Related Resources and Scholarships

LESSON STEPS:

1. **Warm Up**: Give students the *Warm Up Math Problems* worksheet, instructing them to complete the problems. Discuss the answers afterwards.

2. **Discussion**: Tell students that today they will be learning about different STEM career opportunities, having them look at the *STEM Occupation Chart*, and *Washington State Largest and STEM Employers List*. Facilitate a discussion about the careers, using the following questions plus any others that come up during the discussion:
   a. Which of these jobs interests you the most? Why?
   b. Do any of the salaries surprise you?
   c. Look at the correlation between the Entry Educational Levels and the Average Annual Salaries. Do you notice anything surprising?
   d. Pick the job that interests you the most. What steps do you think you will need to take to get this job? Are there certain classes that you think you will need?
   e. What do you think about the percentage of females in these occupations? Does anything stand out to you?
   f. What do you think about the percentage of people of color in these occupations? Does anything stand out to you?
   g. Look at the *Washington Employers List*. Do you recognize any of the companies? Would you want to work for any of these companies? What surprises you about this list of Washington state employers and their locations?

3. **Activities**: Choose the following in-class activities to assign to the students based on time and interest. These activities could be done solo, with a partner or small group, or as a class.
   a. The following question is a sample essay question for The American Institute of Aeronautics and Astronautics Scholarship: "What are your career objectives, and what is your academic plan to achieve these objectives?" Create an outline for how you would respond to this essay question.
   b. Pick one of the occupations listed in the *STEM Occupation Chart*. If you were applying for this job, what attributes and accomplishments would you mention in a cover letter or interview?

4. **Assessment and Follow Up**: Hand out the *STEM Careers Are Everywhere! Exit Ticket*, collect and pass out the following (or use in a follow up lesson): *STEM Career Related Resources and Scholarships*.

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WARM UP MATH PROBLEMS

OCCUPATIONAL TITLE	ANNUAL AVERAGE SALARY	MEDIAN HOURLY WAGE
Software Developers, Applications	$122,175	$57.72
Registered Nurses	$79,262	$37.57
Accountants and Auditors	$75,615	$32.76
Market Research Analysts and Marketing Specialists	$80,057	$34.00
Computer Systems Analysts	$95,484	$44.03
Elementary School Teachers, Except Special Education	$61,012	$29.33
Business Operations Specialists, All Other	$78,102	$35.06
Nursing Assistants	$30,011	$13.95
Computer User Support Specialists	$58,749	$25.51
Computer Programmers	$120,765	$58.30
Web Developers	$86,830	$39.62
Medical Assistants	$37,118	$17.61
Secondary School Teachers, Except Special and Career/Technical Education	$62,817	$30.20
First-Line Supervisors of Construction Trades and Extraction Workers	$77,215	$36.29

1. **Create a line graph and plot the occupations with the top five annual average salaries.**

2. **Find the mean, median, and mode of the median hourly wage of the occupations listed in the chart.**

OCCUPATIONAL TITLE	AVERAGE ANNUAL GROWTH RATE 2014-2024	AVERAGE ANNUAL JOB OPENINGS 2014-2024
First-Line Supervisors of Construction Trades and Extraction Workers	1.5%	350
Business Operations Specialists, All Other	1.6%	954
Secondary School Teachers, Except Special and Career/Technical Education	1.6%	584
Nursing Assistants	1.6%	1,137
Elementary School Teachers, Except Special Education	1.7%	1,261
Registered Nurses	1.8%	2,468
Medical Assistants	1.9%	564
Dental Assistants	1.9%	496
Accountants and Auditors	1.9%	1,585
Computer Programmers	2.0%	830
Computer Systems Analysts	2.7%	840
Computer User Support Specialists	2.7%	668
Market Research Analysts and Marketing Specialists	3.1%	835
Software Developers, Applications	3.2%	3,307
Web Developers	4.3%	379

3. Create a line graph plotting the annual growth rate and annual job openings for each occupation.

4. Do you see any correlation between the annual growth rate and annual job opening for each occupation?

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Selected STEM Occupations

Source: Washington State Employment Security Department

Occupation Title	Annual Average Salary	Median Hourly Wage	Entry Educational Level	Average Annual Growth Rate 2014-2024	Average Annual Job Openings 2014-2024	Percentage of Female Employees	Percentage of People of Color Employees
Software Application Developer	$ 122,175.00	$ 57.72	Bachelor's Degree	3.20%	3307	20%	44.60%
Computer Programmer	$ 120,765.00	$ 58.30	Bachelor's Degree	2.00%	830	22.60%	34.10%
Computer Systems Analyst	$ 95,484.00	$ 44.03	Bachelor's Degree	2.70%	840	35.70%	35.10%
Web Developer	$ 86,830.00	$ 39.62	Associate's Degree	4.30%	379	33.60%	23.50%
Market Research Analyst/Marketing Specialist	$ 80,057.00	$ 34.00	Bachelor's Degree	3.10%	835	55%	22.10%
Registered Nurse	$ 79,262.00	$ 37.57	Bachelor's Degree	1.80%	2468	90%	27.50%
Business Operations Specialist	$ 78,102.00	$ 35.06	Bachelor's Degree	1.60%	954	60.90%	31.90%
First-Line Supervisor of Construction Trades and Extraction Workers	$ 77,215.00	$ 36.29	High School Diploma or Equivalent	1.50%	350	2.60%	29.50%
Accountants and Auditors	$ 75,615.00	$ 32.76	Bachelor's Degree	1.90%	1585	61.30%	28.40%
Secondary School Teacher	$ 62,817.00	$ 30.20	Bachelor's Degree	1.60%	584	60.50%	17.90%
Elementary School Teacher	$ 61,012.00	$ 29.33	Bachelor's Degree	1.70%	1261	78.50%	22.50%
Computer User Support Specialist	$ 58,749.00	$ 25.51	Some College, No degree	2.70%	668	25.50%	30.20%
Dental Assistant	$ 41,462.00	$ 19.73	Post Secondary Nondegree Award	1.90%	496	93.30%	42%
Medical Assistant	$ 37,118.00	$ 17.61	Post Secondary Nondegree Award	1.90%	564	92.90%	47%
Nursing Assistant	$ 30,011.00	$ 13.95	Post Secondary Nondegree Award	1.60%	1137	88.10%	57.90%

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WASHINGTON STATE EMPLOYERS

TOP FIVE WASHINGTON STATE EMPLOYERS
Amazon – Seattle – 230,800 employees
Boeing – Seattle – 161,400 employees
Microsoft – Redmond – 118,000 employees
Joint Base Lewis-McChord – Lakewood – 58,074 employees
Navy Region Northwest – Silverdale – 46,693 employees

WASHINGTON STATE STEM EMPLOYERS AND LOCATIONS
Source: Google Job Search 2017
Note: This is not necessarily a complete listing of all STEM related employers

Software Developers, Applications
1. Amazon – Seattle
2. Department of Social and Health Services – Olympia
3. Starbucks – Seattle
4. Microsoft – Redmond
5. HP – Vancouver, WA
6. Oracle – Seattle
7. Mobica – Bellevue
8. Lowe's – Kirkland
9. Disney – Seattle
10. GoDaddy.com – Kirkland

Registered Nurses
1. UW Medicine – Seattle
2. Department of Veteran Affairs – Spokane
3. Healthtrust Workforce Solutions – Connell
4. Alliance Nursing – Woodinville, Tacoma
5. Swedish Medical Center – Seattle
6. Yakima Valley Memorial Hospital – Yakima
7. Washington Department of Corrections – Walla Walla
8. Morton General Hospital – Morton
9. Catholic Health Initiatives – Seattle
10. Kaiser Permanente – Seattle

Accountants and Auditors
1. State of Washington – Olympia
2. Verathon, Inc – Bothell
3. Clarke Whitney, CPA, Inc – Bremerton
4. Banner Bank – Spokane
5. CliftonLarsonAllen, LLP – Bellevue
6. BECU – Tukwila
7. Whitman County – Colfax
8. PACCAR – Bellevue
9. Department of Labor and Industries – Everett
10. Robert Half Finance and Accounting – Seattle

Market Research Analysts and Marketing Specialists
1. University of Washington – Seattle
2. Amazon – Seattle
3. Zillow, Inc – Seattle
4. Sazan Group, Inc – Seattle
5. Infoblox – Tacoma
6. Stryker – Redmond
7. PCG – Clarkston
8. PACCAR – Bellevue
9. Acosta Sales and Marketing – Bellevue
10. Inventiv Health – Seattle

Computer Systems Analysts
1. Annik, Inc – Bellevue
2. MCE Technical Services – Richland
3. Snohomish County PUD – Everett
4. Excelsior Design, Inc – Richland
5. C&I Engineering, LLC – Richland
6. Business Computer Technicians – Tukwila
7. State of Washington – Olympia
8. Logic20/20 – Seattle
9. Amazon – Seattle
10. VanderHouwen – Vancouver, WA

Elementary School Teachers
1. Seattle Public Schools – Seattle
2. Stevenson Carson School District – Stevenson
3. King County Public Schools – King County
4. Muckleshoot Indian Tribe – Auburn
5. Centralia School District – Centralia
6. Kalama School District – Kalama
7. Renton School District – Renton
8. Spokane Public Schools – Spokane
9. Puget Sound ESD – Renton
10. Bellevue Children's Academy – Bellevue

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Business Operations Specialists
1. Amazon – Seattle
2. Phillips – Bothell
3. State of Washington – Olympia
4. CBRE – Redmond
5. Moseley Technical Services – Seattle
6. Deloitte – Seattle
7. Skagit Bank – Bellingham
8. Mission Support Alliance, LLC – Richland
9. E3 Federal Solutions – Spokane
10. The Act 1 Group, Inc – Bellevue

Nursing Assistants
1. Department of Veteran Affairs – Spokane and Walla Walla
2. Providence Health Services – Spokane
3. Island Hospital – Anacortes
4. Genesis Healthcare – Montesano, Everett
5. Samaritan Healthcare – Moses Lake
6. CHC Services – Seattle
7. Virginia Mason Medical Center – Seattle
8. MultiCare Health System – Puyallup
9. UW Medicine – Seattle
10. Swedish Medical Center – Seattle

Computer User Support Specialists
1. Blue Frog – Seattle
2. Clark Nuber – Bellevue
3. Applied Technical Services – Kirkland
4. Zillow – Seattle
5. UW Bothell – Bothell
6. Brightwire Networks – Olympia
7. Denali Advanced Integration – Tacoma
8. Amazon – Seattle
9. State of Washington – Olympia
10. Muckleshoot Indian Tribe – Auburn

Computer Programmers
1. Kitsap County – Port Orchard
2. ILink Systems – Redmond
3. Amazon – Seattle
4. ManTech – Bremerton
5. American Tire Distributors – Kirkland
6. Oculus – Redmond
7. Modern Electron – Bellevue
8. Facebook – Redmond
9. DXC Technology – Seattle
10. Sucker Punch Productions – Bellevue

Web Developers
1. Amazon – Seattle
2. ERT, Inc – Seattle
3. MCE Technical Services – Richland
4. Department of Labor and Industries – Tumwater
5. Washington State University – Pullman

6. Working Systems, Inc – Olympia
7. Infojini, Inc – Olympia
8. US Digital – Vancouver, WA
9. Starbucks – Seattle
10. Vlocity – Seattle

Medical Assistants
1. Washington State University – Pullman
2. Aerotek – Seattle
3. Kaiser Permanente – Seattle
4. UW Medicine – Seattle
5. Evergreen Health Care – Kirkland
6. Whidbey General Hospital – Seattle
7. Samaritan Healthcare – Moses Lake
8. Kitsap Mental Health Services – Bremerton
9. Providence Health and Services – Spokane
10. Swedish Medical Center – Seattle

Secondary School Teachers
1. Seattle Public Schools – Seattle
2. Capital Region ESD 113 – Tumwater
3. Puget Sound ESD – Renton
4. Mukilteo School District – Everett
5. Green Dot Public Schools – Tacoma
6. Bellevue School District – Bellevue
7. Renton School District – Renton
8. Sterling Education – Seattle
9. Central Kitsap School District – Silverdale
10. Home Port Learning Center Foundation – Bellingham

First-Line Supervisors of Construction Trades and Extraction Workers
1. PME Construction Corporation – Poulsbo
2. Horizon Retail Construction – Seattle
3. Doyon – Seattle
4. The Kugel Corporation – Chehalis
5. Osborne Construction Company – Kirkland
6. MJ Hughes Construction – Vancouver, WA
7. Meridian Construction, Inc – Spokane
8. Lennar – Seattle
9. Swinerton, Inc – Seattle
10. Cybercoders – Vancouver, WA

Dental Assistants
1. Smile Brands Group, Inc – Olympia
2. Columbia Basin Health Association – Othello
3. Seattle Children's Home – Seattle
4. Tri–Cities Community Health – Pasco
5. HealthPoint – Bothell
6. Willamette Dental Group – Tacoma
7. Neighborcare Health – Seattle
8. Kaiser Permanente – Vancouver, WA
9. International Community Health Services – Bellevue
10. Kent Station Family Dentistry – Kent

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EXIT TICKET

1. **What was surprising or interesting about what you learned today?**

2. **What would you like to learn more about?**

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STEM CAREER RELATED RESOURCES & SCHOLARSHIPS

OTHER RESOURCES

The American Society of Mechanical Engineers (ASME)
- www.asme.org
- Nonprofit membership organization that provides engineering scholarships and other educational resources

The American Institute of Aeronautics and Astronautics (AIAA)
- www.aiaa.org
- Nonprofit membership organization that provides STEM scholarships, networking opportunities, competitive opportunities, and other educational resources

STEM SCHOLARSHIPS

SMART Scholarship Program (https://smart.asee.org)
- Eligibility Requirements
    - Must be pursuing an undergraduate or graduate degree in a STEM-related field
    - Able to participate in summer internships at Department of Defense
    - Willing to work at Department of Defense after graduation (one year of employment for every one year of receiving award)
    - Have a minimum GPA of 3.0 at time of award
    - Must be a current undergraduate or graduate student.
    - Must have a high school diploma or GED
- Benefits
    - Full tuition and education-related fees
    - Stipend of $25,000 to $38,000
    - Summer research internship opportunities
    - Health insurance allowance up to $1,200 per calendar year
    - Miscellaneous supplies allowance of $1,000 per academic year
    - Mentoring
    - Post-graduation employment placement at the Department of Defense
- Sample Application Question
    - Please discuss each of the following:
        - The factors and experiences that led you to choose your field of study
        - Specific challenges or problems in your field that most interest you and why

The American Institute of Aeronautics and Astronautics (AIAA) Scholarships
(http://www.aiaa.org/Scholarshipsandawards)
- Eligibility Requirements
    - Must be a current AIAA student member
    - Must have completed at least one academic semester of fulltime college work
    - Must have a minimum GPA of 3.3
    - Must be pursuing a science or engineering degree
- Benefits
    - Various financial awards ranging from $500 to $5,000
- Sample Application Question
    - What are your career objectives, and what is your academic plan to achieve these objectives?

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Siemens Competition (https://siemenscompetition.discoveryeducation.com/)
- Eligibility Requirements
  - High school student in good standing
  - U.S. citizen or permanent resident
  - Submit research project on topic in field of mathematics, engineering, or biological or physical sciences
- Benefits
  - Financial awards ranging from $1,000 to $100,000

Regeneron Science Talent Search (https://student.societyforscience.org/apply-science-talent-search)
- Eligibility Requirements
  - High school senior at school in U.S. or U.S. territory
  - High school senior and U.S. citizen at an accredited American or international school overseas
  - Submit an independent research project in a STEM-related field
- Benefits
  - Financial awards ranging from $2,500 to $250,000

Women Techmakers Scholars Program (https://www.womentechmakers.com/scholars)
- Eligibility Requirements
  - Identify as female
  - Fulltime student in a Bachelors, Masters, or PhD program at a university in the U.S. or Canada
  - Studying computer science, computer engineering, or a closely related technical field
  - Demonstrate strong academic record
  - Exemplify leadership and demonstrate passion for increasing the involvement of women in computer science
- Benefits
  - $10,000 financial award
  - Invitation to a Google Scholars' Retreat, which provides opportunities to participate in workshops and network with Google employees and fellow scholars
  - Mentorship

Washington State Opportunity Scholarship (http://waopportunityscholarship.org/)
- Eligibility Requirements
  - Washington state resident
  - High school senior or college student with fewer than four semesters of credit
  - Received or will receive a diploma or GED from a Washington state high school
  - Planning to enroll as fulltime college student
  - Pursuing or planning to pursue a high-demand major in STEM or healthcare field
  - Minimum GPA of 2.75
  - Maximum family income requirements based on family size
- Benefits
  - Financial award of $2,500 to $7,500 per year for one to three years
- Sample Essay Question
  - Describe a personal experience that has sparked your interest in a STEM or healthcare degree.