

# Testing a Hypothesis

**"Living standards in the South East of England are higher than in the rest of the UK"**

Study the table of data on the resource sheet. Discuss in your group which of the information you could use to help you to test the hypothesis - there is more information than you need and you will have to select the most appropriate.

You should be prepared to present a full report explaining how you went about testing the hypothesis.

Every person in the group should make a contribution to the final report.

## You will need to consider:-

- Which of the information in the tables relates to living standards?
- Will it help to work out some averages or differences?
- What graphs you could create to illustrate any of the points you are making? Which type of graph will be the most effective?
- What other sorts of data would have been useful to you?
- Are there any other factors to take into consideration (for example, public transport in London means some people do not own a car, but this is not the case everywhere)?



# Mathematics 4 | Activity sheet

# Mathematics 4 | Teachers' notes

## Testing a Hypothesis

**Theme** Interpreting statistical information to test a hypothesis

Differences in the quality of life between regions of the UK have long been an important issue. In this unit students are presented with an array of relevant data, and asked to test the hypothesis that living standards are higher in the South East of England than elsewhere. To complete the task students have to find ways of comparing and contrasting the values for different indicators of standard of living.

**Curriculum context** Mathematics data handling at key stages 3 and 4.

This unit is relevant to programmes of study:

KS3 Ma4 1a(iv), c, e, f, h, i, j, 2b, 5a,c KS4F Ma4 1a (iii), (iv), b,c,h,j, 2b, 5a,e,j,k and KS4H Ma4 1a (iii), (iv), c,d,f,g, 2b, 5a,c,e

## Classroom ideas

### Introduction

- Using the table on the accompanying resource sheet as a focus ensure the students understand the terminology: hypothesis, living standards, income support (those families in work who receive extra money from the state because they earn below a certain level). Ensure that students understand the units of measurement used in the table.
- Ask students to identify their own region. How do living standards in their region compare with others?

### Main activity

Ask students to work in small groups. They should:

- Select relevant data.
- Make calculations, e.g. means and differences.
- Produce graphs (on the computer, if available) relevant to testing the hypothesis.

The hypothesis should then be discussed in the light of these pieces of evidence, and the group should prepare a short presentation explaining their reasoned conclusion.

An alternative approach is to ask some groups to find information in support of the hypothesis and other groups to find information that runs counter to the hypothesis. The findings can then form the basis for feedback and discussion.











### Plenary

The key points of evidence could be mounted on large sheets of paper for display purposes or each group could make a presentation to the rest of the class, inviting and answering questions from the audience.



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## Regional differences in the UK\*

	 Population	 Houses	 Central Heating	 Double Glazing	 Motor Cars	 House Prices	 Household Income	 Income Support	 5 or more GCSEs	 Degrees
	Million	Million	%	%	Million	£s	£s / week	% Households	% pupils	% adults
<b>North East</b>	2.594	1.121	94.1	50.1	1.00	57,049	333	21	38.1	8.8
<b>North West</b>	6.884	2.938	82.9	65.4	2.58	61,525	384	18	43.7	10.5
<b>Yorks/Humber</b>	5.037	2.131	82.5	57.4	1.76	59,414	360	17	39.7	11.5
<b>East Mids</b>	4.156	1.754	92.3	62.5	1.65	64,289	401	15	43.4	10.7
<b>West Mids</b>	5.320	2.194	82.2	58.4	2.28	71,168	381	17	42.2	10.2
<b>Eastern</b>	5.334	2.259	92.3	65.7	2.57	86,968	419	11	48.5	12.3
<b>London</b>	7.122	3.040	87.5	50.7	2.35	127,814	491	18	44.0	21.0
<b>South East</b>	7.958	3.304	91.6	59.6	3.27	107,035	474	9	51.1	15.5
<b>South West</b>	4.876	2.102	88.4	68.2	2.15	81,540	405	11	51.1	11.8
<b>WALES</b>	2.926	1.257	--	--	1.10	59,109	360	18	43.7	10.4
<b>SCOTLAND</b>	5.112	2.269	87.2	64.7	1.72	--	371	16	54.8	12.2
<b>N. IRELAND</b>	1.680	0.596	88.7	40.1	0.57	--	336	--	53.5	10.9

\* Note: most data relate to 1998

-- Indicates there is no comparable data.



Does the evidence support this statement?

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