

X208/701

NATIONAL
QUALIFICATIONS
2010

MONDAY, 31 MAY
9.00 AM – 11.30 AM

GEOGRAPHY
ADVANCED HIGHER

1. Candidates are expected to attempt **three** questions, **one** from Section A and **one** from Section B, **and** the question in Section C.
2. Both questions in Section A are worth 30 marks each and both questions in Section B 20 marks each. The question in Section C is worth 10 marks.
3. In all questions, marks will be given for sketch-maps and diagrams which are integral parts of an answer.
4. Candidates are encouraged to use the Supplementary Items and tracing paper provided for annotation or as bases for diagrams. If used, the resources should be placed inside the front cover of the candidate's answer book.
5. Candidates are reminded that they have an atlas which can be a valuable resource in answering questions in all parts of the paper.



SECTION A

Answer ONE question ONLY from this Section

Map Interpretation

Supplementary Item A, Ordnance Survey Map, Extract No 1789/EXP107 1:25 000 (Explorer Series) St Austell and Liskeard, is the basis for answers to questions in this Section.

For whichever question you choose in this Section (ie 1. or 2.) you are expected to make extensive and detailed use of your atlas and the map extract.

You are strongly advised to read the whole of both question 1 and question 2 before you make your choice.

1. The Eden Project is described in the text box below.

The Eden Project, (grid square 0454), opened to the public in 2001 and attracts over 1 million tourists each year.

It consists of a number of greenhouse domes built in a former china clay pit. The domes house two distinct biospheres; the humid tropical biome features a jungle environment while the warm temperate biome has plants from the Mediterranean, South Africa and California. Outside the domes there are landscaped gardens.

Local and global projects demonstrating the sustainable use of resources form a major part of a visit to the Eden Project.

Following on from the success of the Eden Project, a suitable area of land is being sought to develop an Eco-Centre. The Eco-Centre's Mission Statement would be:

"The Eco-Centre is concerned with the search for a globally sustainable way of life, based on ecologically sound technologies."

The Eco-Centre would require a site of 500 m × 500 m. The site should be suitable for fully functioning examples of more than one renewable energy type. The site should contain working examples of environmentally responsible buildings, energy conservation, organic farming, responsible waste management and be located around a visitor and education centre.

- | | |
|--|-------------|
| (a) Identify one suitable location for the development and draw it to scale on the tracing overlay, <i>Supplementary Item B</i> (the area between Eastings 02 to 08 and Northings 50 to 58). | 4 |
| (b) Annotate (do not merely label) your tracing overlay, <i>Supplementary Item B</i> , to show six physical location advantages of your site. | 12 |
| (c) Discuss in depth, using detailed map evidence and references from the whole map extract , the reasons for your choice of location. | 14 |
| | (30) |

2. Study *Supplementary Item A*, the OS map extract, St Austell, and the text box below.

During the glacial periods, which affected the UK, rivers in southern England to the south of the ice continued to flow. As the ice retreated, sea levels rose again (relative to the land). This caused the lower parts of the main river valleys and their tributaries to be submerged forming sheltered, winding inlets called **rias**.

Much of the south coast of England is a submergent coastline, and contains many rias, including Portsmouth Harbour, Southampton Water, Poole Harbour, the estuaries of the Exe, Teign and Dart in Devon, and the estuaries of the River Fowey and River Fal in Cornwall.

- (a) Choose **three** separate areas of coastline, each of which demonstrates a variety of **different** physical, coastal features.

On the tracing overlay provided (*Supplementary Item C*), identify the extent of your three areas of coastline. Draw annotated diagrams to **describe** and **explain** the main physical features of your chosen examples. You must use **specific** information from the map extract.

12

- (b) Explain how the physical geography described in your examples has influenced the ways in which people have used the area.

You may include evidence from other parts of the coast to back up your examples.

You must use **detailed, relevant map evidence** with **Grid References**. Lists are **not** suitable.

18

(30)

[Turn over for SECTION B on *Page four*

SECTION B

Answer ONE question ONLY from this Section

For whichever question you choose in this Section (ie 3. or 4.) you are encouraged to make use of your atlas.

You are strongly advised to read the whole of both question 3 and question 4 before you make your choice.

3. The data shown in *Supplementary Item D* shows a selection of countries within each GNI grouping for 2007.

Numbers of countries grouped by Gross National Income (GNI) per capita and Infant Mortality Rate (IMR)

IMR/ 1000 live births	GNI per capita (US \$)		
	<1500	1501–3000	3001–4500
0–65	5	15	20
66–130	24	21	11
131–185	9	6	5

GNI per capita: Gross National Income (previously referred to as GNP—Gross National Product) divided by the total population.

- (a) State the null hypothesis. 1
- (b) Complete the table in *Supplementary Item E* and calculate Chi-squared to determine whether the observed frequencies differ significantly from the expected frequencies. (See formula below.) 6
- (c) Comment on the usefulness of this technique. 3
- (d) The data shown in the table above represents developing countries grouped by their GNI per person and corresponding infant mortality rates. With reference to developing countries, comment on the results as they relate to this example. 10
- (20)**

The formula for the Chi-squared test is

$$\chi^2 = \sum \frac{(O - E)^2}{E}$$

where O is the observed value and E is the expected value.

The expected values are obtained by multiplying the row total by the column total and dividing by the grand total (the aggregated row total). **At all stages work to two decimal places.**

The required significance level is 0.05 (see *Supplementary Item E*).

Degrees of freedom are calculated using the formula

$$(n - 1) \times (n - 1) \text{ ie (number of rows - 1) } \times \text{ (number of columns - 1)}$$

4. You are advised to use your atlas in this question.

Study **all** the information provided on *Supplementary Item F* which relates to the *Hispanic Population of the United States in 2005.

*Hispanic (also called Latino): people of Mexican, Central/South American and Puerto Rican origin now living in USA.

The map on *Supplementary Item F* is a **choropleth** map showing the distribution of the Hispanic population in the USA by state (excluding Alaska and Hawaii).

(a) Describe and explain the distribution of the Hispanic population shown on the map on *Supplementary Item F*.

5

(b) Explain the advantages **and** disadvantages of using a choropleth map for showing this information.

5

(c) A **dot map** could also be used to present the information shown on the map. Discuss the advantages **and** disadvantages of using this method for the distribution of the Hispanic population in 2005.

4

(d) Study the table and other information on *Supplementary Item F* which provides information for selected states. Discuss how the raw data helps to compare aspects of the Hispanic population which may not be clear from the map and how this impacts on the various states. (You should make use of all the information on *Supplementary Item F*.)

6

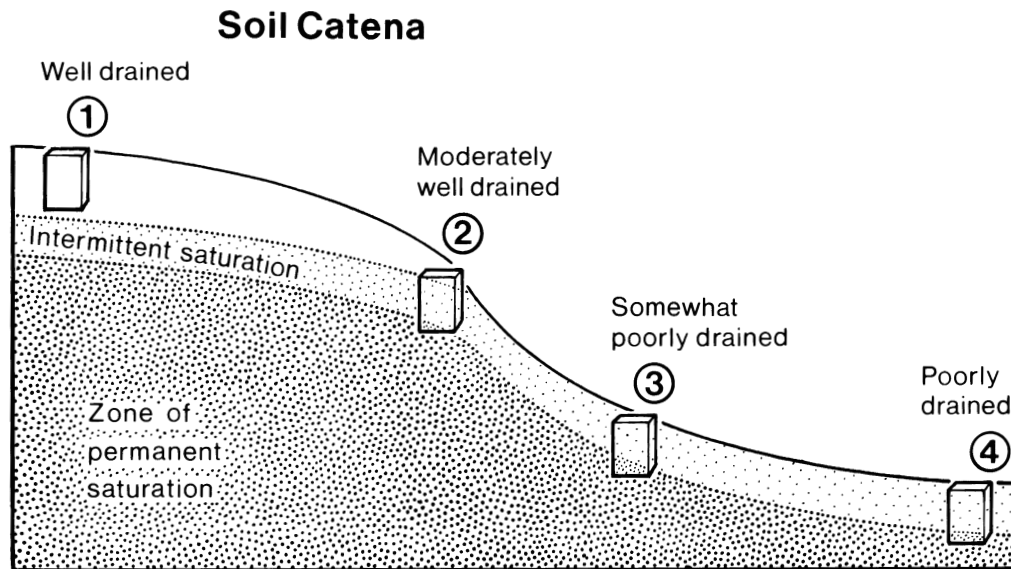
(20)

[Turn over for SECTION C on Page six

SECTION C

This question must be answered

5. The term soil **catena** refers to the sequence of different soils that varies with relief and drainage, though derived from the same bedrock. Such sequences can be found when following a transect from a hilltop to the valley bottom, reflecting changes in micro-climate, drainage and the position of the water table.



A student wishes to investigate soil properties on a slope at the four locations shown on the diagram above.

- (a) State a working hypothesis that would allow the student to investigate changes in soil characteristics and properties found on the slope. 1
- (b) Discuss methods of **data collection** the student would use in order to examine the soil. 5
- (c) What suitable methods and techniques could be used to **analyse** the soil samples and the data? 4

(10)

[END OF QUESTION PAPER]

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Full name of centre

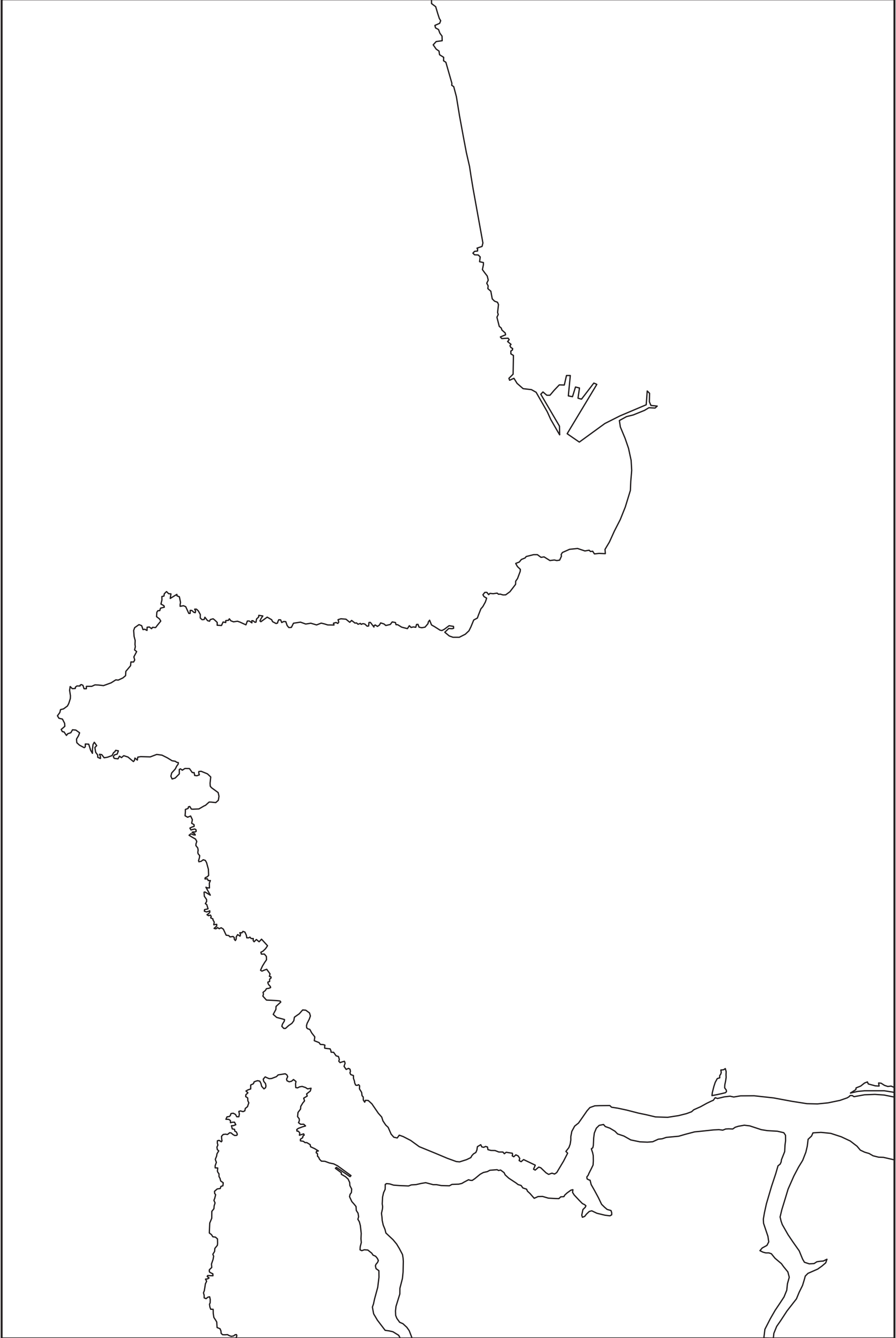
Name of candidate

Date of birth



Full name of centre Name of candidate Date of birth

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49 05 49 55 14

X208/705

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GEOGRAPHY
ADVANCED HIGHER
SECTION B
Supplementary Item D
for Q3

Fill in these boxes.

Full name of centre

Town

Forename(s)

Surname

Date of birth

Day Month Year

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If annotated by the candidate, to be placed inside
the front cover of the candidate's book and
thus sent to the Scottish Qualifications Authority.



SUPPLEMENTARY ITEM D

The table below shows a selection of countries within each of the GNI groupings.

Countries grouped by GNI per capita (US\$) in 2007

<1500 US\$	1501–3000 US\$	3001–4500 US\$
Benin	Angola	Egypt
Bhutan	Bangladesh	Ecuador
Congo	Bolivia	India
East Timor	The Gambia	Libya
Ethiopia	Ghana	Morocco
Ivory Coast	Moldova	Sri Lanka
Mali	Pakistan	Syria

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GEOGRAPHY
ADVANCED HIGHER
SECTION B
Supplementary Item E
for Q3

Fill in these boxes.

Full name of centre

Town

Forename(s)

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Date of birth

Day Month Year

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SUPPLEMENTARY ITEM E

IMR	GNI/PP	<i>O</i>	<i>E</i>	<i>O – E</i>	$(O - E)^2$	$\frac{(O - E)^2}{E}$
0–65	<1500	5	13.1	–8.1	65.61	5.01
0–65	1501–3000	15	14.48	0.52	0.27	0.02
0–65	3001–4500	20	12.41	7.59	57.61	4.64
66–130	<1500	24				
66–130	1501–3000	21				
66–130	3001–4500	11				
131–185	<1500	9				
131–185	1501–3000	6				
131–185	3001–4500	5				
Grand Total			$\Sigma =$			

Critical Values of Chi-squared

Degrees of freedom	Significance level	
	0.05	0.01
1	3.84	6.64
2	5.99	9.21
3	7.82	11.34
4	9.49	13.28
5	11.08	15.09
6	12.59	16.81
7	14.07	18.48
8	15.51	20.09
9	16.92	21.67
10	18.31	23.21

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GEOGRAPHY
ADVANCED HIGHER
SECTION B
Supplementary Item F
for Q4

Fill in these boxes.

Full name of centre

Town

Forename(s)

Surname

Date of birth

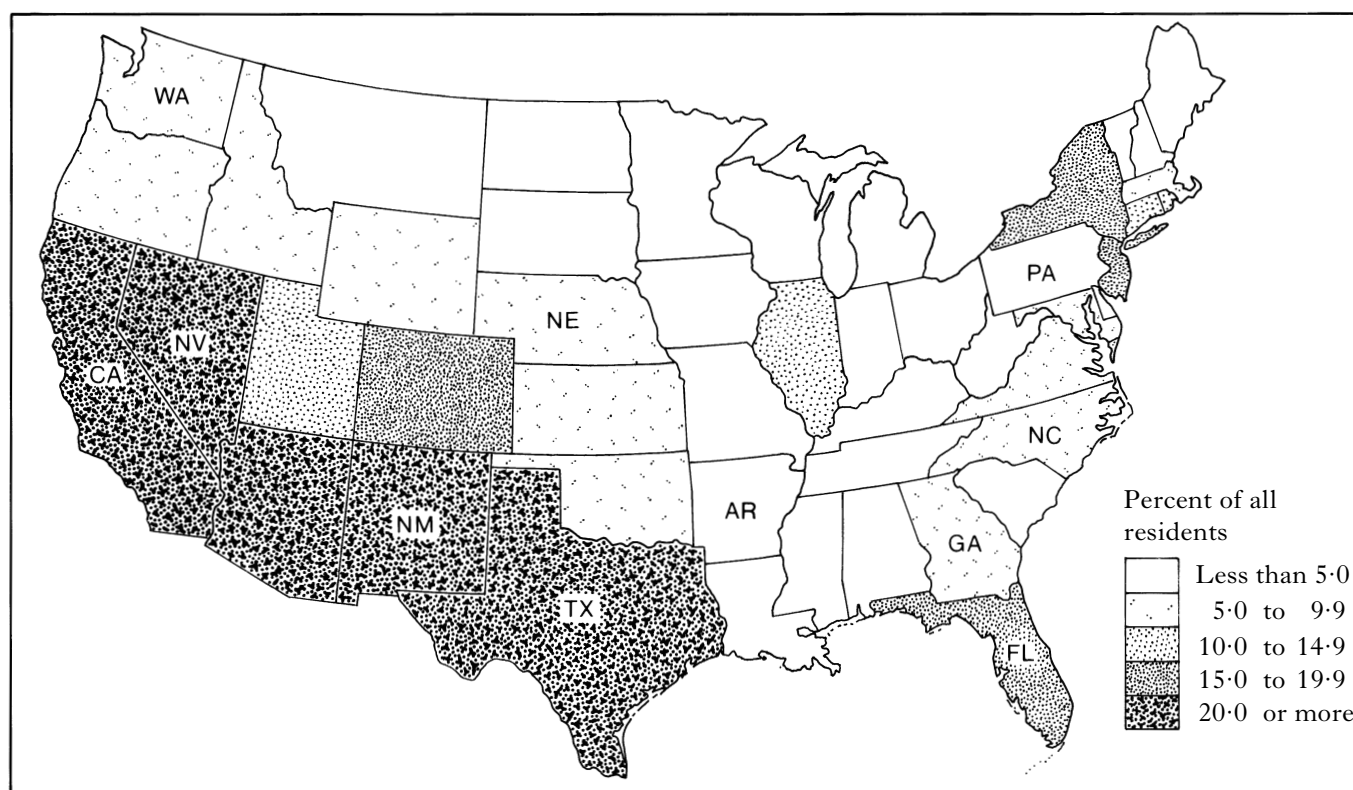
Day Month Year

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**Distribution of Hispanics in the Population of States of the USA in 2005
(excluding Alaska and Hawaii)**



***Hispanic Population Figures for selected US States in 2005
(2005 is the mid-point between the 2000 and 2010 censuses)**

State **(with state abbreviation)	Total Population 2005	Total Hispanic Population 2005	% Change in Hispanic Population 2000–2005	% Hispanic Population 2005
California CA	35,340,566	12,534,628	16.7	35.5
Texas TX	22,250,152	7,882,254	20.7	35.4
Florida FL	17,636,653	3,433,355	30.9	19.8
Pennsylvania PA	11,948,862	488,144	28.1	4.1
North Carolina NC	8,397,785	544,470	48.2	6.5
Georgia GA	8,811,648	625,382	47.0	7.1
Washington WA	6,157,786	546,209	25.6	8.9
Arkansas AR	2,694,665	130,328	58.6	4.8
Nevada NV	2,376,017	557,370	43.2	23.5
New Mexico NM	1,886,789	827,940	10.9	43.9
Nebraska NE	1,706,343	124,504	37.0	7.3
USA	288,398,819	41,926,302	21.5	14.5

***Hispanic** (also called Latino): people of Mexican, Central/South American and Puerto Rican origin now living in USA

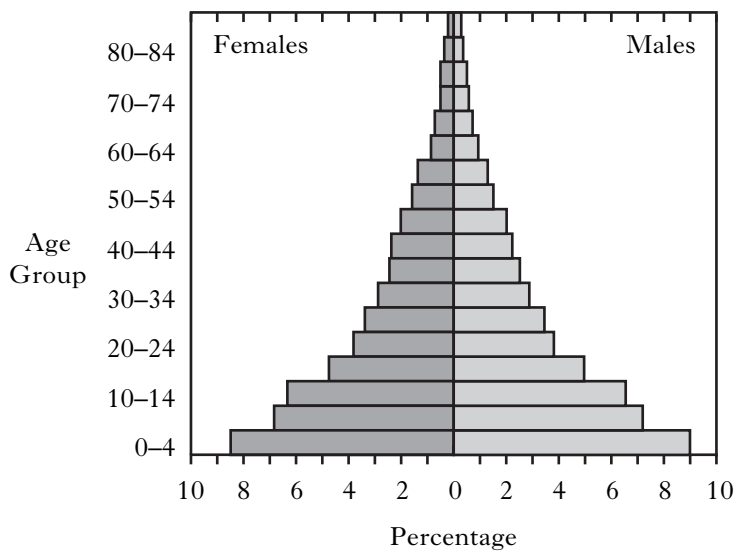
******the state abbreviations also refer to the map

US Hispanic Fact File

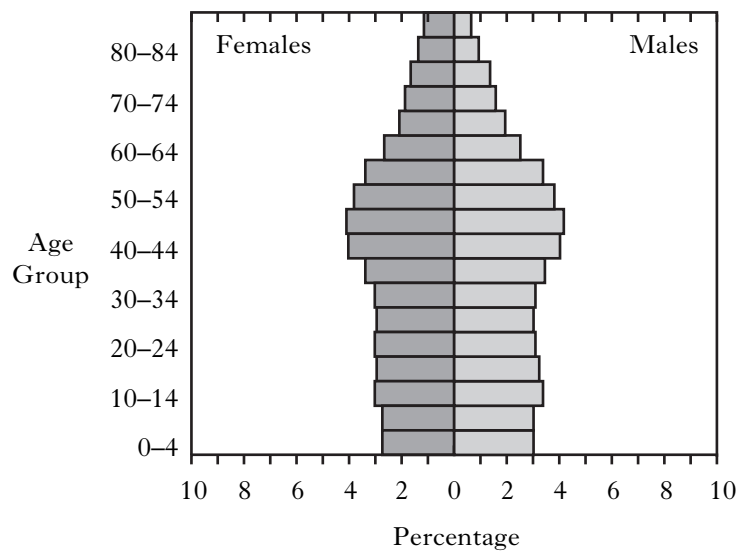
- 46.4% of Hispanics live in city centres. A further 45.1% live outside city centres but still in urban areas.
- The Hispanic population is expected to rise from its 14.5% share in 2005 to a 30% share of the total US population by 2050.
- By 2010, a quarter of US 5–9 year olds will be Hispanic.
- The Total Fertility Rate or average numbers of babies per woman averaged 2.1 per woman in the US in 2005. However, Hispanic rates were 2.9 per woman compared to non-Hispanic whites at 1.8 per woman.

Population Pyramids for 2005

Hispanic Population born in USA



White Population of USA



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