

OUR BIG BIG EARTH (LEVEL 3)

Description:	<i>This project teaches the learner about the world and its diversity to help them develop tolerance toward other people and cultures.</i>
Leading question:	<i>How big and diverse is our planet earth?</i>
Age group:	11 to 14
Subjects:	Social Sciences Mathematics
Total time required:	<i>~6 hours and 30 minutes over 5 days</i>
Self-guided / Supervised activity:	Supervised
Resources required:	<i>Paper, pencils, coloring pens, & glue</i>
Learning outcomes:	<ul style="list-style-type: none"> ● Describe the different features of the earth ● Understand the concept of percentage ● Calculate the percentage of various physical features of the earth ● Understand and appreciate diversity ● Create a model of the earth ● Discuss how people on the earth are interconnected ● Create a collage to identify and appreciate the diversity in their communities ● Create surveys and interview people

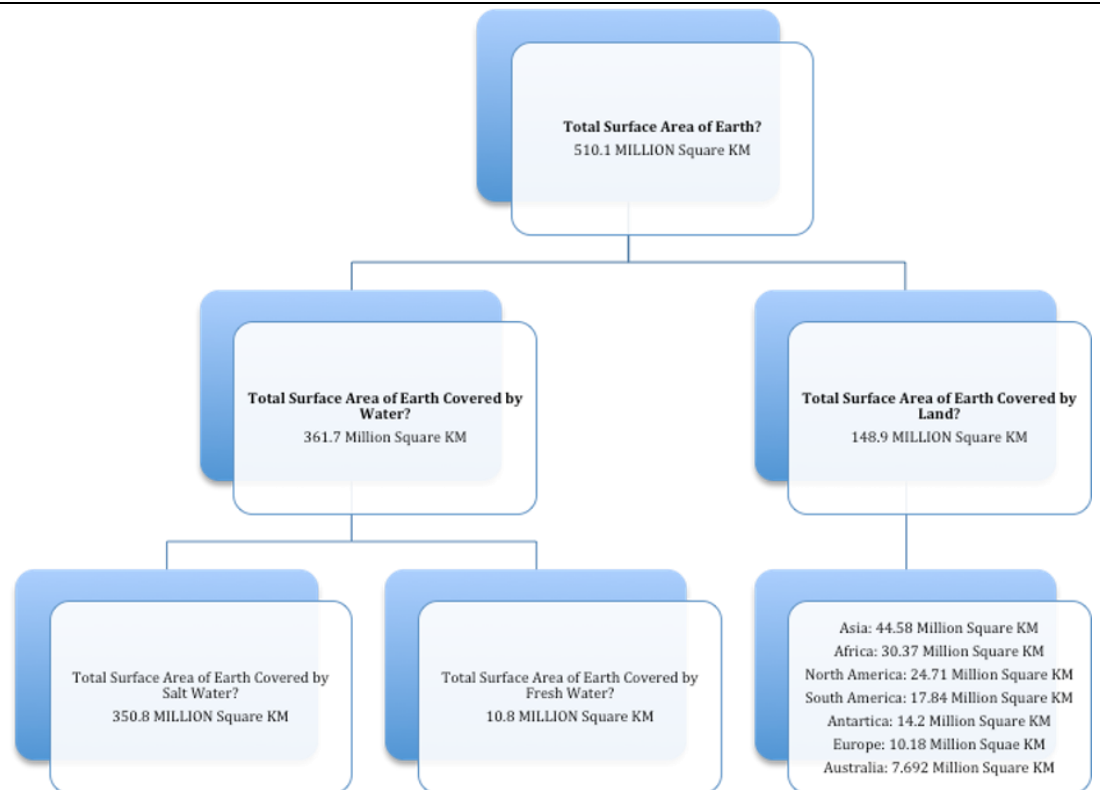
Day 1 –

Today you will learn about our planet, Earth and important facts about the things on it.

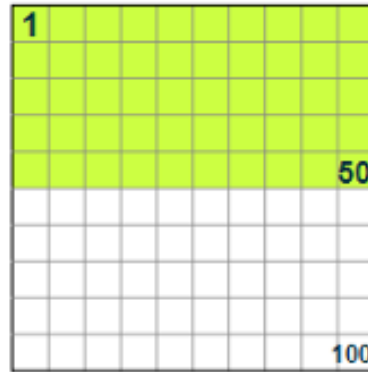
Time	Activity and Description
10 minutes	<p>Let's begin with a few questions:</p> <ul style="list-style-type: none"> ● What are some things that you know about planet Earth? ● What are some things that you don't know about planet Earth? ● What are some things that you believe to be true about planet Earth? <p>If necessary, orient learners with some of the following questions:</p> <ul style="list-style-type: none"> ● What is the shape of our planet? ● Have we discovered life on another planet in the solar system? ● What makes it possible for our planet to sustain life?

	<ul style="list-style-type: none"> • What percentage of our planet is covered by water? <p>Hint: The name of our planet is the Earth. The shape of the Earth is like a sphere but not a perfect sphere - it is closer to an irregular shape called the ellipsoid. We have not yet discovered life on another planet in the solar system though the search for life is currently ongoing on Mars. For now, Earth is the only planet known to support life. Earth is able to support life due to the following conditions:</p> <ol style="list-style-type: none"> 1. Its precise distance from the sun enabling it to receive the perfect amount of heat and light which creates favorable climatic conditions. 2. <i>70% of the Earth's surface is covered by water, which is needed to support life.</i> 3. <i>It has an Ozone layer that protects life on Earth from hazardous ultraviolet radiation from the sun.</i> 																		
15 minutes	<p>The World in Numbers: continents and oceans, countries and people. Learners will ask their family members/teachers or interview people around them to answer the questions in the World in Numbers Worksheet (it is preferred to have a hard copy of the worksheet. The worksheet is also provided as an Appendix for easy printing).</p> <table border="1" data-bbox="435 1098 1393 1913"> <thead> <tr> <th colspan="2">World in Numbers</th> </tr> <tr> <th>Question</th> <th>Answer</th> </tr> </thead> <tbody> <tr> <td>How many continents are there in the world?</td> <td></td> </tr> <tr> <td>Can you name them? (The child can name as many as they know)</td> <td></td> </tr> <tr> <td>Do you know the name of the continent you live in?</td> <td></td> </tr> <tr> <td>How many Oceans are there in the world?</td> <td></td> </tr> <tr> <td>Can you name them? (The child can name as many as they know)</td> <td></td> </tr> <tr> <td>How many countries are there in the world?</td> <td></td> </tr> <tr> <td>Can you name two neighbouring countries?</td> <td></td> </tr> </tbody> </table>	World in Numbers		Question	Answer	How many continents are there in the world?		Can you name them? (The child can name as many as they know)		Do you know the name of the continent you live in?		How many Oceans are there in the world?		Can you name them? (The child can name as many as they know)		How many countries are there in the world?		Can you name two neighbouring countries?	
World in Numbers																			
Question	Answer																		
How many continents are there in the world?																			
Can you name them? (The child can name as many as they know)																			
Do you know the name of the continent you live in?																			
How many Oceans are there in the world?																			
Can you name them? (The child can name as many as they know)																			
How many countries are there in the world?																			
Can you name two neighbouring countries?																			

	<p style="text-align: center; border: 1px solid black; padding: 5px;">How many people live in this world?</p> <p>Answers: How many continents are there in the world? <i>Answer: 7</i></p> <p>Can you name the continents? <i>Answer: Asia, Africa, Antarctica, Australia, Europe, North America, and South America</i></p> <p>Do you know the name of the continent you live in? <i>Answer: Europe</i></p> <p>How many oceans are there in the world? <i>Answer: 5</i></p> <p>Can you name them? <i>Answer: Atlantic, Pacific, Indian, Arctic, Southern (Antarctic) Oceans</i></p> <p>How many countries are there in the world? <i>Answer: 195</i></p> <p>Can you name two neighboring countries? <i>Answer: e.g Germany and Ukraine</i></p> <p>How many people live in this world? <i>Answer: 8 billion</i></p>
25 minutes	<p>Making Big Numbers Easier to Understand</p> <ul style="list-style-type: none"> • Have you realized how BIG our Earth is? With so many people and countries! Our own village/city looks so big, can you visualize how big the whole world is? Let's look at a few big numbers to help us understand the enormity of our planet.



- “These numbers really have made us understand how big and vast our planet is! These numbers are very difficult to remember, isn't it? Because they are in millions and millions!
- To make it easier for us to deal with huge numbers like these, mathematicians developed the idea of percentage!
- Percentages help shrink the biggest of numbers to a small number that can be remembered easily.
- Percent means “out of 100” or part of the whole.
- In the figure below, there are 100 squares, 50 of which are highlighted. To calculate the percentage of this highlighted area, we divide 50 by the total number of squares $50/100 = 0.5$
- 0.5 is the decimal form of 50%, which we get by multiplying the result (0.5) into 100
- $0.5 \times 100 = 50\%$
- We add the % sign to denote a percentage.



Can you calculate the percentage of the highlighted area in the following figure using the steps below? Find the answer to “D”. Plug in values for A and B to find the answer:

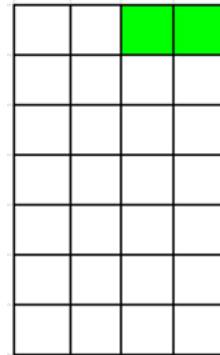
Answer:

Number of highlighted cells = A

Total number of cells = B

$A/B = C$

$C \times 100 = D$



20 minutes

Challenge:

Let's calculate the percentage of land and water on Earth!

Keep in mind that to calculate a percentage we need the following information:

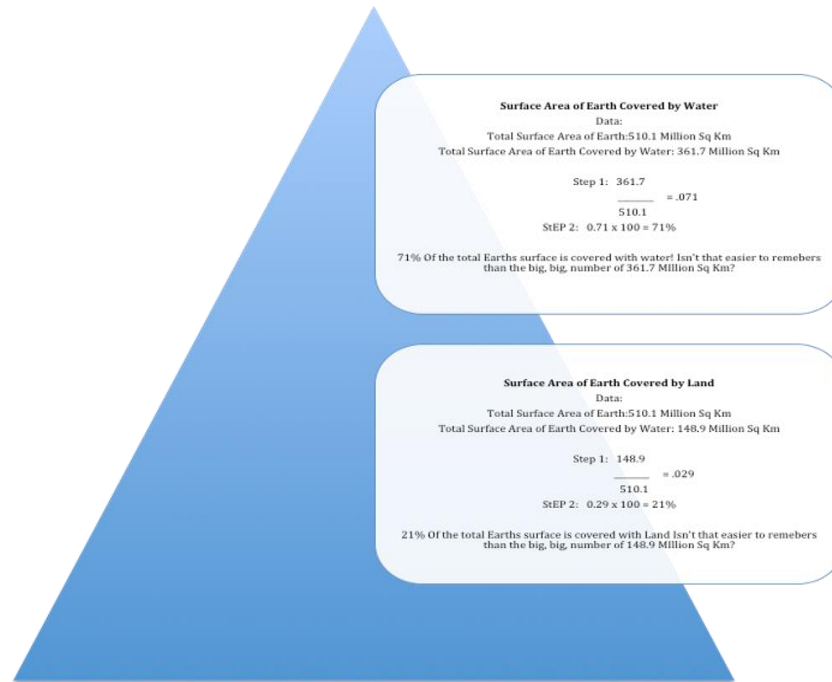
1. A – What is the area we want to calculate? This will be the numerator
2. B – What is the total area? This will be the denominator.
3. Divide A by B
4. C – After the division you will get a number either it will be a whole number or decimal.
5. If it is a whole number that will be your answer
6. If it is a decimal number (e.g: 0.39984), we will use the rounding off concept.

Follow the following steps:

- a. Select a number to two decimal places (e.g 0.39).
- b. If the second digit after the decimal is smaller than 5, do not change the rounding digit (rightmost number or second number after the decimal point). In that case the answer will stay the same. (e.g if the number is 0.24 or 0.31, it will remain the same)
- c. If the second digit after the decimal is greater than 5, increase the rounding digit by one (0.01). In our example, 0.39 will become 0.40 (0.39 + 0.01)

7. D – Multiply the answer from C into 100. This is the share or proportion of B that is made up of A!


Wasn't that easy? Let's Practice!



Day 2

Today, you further explore the Earth and discover how we are all interconnected.

Time	Activity and Description
5 minutes	<p>“Hola! Do you know what it means? Hola is a Spanish word for Hello in English, and Bonjour in French. Spanish is spoken by more than 580 million people across the world, English is spoken by around 1.5 billion people around the world, and French by more than 270 million people around the world. In the previous class we learned about the Earth. Today we will take our discussion further and explore the world around us, but before that, we will reflect on the previous day's activities through the following questions”:</p> <ul style="list-style-type: none"> • What were your key learning points yesterday? • How many continents and oceans does our planet have, can you name them? • How many countries are there in the world in total? • Which activities did you find most interesting and why?
40 minutes:	<ul style="list-style-type: none"> • In this activity the learner will create a 3D model/map of planet Earth. All the learnings from the previous activities will be applied here to achieve our objectives. To complete the 3D model/map, learners should be encouraged to get as creative as possible. They can use any available resource to build their model/map.

	<ul style="list-style-type: none"> Hint: some easy ways that learners can use to construct the globe is using paper and bowls, layer on used paper and then drawing continents on the outer layer. They can also try wrapping a balloon or ball with paper. Alternatively, learners can make the following cutout, draw the continents and connect the numbered parts according to the sequence as shown below: 
<p>20 minutes</p>	<p>Learners will present their work to their educator and peers and talk about the following:</p> <ol style="list-style-type: none"> 1. How they designed the model 2. Highlight the different oceans and continents as shown in the model/map <p>The educator needs to observe and assess the model/map to see if it meets the criteria provided below:</p> <ul style="list-style-type: none"> • Model is 3-dimensional with the names of continents and oceans written clearly on it • The model is durable • Learners demonstrate creativity in creating the model
<p>20 minutes</p>	<p>Now that we know how big our planet is, and how many people live on it at the moment, let's try to see how interconnected our lives are. How 'global' is our family?</p> <p>Activity:</p> <p>The learner together with classmates/the educator will answer a set of questions to realize our global interconnectedness. (Choose only the relevant questions). In each case, ask the learner to draw a line from the country/continent the family lives in to the identified country/continent.</p> <ul style="list-style-type: none"> • Do we have family members living in other countries/ continents? Can you spot that continent on the world map? • Do we have friends from other countries or continents? Can you spot that continent on the • world map?

	<ul style="list-style-type: none"> • Do any of us use or know a salutation/greeting in another language? Where did that language originate? • Do any of us like a dish from a different culture/country? • Have any of us travelled to another country? <p>Learners will write an essay or few sentences based on their responses to the selected questions from the list above. The prompt for the essay is “Is a Our connected world better than a disconnected one for me?”. In their essay, learners will describe their connections to other parts of the world.</p> <p>Learners will share their essay with peers for feedback. Feedback will include: - What do they love about the essay? - Any suggestions for improvement?</p> <p>Learners will use feedback from family to improve their essay.</p>																		
<p>20 minutes</p>	<p>The origin of things “We have so many different things around us, but do we know where they were invented or used for the first time? Let me ask you a few questions and we can learn about the origin of many things we use daily!”</p> <table border="1" data-bbox="467 1037 1224 1562"> <thead> <tr> <th>Invention</th> <th>Inventor</th> <th>Country</th> </tr> </thead> <tbody> <tr> <td>Light bulb</td> <td></td> <td></td> </tr> <tr> <td>Telephone</td> <td></td> <td></td> </tr> <tr> <td>Airplane</td> <td></td> <td></td> </tr> <tr> <td>Camera</td> <td></td> <td></td> </tr> <tr> <td>Radio</td> <td></td> <td></td> </tr> </tbody> </table> <p>Input</p> <ol style="list-style-type: none"> 1. Light bulb (Answer: Thomas Edison, North America) 2. Telephone (Answer: Alexander Graham Bell, Scotland) 3. Airplane (Answer: Wright Brothers, North America) 4. Camera (Answer: Joahnn Zahn, German) 5. Radio (Answer: Guglielmo Marconi, Italy)\ 	Invention	Inventor	Country	Light bulb			Telephone			Airplane			Camera			Radio		
Invention	Inventor	Country																	
Light bulb																			
Telephone																			
Airplane																			
Camera																			
Radio																			

	<ul style="list-style-type: none"> ● “Isn’t it amazing how something invented so far away is so common in our country that we can’t even imagine life without it? This is how connected we are, a change happening in one country has the potential to impact the entire world” ● Identify “international” items in your own homes: <ul style="list-style-type: none"> ○ Make a list of 10-20 items and do some research (by asking caretakers, neighbours or other adults including shopkeepers) to find out where they are imported from! ○ Learners can also read the tags and labels of products and items in their house to see where they were made. ○ Items can include produce and other food items, office/school supplies, clothing, vehicles etc. ● Draw a table with two columns and write or draw the item in one column and its country of origin in the other ● Find out how many countries are represented in your house! ● Learners should mark these countries on the world map
<p>5 minutes</p>	<p>Learners reflect on and discuss the following question:</p> <ul style="list-style-type: none"> ● What do you think of all the things we have at home? ● How many people do you think worked on them until they reached our house? (starting from extraction of raw material, to manufacturing, to transport.) ● Can we produce them in our own country? Why or why not?

Day 3 –

Today you will learn about diversity and tolerance.

Time	Activity and Description
<p>15 minutes</p>	<p>Introduction to Diversity: Take 2 minutes to draw a Venn diagram to capture the similarities and differences between you and a friend of yours. Consider aspects such as</p> <ol style="list-style-type: none"> 1. Appearance and physical traits 2. Preferences 3. Beliefs 4. Personality traits <p>Sample:</p>

	<div style="text-align: center;"> <p>The diagram shows two overlapping circles. The left circle is labeled 'Me' and contains: Born in Europe, Loves to read, Has blue eyes, Dislikes math, and Knows how to ride a bike. The right circle is labeled 'My Friend' and contains: Born in Africa, Loves to dance, Has brown eyes, Likes math, and Does not know how to ride a bike. The overlapping area contains: Loves football, Has 1 brother, Has blond hair, and Cries easily.</p> </div> <ul style="list-style-type: none"> ● These differences that we see among people or things are known as diversity. ● In addition to the way we look, we can be different or diverse in many ways. ● Can you list 3 other ways in which people can be diverse or different? (Diversity among people can be seen in the clothes they wear, their age, the religion they follow, the food they eat, the places they are from and so many other things.) 										
<p>10 minutes</p>	<p>Understanding diversity: We all have different traits. We are born with some traits while some other traits are based on our choices and on other people's choices too. Let each of us fill this ID table, and then discuss it. Write down things about yourself in the two columns.</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Things I did not choose</th> <th>Things I chose for myself</th> </tr> </thead> <tbody> <tr> <td>Name</td> <td>My favorite dish</td> </tr> <tr> <td>Nationality</td> <td>My super hero</td> </tr> <tr> <td>Religion</td> <td>Favorite story</td> </tr> <tr> <td>Eye-color</td> <td>Favorite game</td> </tr> </tbody> </table>	Things I did not choose	Things I chose for myself	Name	My favorite dish	Nationality	My super hero	Religion	Favorite story	Eye-color	Favorite game
Things I did not choose	Things I chose for myself										
Name	My favorite dish										
Nationality	My super hero										
Religion	Favorite story										
Eye-color	Favorite game										
<p>20 minutes</p>	<p>Conduct a detailed discussion on the card presented by learners. The discussion should be carried forward and focused on the theme of perceiving differences and building barriers between peoples based on things they have not chosen.</p> <ul style="list-style-type: none"> ● What similarities do we all share in the class? ● What are our differences? ● Do you think there are children from around the world who share similarities with you? 										

	<ul style="list-style-type: none"> • Would you prefer playing your favorite game with your classmates or with a child from another country? Why? <p>“Isn’t it strange that we hold things against people that we have no control over? The color of someone's skin, the ethnicity, the caste one is born into, the language one speaks. Isn’t it silly to use these to build barriers between ourselves?”</p>
20 minutes	<p>Reflection questions:</p> <ul style="list-style-type: none"> • What do you think when you see a child who has a different skin color? Do you think they may share similarities with you? • What do you feel when you are with people who speak a language you don’t understand? • How would you react towards somebody who speaks a different language? • Would you like to live in a country where people have a different skin colour, speak a different language and eat different food from yours? • If you have a friend who follows a different religion, what gift would you give them at their religious celebrations? • How would you behave with someone who is differently abled?

Day 4 –

Today we will find out how diverse our community is and make a collage to represent this diversity.

Time	Activity and Description
30 minutes	<p>Appreciating diversity:</p> <p>Over the next two days, learners will interact with people and observe various aspects of their community to begin creating a collage of their diverse surroundings.</p> <p>Learners take a walk around their community and make a note of the diversity they see:</p> <ol style="list-style-type: none"> 1. Amongst people around (age, gender, clothing, height, skin colour, etc.) 2. In the types of food available around 3. The variety of products available in the market 4. In the plants and animals around <p>They can also include any other type of diversity they see in their community.</p> <p>After this, have them reflect on the kinds of differences they saw.</p> <p>Learners then draw what they saw or find representative images from newspapers/magazines, they can even click photos, print and stick them on a chart paper.</p>
15 minutes	<p>Learners discuss:</p> <p><i>How would you feel if you only saw the same kind of people, food, and plants around you? With no diversity at all.</i></p> <ul style="list-style-type: none"> • Diversity adds variety to life that makes it exciting and fun.

	<ul style="list-style-type: none"> ● In addition to that, different people come with their own set of ideas and skills. For example, in a group project, each member has a different skill that they can use. ● Diversity also helps us think openly and accept different ideas. 																																																						
<p>30 minutes</p>	<p>Diversity Around Us:</p> <ul style="list-style-type: none"> ● Now, we will survey 12 to 15 people from our community and ask them questions to see how diverse the people around us are. <i>(can be done in groups and instead of community members, learners can interview educators and peers as well)</i> ● After the surveys, we will calculate percentages and add the data to our collage. ● Take some time to think of 5 multiple choice questions right now. You can cover people’s occupation, where they are from, the languages they speak etc. ● You can let one of the options be ‘Other’ to accommodate for varied answers. <p>Help students frame meaningful questions. Questions can be framed as follows:</p> <ol style="list-style-type: none"> 1. Are you originally from this town? <ol style="list-style-type: none"> a. Yes, I’ve lived here all my life b. No, I moved here from somewhere else 2. What do you do for a living? <ol style="list-style-type: none"> a. Own a business b. Employed at a company c. Student d. Home-maker e. Other <p>What is your mother tongue? <i>(options can be customized to your region)</i></p> <p>Learners can record their answers in a table like this one:</p> <table border="1" data-bbox="396 1226 1484 1791"> <thead> <tr> <th>Name:</th> <th>Q1</th> <th>Q2</th> <th>Q3</th> <th>Q4</th> <th>Q5</th> </tr> </thead> <tbody> <tr> <td>Person 1</td> <td>a</td> <td>c</td> <td>a</td> <td>e</td> <td>b</td> </tr> <tr> <td>Person 2</td> <td>b</td> <td>a</td> <td>c</td> <td>b</td> <td>b</td> </tr> <tr> <td>Person 3</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Person 4</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Person 5</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Person 6</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Person 7</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Person 8</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	Name:	Q1	Q2	Q3	Q4	Q5	Person 1	a	c	a	e	b	Person 2	b	a	c	b	b	Person 3						Person 4						Person 5						Person 6						Person 7						Person 8					
Name:	Q1	Q2	Q3	Q4	Q5																																																		
Person 1	a	c	a	e	b																																																		
Person 2	b	a	c	b	b																																																		
Person 3																																																							
Person 4																																																							
Person 5																																																							
Person 6																																																							
Person 7																																																							
Person 8																																																							

Day 5-

Today we will complete our collages and present them to the class.

Time	Activity and Description
25 minutes	<p>Calculating Percentages: Based on the answers collected, calculate the percentage of common responses for at least 3 questions. Follow these steps:</p> <ol style="list-style-type: none"> 1. A – Add the number of responses for the common option 2. B – Write the total number of people interviewed 3. C – A divided by B. This is your decimal answer. 4. D – Multiply C by 100 to get your answer in percentage. <p>Example: For a question like: Are you originally from this town? a. Yes, I've lived here all my life b. No, I moved here from somewhere else</p> <p>A – 10 people answered 'b' (No, I moved here from somewhere else) B – total people interviewed = 15 C = $10/15 = 0.666$ (Rounded off to 0.67) D = $0.67 \times 100 = 67\%$</p> <p>So, 67% of people moved here from somewhere else.</p> <p>Learners can calculate and add these percentages to their collage.</p>
30 minutes	<p>Learners present their collage to their classmates and share answers to the following:</p> <ol style="list-style-type: none"> 1. What surprised them about the diversity in their community? 2. How does their community benefit from the diversity around. <p>Learners share feedback on the presentations based on the following:</p> <ol style="list-style-type: none"> 1. What did you like about the presentation? 2. What could have been better?
15 minutes	<p>Reflection:</p> <ul style="list-style-type: none"> ● What I like most about the project? ● What did I find difficult to do? ● What are the key things I learnt from the project? ● What will I do differently next time? <p>If there is so much diversity in just our community, can you imagine how much diversity they must be around the entire planet?</p>

Additional enrichment activities:

- Have learners calculate the percentage of the earth's surface covered by each continent.

<i>Total surface area of Earth covered by land</i>	<i>148.9 million sq. km</i>
<i>Total land covered by Asia</i>	<i>44.58 million sq. km</i>
<i>Total land covered by Africa</i>	<i>30.37 million sq. km</i>
<i>Total land covered by North America</i>	<i>24.71 million sq. km</i>
<i>Total land covered by South America</i>	<i>17.84 million sq. km</i>
<i>Total land covered by Antarctica</i>	<i>14.2 million sq. km</i>
<i>Total land covered by Europe</i>	<i>10.18 million sq. km</i>
<i>Total land covered by Australia</i>	<i>7.692 million sq. km</i>

- You can ask learners to draw a map of the world with nothing written on it, and then play a game with them to answer all questions that on World in numbers worksheet and mark answers on the world map.
- You can ask learners to make a puzzle out of the world map, by drawing it and then cutting it into square pieces, to challenge peers to put it together.

WORLD IN NUMBERS WORKSHEET

World in Numbers	
Question	Answer
How many continents are there in the world?	
Can you name them? (The child can name as many as they know)	
Do you know the name of the continent you live in?	
How many Oceans are there in the world?	
Can you name them? (The child can name as many as they know)	
How many countries are there in the world?	
Can you name two neighbouring countries?	
How many people live in this world?	