Y7	UNIT 11 Data Collection and Presentation Lesson Plan 1	Types of Data
Activity		Notes
1	Arranging data T: In this unit we'll learn how to collect, classify and display data; data is information that is used in any process connected with stastistics. We'll start by looking at the information on the OHP, which gives us a number of statements about James.	Whole class activity. Statements appear on OHP. T asks a P to read out the
	 James lives in Birmingham. James was born in Exeter. James is 43 years old. James is married. James and his wife have 3 children. James is an engineer. James is tall; his height is about 194 cm. James weighs 96 kg. James owns a car. James' favourite rock group is Led Zeppelin. 	sentences clearly.
	Questions/HeadingsAnswers/DataPlace of residenceBirminghamBirthplaceExeterAge (years)43MarriedYesChildren3ProfessionEngineer	Then T and Ps discuss how to present the data under headings in a table.
	Height 194 cm Weight 96 kg Car Yes Music Led Zeppelin	T writes table on BB, Ps in Ex.Bs. Then Ps try to classify data as to whether or not is is numerical, and then compare numerical data.
	T: Which of the questions are answered with numerical data? (Age, children, height, weight) Are there any differences in the numerical data? (Units)	
	What is meant by 'about 194 cm'? (193.5 cm ≤ height <194.5 cm) Is James' weight exactly 96 kg? (Probably to the nearest kg) Has James got exactly 3 children, or is it better to say he has 'about 3 children'? (He has exactly 3 children; we do not say he has 'about' 3 children)	Finally, T introduces the concepts of <i>quantitative</i> , <i>discrete</i> and <i>continuous data</i> .
	etc. 10 mins	Whole class activity.
2	Types of data OS 11.1	Task appears on OHP (Ps also look at chart in Ex.Bs, p157). After redefining types of data (qualitative, discrete and continuous), Ps go over questions on p156-157 of PB
	T asks some extra questions for part (a): e.g. "Explain why 'Age', 'World Ranking' and 'Aces' are discrete data". "Why are 'Height' and 'First Serve Max Speed' continuous data?" 18 mins	interactively. T asks and points to P to answer question by question. Agreement. Praising.

Y7	UNIT 11 Data Collection and Presentation Lesson Plan 1	Types of Data	
Activity		Notes	
3	Data - quantitative and qualitative PB 11.1, Q1 25 mins	Individual work, monitored, helped. Oral checking. Agreement. Feedback. Praising	
	25 /////		
4	Further practice with types of data OS 11.2 T: (Extra questions) Which place of birth appears most frequently in the database? (Plymouth)	Whole class activity, question by question, interactively. Then T makes Ps read the data to see the connections, and then asks extra questions. Agreement. Praising.	
	Which age appears most frequently? (12 years) Which occurs most frequently - boys or girls? (Girls) What is the age difference between the oldest and the youngest people listed? $(14 - 7 = 7 \text{ years})$		
5			
	Creating and using a database PB 11.1, Q4 45 mins	Group activity. T puts class in 4 groups of 6-8 pupils (e.g. by seating). Each group nominates a spokespersor to obtain the data and record it i a table. Spokespersons agree or the headings for the last two columns and then start to ask their own group for data. T monitors, helps. Then each group writes down the answers to questions in part (d). When each group is ready, spokespersons read out their answers. Now spokespersons discuss their data and summarise it all, with monitoring and helping. Results are given to class. All Ps then discuss together the deviations of the groups' results from the whole class results.	
	Set homework PB 11.1, Q2		
	PB 11.1, Q2 PB 11.1, Q3		

Y7	UNIT 11 Data Collection and Presentation Lesson Plan 2	Collecting Data 1
Activity		Notes
1	Checking homework PB 11.1, Q2 (a) (iii), (iv) (b) (ii), (v), (vi), (viii), (ix)	Oral checking and review of types of data. Agreement, feedback, self-
	(c) (i), (vii), (x) PB 11.1, Q3 (a) This will be a whole number. (b) This number can be of any value. (c) 'Colour', 'Trailer/Caravan' (d) 33 mph (e) 2 cars (f) Red (g) 36 mph (h) L 4 mins	correction. Praising.
2A	Representing data	
	OS 11.3, Question A, Tally chart	Whole class activity. Task appears on OHP and each pair of Ps has a copy. T introduces the tally chart, showing how data collected car be counted easily.
		Ps count on their copy; T asks, Ps answer and come to OHP to complete the table. Then T ask other questions.
	T: How many of the pupils walk to school? (9) Which method of travel is used by six of the pupils? (Car) Which method of travel is the least used? (Bike)	
	How many times as frequent is the number of pupils travelling by the most popular method than the number travelling by bike? (4)	Agreement. Praising.
2B	OS 11.3, Question B, Pictogram	T now introduces pictogram as a possible way of representing data. After answering question B, T can ask Ps if they can suggest another pictogram to
	T: So each person in the pictogram represents 2 people in real life. Can you think of another way of representing this data?	show this data.
	Look at the numbers in the tally chart. What do they have in common? (All are multiples of 3)	
2C	Drawing a pictogram	Individual work, monitored,
	T (if Ps have not suggested this already): Let's make another pictogram to illustrate the data, with each person in the pictogram representing 3 pupils.	helped. Oral checking. Feedback, self-correction. Praising.
2D	OS 11.3, Question C, Other ways of illustrating data T: Can you remember a method we used to illustrate data at the beginning of the school year?	Whole class activity. T helps Ps to recall bar charts. T draws the chart on BB, Ps in Ex.Bs.
	18 mins	

Y7	UNIT 11 Data Collection and Presentation Lesson Plan 2	Collecting Data 1
Activity		Notes
3A	Further practice with tally charts and pictograms T: Can you remember the work we did at the end of the last lesson? Get together in your groups again and make a tally chart using the information from just the 'Age' column. Illustrate this data with a pictogram.	Group activity, using the data collected from the class in the previous lesson. T monitors Ps' work and helps them construct the tally chart. Age Tally Frequency 11 12 13
3В	Bar charts T: Now let's summarise the tally charts from all the groups and make a bar chart to illustrate the 'Age' data for the whole class.	Ps work together, discussing the method, and each P draws the tally chart and pictogram in their Ex.B. Checking by groups. T discusses their representation with each group. T draws a tally chart on BB (Ps in Ex.Bs), each group gives their frequencies and T fills in the chart. Then T asks if anyone would like to show the others how to make the bar chart (T may help).
	31 mins	Agreement. Praising.
4	Further practice with bar charts Activity 11.2, with question 2 reworded as: "Draw a bar chart to illustrate the data."	Individual work, monitored, helped. Each P has a copy of Activity 11.2 and Resource Sheet 11.2 and works from them in their Ex.B. (T may need to give help with the construction of the bar chart.) Checking at OHP (tally chart) and BB (bar chart). Agreement, feedback, self-correction. Praising.
5	Further practice with tally charts OS 11.6	Whole class activity. Task appears in OHP. T encourages a slower P to be the spokesperson who will collect data. This P comes to OHP and asks birthday of each P in class, making the tally marks in the correct rows, and then totalling them. Praising. Each P writes the numbers in the Total column in their Ex.B; the construction of a bar chart will form part of the homework.
	45 mins	

Y7	UNIT 11 Data Collection and Presentation Lesson Plan 2	Collecting Data 1
Activity		Notes
	Set homework	
	 OS 11.6, Bar Chart PB 11.2, Q7 	
	3. Using the data in the previous question, draw a pictogram to illustrate the numbers and types of pets owned by these children.	T tells Ps that they will need a protractor, a pair of compasses and a ruler for the next lesson.

Y7	UNIT 11	Data Collect and Presen	ction tation Lesson Plan 3	Collecting Data 2
Activity				Notes
1	_	r Chart (a) 4 (b) (e) Rabbit	(c) Girls (d) 5 (f) Rabbit stion, draw a pictogram to pets owned by these	Tasks 1 and 3 are checked on OHP (chart and histogram prepared by T in advance). Task 2 is checked orally. Feedback, self-correction. Praising.
2A	Revision work	with fractions: menta	al work	Manual
	T: How much of We'll see	of the work in Unit 10	have you forgotten?	Mental work. T asks, points to P, P answers. This warm-up activity leads on
	What is	$\frac{1}{4}$ of 12	(3)	to representation of data on a pie chart.
		$\frac{1}{3}$ of 15	(5)	
		$\frac{1}{7}$ of 21	(3)	Agreement. Praising.
		$\frac{1}{20}$ of 180?	(9)	Tagaretine a transmig
	What is	$\frac{1}{18}$ of 36	(2)	A P is called to front and writes answer on BB. Praising. Quicker Ps will be able to
		$\frac{1}{18}$ of 360?	(20)	calculate mentally, slower ones may need to write, and can write on BB as they do the calculations and give their answers.
2B	_	r preparing a pie cha		
	T: How do we T: Well done. Now find th	find $\frac{3}{4}$ of 12?	$(\frac{12}{4} \times 3)$	Whole class activity. This activity leads directly into the preparation of pie charts as a possible way of displaying data.
		$\frac{2}{3}$ of 12	(8)	possible way of displaying data.
		$\frac{3}{5}$ of 20	(12)	
		$\frac{5}{18}$ of 36	(10)	
		$\frac{5}{18}$ of 360	(100)	
2C	Constructing a	pie chart		The information appears on
	At the final dinner of an international conference there were 2 German, 5 American, 7 Russian, 1 Chinese and 3 English delegates. A circular pie was cut into as many slices of equal size as there were delegates, so that each one was given a slice.		OHP. After T has read out problem, T asks questions preparing Ps for	
	T: What fraction	on of the pie did each d	delegate receive? $(\frac{1}{18})$	sketching the pie.
(continued)	What fraction	on of the pie did the Am	erican delegation receive? $(\frac{5}{18})$	

Y7	UNIT 11 Data Collection and Presentation Lesson Plan 3	Collecting Data 2	
Activity		Notes	
2C (continued)	T: Can you draw a sketch of the pie cut into five pieces according to the nationalities of the delegates? How should it be cut? How many degrees are there around a point? (360°) What is the angle for one person? (20°) What is the angle for the Russian delegation? (140°) etc. T: Can you remember how to draw angles? T: Now use your ruler, protractor and compasses to construct the pie in your Ex.B.	T (on BB) and Ps (in Ex.Bs) draw a sketch, in preparation for the construction. Now T, at BB, demonstrates, with the help of Ps, how to construct the pie chart, using the board ruler, protractor and compasses. Ps construct pie chart in Ex.Bs; T monitors, helps where necessary.	
3	Methods of displaying data	Individual work, monitored,	
	There were 18 delegates at an international conference; 2 were German, 5 American, 7 Russian, 1 Chinese and 3 English. Display this data on a pictogram and a bar chart.	helped. This helps Ps to remember what they have already been taught, and the comparison with the previous task is useful. Each pair of Ps (by seating) shares the task, one drawing a pictogram and the other a bar chart. Checking at BB. T sketches the solution (pictogram and bar chart) close to the pie chart constructed previously. After checking (feedback, self-correction, praising), T asks Ps if	
	T: Does the pie chart show the data fairly? Can we see information about the participants' nationalities on it? 27 mins	they know why the pie chart is relevant. Then T explains the use of the pie chart for representing data.	
4	Testing a hypothesis	Whole class activity.	
	T: Peter stated his hypothesis that the most popular flavour crisps of the majority of pupils in his class was 'cheese and onion'.	Firstly, T and Ps discuss the meaning of 'hypothesis', to ensure that they understand it. Then T asks Ps how to proceed, step by step, T working at BB and Ps in Ex.Bs. Praising. Finally, T brings in the notion of 'mode' (Ps could write definition in their Ex.Bs)	
5	Pie Charte OS 11 5	T 11 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	
5	Pie Charts OS 11.5	Individual work. Each P has a copy of OS 11.5 and works on it. Checking at OHP. Agreement, feedback, self-correction. Praising.	
	Set homework		
	PB 11.2, Q3	Tasks Date with his 10	
	PB 11.2, Q6	T asks Ps to each bring a 10p coin to the next lesson.	

Y7	UNIT 11 Data Collection and Presentation Lesson Plan 4	A Fair Bet
Activity		Notes
1	Checking homework PB 11.2, Q3	For Q3, T and Ps must check the data. Then the various diagrams can be checked on BB. For Q6, only the pie chart need
	PB 11.2, Q6 (a) 12 (b) 42°, 60°, 78°, 60°, 36°, 84° 5 mins	be shown on BB.
2	Mental work M11.3	Mental work. Each pair of Ps has a copy of 'Statistical Diagrams A' from M 11.3. T asks questions, Ps look at diagrams and answer, question by question. T must ensure that slower Ps have time to interpret the information on the diagrams.
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3	Frequencies T: I've brought a pack of playing cards with me today. Is there anyone who does not know what playing cards are? How many cards are in a full pack? (52) What is meant by 'shuffling the cards'? (Changing the order of the cards without looking at them) I always think that 'Hearts' are my lucky cards. When I want to know if I will have a good day, I do the following things: • shuffle the cards • cut the pack (T may need to explain 'cut') • look at the card which is face up and write down its suit • repeat the process so that I have twelve items of data • summarise the frequencies of 'Hearts' and 'Not Hearts'.	Whole class activity, with T going over previously taught work by asking questions throughout. If anyone is not familiar with playing cards, T shows and explains (with help of other Ps).
	If I get a result that I don't like, I stay at home all day and cry! Would you like to help me do this today? (Yes) Let's draw a tally chart to record the frequencies.	T asks a P to draw a tally chart (Hearts – Not Hearts) on BB; other Ps draw it in Ex.Bs. Then T shuffles and cuts the cards, Ps look at the card and mark the tally on their charts. Before counting frequencies, they define together the meaning of 'a fair pack', and then predict what the result will be (in this case, neither lucky nor unlucky. Now Ps count the frequencies, discuss the result and compare it with the predicted result (assuming that the pack is fair).
	T: Now let's show the results on a pictogram.	Finally Ps illustrate the data in Ex.Bs, one of them working at BB.
	27 mins	

Y7	UNIT 11 Data Collection and Presentation Lesson Plan 4	A Fair Bet
Activity		Notes
4A	Tossing a coin T: Take your 10p coin and test to see if it is fair or not. Toss the coin six times and write down whether it shows 'Heads' or 'Tails'.	Whole class activity. Everybody tosses their coin, then T asks Ps if their coin is fair. They illustrate, for example, the result '2 Heads, 4 Tails' on a pie chart at BB, and discuss the reason for so many unfair coins.
4B	Another experiment T: Now let's do another experiment. Draw a tally chart. Toss your coin 30 times, count the frequencies and illustrate the data on a pie chart. 38 mins	Individual work. T monitors Ps' work, helping and checking, until everyone has finished and prepared their pie chart. Now Ps can compare their pie charts with the data recorded previously (after only 6 tosses of the coin). Discussion.
5	Illustrating data and analysing results PB 11.2, Q9 45 mins	Individual work. T asks Ps to use a bar chart to illustrate the data. Checking of part (a) at OHP. T has prepared the tally chart and the bar chart on an OS, so Ps can check for themselves if they were successful. Ps and T discuss part (b). Feedback, self-correction. Praising.
	Set homework Activity 11.4	Each P has a copy of Activity 11.4 and Resource Sheet 11.4
(continued)		