Title: The World We Share Part 2 – Pie Charts

Learning Objective: Awareness of the world as a 'global village'.
1. Calculation of percentages, angles for pie charts. Interpretation, or drawing, of pie charts.
2. Knowledge of continents, size in terms of land area and population. Population density.
3. Representation and interpretation of data about the types of land around the world.

Statistics for the Biggest Ever Maths and Science Lesson	Number of Learners	Number of Countries	Number of Classes	Number of Teachers	Countries
Estimated ahead of time	11046	14	356	329	Australia, Brazil, Colombia, Denmark, Great Britain, India, Ireland, Kenya, New Zealand, Nigeria, Singapore, South Africa, Spain, USA
Actual numbers on 3 November 2015					

Be selective. Just choose a selection of these ideas to suit your class.

Suggested Lesson: Start by talking about the different classes around the world sharing this lesson. You can mention where the other schools are and show this on a globe in your classroom, on Google Maps or on the transparent globe image seen above. Talk about continents and populations. Ask:
- Who knows what continent we live on?
- What is a continent?
- The National Geographic Genographic Project has used DNA research to map the main migration routes that humans followed as they spread across the world starting from Africa about 60 000 years ago. The map below is copied from the Genographic Project website where the map is interactive so that by clicking on the routes you can find information about each migration. https://genographic.nationalgeographic.com/human-journey/ .


- Do you know that people around the world don't agree about the continents? In most English speaking countries, China, India, the Philippines and parts of Western Europe we say there are 7 continents. In Russia, Eastern Europe and Japan they say that Europe and Asia together form one continent Eurasia so there are 6 continents. In most Spanish speaking countries and Greece people say that North and South America form one combined continent.

- The data in the table gives information about the continents. The data can be used for practice in calculating percentages and angles for drawing pie charts. You might share the work around the class so that a few learners do each calculation and then collect the results for everyone to use to draw their pie charts.

Continent	Land Area (km²) 29.1% of Earth's Surface	Percentage of Total Land Area	Population 2013	Percentage of Total Population	Density People per km²	Most populous city (disputed)	Calculation of angles for Pie Chart Land Area	Calculation of angles for Pie Chart Population
Africa	30,370,000	20.4%	1,110,635,000	15%	33.7	Lagos, Nigeria	0.204X360=73°	0.15X360=54°
Antarctica	13,720,000	9.2%	4,490	0%	0.0003	McMurdo Station, US	0.092X360=33°	0°
Asia	43,820,000	29.5%	4,298,723,000	60%	95.0	Shanghai, China	0.295X360=106°	0.6X360=216°
Australia	9,008,500	5.9%	38,304,000	0.4%	3.2	Sydney, Australia	0.059X360=21°	0.04X360=1°
Europe	10,180,000	6.8%	742,452,000	11%	72.5	Moscow, Russia	0.068X360=25°	0.11X360=40°
North America	24,490,000	16.5%	565,265,000	8%	22.1	Mexico City, Mexico	0.165X360=59°	0.08X360=29°
South America	17,840,000	12.0%	406,740,000	6%	22.0	São Paulo, Brazil	0.12X360=43°	0.06X360=22°
	149,428,500		7,162,123,490					

- You might ask the learners to draw one or both of these pie charts. If you have access to computers they might use a spreadsheet program such as Excel for this.
- What do these two Pie Charts tell us? How do they compare?
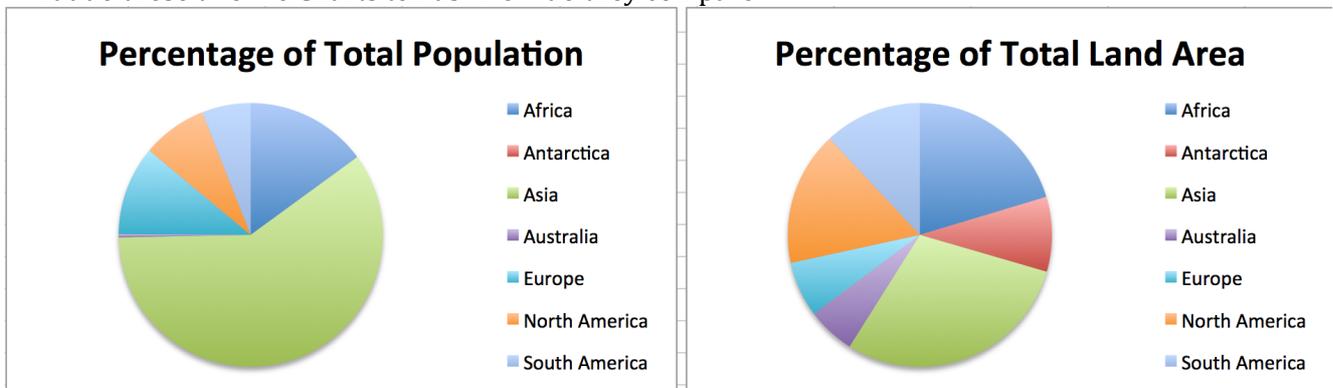
- Why do you think there are 6 sectors in the population chart and 7 in the land area chart?
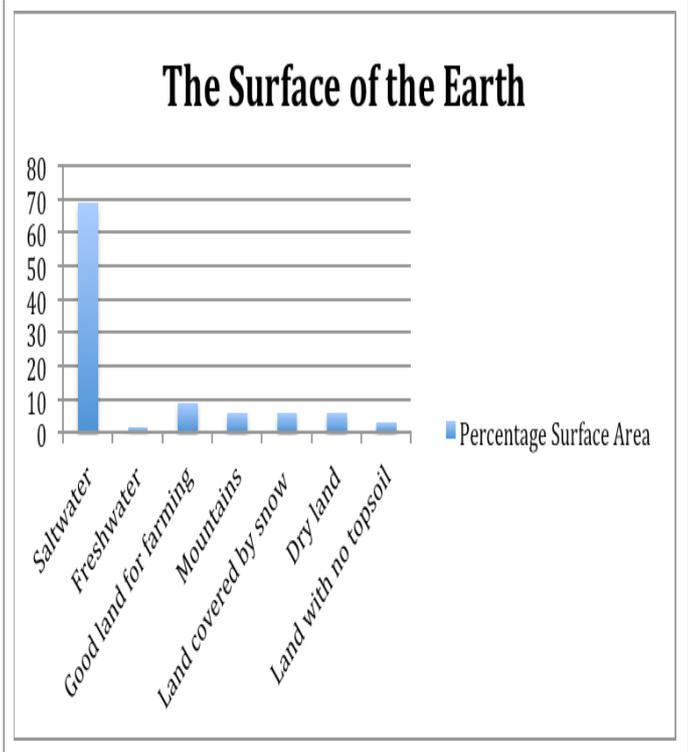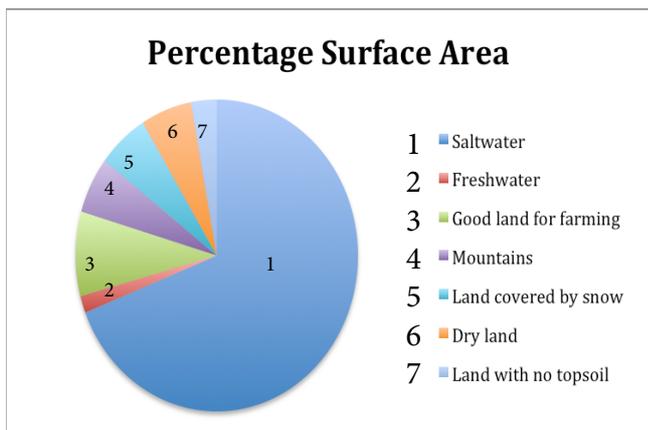- Your class might talk about population density and what that means (as a ratio).

Follow-up suggestions or homework
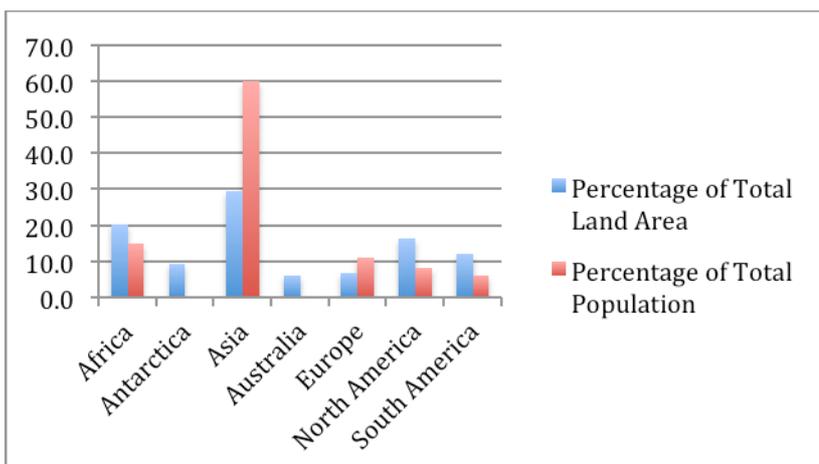
- You might like to give the statistics for percentages of land area and percentages of total world population and ask the learners to draw a double frequency bar chart to compare the two sets of figures. Alternatively you might give them this diagram and talk about what it shows.
- The statistics for the world's biggest city are disputed (see Wikipedia references). Discuss whether this means biggest land area, biggest population, biggest conurbation, or another interpretation.

Representation and interpretation of data: land and sea covering the Earth's surface

The surface of the Earth	Surface area km²	Percentage Surface Area
Saltwater	352,103,700	69.03
Freshwater	9,028,300	1.77
Good land for farming	44,682,307	8.76
Mountains	29,788,205	5.84
Land covered by snow	29,788,205	5.84
Dry land	29,788,205	5.84
Land with no topsoil	14,894,102	2.92

Lesson suggestions:

The data in this table can be used for practice in calculating percentages and the angles for drawing a pie chart.

The learners could be asked to draw a pie chart and a frequency bar chart or you could give them the charts and use them for practice in interpreting data.

For example you could ask:

Which of the charts gives the best representation of the information in the table.

What can we learn from these statistics?

What is the land like near where we live? In the rest of our country?

How does it affect economic development in our country?

How does this affect our lives?

Percentage Surface Area

1 ▪ Saltwater
2 ▪ Freshwater
3 ▪ Good land for farming
4 ▪ Mountains
5 ▪ Land covered by snow
6 ▪ Dry land
7 ▪ Land with no topsoil

The Surface of the Earth

▪ Percentage Surface Area

https://genographic.nationalgeographic.com/human-journey/

https://en.wikipedia.org/wiki/List_of_continents_by_population

https://en.wikipedia.org/?title=Continent#cite_note-31

https://en.wikipedia.org/wiki/List_of_cities_proper_by_population

See the Excel document: DNA Lesson The World We Share.xls