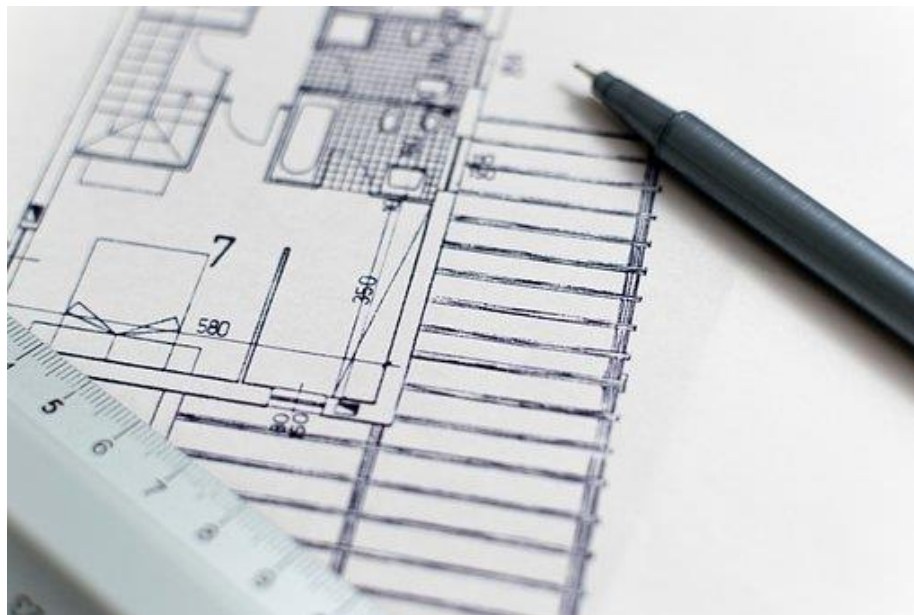


**EXPLORING**  
**CAREER CLUSTERS:**  
**ARCHITECTURE**  
**&**  
**CONSTRUCTION**



*Image from Creative Commons [www.pixabay.com/en/architecture-blueprint-floor-plan-1857175/](http://www.pixabay.com/en/architecture-blueprint-floor-plan-1857175/)*

# UNIT 2-A: EXPLORING CAREER CLUSTERS: Architecture & Construction *Suggestions for the Instructor*

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## **Pg. 2A-13 - 14 -- What Do You Already Know? Job Titles in Architecture & Construction**

In small groups, discuss each of the job titles in the **Architecture & Construction** career cluster. What do you think these workers do? What kind of environment do they work in? What tools and equipment do they use? What kind of skills do they need to have?

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## **Pg. 2A-15 - 18 -- Architecture & Construction JOB TITLES: Research**

In small groups, look up the job titles below on **MyCareerShines** ([www.mycareershines.kuder.com](http://www.mycareershines.kuder.com)) and write the definition on the lines on the handout. (Other websites or a dictionary may be used if this is not accessible.) Ask students to discuss how their research compares with their prior knowledge.

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## **Pg. 2A-19 -- Architecture & Construction Job Description Match-up**

On this handout, have students match the letter of the job from this career cluster with the description of the job duties.

### **ANSWERS:**

	<b>Architecture / Construction Career Cluster</b>		<b>Description of Job Duties</b>
<i>A</i>	<i>Building Inspector</i>	<b>O</b>	<i>Joins metal parts together. Works on metal components in buildings, pipelines, bridges, power-plants, or refineries.</i>
<i>B</i>	<i>Carpenter</i>	<b>N</b>	<i>Prepare surfaces, calculates the area to be painted, applies primer, paint and other finishes using hand brushes, rollers, or sprayers</i>
<i>C</i>	<i>Plumber / pipefitter</i>	<b>B</b>	<i>Works from blueprints to cut, fit, and assemble wood and other materials to construct buildings, boats, and other structures.</i>
<i>D</i>	<i>Solar Energy System Installer</i>	<b>E</b>	<i>Directs construction supervisors, monitors the progress of construction activities, and monitors compliance with building codes.</i>
<i>E</i>	<i>Construction Manager</i>	<b>G</b>	<i>Installs, connects, and repairs electrical wiring in buildings. Pulls cable through a conduit to connect switches and outlets.</i>

<i>F</i>	<i>Drywall Installer / Sheetrock Applicator</i>	<b>D</b>	<i>Safely attaches solar modules to roofs and guarantees that solar energy systems work.</i>
<i>G</i>	<i>Electrician</i>	<b>C</b>	<i>Lays out, assembles, and installs pipes for air, ammonia, gas, and water systems.</i>
<i>H</i>	<i>Heating Ventilation and Air Conditioning Mechanic</i>	<b>K</b>	<i>Researches and provides data about the location, elevation, and shape of land for engineering, mapmaking, construction and other purposes.</i>
<i>I</i>	<i>Contractor</i>	<b>A</b>	<i>Examines the construction and repair of structures to ensure that the materials meet regulations.</i>
<i>J</i>	<i>Brick mason</i>	<b>L</b>	<i>Plans, designs, and supervises the construction of homes, office buildings, airports, or highways using computer-aided design and drafting systems (CADD) to create drawings.</i>
<i>K</i>	<i>Surveyor</i>	<b>M</b>	<i>Plans and designs land areas for residential use, public parks, airports, shopping centers, etc.</i>
<i>L</i>	<i>Architect</i>	<b>F</b>	<i>Installs and finishes drywall panels used for walls and ceilings in homes and other buildings.</i>
<i>M</i>	<i>Landscape Architect</i>	<b>H</b>	<i>Installs, maintains, and repairs heating and air conditioning equipment.</i>
<i>N</i>	<i>Painter</i>	<b>J</b>	<i>Sets bricks, concrete blocks, masonry panels, and other masonry materials. Builds and repairs walls, floors, partitions, chimneys and other structures.</i>
<i>O</i>	<i>Welder</i>	<b>I</b>	<i>Provides the material, labor, equipment, and services necessary for the construction of the project. Hires subcontractors to perform specialized tasks.</i>

\*\*\*\*\*

### **Pg. 2A-20 -- Alphabetical Order**

Have students put the **Architecture & Construction** job titles in alphabetical order.

**ANSWERS:**

- |                           |   |
|---------------------------|---|
| 1. Architect              | 11. Heating Ventilation and Air Conditioning Mechanic |
| 2. Bricklayer's Assistant | 12. Landscape Architect                               |
| 3. Brick Mason            | 13. Painter   |
| 4. Building Inspector     | 14. Pipefitter  |
| 5. Carpenter              | 15. Plumber   |
| 6. Construction Manager   | 16. Plumber's Assistant                               |
| 7. Contractor             | 17. Solar Energy System Installer                     |
| 8. Drywall Installer      | 18. Surveyor  |
| 9. Electrician            | 19. Welder  |
| 10. Environmental Planner |   |

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**Pg. 2A-21 - 22 -- STRETCH Your VOCABULARY**

Have students make new words from the **Architecture and Construction Job Cluster** vocabulary. They may work in small groups to use their own knowledge and a dictionary to see how many forms of the words they can find. (They will not be able to fill in all the categories for some terms.) The first four are done for them.

Have them write a story about a day in the life of a person who works in the Architecture and Construction career cluster. Have them use at least ten of the words (in addition to the job titles!)

**ANSWERS:**

<b>JOB TITLE</b>	<b>RELATED NOUN</b>	<b>Present-tense VERB</b>	<b>ADJECTIVE</b>	<b>ADVERB</b>
<b>Construction worker</b>	~ construction ~ work	~ construct ~ work	~ constructive ~ working	constructively
<b>Bricklayer</b>	bricklaying	lay brick		
<b>Installer</b>	installation	Install	installed	
<b>Architect</b>	architecture		architectural	architecturally
<b>Inspector</b>	inspection	inspect	inspected	
<b>Plumber</b>	plumbing	plumb	plumbed	
<b>Carpenter</b>	carpentry			
<b>Carpenter's assistant</b>	~carpentry ~assistance	assist	assisted	
<b>Solar Energy System Installer</b>	~energy ~system ~installation	~energize ~systematize ~install	~energetic ~systematic ~installed	~energetically ~systematically
<b>Construction Manager</b>	~ construction ~ management	~ construct ~ manage	~ constructive ~ managed	constructively
<b>Electrician</b>	electricity	electrify	electrical	electrically
<b>Heating Ventilation Air Conditioning Mechanic</b>	~heat ~ventilation ~air conditioning ~machine	~heat ~ventilate ~air condition ~mechanize	~heated ~ventilated ~air-conditioned ~mechanized ~mechanical	~heatedly ~mechanically
<b>Contractor</b>	contract	contract	contractual	
<b>Environmental Planner</b>	~environment ~plan	plan	~environmental ~planned	environmentally
<b>Surveyor</b>	survey	survey	surveyed	
<b>Painter</b>	paint	paint	painted	painterly

\*\*\*\*\*

## Pg. 2A-23 -- Architecture and Construction Job Cluster Crossword Puzzle

### ANSWERS:

#### Across

1. Installs, connects, and repairs electrical wiring in buildings -- **ELECTRICIAN**
4. Helps skilled construction workers (plumbers, bricklayers, carpenters) - **ASSISTANT**
8. Installs and finishes drywall panels used for walls and ceilings -  
**DRYWALL INSTALLER**
10. Plans, designs, and supervises the construction of buildings using computer-aided design and drafting (CADD) -- **ARCHITECT**

#### Down

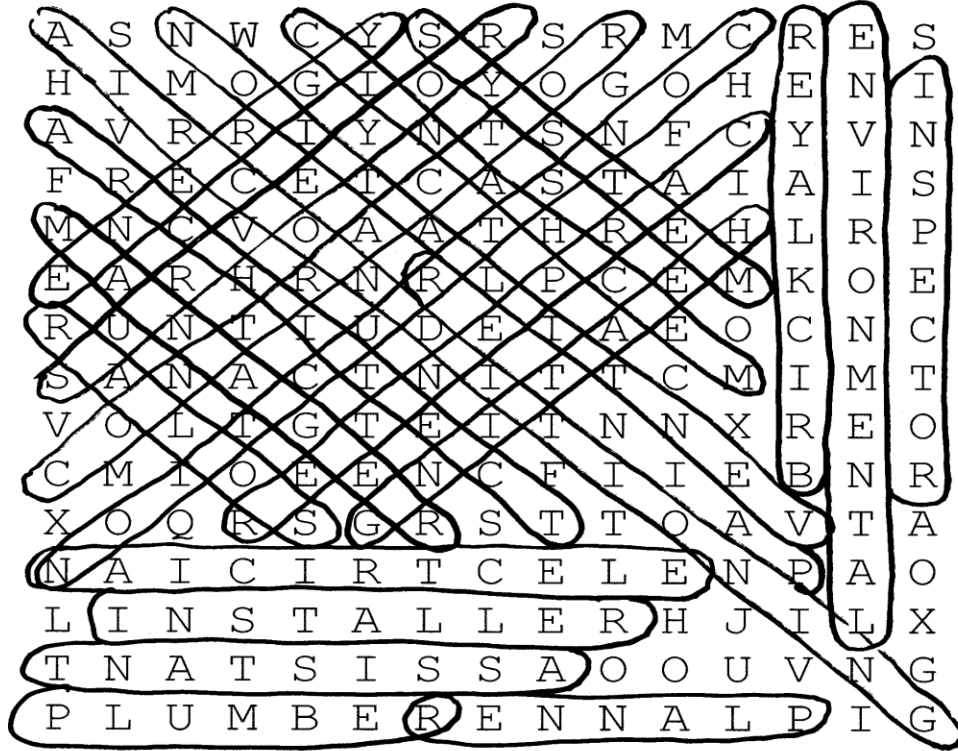
2. Provides the material, labor, equipment, and services necessary for the construction of the project; hires subcontractors -- **CONTRACTOR**
3. Examines the construction and repair of structures to ensure that the materials meet regulations -- **INSPECTOR**
5. Sets bricks, concrete blocks, masonry panels, and other masonry materials -  
**BRICKLAYER**
6. Works from blueprints to cut, fit, and assemble wood to construct buildings -  
**CARPENTER**
7. Lays out, assembles, and installs pipes for air, ammonia, gas, and water systems -  
**PLUMBER**
9. Researches and provides data about the location, elevation, and shape of land -  
**SURVEYOR**

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### Pg. 2A-24 -- Architecture & Construction Word Search

ANSWERS:



AIRCONDITIONING  
BRICKLAYER  
CONTRACTOR  
ENVIRONMENTAL  
INSTALLER  
PAINTER  
SOLAR  
VENTILATION

ARCHITECT  
CARPENTER  
ELECTRICIAN  
HEATING  
MANAGER  
PLANNER  
SURVEYOR

ASSISTANT  
CONSTRUCTION  
ENERGY  
INSPECTOR  
MECHANIC  
PLUMBER  
SYSTEM

\*\*\*\*\*

## Pg. 2A-25 - 27 -- MATH in the Architecture and Construction Career Cluster: Reading a Ruler

Demonstrate to students how important measurement is to the Architecture and Construction Career by giving them the opportunity to become familiar with and use a ruler. They may work in small groups to use a colored pencil to label all the  $\frac{1}{2}$  inch marks (half way between the inch marks,) then use that ruler to answer the questions that follow:

### ANSWERS:

1. How many inches are there in this half-ruler?     **six**
2. How many inches are there in one foot?     **twelve**
3. How many inches are there in two feet?     **twenty-four**
4. How many  $\frac{1}{2}$  inches are there in six inches?     **twelve**
5. How many  $\frac{1}{2}$  inches are there in three feet?     **sixty-four**

Using a different colored pencil, have them label all the  $\frac{1}{4}$  inch marks inside the ruler (half way between the inch and half inch marks.) then use the same ruler to answer the questions that follow:

### ANSWERS:

1. How many  $\frac{1}{4}$  inches are in one inch?     **four**
2. How many  $\frac{1}{4}$  inches are in three inches?     **twelve**
3. How many  $\frac{1}{4}$  inches are in four inches?     **sixteen**
4. How many  $\frac{1}{4}$  inches are in  $5\frac{1}{2}$  inches?     **twenty-two**
5. How many  $\frac{1}{4}$  inches are in one foot?     **forty-eight**

A page of six-inch long rulers (**Practice with Linear Measurement**) has been provided for instructors to use in the classroom for more measurement practice. Teachers may also copy the page onto card stock, cut and laminate the rulers if possible, then distribute them to students to use to answer the questions that follow:

### ANSWERS:

1. How long is your math book?     **answers will vary / check for correctness**
2. How long is an unsharpened pencil?     **answers will vary / check for correctness**
3. How long is line A?     **4 1/2 "**
4. How long is line B?     **5 "**
5. How much longer is line B than line A?     **3/4 "**
6. Draw a line that is  $3\frac{1}{2}$ " long.     **check for correctness**
7. Draw a line that is  $2\frac{1}{4}$ " long.     **check for correctness**
8. Draw a box that has a length of  $6\frac{1}{4}$ " and a width of  $2\frac{3}{4}$ ". Inside of the box, write five architecture and construction careers that involve using measurement skills.

**Check for correct measurements. Careers may include any of those listed in the Architecture and Construction Career Cluster.**

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**Pg. 2A-28 - 30 -- MATH in the Architecture and Construction Career  
Cluster: Interpreting Scale**

Students read about the ways in which scale is used in architectural drawings and floor plans in order to then apply this knowledge to word problems using scale. Remind them as they read that floor plans are generally drawn to 1/4" scale which means that every 1/4" on the plan equals 1' in actual length.

Distribute the accompanying handout and the graph paper and have students draw scale models based on the dimensions given. They can then work together to check their measurements.

**ANSWERS:**

**A --** *On the 1/4" graph paper on the following page, draw a scale model of a bedroom closet that is 3' (length) x 2 1/2' (width.)*

1. Label the room in feet. \_\_\_\_\_ **Check drawings for accuracy.** \_\_\_\_\_
2. What is the perimeter of the room? \_\_\_\_\_ **11'** \_\_\_\_\_
3. What is the area of the room in square feet? \_\_\_\_\_ **7 1/2 sq. ft.** \_\_\_\_\_

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**B --** *On the 1/4" graph paper on the following page, draw a scale model of a garden plot that is 5' (length) x 3' (width.) Use a scale of 1/4" = 1'.*

1. Label the garden plot in feet. \_\_\_\_\_ **Check drawings for accuracy.** \_\_\_\_\_
2. What is the perimeter of the garden plot? \_\_\_\_\_ **16'** \_\_\_\_\_
3. What is the area of the garden plot in square feet? \_\_\_\_\_ **15 sq. ft.** \_\_\_\_\_

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**C --** *On the 1/4" graph paper on the following page, draw a scale model of a path that is 6' (length) x 1 1/2' (width.) Use a scale of 1/4" = 1'.*

1. Label the sidewalk in feet. \_\_\_\_\_ **Check drawings for accuracy.** \_\_\_\_\_
2. What is the perimeter of the sidewalk? \_\_\_\_\_ **15'** \_\_\_\_\_
3. What is the area of the sidewalk in square feet? \_\_\_\_\_ **9 sq. ft.** \_\_\_\_\_

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**Pg. 2A-31 -- What does a Construction Worker do? EDITING PRACTICE**

Have students rewrite the paragraph on the handout. They will edit for complete sentences, correct subject / verb agreement, punctuation, and capitalization.

**ANSWERS:**

Construction workers do a wide range of tasks from the very easy to the extremely difficult and hazardous. Although many of the tasks they do require some training and experience, many jobs can be learned quickly.

A construction worker typically cleans construction sites by removing debris, loads or unloads building materials used in construction, builds or takes apart scaffolding and temporary structures, digs trenches and compacts earth to prepare for construction, operates equipment and machines used in construction, helps other craft workers with their duties, and follows construction plans and instructions.

Construction workers use a variety of tools and equipment. Some tools are simple, such as brooms and shovels. Other equipment is more sophisticated, such as pavement breakers, jackhammers, earth tampers, and surveying equipment. Workers may help transport and use explosives or run hydraulic boring machines to dig out tunnels. They may learn to use laser beam equipment to place pipes and use computers to control robotic pipe cutters. They may become certified to remove asbestos, lead, or chemicals.

Construction work can be physically demanding. Some construction workers work at great heights or outdoors in all weather conditions. Some may be required to work in tunnels. They must use earplugs around loud equipment and wear gloves, safety glasses, and other protective gear.

Did you know that there are many trades within the architecture and construction career cluster? Carpenters, electricians, painters, plasterers, plumbers, roofers, contractors, and architects are all examples of jobs related to construction.

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**Pg. 2A-32 -- Talk About Jobs! Small Group Dialogue**

Have students pick one of the jobs in the Architecture and Construction Career Cluster. In small groups, complete the dialogue on the handout, using at least ten of the words from the previous lessons. Have him write in such a way that the audience learns about the job duties, the work environment, and the qualities a person should possess who holds one of these jobs. Then they can perform the dialogue for the class.

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**Pg. 2A-33 - 34 -- A Day in the Life: Sheila Jackson, Building Contractor**

Have students read an article about a day in the life of a building contractor, either individually, in small groups, or as a class. Then have them answer the comprehension questions about the information in the article.

**ANSWERS:**

1. What did Sheila do to prepare for her job as a building contractor?  
**She worked for years as a carpenter, then took classes in CADD (Computer-aided Design and Drafting) so she could learn more about architectural design, building codes, zoning regulations and basic construction elements.**
2. Why do you think being well-organized is important to being a building contractor?  
**She has so many duties she has to complete on a daily basis in order to ensure that the construction project is completed in a timely manner.**
3. What other workers in the Architecture and construction Career Cluster does Sheila work with as part of her job?  
**Carpenters, plumbers, electricians, bricklayers, drywall installers, architects**
4. What are some of the things that Sheila likes most about her job?  
**She likes that she is the one who is responsible for dealing with all emergencies and resolving problems that occur. She likes making decisions. She likes that a lot of people are counting on her to do the job right.**
5. What parts of Sheila’s job as a contractor do you think you would enjoy? Which would you find challenging?  
**Answers will vary. Encourage students to use specific examples from the reading.**
6. What qualities does Sheila have that make her a good building contractor?  
 leadership  
 experience in construction  
 ability to make decisions  
 artistic  
 knowledge of materials and supplies  
 financial skills  
 communication skills  
 planning and organizational skills  
 responsible  
 medical skills

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**Pg. 2A-35 -- Career Cluster Research**

Ask students to use three resources to research and complete the information pertaining to job titles in the career cluster they have chosen to explore. (For example: MyCareer Shines: <https://mycareershines.kuder.com>, another on-line resource, an interview with a career counselor.)

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**Pg. 2A-36 - 37 -- Post-Secondary Catalogue Exploration & Presentation**

For this activity, students will choose a program at one of the local educational or vocational institutions that interests them, based on what they have learned about their interests, skills and talents as well as what they now know about post-secondary options. (For example: they might select a certificate program from the local technical center, an Associate of Arts degree program, a community college certificate program or Associate of Science degree, or a four-year college degree.) They will go to the website of the institution which offers a program that interests them to answer the questions on the handou If they do not have internet access, if possible bring in print catalogues from the local college and vocational / technical center. Have students then prepare to present their information to the class.

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**Pg. 2A-38 - 40 -- Architecture and Construction Occupation Presentation**

Have students study the occupational vocabulary on the handout. Then they can use MyCareer Shines (<https://mycareershines.kuder.com>) and the Occupational Outlook Handbook ([http://o\\*netonline.com](http://o*netonline.com)) to explore in greater depth one of the jobs in the Architecture and Construction Career Cluster and prepare to present the information to the class.

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**EXPLORING  
CAREER CLUSTERS:  
ARCHITECTURE  
&  
CONSTRUCTION**



**Student Activities**

# WHAT DO YOU ALREADY KNOW?

## JOB TITLES IN ARCHITECTURE & CONSTRUCTION

*In small groups, discuss each of the job titles in the **Architecture & Construction** career cluster. What do you think these workers do? What kind of environment do they work in? What tools and equipment do they use? What kind of skills do they need to have?*

Carpenter \_\_\_\_\_

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Plumber \_\_\_\_\_

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Brick Mason / Bricklayer \_\_\_\_\_

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Building Inspector \_\_\_\_\_

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Construction Manager \_\_\_\_\_

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Drywall Installer / Sheetrock Applicator \_\_\_\_\_

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Painter \_\_\_\_\_

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Electrician\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Heating Ventilation and Air Conditioning Mechanic\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Solar Energy System Installer\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Surveyor\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Architect\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Landscape Architect\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Environmental Planner\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Welder\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Contractor\_\_\_\_\_

\_\_\_\_\_

# ARCHITECTURE & CONSTRUCTION

## JOB TITLES: Research

*In small groups, look up the job titles below on MyCareerShines ([www.mycareershines.kuder.com](http://www.mycareershines.kuder.com)) and write the definition on the lines below. (Other websites or a dictionary may be used if this is not accessible.) How does your research compare with your prior knowledge?*

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### CARPENTER

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### PLUMBER

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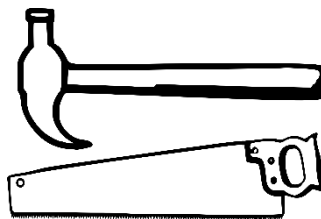
### BRICK MASON / BRICKLAYER

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**BUILDING INSPECTOR**

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**CONSTRUCTION MANAGER**

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**DRYWALL INSTALLER / SHEETROCK APPLICATOR**

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**ELECTRICIAN**

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**PAINTER**

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**HEATING VENTILATION AND AIR CONDITIONING MECHANIC**

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**SOLAR ENERGY SYSTEM INSTALLER**

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**SURVEYOR**

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**ENVIRONMENTAL PLANNER**

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**ARCHITECT**

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**LANDSCAPE ARCHITECT**

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**WELDER**

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**CONTRACTOR**

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*Images from Creative Commons [www. openclipart.org/detail/183613/hammer-and-saw](http://www.openclipart.org/detail/183613/hammer-and-saw) and [www. pixabay.com/en/construction-safety-hard-hat-helmet-2238779](http://www.pixabay.com/en/construction-safety-hard-hat-helmet-2238779)*

# ARCHITECTURE & CONSTRUCTION

## JOB DESCRIPTION MATCH-UP

Match the letter of the job from this career cluster with the description of the job duties.

	Architecture / Construction Career Cluster	Description of Job Duties
A	Building Inspector	Joins metal parts together. Works on metal components in buildings, pipelines, bridges, power-plants, or refineries.
B	Carpenter	Prepare surfaces, calculates the area to be painted, applies primer, paint and other finishes using hand brushes, rollers, or sprayers
C	Plumber / pipefitter	Works from blueprints to cut, fit, and assemble wood and other materials to construct buildings, boats, and other structures.
D	Solar Energy System Installer	Directs construction supervisors, monitors the progress of construction activities, and monitors compliance with building codes.
E	Construction Manager	Installs, connects, and repairs electrical wiring in buildings. Pulls cable through a conduit to connect switches and outlets.
F	Drywall Installer / Sheetrock Applicator	Safely attaches solar modules to roofs and guarantees that solar energy systems work.
G	Electrician	Lays out, assembles, and installs pipes for air, ammonia, gas, and water systems.
H	Heating Ventilation and Air Conditioning Mechanic	Researches and provides data about the location, elevation, and shape of land for engineering, mapmaking, construction and other purposes.
I	Contractor	Examines the construction and repair of structures to ensure that the materials meet regulations.
J	Brick Mason	Plans, designs, and supervises the construction of homes, office buildings, airports, or highways using computer-aided design and drafting systems (CADD) to create drawings.
K	Surveyor	Plans and designs land areas for residential use, public parks, airports, shopping centers, etc.
L	Architect	Installs and finishes drywall panels used for walls and ceilings in homes and other buildings.
M	Landscape Architect	Installs, maintains, and repairs heating and air conditioning equipment.
N	Painter	Sets bricks, concrete blocks, masonry panels, and other masonry materials. Builds and repairs walls, floors, partitions, chimneys and other structures.
O	Welder	Provides the material, labor, equipment, and services necessary for the construction of the project. Hires subcontractors to perform specialized tasks.

# ALPHABETICAL ORDER

Put the following *Architecture & Construction* job titles in alphabetical order.

Solar Energy System Installer  
Carpenter  
Plumber  
Contractor  
Brick Mason  
Building Inspector  
Drywall Installer  
Electrician  
Surveyor  
Painter

Architect  
Pipefitter  
Bricklayer  
Welder  
Landscape Architect  
Environmental Planner  
Construction Manager  
Heating Ventilation and  
Air Conditioning Mechanic  
Plumber's Assistant

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_
6. \_\_\_\_\_
7. \_\_\_\_\_
8. \_\_\_\_\_
9. \_\_\_\_\_
10. \_\_\_\_\_
11. \_\_\_\_\_
12. \_\_\_\_\_
13. \_\_\_\_\_
14. \_\_\_\_\_
15. \_\_\_\_\_
16. \_\_\_\_\_
17. \_\_\_\_\_

## STRETCH YOUR VOCABULARY

*Make new words from the **Architecture and Construction Job Cluster** vocabulary. Work in small groups to use your own knowledge and a dictionary to see how many forms of the words below you can find. (You will not be able to fill in all the categories for some terms.) The first four are done for you.*

<b>JOB TITLE</b>	<b>RELATED NOUN</b>	<b>Present-tense VERB</b>	<b>ADJECTIVE</b>	<b>ADVERB</b>
<b>Construction worker</b>	~ construction ~ work	~ construct ~ work	~ constructive ~ working	constructively
<b>Bricklayer</b>	bricklaying	lay brick		
<b>Installer</b>	installation	install	Installed	
<b>Architect</b>	architecture		architectural	architecturally
<b>Inspector</b>				
<b>Plumber</b>				
<b>Carpenter</b>				
<b>Carpenter's assistant</b>				
<b>Solar Energy System Installer</b>				
<b>Construction Manager</b>				
<b>Electrician</b>				

<b>Heating Ventilation Air Conditioning Mechanic</b>				
<b>Contractor</b>				
<b>Environmental Planner</b>				
<b>Surveyor</b>				
<b>Painter</b>				

**SMALL GROUP STORY**

*Now write a story about a day in the life of a person who works in the career cluster of Architecture / Construction. Use at least ten of the words above (in addition to the job titles!)*

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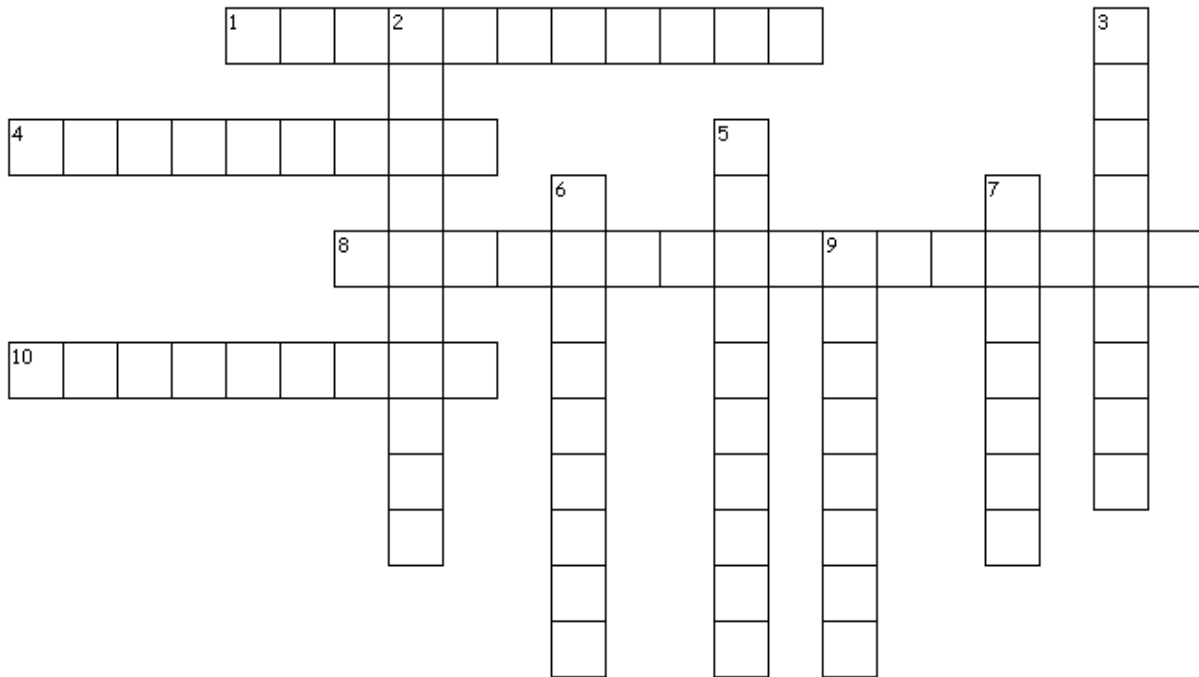
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## Architecture and Construction Job Cluster Crossword Puzzle



### Across

1. Installs, connects, and repairs electrical wiring in buildings
4. Helps skilled construction workers (plumbers, bricklayers, carpenters)
8. Installs and finishes drywall panels used for walls and ceilings
10. Plans, designs, and supervises the construction of buildings using computer-aided design and drafting (CADD)

### Down

2. Provides the material, labor, equipment, and services necessary for the construction of the project; hires subcontractors
3. Examines the construction and repair of structures to ensure that the materials meet regulations.
5. Sets bricks, concrete blocks, masonry panels, and other masonry materials
6. Works from blueprints to cut, fit, and assemble wood to construct buildings
7. Lays out, assembles, and installs pipes for air, ammonia, gas, and water systems
9. Researches and provides data about the location, elevation, and shape of land

[http://puzzlemaker.discoveryeducation.com/CrissCrossSetupForm.asp?campaign=flyout\\_teachers\\_puzzle\\_crisscross](http://puzzlemaker.discoveryeducation.com/CrissCrossSetupForm.asp?campaign=flyout_teachers_puzzle_crisscross)

# Architecture & Construction Word Search

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

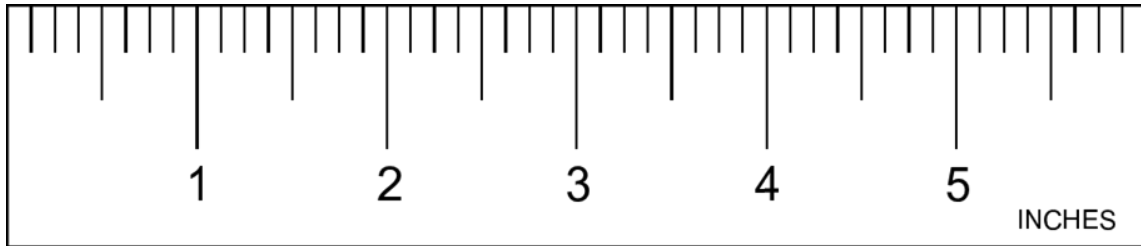
AIRCONDITIONING  
BRICKLAYER  
CONTRACTOR  
ENVIRONMENTAL  
INSTALLER  
PAINTER  
SOLAR  
VENTILATION

ARCHITECT  
CARPENTER  
ELECTRICIAN  
HEATING  
MANAGER  
PLANNER  
SURVEYOR

ASSISTANT  
CONSTRUCTION  
ENERGY  
INSPECTOR  
MECHANIC  
PLUMBER  
SYSTEM



## MATH in the Architecture and Construction Career Cluster: Reading a Ruler



The six-inch ruler above is a half of a foot. Inside the ruler, use a colored pencil to label all the  $\frac{1}{2}$  inch marks (half way between the inch marks.) Use the ruler to answer these questions:

1. How many inches are there in this half-ruler? \_\_\_\_\_
2. How many inches are there in one foot? \_\_\_\_\_
3. How many inches are there in two feet? \_\_\_\_\_
4. How many  $\frac{1}{2}$  inches are there in six inches? \_\_\_\_\_
5. How many  $\frac{1}{2}$  inches are there in three feet? \_\_\_\_\_

Using a different colored pencil, label all the  $\frac{1}{4}$  inch marks inside the ruler (half way between the inch and half inch marks.)

6. How many  $\frac{1}{4}$  inches are in one inch? \_\_\_\_\_
7. How many  $\frac{1}{4}$  inches are in three inches? \_\_\_\_\_
8. How many  $\frac{1}{4}$  inches are in four inches? \_\_\_\_\_
9. How many  $\frac{1}{4}$  inches are in  $5 \frac{1}{2}$  inches? \_\_\_\_\_
10. How many  $\frac{1}{4}$  inches are in one foot? \_\_\_\_\_

**MATH in the Architecture and Construction Career Cluster: Reading a Ruler, cont.**

Using a labeled six-inch ruler which has been cut out, measure the following objects:

1. How long is your math book? \_\_\_\_\_

3. How long is an unsharpened pencil? \_\_\_\_\_

4. How long is line A? \_\_\_\_\_

**A** \_\_\_\_\_

5. How long is line B? \_\_\_\_\_

**B** \_\_\_\_\_

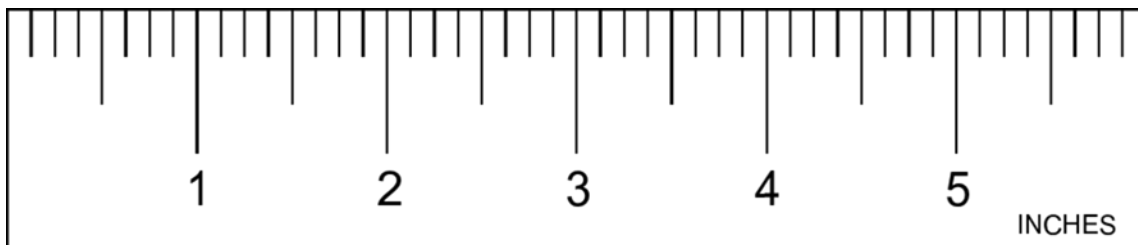
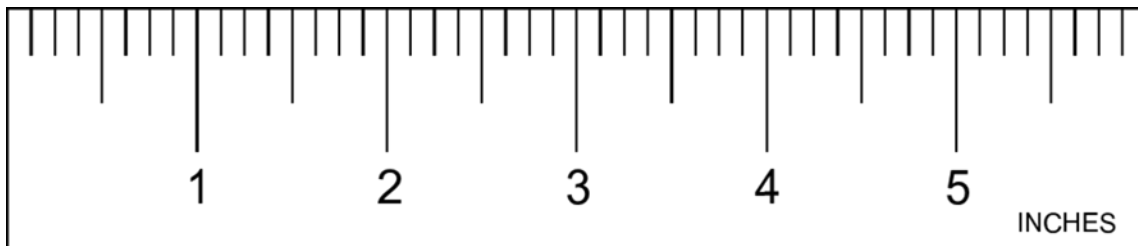
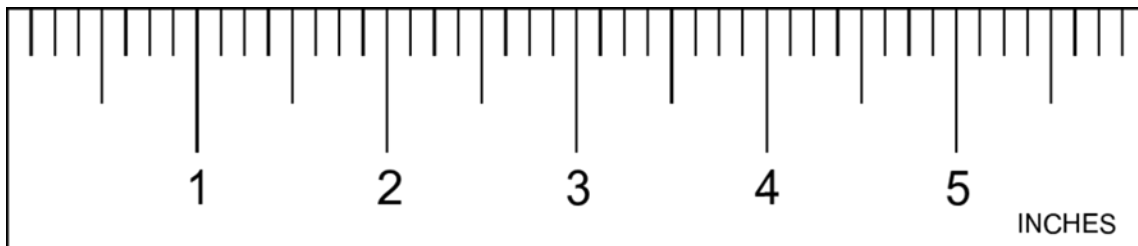
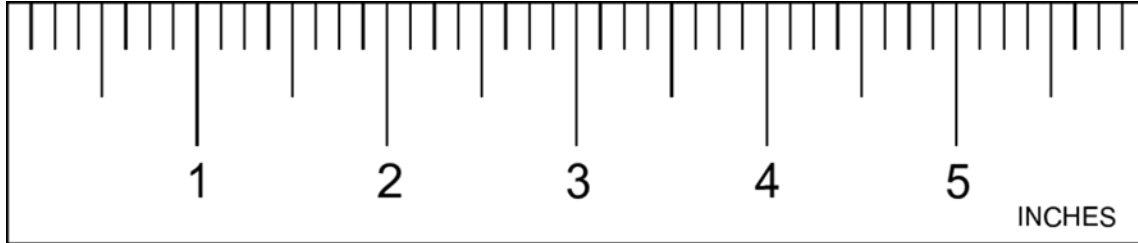
6. How much longer is line B than line A? \_\_\_\_\_

7. Draw a line that is  $3\frac{1}{2}$ " long.

8. Draw a line that is  $2\frac{1}{4}$ " long.

9. Draw a box that has a length of  $6\frac{1}{4}$ " and a width of  $2\frac{3}{4}$ ". Inside of the box, write five architecture and construction careers that involve using measurement skills.

## **PRACTICE with Linear Measurement**



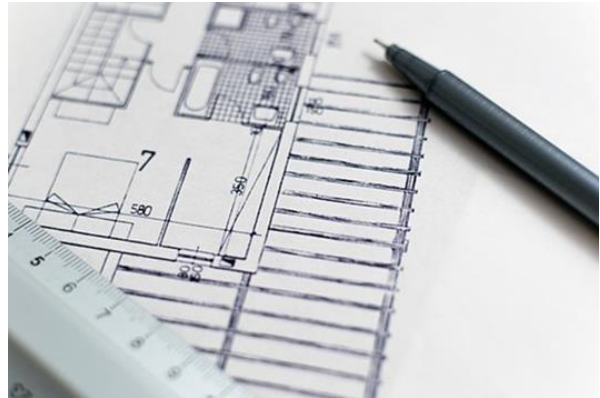
## **MATH in the Architecture and Construction Career Cluster: Interpreting Scale**

Adapted from <http://brainplusiqs.com/worksheet/scale-drawings-worksheets.html>

Floor plans show the outline and all the details of a building to be constructed from a bird's eye (top down) view. They show two dimensions --- length and width. The floor plan is a drawing of one floor of a building without the roof.

A floor plan must comply with national and local building codes. It must include all drawings, schedules, and specifications necessary for bids, permits, and construction.

Floor plans show interior and exterior walls and room dimensions, as well as the location of doors, windows, stairs, cabinets, toilets and sinks.



A floor plan is copied for each of the trades that will be involved in the construction of the building. For example, there is an electrical floor plan, a plumbing floor plan, an HVAC (heating, ventilation, and air conditioning) floor plan, etc.

A floor plan includes the dimensions of each of the sections to be built. Each of these dimensions is built to scale.

To ensure proper construction, workers must use precise measurements. The scale sets a rule for the entire blueprint floor plan. It indicates what measurements on the drawing are equal to in real life.

Floor plans are generally drawn to 1/4" scale which means that every 1/4" on the plan equals 1' in actual length. Other details like framing layouts or built-in details may be drawn at another scale like 1/8" or even 3/4". The scale of each drawing is usually written beneath the drawing, usually next to the title.

**MATH in the Architecture and Construction Career Cluster: Interpreting Scale**

**You Try It**

**A --** On the 1/4" graph paper on the following page, draw a scale model of a bedroom closet that is 3' (length) x 2 1/2' (width.) Use the steps in the first problem to help you:

**Steps:**

- Using a scale of 1/4" = 1', you can use four 1/4 inch squares (or 1") to represent 1 ft.
- The closet is 3' long. Three feet is equal to three sets of four 1/4" lines. Three sets of four grid lines is 12 spaces.
- Using a scale of 1/4" = 1', the length of the closet is represented by 3 inches (or 12 grid spaces that are 1/4" long.)
- The closet is 2 1/2' wide. Using a scale of 1/4" = 1', you can measure 2 1/2" to find ten 1/4" grid spaces.

1. On the graph paper, label the room in feet.
2. What is the perimeter of the room? \_\_\_\_\_
3. What is the area of the room in square feet? \_\_\_\_\_

\*\*\*\*\*

**B --** On the 1/4" graph paper on the following page, draw a scale model of a garden plot that is 5' (length) x 3' (width.) Use a scale of 1/4" = 1'.

1. On the graph paper, label the room in feet.
2. What is the perimeter of the room? \_\_\_\_\_
3. What is the area of the room in square feet? \_\_\_\_\_

\*\*\*\*\*

**C --** On the 1/4" graph paper on the following page, draw a scale model of a path that is 6' (length) x 1 1/2' (width.) Use a scale of 1/4" = 1'.

1. On the graph paper, label the room in feet.
2. What is the perimeter of the room? \_\_\_\_\_
3. What is the area of the room in square feet? \_\_\_\_\_



# What Does a Construction Worker Do?

## EDITING PRACTICE

Adapted from [www.sokanu.com](http://www.sokanu.com)

*Rewrite the paragraph below. Edit for spelling, complete sentences, correct subject / verb agreement, punctuation, and capitalization.*



construction workers does a wide range of tasks from the very easy to the extremely difficult and hazardous although many of the tasks they due requires sum training and experience many jobs can bee learned quickly a construction worker typically clean's construction sites by removing debris loads or unloads building materials used in construction builds or takes apart scaffolding and temporary structures digs trenches and compacts earth two prepare for construction operate equipment and machines used in construction helps other craft workers with their duties and follows construction plans and instructions

construction workers' use a variety of tools and equipment some tools are simple such as rulers brooms saws drills and shovels and some is more sophisticated such as pavement breakers jackhammers earth tampers and surveying equipment workers may help transport and use explosives ore run hydraulic boring machines to dig out tunnels they may learn too use laser beam equipment to place pipes and use computers to control robotic pipe cutters they may become certified too remove asbestos lead or chemicals

construction work can be physically demanding some construction workers works at grate heights or outdoors in all whether conditions some may be required to work in tunnels they must use earplug's around loud equipment and wear gloves safety glasses and other protective gear

did you know that their are many trades within the architecture and construction career cluster brickmasons carpenters electricians painters plasterers plumbers roofers contractors and architects are all example of jobs related to construction

*Image from Creative Commons [www.pixabay.com/en/sign-cone-symbol-traffic-warning-2408065/](http://www.pixabay.com/en/sign-cone-symbol-traffic-warning-2408065/)*

# Talk About Jobs!

## Small Group Dialogue

*Pick one of the jobs in the Architecture and Construction Career Cluster. In small groups, complete the dialogue below, using at least ten of the words from the previous lessons. Write in such a way that the audience learns about the job duties, the work environment, and the qualities a person should possess who holds one of these jobs. Then perform the dialogue for the class.*

**Joe:** I love being a \_\_\_\_\_

**Sarena:** Me, too! My favorite part of this job is \_\_\_\_\_

**Joe:** Really? My favorite part is \_\_\_\_\_

**Sarena:** I got my training for the job \_\_\_\_\_

**Joe:** I got my training \_\_\_\_\_

**Sarena:** I love the tools! I love the fact that every day I get to use \_\_\_\_\_

**Joe:** And the environment is so \_\_\_\_\_

**Sarena:** And you have to be a special sort of person to do this! You have to be \_\_\_\_\_

**Joe:** \_\_\_\_\_

**Sarena:** \_\_\_\_\_

**Joe:** \_\_\_\_\_



## **A Day in the Life: Sheila Jackson, Building Contractor**

Building a house is a complicated process! There are so many different tasks involved that it takes a person with good organizational skills to keep it all together and make sure everything is done right.

After years of working as a carpenter, I took classes in CADD (Computer-aided Design and Drafting) so I could learn more about architectural design, building codes, zoning regulations and basic construction elements. So when a job in my company came up for a residential building contractor, I was ready! Now I oversee the construction of individual houses and multi-unit housing projects.



There are many duties I have to complete on a daily basis in order to ensure that the construction project is completed in a timely manner. Before I do anything else, I have to acquire all the licenses and permits that are required before the building project can begin. Then I establish a budget for the construction project and work to follow that budget as closely as possible. With a carefully planned budget, I can obtain supplies, hire workers and finish the construction in a cost-efficient manner.

Then I manage all the workers: I do everything from hiring, supervising, and reviewing the payroll for all the workers needed on the job. And not only that! I'm also responsible for obtaining all the masonry, wood structure, plumbing, and electrical materials for the project.

Throughout the construction process, I'm responsible for reviewing the progress and implementing necessary changes along the way. AND if there's an emergency - it's on me. I'm the one who's responsible for dealing with all emergencies and resolving problems that occur - sometimes on a daily basis. But that's what keeps it interesting!

I really love my job. At first it was incredibly challenging, because there is so much to do every day and I am responsible for so much. But I'm pretty good at making decisions and I'm a natural leader. I know a lot of people are counting on me to do the job right, and I'm up for the challenge.

*Image from Creative Commons [www.pixabay.com /en/construction-worker-building-job-642631/](http://www.pixabay.com/en/construction-worker-building-job-642631/)*

## **A Day in the Life: Sheila Jackson, Building Contractor QUESTIONS**

1. What did Sheila do to prepare for her job as a building contractor?
  
  
  
  
  
  
  
  
  
  
2. Why do you think being well-organized is important to being a building contractor?
  
  
  
  
  
  
  
  
  
  
3. What other workers in the Architecture and Construction Career Cluster does Sheila work with as part of her job?
  
  
  
  
  
  
  
  
  
  
4. What are some of the things that Sheila likes most about her job?
  
  
  
  
  
  
  
  
  
  
5. What parts of Sheila's job as a contractor do you think you would enjoy? Which would you find challenging?
  
  
  
  
  
  
  
  
  
  
6. What qualities does Sheila have that make her a good building contractor?  

___ leadership	___ financial skills
___ experience in construction	___ communication skills
___ ability to make decisions	___ planning and organizational skills
___ artistic	___ responsible
___ knowledge of materials and supplies	___ medical skills

## Career Cluster Research

Use three resources to research and complete the information pertaining to job titles in the career cluster you have chosen to explore.  
 (For example: MyCareer Shines: <https://mycareershines.kuder.com>, another on-line resource, an interview with a career counselor.)

Name of career cluster: \_\_\_\_\_

<b>Job Title</b>			
<b>Educational level needed:</b> (On-the-job training, apprenticeship, 2-year technical school or community college, 4-year college/university?)			
<b>Salary/Wages:</b> (Beginning, Median, Experienced?)			
<b>Environment:</b> (Outdoors / indoors, school, office, hospital, business?)			
<b>Qualities needed to be successful in this occupation:</b> (Special skills, personal qualities, etc.)			

# Post-Secondary Catalogue Exploration & Presentation

*Based on what you have learned about your interests, skills and talents as well as what you now know about post-secondary options, choose a program at one of the local institutions that interests you (for example: you might select a certificate program from Lively Technical Center, a TCC Associate of Arts degree program, TCC certificate program, or a FAMU four-year degree.) Go to the website of the institution which offers a program that interests you to answer the following questions. If you do not have internet access, use the print catalogues from the local college and vocational / technical center. Prepare to present your information to the class.*

1. What is the name of the website? \_\_\_\_\_

2. What is the name of the program of study that interests you? \_\_\_\_\_

\_\_\_\_\_

3. How many credit hours or clock hours is the program? \_\_\_\_\_

4. How long will it take in weeks, months or years to complete the program? \_\_\_\_\_

\_\_\_\_\_

5. What does the program cost? \_\_\_\_\_

6. Does the program accept financial aid? \_\_\_\_\_

7. What are the entrance requirements of the program? (TABE scores? GED? ACT or SAT? Other tests or requirements?)

\_\_\_\_\_

\_\_\_\_\_

8. What are some of the classes you will have to take in this program?

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

9. What do graduates of this program typically earn? \_\_\_\_\_

\_\_\_\_\_

**10.** What questions would you ask of a student who is currently involved in this program?

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**11.** What questions would you ask of a counselor in student services about this program?

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**12.** If this program is right for you, what do you need to do to prepare for it so that you can be successful? (Be specific: what do you need to accomplish academically, financially and personally before you apply?)

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# ARCHITECTURE AND CONSTRUCTION

## OCCUPATION PRESENTATION

Study the occupational vocabulary below. Then use **MyCareer Shines** (<https://mycareershines.kuder.com>) and the **Occupational Outlook Handbook** ([http://o\\*netonline.com](http://o*netonline.com)) to explore in greater depth one of the jobs in the Architecture and Construction Career Cluster. Prepare to present the information to the class.

### DEFINITIONS:

- ❖ **occupational outlook:** the chance you have of getting a job in a certain field in the current economy. Occupational outlook is related to how many jobs are available in this field and how many workers are needed.
- ❖ **occupational hazards:** working conditions that can lead to illness or death. Often, but not always, people in high-risk jobs are paid more than similar but less risky jobs to compensate for the danger involved.
- ❖ **certification:** evidence that an individual has acquired the skills and knowledge needed to do a job, given by a school or authority after an evaluation or test
- ❖ **mandatory:** required or commanded by authority; obligatory
- ❖ **job prospects:** the range of career opportunities available to a person having a particular combination of skills, knowledge, qualifications, etc.
- ❖ **median earnings:** the middle salary out of all the people in a group (often used to describe people doing a similar job), half having incomes above the median, half having incomes below the median

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Occupation \_\_\_\_\_

1. What are the typical job duties of this occupation?

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2. What is the typical environment where this work takes place?

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3. What are the typical hours worked by a person doing this job?

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4. Are there occupational hazards? What are they?

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5. What education and / or training are required to enter this occupation?

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6. What licenses or certifications are mandatory for this occupation?

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7. What skills should a person in this occupation possess?

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8. What is the total number of jobs in this occupation today?

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9. What is the projected change in the number of jobs in this occupation?

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10. What are the job prospects for this occupation in Florida?

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11. What are the median earnings for workers in this field?

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12. In your opinion, what are the major advantages of this occupation?

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13. In your opinion, what are the major disadvantages of this occupation?

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14. Does this job suit you and your talents and interests? How?

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15. If you decided to pursue work in this occupation, what steps would you need to take?

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