

## POPULATION CENSUS

Ages 8-10 (Level 2)

<b>Description:</b>	Learners will design their own census survey and gather and analyze data on the people within their community to understand their community better
<b>Leading question:</b>	Can we conduct a census to learn more about our family and community?
<b>Age group:</b>	8-10
<b>Subjects:</b>	Mathematics (data handling)
<b>Total time required:</b>	~ 4.6 hours over 4 days
<b>Self-guided / Supervised activity:</b>	Medium supervision
<b>Resources required:</b>	Pen, paper, ruler

Day	Time	Activity and Description
1	5 minutes	<p>Introduction:</p> <ol style="list-style-type: none"> <li>Learners will create a census survey for their community. The purpose of a census is to find out the total number of people living in a place and understand them better by grouping them into similar categories such as age groups, gender, occupation etc.</li> <li>Learners will create this and then survey the population of their immediate community including their own and their relatives' households and their close neighbors. They will then try to find out how many people fall under each category (such as gender, age group, occupation, education etc.). They will also find the number of school-going children in their community.</li> <li>Learners will then write a short essay summarizing their findings</li> </ol>
	20 minutes	<p>First, learners will create a census questionnaire with all the questions they want to ask participants. The learner will think about what they should ask and write the questions down.</p> <p>Suggested questions:</p> <ol style="list-style-type: none"> <li>What is your name?</li> <li>How many people are in your home?</li> <li>What is the age of each person in your home, including you?</li> <li>What is the gender of each person?</li> <li>What is the occupation of each person in your household?</li> <li>Are they currently:             <ol style="list-style-type: none"> <li>in school</li> <li>not in school</li> </ol> </li> </ol>

EAA welcomes feedback on its projects in order to improve, please use this link:

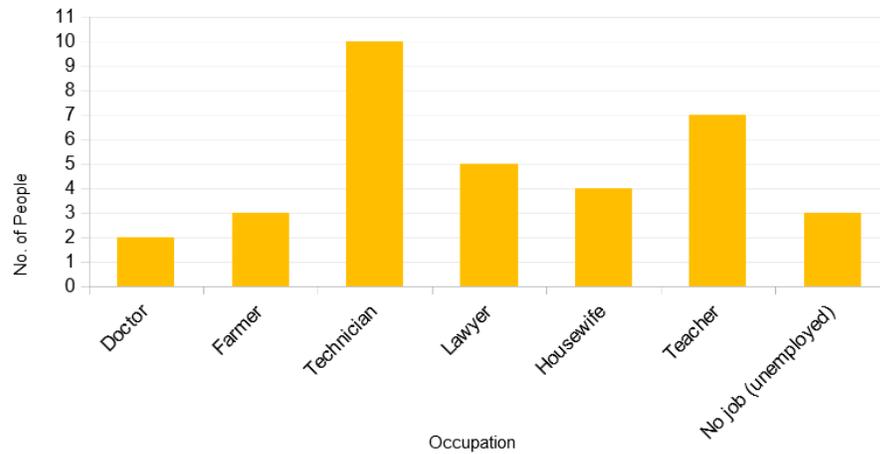
<https://forms.gle/LGAP9k17fMyJrKJN7>

30 minutes	<p>c. graduates</p> <p>7. Can you and everyone in your house read and write?</p> <p>Learners will create categories for each of the responses.</p> <p>Suggestions:</p> <p>8. Number of people in the home:</p> <ol style="list-style-type: none"> <li>1-4</li> <li>5-10</li> <li>More than 10</li> </ol> <p>9. Age categories:</p> <ol style="list-style-type: none"> <li>Under 18</li> <li>18-30</li> <li>31-60</li> <li>Over 60</li> </ol> <p>10. Education:</p> <ol style="list-style-type: none"> <li>Not enrolled in school or college</li> <li>Enrolled in school or college</li> <li>Completed school or college</li> </ol> <p>11. Gender categories:</p> <ol style="list-style-type: none"> <li>Male</li> <li>Female</li> </ol> <p>12. Can you and everyone in your house read and write?</p> <ol style="list-style-type: none"> <li>Yes</li> <li>No</li> </ol> <p>13. <i>What categories can you add for occupation? Come up with a few options for occupation.</i></p> <p>Note: If you add more questions, make sure to create categories for them.</p> <p>The final questionnaire should look like the following:</p> <ol style="list-style-type: none"> <li>What is your name?</li> <li>How many people are in your home? <ol style="list-style-type: none"> <li>1-4</li> <li>5-10</li> <li>More than 10</li> </ol> </li> <li>What is the age of each person in your home, including you? <ol style="list-style-type: none"> <li>Under 18</li> <li>18-30</li> <li>31-60</li> <li>Over 60</li> </ol> </li> <li>What is the gender of each person, including you? <ol style="list-style-type: none"> <li>Male</li> <li>Female</li> </ol> </li> <li>What is the highest level of education of everyone in your house?</li> </ol>
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	10 minutes	<p>a. Not enrolled in school or college b. Enrolled in school or college c. Completed school or college</p> <p>6. Can you and everyone in your house read and write? a. Yes b. No (write the number of household members who are unable to read and write)</p> <p>7. What is the occupation of each person? a. &lt;insert occupation categories&gt;</p> <p>Create answer sheets following the template below for each person you interview:</p> <p>Record the responses of the person you are interviewing and <b>everyone in their house</b> on separate answer sheets. For example, if Hassan’s household has 4 family members, you will only interview Hassan, but you will record his answers to all the questions for each member of his family <b>on 4 different answer sheets</b>.</p> <p>Group the answer sheets that belong to members of the same household together and write household 1, household 2 etc. at the top of the page.</p> <p><b>Critique and revision:</b></p> <p>Learners present all the day’s work (the questions, the answer categories and the questionnaire developed) to their class, parents or family members for feedback and suggestions for improvement. The class, parents or family members provide feedback using the following format:</p> <p>Praise: What did you like about the learner’s work done? Question: do you have any questions or clarifications about the work? Suggestions: In what areas does the learner need to improve their work?</p> <p>Learners make the edits and suggestions (if any) to their work to make it better.</p>
2	1-2 hours	<p>Today, the learner will interview his or her family and relatives and/or community members.</p> <p>Ask the learner to think about how they can collect the information from the different people within their family/community.</p> <p>Suggestions on how learners can conduct the interviews:</p> <ul style="list-style-type: none"> <li>- In person (with social distancing)</li> <li>- Phone/video call or SMS for relatives or friends who stay far away</li> <li>- Guessing or asking family members if they know the answer for those, they cannot reach to conduct the face-to-face interviews</li> </ul>

	10 minutes	<p>Learners will go ahead and interview all the people in their family and/or community. Relatives can be interviewed through text or calls. If you are interviewing in person, make sure you have a mask on and maintain social distancing norms by standing 6 feet from the person you are interviewing.</p> <p>When you are interviewing people, ask them the question, then check the option in the categories that reflect their response. For example, if they graduated high school and are not in college, circle or put a check mark ✓ next to the “completed school” option of question 6 of the questionnaire above on the answer sheet</p> <p><b>Reflection:</b> Learners are encouraged to continually reflect on the exercise as they conduct it and keep improving the methods used to conduct the interviews. Below are some suggestions of reflection questions they can use through this process:</p> <ul style="list-style-type: none"> <li>- How are the interviews going? How do you feel about the way you are collecting information? Can it be improved? If so, how?</li> <li>- Are there any new things that you are learning through this process?</li> </ul> <p>Note: Another option if you are unable to conduct the interviews in person or phone calls is to simply guess what the responses might be or ask your family members if they know your neighbors well. This should be used as a last resort if you are unable to reach people for interviews</p>																				
3	40-60 minutes	<p>Learners will analyze the results of the family/community census. Below is some guidance on how they can analyze the data. Learners will first create a table like the following and enter the details of all participants. The rows represent the names of the people surveyed and the columns represent the questions in the questionnaire. Add columns for all the questions you included in your questionnaire:</p> <p style="text-align: center;">Row </p> <table border="1" data-bbox="414 1430 1143 1808"> <thead> <tr> <th>Name</th> <th>Age</th> <th>Gender</th> <th>No. of people in house</th> <th>Education</th> </tr> </thead> <tbody> <tr> <td>Sarah</td> <td>30</td> <td>Female</td> <td>3</td> <td>Completed college</td> </tr> <tr> <td>Ahmed</td> <td>11</td> <td>Male</td> <td></td> <td>In school</td> </tr> <tr> <td>Kareem</td> <td>62</td> <td>Male</td> <td></td> <td>Completed high school</td> </tr> </tbody> </table>	Name	Age	Gender	No. of people in house	Education	Sarah	30	Female	3	Completed college	Ahmed	11	Male		In school	Kareem	62	Male		Completed high school
Name	Age	Gender	No. of people in house	Education																		
Sarah	30	Female	3	Completed college																		
Ahmed	11	Male		In school																		
Kareem	62	Male		Completed high school																		

	15 minutes	<table border="1" data-bbox="414 254 1143 317"> <tr> <td>Sana</td> <td>16</td> <td>Female</td> <td>5</td> <td>In school</td> </tr> </table> <p data-bbox="769 338 927 422" style="text-align: center;">Column </p> <p data-bbox="414 464 1403 600">When you interview people living in the same house, enter the total number of people living in that house only one time. For example, in the table above, 3 people - Sarah, Ahmed, and Kareem - live in the same house. 3 is entered in the column of no. of people in house only one time in the row of the.</p> <p data-bbox="414 642 1219 674">Analyze your results using the following questions as your guidance:</p> <ul data-bbox="461 680 1403 1136" style="list-style-type: none"> <li>- In total, how many people live in all of the households you surveyed? This is called the <b>number of observations</b>.</li> <li>- How many people have completed school?</li> <li>- How many male participants did you find?</li> <li>- How many people were employed (had jobs)?</li> <li>- Arrange the ages of all the people in your survey in descending order (biggest to smallest) and find the middle value.</li> <li>- What is the most common age group you found in your data?</li> <li>- Are there more males or females in your survey?</li> <li>- Which gender category has said that they completed school more than the other - males or females?</li> <li>- How many school-going children did you find? Are there children who should be in school (based on their age) but are not attending any school?</li> </ul> <p data-bbox="461 1142 716 1173">Numeracy extension:</p> <ul data-bbox="461 1180 1403 1388" style="list-style-type: none"> <li>- Imagine that everyone in your survey said that they have 7 people living in their home. What would the total number of people living in all the homes be? (<b>hint:</b> multiply 7 by the number of observations)</li> <li>- Imagine that you survey your neighborhood and find out that 230 people out of all the 1000 people living there cannot read or write. What is the number of people who <b>can</b> read and write?</li> </ul> <p data-bbox="414 1430 1360 1493">Learners will compile and write the responses from the analysis performed on a sheet of paper.</p> <p data-bbox="414 1535 1386 1671">Learners share the responses with their class, parents or family members. Parents or family members or their teacher will check if the learner has been able to perform the analysis accurately and provide feedback on any areas that need improvement where necessary.</p>	Sana	16	Female	5	In school
Sana	16	Female	5	In school			
4	15 minutes	Learners will interpret the results of this fictional survey of a big family represented in the graph below and answer the following questions:					

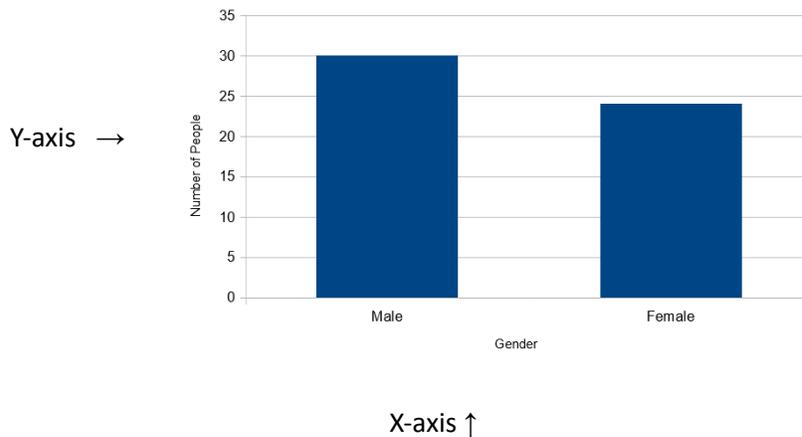


- How many farmers live in this house?
- Are there more lawyers than teachers?
- How many people in total live in this house?
- How many people living in this house are employed (have jobs)?
- What is the most frequent (or common) job? This is the job with the highest number of people.
- List the jobs in ascending order of how many people have them (smallest to biggest).

30  
minutes

**Optional challenge:** Learners challenge themselves to represent some of the information from their community survey in bar graphs. First, select one category you want to represent.

Suggestions: age, number of females vs males, education levels etc. Example:



	<p>30 minutes</p> <p>10 minutes</p> <p>15 minutes</p>	<ul style="list-style-type: none"> <li>- Steps: <ul style="list-style-type: none"> <li>○ Draw a vertical line on the left side of a piece of paper. Next, draw a horizontal line starting at the bottom of the vertical line going right as shown above. These are your axes. The y-axis is the vertical line in the graph and the x-axis is the horizontal line. These lines should intersect at the bottom left corner of the page.</li> <li>○ The y-axis is like a vertical number line. You can write numbers in increments of 1, 5, or any interval. If you don't have many observations, you can write numbers from 0-10 with one-digit intervals e.g., 0, 1, 2, 3, 4 etc. as was done in the previous (yellow) graph above. In this (blue) graph, numbers are written from 0-35 in 5-digit intervals (0, 5, 10, 15... etc.). This axis represents the number of people surveyed. It starts from 0 and ends with the total number of observations.</li> <li>○ The x-axis represents the categories of your questionnaire's questions. Draw rectangles representing the categories of age, education, occupation etc. as shown above</li> <li>○ The rectangles will be as high as the total number of each category. For example, in the graph above, there are 30 male participants</li> <li>○ Color or shade each rectangle using a different color or shading pattern</li> <li>○ Can you find out the number of female participants in the chart above?</li> </ul> </li> </ul> <p>Learners will create a brief report about the main things they observed to summarize the census study they conducted and include the graph they made.</p> <p>Suggestions for what to include in the report:</p> <ul style="list-style-type: none"> <li>- Total number of people in your survey</li> <li>- Number of males vs females</li> <li>- Number of school-age and school-going children</li> <li>- Number of people who can read and write</li> <li>- Number of unemployed adults</li> <li>- Most frequently mentioned occupation</li> <li>- Most frequently mentioned highest level of education</li> <li>- Any other data they have collected</li> </ul> <p>Learners can quiz family members on some questions to test how well they know their family! Learners will then share the results with their family by reading their report out loud and/or showcasing the poster they designed.</p> <p>Overall Project Reflection:</p> <p>The learner will now think about all the exercises they have done all week and take note of any TWO of the following:</p>
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	<ul style="list-style-type: none"> <li>• What is the most important lesson you have learnt through this project?</li> <li>• What did you find challenging, puzzling, or difficult to understand?</li> <li>• What question would you most like to discuss?</li> <li>• What is something that you found interesting?</li> </ul>
Assessment Criteria:	<ul style="list-style-type: none"> <li>- Creation of questionnaire containing questions and response categories where applicable</li> <li>- Interviewing and collecting data for at least 10 people either in person or virtually</li> <li>- Correctly analyzing results and answering questions listed on day 3 tasks</li> <li>- Correct graphical representation of at least one data point using bar graph</li> <li>- Creation of report with insight consisting of a few sentences on key information gained from census survey and/or poster to address challenge faced by surveyed participants</li> </ul>

Topics/Concepts covered	<ul style="list-style-type: none"> <li>- Survey design</li> <li>- Multiplication</li> <li>- Subtraction</li> <li>- Data handling: summarizing data, analyzing data and creating graphs</li> <li>- Interpretation of the data</li> <li>-</li> </ul>
Learning outcomes:	<ul style="list-style-type: none"> <li>- Designing and using a survey tool to gather information</li> <li>- Solve problems with one-digit multiplication</li> <li>- Solve problems with four-digit subtraction</li> <li>- Data handling: analyzing survey data</li> <li>- Data handling: analyzing and creating graphical representation of data</li> <li>- Literacy: summarizing</li> <li>- <b>Measurement and Data:</b> Represent and interpret data</li> <li>- <b>Statistics:</b> ask-and-answer questions about totaling and comparing categorical data</li> <li>-</li> </ul>
Required previous learning:	<ul style="list-style-type: none"> <li>- Multiplication by one-digit numbers</li> <li>- Four-digit subtraction</li> </ul>
Inspiration:	N/A
Additional enrichment activities:	<ul style="list-style-type: none"> <li>- Learners can add more questions to the survey and come up with the appropriate response categories</li> <li>- After completing the census, learners can try to identify one issue facing the community. For example, do the results reveal that there are a lot of out-of-school children? Do you find that many adults do not have a job? Learners can then design a poster to help address these issues</li> </ul>
Modifications for simplification	<ul style="list-style-type: none"> <li>- Reduce the number of questions or categories for the learners</li> <li>- Learners can conduct the survey in their own homes with a smaller sample</li> </ul>

	- Learners can reduce the amount of analysis and questions they answer at the end
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### Ages 11-14 (Level 3)

<b>Description:</b>	Learners will design their own census survey and gather and analyze data of the people within their family/community to understand them better.
<b>Leading question:</b>	Can we conduct a census to learn more about our family and community?
<b>Age group:</b>	11-14+
<b>Subjects:</b>	Mathematics (data handling)
<b>Total time required:</b>	~4.6 hours over 4 days
<b>Self-guided / Supervised activity:</b>	Medium supervision
<b>Resources required:</b>	Pen, paper, ruler, protractor, compass

Day	Time	Activity and Description
1	5 minutes	<p>Introduction:</p> <ol style="list-style-type: none"> <li>Learners will create a census survey for their community. The purpose of a census is to find out the total number of people living in a place and understand how many of them fall into certain categories such as age groups, gender, occupation etc.</li> <li>Learners will create and survey the population of their immediate community including their own and their relatives' households and their close neighbors. They will then try to find out how many people fall under each category (such as gender, age, occupation, education etc.). They will also find the number of school-going children in their community</li> <li>After completing the census, learners will then identify one issue facing the community based on the results of their census. For example, does your data reveal that there are a lot of out of school children? Do you find that many adults are unemployed?</li> <li>Learners will then write a short essay or design a campaign poster to address the issue they have identified from the results of their survey</li> </ol>
	20 minutes	<p>First, Learners will create a census questionnaire with all the questions they want to ask participants. The learner will start by thinking about what questions they should ask and write them down.</p> <p>Suggested details and questions:</p> <ol style="list-style-type: none"> <li>House Number</li> </ol>

	<p>30 minutes</p>	<ol style="list-style-type: none"> <li>2. What is your name?</li> <li>3. How many people are in your home?</li> <li>4. What is the date of birth of each person in your home, including you?</li> <li>5. What is the gender of each person?</li> <li>5. What is the occupation of each person?</li> <li>6. Are you and your family members currently in school, not in school or finished school?</li> <li>6. If you/they have completed school/college, what is their highest level of education completed?</li> <li>7. Can you and everyone in your house read and write?</li> <li>8. Add here any other questions that are of interest to the learner</li> </ol> <p>Learners will create categories for each of the responses. Suggestions:</p> <ol style="list-style-type: none"> <li>1. Number of people in the home:             <ol style="list-style-type: none"> <li>a. 1-4</li> <li>b. 5-10</li> <li>c. More than 10</li> </ol> </li> <li>2. Age categories:             <ol style="list-style-type: none"> <li>a. &lt; 10</li> <li>b. 10-18</li> <li>c. 19-30</li> <li>d. 31-40</li> <li>e. 41-50</li> <li>f. Older than 50</li> </ol> </li> <li>3. Education:             <ol style="list-style-type: none"> <li>a. Not enrolled in school or college</li> <li>b. Enrolled in school or college</li> <li>c. Completed school or college</li> </ol> </li> <li>4. Highest Level of Education:             <ol style="list-style-type: none"> <li>a. Primary School</li> <li>b. Secondary School/High School</li> <li>c. University</li> </ol> </li> <li>5. <i>What categories can you add for Gender? Come up with the options for gender</i></li> <li>6. <i>What categories can you add for occupation? Come up with a few options for occupation. Don't forget to add a category for those who are not employed</i></li> </ol> <p>If you add more questions, make sure to create categories for them.</p> <p>The final questionnaire should look like the following:</p> <ol style="list-style-type: none"> <li>1. House number: _____</li> <li>2. What is your name?</li> <li>3. How many people are in your home? _____</li> </ol>
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	<p>10 minutes</p>	<p>a. -4 b. 5-10 c. More than 10</p> <p>4. What is the age of each person in your home, including you? a. &lt; 10 b. 10-18 c. 19-30 d. 31-40 e. 41-50 f. Older than 50</p> <p>5. What is the gender of each person, including you? a. Male b. Female</p> <p>6. Is everyone in your house , including you, currently in school, not in school or finished school? a. Yes b. No</p> <p>7. If you/they have finished school, what is your/their educational status? a. Not enrolled in school or college b. Enrolled in school or college c. Completed school or college</p> <p>8. If you/they have completed school/college, what is the highest level of education completed? a. Primary School b. Secondary School/High School c. University</p> <p>9. What is the occupation of each person? a. &lt;insert occupation categories&gt;</p> <p>10. Add any other questions that you came up with here</p> <p>Learners can make copies of the questionnaire or write the questions on different pieces of paper. They can also create the questionnaire in tabular format like the one below:</p>
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House Number	Name	How many people are in your home?	How old are you or how old is [NAME]?	What is your gender or what is the gender of [NAME]? a. Male b. Female	Are you currently in school or is [NAME] currently in school? a. Not enrolled in school or college b. Enrolled in school or college c. Completed school/college	Add other questions here...
1	Hassan	3	16	Male	Completed school/college	
1	Ranjitt		18	Female	Enrolled in school/college	

Record the responses of the person you are interviewing and **everyone in their house** on separate copies of the questionnaire or in a separate row if using the tabular format. For example, if a household has 4 members, you will interview one person but you will record his or her answers to all the questions for each member **on 4 different questionnaires or 4 different rows**.

Group the copies of the questionnaire that belong to members of the same household together as household 1, household 2 etc. or group the responses of people that belong to same household in rows that are close to each other

**Critique and revision:**

Learners present all the day's work (the questions, the answer categories and the questionnaire developed) to their class, parents or family members for feedback and suggestions for improvement. The class, parents or family members provide feedback using the following format:

Praise: What did you like about the learner's work done?  
Question: Do you have any questions or clarifications about the work?  
Suggestions: In what areas does the learner need to improve their work?

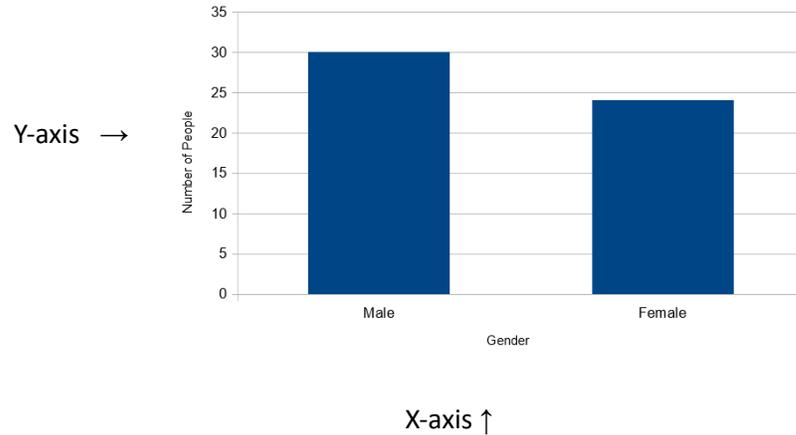
2	1-2 hours	<p>Today, the learner will interview his or her family and go around their neighborhood interviewing immediate neighbors. Ask the learner to think about how they can collect the information from the different people within their family/community.</p> <p>Suggestions for conducting the interviews:</p> <ul style="list-style-type: none"> <li>• In person with social distancing for people in your family/community whom you can meet face-to-face</li> <li>• Phone/video call/text message for family members/relatives/relatives or community members who are not around at the time of the interview</li> </ul>
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	<p>10 minutes</p>	<ul style="list-style-type: none"> <li>• Guessing/asking another family who knows information about that person</li> </ul> <p>Relatives and neighbors can be interviewed through text or calls. If you are interviewing in person, make sure you have a mask on and maintain social distancing norms by standing 6 feet from the person you are interviewing.</p> <p>Learners will go ahead and interview all the people in their family and/or community.</p> <p>When you are interviewing people, ask them the question, then check the option in the categories that reflect their response. For example, if they graduated high school and are not in college, circle or put a check mark ✓ next to the “completed school” option of question 6 of the questionnaire above or write down the option that is applicable to them if using a table to record responses. See the example below:</p> <table border="1" data-bbox="492 884 1390 1262"> <thead> <tr> <th>House Number</th> <th>Name</th> <th>How many people are in your home?</th> <th>How old are you or how old is [NAME]?</th> <th>What is your gender or what is the gender of [NAME]? a. Male b. Female</th> <th>Are you currently in school or is [NAME] currently in school? a. Not enrolled in school or college b. Enrolled in school or college c. Completed school/college</th> <th>Add other questions here...</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Hassan</td> <td>3</td> <td>16</td> <td>Male</td> <td>Completed school/college</td> <td></td> </tr> <tr> <td>1</td> <td><u>Ranjitt</u></td> <td></td> <td>18</td> <td>Female</td> <td>Enrolled in school/college</td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table> <p>Another option if you are unable to conduct the interviews in person or phone calls is to simply guess what the responses might be!</p> <p><b>Reflection:</b> Learners are encouraged to continually reflect on the exercise as they conduct it and keep improving the methods used to conduct the interviews. Below are some suggestions of reflection questions they can use through this process.</p> <ul style="list-style-type: none"> <li>- How are the interviews going? Are you using the most efficient way of collecting the information? Can the process of collecting information be improved? If so, how?</li> <li>- Are there any new things you are learning through this process?</li> </ul>	House Number	Name	How many people are in your home?	How old are you or how old is [NAME]?	What is your gender or what is the gender of [NAME]? a. Male b. Female	Are you currently in school or is [NAME] currently in school? a. Not enrolled in school or college b. Enrolled in school or college c. Completed school/college	Add other questions here...	1	Hassan	3	16	Male	Completed school/college		1	<u>Ranjitt</u>		18	Female	Enrolled in school/college															
House Number	Name	How many people are in your home?	How old are you or how old is [NAME]?	What is your gender or what is the gender of [NAME]? a. Male b. Female	Are you currently in school or is [NAME] currently in school? a. Not enrolled in school or college b. Enrolled in school or college c. Completed school/college	Add other questions here...																															
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1	<u>Ranjitt</u>		18	Female	Enrolled in school/college																																

3	20 minutes	<p>Learners will create a table summarizing the findings on age, gender, number of people and education from all the census participants in a tabular format in preparation for analysis.</p> <p>See the example below:</p>																													
	40-60 minutes	<table border="1"> <thead> <tr> <th>House</th> <th>Name</th> <th>Age</th> <th>Gender</th> <th>No. of people in house</th> <th>Education</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Sarah</td> <td>30</td> <td>Female</td> <td>3</td> <td>Completed college</td> </tr> <tr> <td>1</td> <td>Ahmed</td> <td>11</td> <td>Male</td> <td></td> <td>In school</td> </tr> <tr> <td>1</td> <td>Kareem</td> <td>62</td> <td>Male</td> <td></td> <td>Completed high school</td> </tr> <tr> <td>2</td> <td>Sana</td> <td>16</td> <td>Female</td> <td>5</td> <td>In school</td> </tr> </tbody> </table> <p>Analyze your results, we will use the following probing questions:</p> <ul style="list-style-type: none"> <li>● In total, how many people live in all of the households you surveyed? This is called the <b>number of observations</b>.</li> <li>● How many people have completed school?</li> <li>● What is the <b>average</b> age of participants? You can find the <b>average</b> by adding all the ages and dividing by the number of observations. E.g. <math>(20+13+5) \div 3 = 12.7</math>. The average is also called the <b>mean</b>.</li> <li>● What is the average number of people living in the same house?</li> <li>● How many male participants did you find?</li> <li>● How many people were employed?</li> <li>● What is the <b>median</b> age of participants? You can find the <b>median</b> (or middle value) following these steps:             <ul style="list-style-type: none"> <li>○ Look at the age column. Arrange the ages in ascending order from smallest to biggest</li> <li>○ Count how many ages there are (maybe not all participants gave their age)</li> <li>○ Find the middle value in the ordered age list. This is your <b>median</b>. The middle value should have the <u>same number of digits before and after it if the total number of observations is an odd number</u>. For example, if you have 15 numbers, the middle value is the seventh digit in the list. If you have an even number of total digits, for example, 20 digits, the middle value is the sum of the two middle digits (in this case the tenth and eleventh numbers) divided by 2. To illustrate, let's say this is our age distribution for 20 people we surveyed in ascending order:                 <ul style="list-style-type: none"> <li>■ 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20</li> </ul> </li> </ul> </li> </ul>	House	Name	Age	Gender	No. of people in house	Education	1	Sarah	30	Female	3	Completed college	1	Ahmed	11	Male		In school	1	Kareem	62	Male		Completed high school	2	Sana	16	Female	5
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	10 minutes	<ul style="list-style-type: none"> <li>■ 10 and 11 are the middle values because there is an equal number of digits before 10 and after 11. There are 9 digits before 10 and 9 digits after 11</li> <li>■ To find the median: <math>(10 + 11) \div 2 = 21/2 = 10.5</math></li> <li>■ 10.5 is the median</li> <li>○ Find the median age of participants in your data.</li> <li>● What is the <b>mode</b> of the participants' age? You can find the mode by following these steps:             <ul style="list-style-type: none"> <li>○ Look at the age column. Arrange the ages in ascending order from smallest to biggest</li> <li>○ Is there an age that is repeated many times? What is the most frequent age that many participants share? This is your mode. You can also have two or more modes if two different ages are repeated the same number of times. For example, if Ahmed, Sana and Sarah were all 11 years old and Kareem, Mona, and Adam were all 20 years old, and three is the greatest number of times that a number is repeated in your data, then your modes are 11 and 20.</li> </ul> </li> <li>● What is the <b>mode</b> of people living in the same household?</li> <li>● What is the percentage of females? You can find the percentage by following these steps:             <ul style="list-style-type: none"> <li>○ Calculate the total number of observations</li> <li>○ Calculate the number of females</li> <li>○ Divide the number of females by the number of observations</li> <li>○ Multiply the answer by 100</li> <li>○ <math>\frac{\text{Number of females}}{\text{Total number of observations}} \times 100</math></li> </ul> </li> <li>● <b>Frequency</b> refers to the number of times one answer came up in your survey. For example, if 5 people said they completed college, the <b>frequency</b> of college completion is 5. What is the educational category with the highest <b>frequency</b>?</li> </ul> <p>Learners to compile and write the responses from the analysis performed on a sheet of paper.</p> <p>Learners share the responses with their class, parents or family members. Parents or family members or the teacher will check if the learner has been able to perform the analysis well and provide feedback on any areas that need improvement where necessary.</p>
4	30 - 45 minutes	<p>Learners will represent some of the information from the survey in bar graphs. First, select 2-3 categories you want to represent. Suggestions: age, number of females vs males, education levels. Draw the graphs for the categories selected</p>

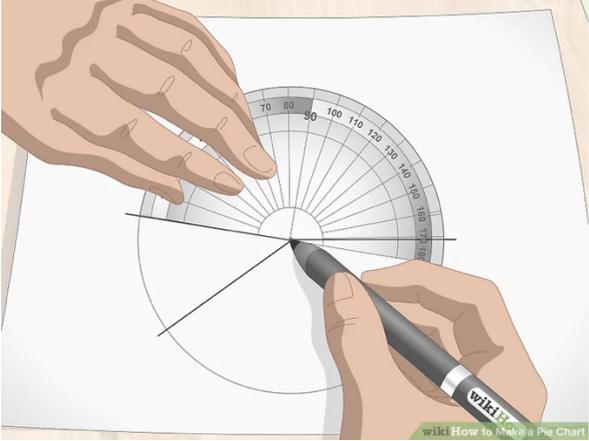
Example:



- Draw a vertical line on the left side of the page and then draw a horizontal line starting at the bottom of the vertical line going right as shown above. These are your axes. The y-axis is the vertical line in the graph and the x-axis is the horizontal line. These two lines should intersect at the bottom left corner of the page
- The y-axis is like a vertical number line. You can write numbers in increments of 1, 5, or any interval. If you don't have many observations, you can write numbers from 0-10 with one digit intervals e.g. 0, 1, 2, 3, 4 etc. In the graph above, numbers are written from 0-35 in 5-digit intervals (0, 5, 10, 15... etc.). This axis represents the number of people surveyed. It starts from 0 and ends with the total number of observations.
- The x-axis represents the categories of your questionnaire. Draw rectangles representing the categories of age, education, occupation etc. as shown above
- The rectangles will be as high as the total number of each category. For example, in this graph, there are 30 male participants
- Color or shade each rectangle using a different color or shading pattern
- Can you find out the number of female participants in the chart above?

**Another option** is to represent some of the categorical data (like gender) using a pie chart such as the following:



	<p>10 minutes</p>	 <p><i>Images downloaded from WikiHow: How to make a Pie Chart</i></p> <p>After dividing the circle into different slices based on the angles you computed,color or shade each part of the circle using a different color or shading pattern</p>
	<p>15 minutes</p>	<p>If learners do not have access to a protractor, they can divide the pie into equal parts using a ruler and then try estimating the number of pie slices that each category should have based on the percentage of respondents in each category by doing the following:</p> <ul style="list-style-type: none"> <li>- Divide the pie/circle into 10 equal parts</li> <li>- Find the percentage of males and females and write these as fractions (out of 100): 56% males and 44% females in fractions is 56/100 males and 44/100 females</li> <li>- Simplify the fractions to bring the denominator to 10: simplifying them, we get 5.6/10 males and 4.4/10 females</li> <li>- Rounding these, we get 6/10 males and 4/10 females</li> <li>- Therefore, 6 slices of the pie should go to men and 4 to women</li> <li>- Shade each category using a different color to distinguish between males and females</li> </ul> <ul style="list-style-type: none"> <li>● Learners will create a brief report using the data collected to describe their family/community by writing a few sentences about the following in their notebook or piece of paper:             <ul style="list-style-type: none"> <li>● Total number of households visited</li> <li>● Total number of people in your survey</li> <li>● Number or percentage of males vs females. Which gender category has more or fewer people than the other?</li> <li>● Average age of participants</li> <li>● Mode of number of people living in the same household. Do any households have the same number of family members?</li> </ul> </li> </ul>

		<ul style="list-style-type: none"> <li>• Most frequently mentioned occupation</li> <li>• Any other data you have collected</li> <li>• Most frequently mentioned highest level of education</li> </ul> <p><b>Literacy extension:</b> From your report, what is the biggest challenge facing the community? For example, does your data reveal that there are a lot of out of school children? Do you find that many adults are unemployed? Look at any of the other questions you could have added to the survey to see if it reveals anything else about the community. Write a paragraph on what can be done to resolve the challenge OR design a poster for a campaign to end this issue.</p> <p>Learners can quiz family members on some questions to test how well they know their community! Learners will then share the results with their class or family by reading the report out loud and/or showcasing the poster they designed.</p> <p>Overall Project Reflection</p> <p>The learner will now think about the exercises they have completed all week and take note of any TWO of the following:</p> <ul style="list-style-type: none"> <li>• What is the most important lesson you have learnt throughout this project?</li> <li>• What have you found challenging, puzzling or difficult to understand?</li> <li>• What question would you most like to discuss?</li> <li>• What is something that you found interesting?</li> </ul>
Assessment Criteria:	<ul style="list-style-type: none"> <li>- Creation of questionnaire containing questions and response categories where applicable</li> <li>- Interviewing and collecting data for at least 10 people either in person or virtually</li> <li>- Correctly analyzing results and answering questions listed on day 3 tasks</li> <li>- Correct graphical representation of at least one data point using bar graph or pie chart</li> <li>- Creation of report consisting of a few sentences on key information gained from census survey</li> </ul>	
Topics/concepts covered	<ul style="list-style-type: none"> <li>- Survey design</li> <li>- Statistics: computing mean/average, median, mode</li> </ul>	

	<ul style="list-style-type: none"> <li>- Multiplication, division and percentages for two-digit numbers</li> <li>- Data handling: summarizing data, analyzing data and creating graphs</li> <li>- Interpretation of the data</li> <li>-</li> </ul>
Learning outcomes:	<ul style="list-style-type: none"> <li>- Designing and using a survey tool to gather information</li> <li>- Calculating percentages with two-digit numbers</li> <li>- Data handling: computing mean, median, mode, frequency</li> <li>- Data handling: graphical representation of data</li> <li>- Literacy: writing summary report and reading practice</li> <li>- <b>Statistics:</b> interpret and present data using bar charts, pictograms and tables</li> <li>- <b>Statistics:</b> solve one-step and two-step questions [for example 'How many more?' and 'How many fewer?'] using information presented in scaled bar charts and pictograms and tables</li> </ul>
Required previous learning:	Multiplication and division with two-digit numbers
Inspiration:	N/A
Additional enrichment activities:	<ul style="list-style-type: none"> <li>- Learners can add more questions to the survey and come up with the appropriate response categories</li> <li>- Learners can section the data and analyze it according to a certain category. For example, they can calculate and compare the average ages of men and women in their data</li> <li>- Learners can think about different ways to use this information. They can write a few sentences or a report on how their results can be useful for schools, hospitals, government officials etc.</li> </ul>
Modifications for simplification	<ul style="list-style-type: none"> <li>- Learners can simplify this project by reducing the number of questions or categories and/or the required analysis</li> <li>- Learners can also simplify it by reducing the number of people they interview</li> </ul>