

OUR BIG BIG EARTH (LEVEL 3)

Ages 11 to 14 (Level 3)

Description:	A project that teaches the learner about the world and its diversity to help them develop tolerance to other cultures.
Leading question:	How big and diverse is our planet Earth?
Age group:	Social sciences, Art, Global citizenship, and Mathematics
Subjects:	Social sciences, Global citizenship, and Mathematics
Total time required:	5 hours over 3 days
Self-guided / Supervised activity:	High parent supervision required
Resources required:	Paper, pencils, coloring pens, & glue

Day 1

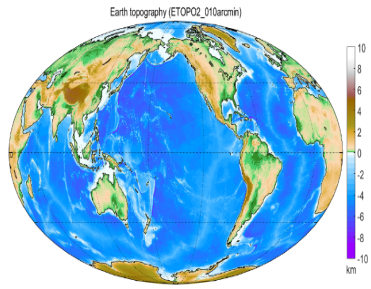
Introduction (5 mins)

Through this project you will study various topics and perform activities to learn more about the world around us.

"I am so excited about beginning another project with you. Today we will start a project that will teach us so many new things about the planet that we live in, but before we start let me ask you a few questions"

- What is the name of our planet? (Answer: Earth)
- What is the shape of our planet? (Answer: it is like a sphere but not a perfect sphere - it is closer to an irregular shape called ellipsoid)
- Have we discovered life on another planet from the solar system? (Answer: No, Earth is the only planet that can sustain life) Students can brainstorm why life only exists on Earth

ADD AN ILLUSTRATION OF THE GLOBE WHICH CLEARLY SHOWS 70% OF THE Earth SURFACE IS COVERED BY WATER



World in numbers (30 minutes)

“Have a look at the globe in this photo, what do you think covers the majority of our planet's surface? Is it land or is it water? It's quite easy to judge that by looking at this photo, isn't it? We will learn how to represent big numbers like the total surface of the Earth covered by the ocean with a small and easy number called a percentage. Are you excited to learn more about the planet you live in? Let's see if you know a few facts!”

ADD AN ILLUSTRATION OF A WORLD MAP, USE DIFFERENT COLORS FOR CONTINENTS

The parents will attempt to develop an understanding of the various components of planet Earth, such as continents, oceans, countries and populations. Please note that even though you will be asking questions from your child, it is completely fine if they don't know the correct answers. Treat this as an opportunity for your child to learn more about the planet!

“The Earth is shaped like a big ball, and you can see there are blue and brown colors on the surface. The brown color represents land, whereas blue represents water. Large pieces of land are called continents, and large bodies of water are called oceans. Now let's see how much you know about the planet, and maybe learn a few new interesting things about our big, big, Earth!”

World in Numbers	
Question	Answer
How many continents are there in the world?	7
Can you name them? (The child can name as many as they know)	Asia, Africa, Antarctica, Australia, Europe, North America, and South America
Do you know the name of the continent you live in?	Asia

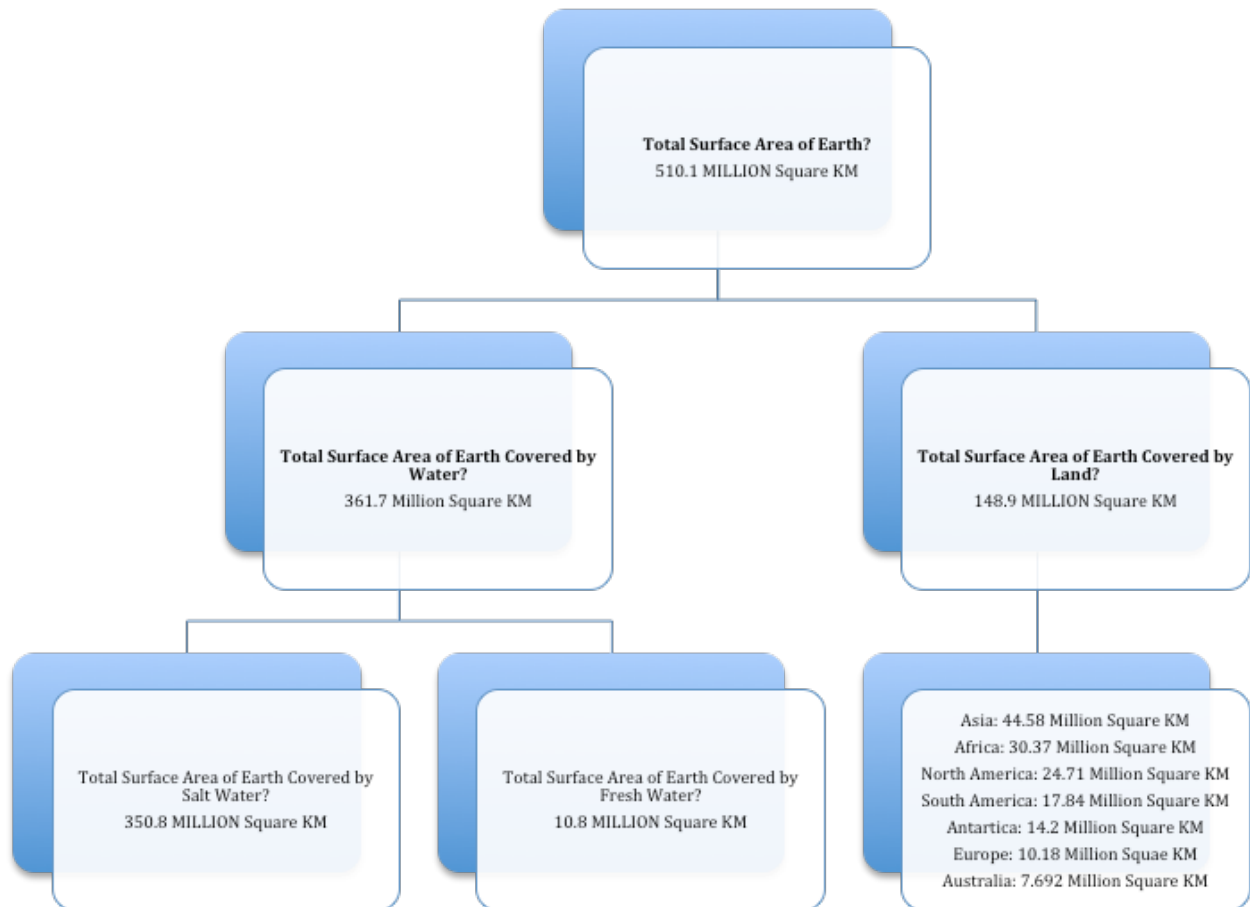
How many Oceans are there in the world?	5
Can you name them? (The child can name as many as they know)	<i>Atlantic, Pacific, Indian, Arctic, Southern (Antarctic) Ocean</i>
How many countries are there in the world?	195
Can you name two neighbouring countries?	<i>Iran, Afghanistan, China, India</i>
How many people live in this world?	<i>7.6 Billion</i>



Let's make BIG numbers Easier to Understand (40 minutes)

"Wow, have you realised 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"

Did you know?



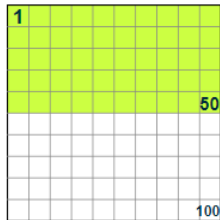
"These numbers really have made us understand how big and vast our planet is! These numbers are very difficult to remember, isn't it? Because they are in millions and millions! To make it easier for us to deal with huge numbers like these, mathematicians developed the idea of Percentage! Percentages help us 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 $50/100 = 0.5$

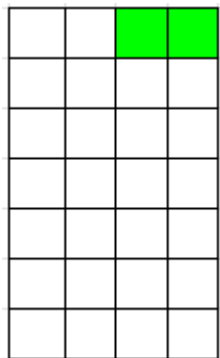
0.5 is the decimal form of 50%, which we get by multiplying the result (0.5) into 100

$$0.5 \times 100 = 50\%$$

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”. Learners will plug in values for A and B to find the answer:



Answer:

Number of highlighted cells = A

Total number of cells = B

$$A/B = C$$

$$C \times 100 = D$$

Lets calculate the percentage of land and water on Earth!

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

A- What is the area we want to calculate? This will be the numerator

B - What is the total area? This will be the denominator

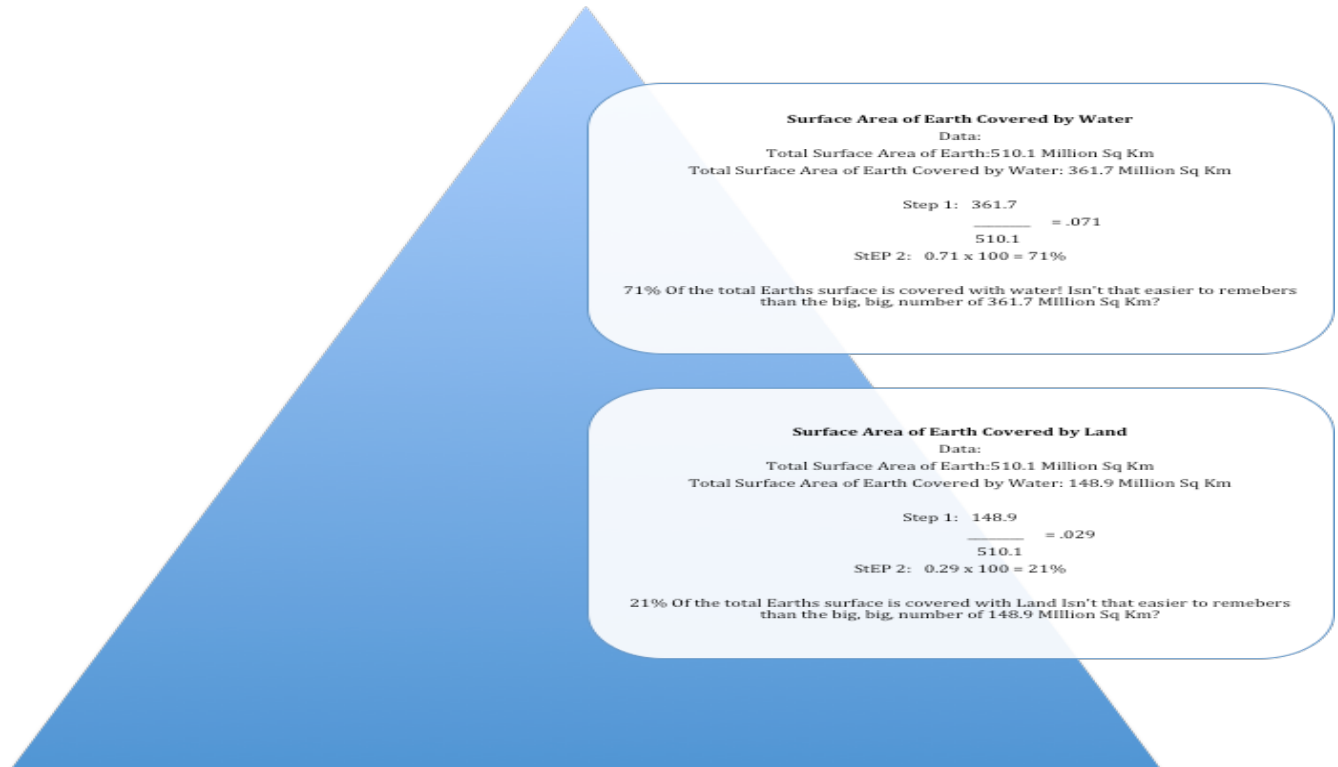
Divide A by B

C - After the division you will get a number either it will be a whole number or decimal.

- If it is a whole number that will be your answer
- If it is a decimal number (e.g: 0.39984), we will use the **rounding off concept**. Follow the following steps:
 - Select a number to two decimal places (e.g 0.39).
 - 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)
 - 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)

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!



MAYBE PERCENTAGES SHOULD BE DEPICTED IN PIE CHARTS

Now calculate the following:

Practice Question	Data	Step 1 (upto two decimal place)	Step 2	What's the percentage?
Calculate the percentage of total land surface area on Earth covered by Asia?	<p>Total surface area covered by Land on Earth: 148.9 Million Sq. KM (Denominator)</p> <p>Total Surface Area covered by Asia: 44.58 Million Sq. KM (Numerator)</p>	$\frac{44.58}{148.9} = 0.29$	$0.29 \times 100 = 29\%$	29% of the total land area on the Earth's surface level is covered by Asia!

Calculate the percentage of total land surface area on Earth covered by Africa?				
Calculate the percentage of total land surface area on Earth covered by North America?				
Calculate the percentage of total land surface area on Earth covered by South America?				
Calculate the percentage of total land surface area on Earth covered by Antarctica?				
Calculate the percentage of total land surface area on Earth covered by Europe?				
Calculate the percentage of total land surface area on Earth covered by Australia?				

If learners cannot divide decimals or do long division, follow these steps:

- To divide a decimal by another decimal, we need to first move the decimal points.
- If we want to divide $11.6 \div 7.1$, we must remove the decimal point in the numbers. To do this, we would **move the decimal point to the right by one place** in BOTH numbers by multiplying each number by 10 which will give us $116 \div 71$
- In the example above, moving the decimal point to the right once is enough to get rid of it. We can then divide the numbers as whole numbers. Sometimes, the numbers we want to divide may not have the same number of digits before and after the decimal point.
- Let's do one such example with the following: $9.33 \div 45.7$:
- Here, by multiplying both numbers by 10, we get $93.3 \div 457$. Notice that the first number still has a decimal point. This is because the original had two digits after the decimal point, unlike 45.7, which only had one digit after. As a rule of thumb, you must do the same thing to both numbers.
- Now, let's do a long division to get the answer. Follow the steps below:

Long division explained:

In long division, we have the divisor and dividend. In our example, the divisor is 457 (it goes outside the box) and the dividend 93.3 (it goes inside). The number on top is the quotient

What we are looking for is how many times does the divisor 457 go into the number 93.3

We know that 5 goes into 10 two times, 4 goes into 16 four times, but what happens when the divisor is greater than the dividend?

In our example, 457 is greater than 93.3. The smallest number in 457 times table is 457! (x1)

When we have a dividend that is smaller than the divisor, we start with a zero and add a decimal point to allow us to take the entire number 933 instead of 93.3. Write zero followed by a decimal in the quotient

Now, find the number that is closest but smaller than 933 in 457 times table. You will find that 457 times 2 gives us 914, which is the closest to 933 in 457 times table. Write 2 in the quotient

Find the difference between the two numbers. It is 19. Again this number is too small, we must make it bigger!

Write zero in the quotient to allow us to change the number from 19 to 1900 (because 190 is also too small)

Find the number closest to 1900 in 457 times table and write in the quotient the number that we need to multiply 457 into to get that answer. It is 4! ($457 \times 4 = 1828$). Write 4 in the quotient

Find the difference $1900 - 1828 = 72$

You can repeat these steps for 72 (making it 720) and find the closest number to it. You can also stop here since we have a quotient of 3 decimal places. The answer is therefore 0.204!

- Learners can now do the above activity to find the percentage of land space covered by each continent! The first one has been done as an example

Following this activity, ask the learner:

- Which continent is the biggest in terms of size? Which one has the highest population?
- Which continent is the smallest in terms of size? Which one has the smallest population?
- What percentage of the Earth's surface is covered by the largest continent?
- What percentage of the Earth's surface is covered by the smallest continent?

Day 2

Reflections:

"Hola! Do you know what it means? It means hello in Spanish which is spoken by more than 580 million people across the world. Yesterday 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":

- What did you learn yesterday?
- How many continents and oceans does our planet have, can you name a few?
- How many countries are there in total?
- Which activities did you find most interesting and why?

Practice Activity (45 mins) and Presentation (15 minutes)

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.

Hint: some easy ways that learners can use to construct the globe is using paper 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



Learners will present their work to family members or peers and talk about the following:

1. How they designed the model
2. Highlight the different oceans and continents as shown in the model/map

The parent need to observe and assess the model/map to see if it meets the criteria provided below:

- 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

Activity: 20 minutes

“Now that we are well aware of the big world we are living in with billions of people around the globe, we will go ahead and explore to what extent we are interconnected with one another despite our geographical differences. In the next activity, we will know more about how global our family is.”

Activity: answer a set of questions to realize our global interconnectedness (choose only the relevant questions)

- Do we have family members living in other countries/ continents?
- Do we have friends from other countries or continents? Or anyone that we have heard of (celebrity, athlete etc.)?
- Do any of us use or know a salutation/greeting in another language? Where did that language originate?
- Any family member who likes a dish from a different culture/country?
- Any family member who has travelled to another country?

We live in an interconnected world, where events in one part of the world have a direct or indirect influence on other parts. The most recent example of this is how quickly Covid19 spread across the globe, a disease that originated in one part has led to cases in almost every other country. Despite the oceans and vast landmasses of this planet, we were not safe from the negative impact of human behavior.

To find out how global events affect our daily life. let's look into the COVID-19 pandemic:

- Do you know where it actually started? (which city, in which country, in which continent?)
- Can you spot the country of origin on the map?
- How strange is it that someone catching a virus in a faraway city, led to a global pandemic and had such a major impact on everybody's lives?

Learners will write an essay or few sentences based on their responses to the selected questions from the list above. The topic of the essay is "our connected world". In their essay, learners will describe their connections to other parts of the world.

Additional Activity: The origin of things (20 minutes)

"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!"

Invention	Inventor	Country
Light bulb	Thomas Edison	North America
Telephone	Alexander Graham Bell	Scotland
Airplane	Wright Brothers	North America
Camera	Joahnn Zahn	Germany
Radio	Guglielmo Marconi	Italian

--	--	--

“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”

Learners will identify “international” items in their own homes:

- Make a list of 10-20 items and do some research (by asking caretakers, neighbors or other adults including shopkeepers) to find out where they came 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 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!

Additional Reflection (5 minutes)

The learners will be asked the following questions to gauge their understanding of this activity:

- What do you think of all the things we have at home?
- How many people 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:

Reflections:

“Today its the last day of our Big Big Earth project and I am proud of how far you have come. I am confident that we will enjoy the activities on our final day as much as we did the previous days. Before we jump to our activities, let's recall what we learnt yesterday”:

- Do you remember what you learned yesterday?
- Do you have any family members living abroad?
- Can you recall an event which began in one country but took its toll on the rest of the world?
- Can you name a few inventions from other countries that are common in ours now?
- Which activities did you find most interesting and why?

Activity: Tolerance (30 minutes)

"In this world, we live with 7.8 billion other humans belonging to 195 countries. Despite that, we share a lot of similarities but we also have our differences. It's the differences that make us unique and interesting. Isn't it interesting to meet people from different cultures, who speak so many different languages?"

Do you know how big 7 billion is? Can you write it down in numbers? To put the number of people on Earth in perspective, the number 100 has two zeroes, but 7 billion has 9 zeros - 7,000,000,000! There are 7,800,000,000 people living on Earth!

Learners will write the number of people on earth in the following place value chart. Remember that the rightmost number is in the ones place, the second most right number is in the tens place, the third most right is in the hundreds place, and so on. What is the place of 6 in 670,000? An example is presented below using 345,000,000:

Hundr ed billion s	Ten billio ns	Billio ns	Hundr ed million s	Ten millio ns	Millio ns	Hundre d thousa nds	Ten thousa nds	Thousa nds	Hundre ds	Te ns	On es
			3	4	5	0	0	0	0	0	0

Now, plug in the number of people in the world in the following place value chart?

Hundr ed billion s	Ten billio ns	Billio ns	Hundr ed million s	Ten millio ns	Millio ns	Hundre d thousa nds	Ten thousa nds	Thousa nds	Hundre ds	Te ns	On es

Today, learners will fill out this table and discuss it with their family or class. They will then compare it with other learners (or neighbors) who come from different backgrounds and find out how many shared and unique items there are - they can also find the percentage of shared and unique items:

Things that I did not choose	Things I chose for myself!
Name	My favorite dish
Nationality	My friends
Religion	My favorite book
Eye-color	My favorite game

⇒

Things that I did not choose	Things I chose for myself!

Discussion: 45 minutes

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.

“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”

- What similarities do we all share in the family?
- What are our differences?
- Do you think there are other children from around the world who share similarities with you?
- Would you prefer playing your favorite game with your parents or with a child from another country? Why?

Reflection questions (15 minutes)

You need to ask your child/ren the following questions:

- What do you think when you see a child who has a different skin color? Do you think they may share similarities with you?
- If you have a friend who follows a different religion, what gift would you give them at their religious festival?
- How will you react towards somebody who speaks a different language?
- How will you behave with someone who is differently abled?