

# How to Get Started

## 1 Getting Set Up

### You will need:

- a. A device for the teacher, or “guide” (preferably a tablet)
- b. A mobile phone and compatible VR viewer device (like Google Cardboard™) for the student, or “explorer”
- c. A Wi-Fi® network that is peer-to-peer enabled. It may be helpful to go through a router or hotspot.

**Download the FREE Google Expeditions app** to your devices from Google Play™ (for Android™) or from iTunes® (for iOS®). The first time you open Google Expeditions, you’ll be offered a brief demonstration of the app. In the demo, tap **Full Screen** to see how the app works without a viewer.

Teachers can start Field Trips, guide students through multiple panoramas, access notes, and highlight points of interest throughout the Field Trip. Students can insert the phone into the viewer and start exploring! The Field Trip must be started by the teacher.

## 2 Selecting HMH Field Trips

HMH has developed a variety of Field Trips that can be accessed through the Google Expeditions app, and more are coming all the time. Using the search function in the app, type in the exact title as it appears in the Lesson Plan (for example: **Carmen’s Hot and Cold Cap**).

## 3 Using the HMH Teacher Guides

HMH has developed Teacher Guides for HMH Field Trips with Google Expeditions that correspond to several of our programs. You can access these guides through your HMH Online Teacher Resources and incorporate them into your lessons.

### I like it! How can my school purchase the hardware?

Your school can purchase the recommended equipment through any hardware provider or work with a Google-certified provider like Best Buy® Education ([bestbuy.com/googleexpeditions](http://bestbuy.com/googleexpeditions)). With Best Buy Education, you can purchase a ready-made kit or build your own, depending on what suits your needs.

## Expeditions Guidelines

**These guidelines must be reviewed and accepted before using the Expeditions app.**

- Expeditions is only for users older than age 7. Students should not use Expeditions without adult supervision.
- Make sure that users participating in Expeditions in a Google Cardboard viewer have enough space to look around freely and do not attempt to walk around.
- Take frequent breaks while using Expeditions and Cardboard. If you experience nausea, discomfort, eyestrain, or disorientation, immediately discontinue using Cardboard.
- If you or any users participating in the Expedition session have had or could be prone to seizures, consult a doctor before using Cardboard.
- Ensure that any employees, agents, or contractors who are leading an Expedition have reviewed and understand these guidelines.

# Carmen's Crowded Caper

## Overview

The study of human populations is an important topic in geography. Geographers who study human populations are particularly interested in patterns that emerge over time. They study such information as how many people live in an area, why people live where they do, and how populations change. Population patterns like these can tell us much about our world.

Some places on Earth are crowded with people. Others are almost empty. One statistic geographers use to examine populations is population density, a measure of the number of people living in an area. Population density is expressed as persons per square mile or square kilometer. The city of Delhi, India, for example, has a population density of about 29,298 people per square mile (11,312 per square kilometer). That is one of the highest population densities in the world. Population density provides us with important information about a place. The more people per square mile in a region, the more crowded, or dense, it is. In places with high population densities, the land is often expensive, roads are congested, and buildings tend to be taller.

In this activity, students will take an HMH Field Trip to the five most populous countries in the world, visiting one of the largest cities in each. They will explore some of the ways that megacities accommodate so many people. They will travel to São Paulo, Jakarta, New York City, Delhi, and Shanghai. Then students will create a population graphic for the locations featured in the HMH Field Trip.

## Objectives

In this lesson, students will learn to:

- examine how many people live on Earth and where most of them live
- summarize how population density affects life in a particular place
- illustrate and calculate the population density of various locations

## Classroom Activity

- Two 45-minute class periods

## Introduce

Ask students, "How many people live in your community? Do you live in a small town, a huge city, or something in between?" (*Student responses will vary for both questions depending on location. Accept reasonable population estimates and you may wish to follow up with a quick search to determine an accurate count.*) Explain to students that their community's population, or the total number of people in a given area, determines a great deal about the place in which they live. Population influences the variety of businesses, the types of transportation, and the number of schools in the community. Then ask "What do geographers learn by studying population?" (*Responses will vary, but students may discuss the following topics or ideas: Geographers learn how many people live in an area, where they live and why, and how populations change.*) Explain to students that the study of population is much more important than they might realize. The number of people living in an area affects all elements of life—the availability and types of housing and jobs, whether hospitals and schools open or close, even the amount of available food. Geographers track changes in populations by examining important statistics, studying the movement of people, and analyzing population trends. Tell students that on this HMH Field Trip, they will travel to some of the most heavily populated places on Earth.



population density for each location.)

## Teach

1. Guide students through the HMH Field Trip **Carmen's Crowded Caper**. As students look at each scene using their viewers, read the information that appears to the class. Tap on each point of interest to direct students' attention, then share the additional information. Each scene includes a set of leveled questions that you can use to check students' understanding. At the end of the field trip, have students put their viewers down. Briefly discuss with students what they learned.
2. Remind students that population density measures the number of people living in an area. Explain to students how to calculate population density, by dividing a place's total population by its area in square miles (or square kilometers). For example, if a city has a population of 100,000 people and an area of 100 square miles, you would divide 100,000 by 100. This would give you a population density of 1,000 people per square mile ( $100,000 \div 100 = 1,000$ ). Next organize students into at least three "countries." Assign students randomly to each, creating unequal groups. Ask each group to name its "country," count its citizens for this year, and determine its density according to a random number of square miles you provide. Help students calculate as needed and check each group's answer for accuracy. (*Answers will vary based on each group's data.*)
3. Introduce the task. Tell students to draw five equal-sized squares on a piece of paper and label each with a different location from the HMH Field Trip. Present the following population information for students to reference:
  - São Paulo—12,176,866
  - Jakarta—10,638,689
  - New York City—8,622,698
  - Delhi—16,787,941
  - Shanghai—26,317,104

Ask students to "populate" each square with dots representing the number of people for each location. Assign a population number to each dot; for example, one dot could represent 100,000 people. You may wish to round off population counts for each city. Then have students examine their illustrations and ask them to write a statement about what the drawing shows. (*Students should be able to determine that their illustrations are visual representations of the*

## Close

Work with students to calculate the population density for each location. You may wish to use calculators or round off figures to adjust the level of difficulty for computation. Have students add the population density data to their illustrations. Use the land area data listed below:

- São Paulo—587.3 square miles (1,521.11 square kilometers)  
(20,734 people per square mile; 8,005 people per square kilometer)
- Jakarta—255.4 square miles (661.5 square kilometers)  
(41,655 people per square mile; 16,083 people per square kilometer)
- New York City—302.6 square miles (783.8 square kilometers)  
(28,495 people per square mile; 11,001 people per square kilometer)
- Delhi—573 square miles (1,484 square kilometers)  
(29,298 people per square mile; 11,312 people per square kilometer)
- Shanghai—2,448 square miles (6,341 square kilometers)  
(10,750 people per square mile; 4,150 people per square kilometer)

## Teaching Tips and Information

The U.S. Census Bureau and other organizations try to estimate how many people are living in the world at any time. They have constructed "population clocks" that use information about population trends to estimate world population every few minutes. The Census Bureau clock can be viewed at <https://www.census.gov/popclock/world>.

You can extend this activity by challenging students to use the World Population Clock to complete the following tasks:

- Record the population growth that takes place in the span of one minute.
- Calculate the estimated growth rate for one day.
- Calculate the estimated growth rate for one week.
- Create a graph to record the different growth rates.
- Write three statements about the data presented on the graph.