

# 1.1 Introduction to Maps

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Name: \_\_\_\_\_ Class: \_\_\_\_\_ Date: \_\_\_\_\_

**Total: 10 marks**

## Objective

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Build the skills to answer exam questions on **maps** 地图 and **map projections** 地图投影.

**You must be able to:**

- distinguish a **reference map** 参考地图 from a **thematic map** 专题地图
- explain why every **projection** 投影 distorts shape, area, distance, or direction
- match a projection (Mercator, Gall-Peters, Robinson) to its main distortion
- read **map scale** 比例尺 and say what a large- vs small-scale map shows

## 1 Worked examples

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Study these first. Each one shows the method for a task used later.

### ■ Reference vs thematic maps

A **reference map** shows locations —borders, cities, roads. A **thematic map** shows the spatial pattern of one variable, such as population density or climate.

### ■ Why projections distort

The Earth is a sphere; a map is flat. Flattening it always distorts at least one of **shape, area, distance, or direction**. No projection preserves all four.

### ■ Matching projection to distortion

**Mercator** keeps direction/shape but greatly exaggerates area near the poles. **Gall-Peters** keeps area true but distorts shape. **Robinson** is a compromise, distorting each a little.

## 2 Practice

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**2.1** State one difference between a reference map and a thematic map.

[2]

**2.2** Explain why a flat map of the whole world must distort the Earth. [2]

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**2.3** The Mercator projection is common in classrooms and online maps.

(a) State the property the Mercator projection preserves. [1]

(b) State the main distortion it introduces. [1]

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### 3 Exam-style questions

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**3.1** A map showing the percentage of each country's population that is urban is best described as a [1]

- **A** reference map
  - **B** thematic map
  - **C** political map
  - **D** topographic map
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**3.2** A geographer needs true compass bearings for ocean navigation. The best projection is [1]

- **A** Gall-Peters (equal-area)
  - **B** Mercator (conformal)
  - **C** an equal-area interrupted map
  - **D** a cartogram
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**3.3** A city planner uses a street map of one neighbourhood; a student uses a map of the whole world.

(a) Which map is larger scale? [1]

(b) State one thing the larger-scale map shows that the smaller-scale map cannot. [1]

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## 4 Go further

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- work through the **1.1 Introduction to Maps** lesson on the **Learn** page;
- read the **Thinking Geographically** section of the AP Human Geography handout on the **Know** page.

## Solutions

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**2.1** a reference map shows locations/features; a thematic map shows the pattern of one variable.

**2.2** the Earth is a sphere and a map is flat; flattening a curved surface must distort shape, area, distance, or direction.

**2.3** (a) direction / true shape locally. (b) it exaggerates area toward the poles (e.g. Greenland looks huge).

**3.1 B.** it maps the spatial pattern of one variable, so it is a thematic map.

**3.2 B.** Mercator preserves direction, which is why it was designed for navigation.

**3.3** (a) the neighbourhood street map. (b) fine local detail —individual streets/buildings.