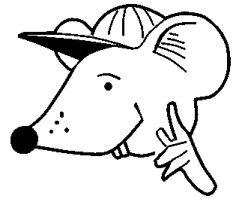




# MATHEMATICS



**N.S. Yr. 5 P.115**

**Collect and organise data.  
Use tables, graphs and charts.**

## Equipment

Paper, pencil, ruler , squared paper.

# MathSphere

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## **Concepts**

Children should understand the meaning of and be able to spell and read these words:

*Vote, survey, questionnaire, data, count, tally, sort, classify, set, represent, table, list, graph, chart, diagram, axes, label, title, most/least common or popular, mode, maximum/minimum value, range*

Children should be able to collect data and be able to discuss the frequencies associated with a bar chart.

They should be able to say which items are most or least popular and say who voted for which items.

They should be able to group data into simple groups (eg group marks in a test into 1 - 20, 21 - 30, 31 - 40 etc).

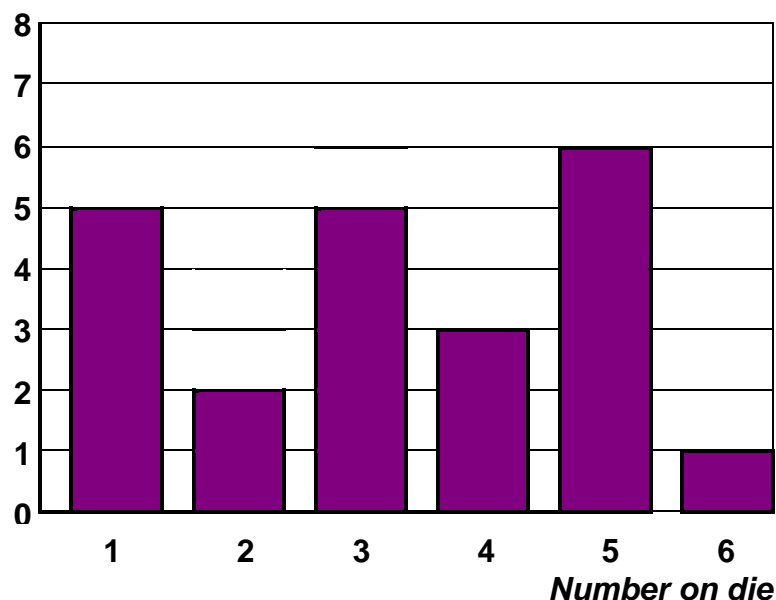
They should be able to draw bar charts with grouped data and interpret them.

They should realise that it is inappropriate to join points plotted for a bar chart to make a line graph as the points in between have no meaning. (Eg if 8 pupils scored between 11 and 20 and 6 pupils scored between 21 and 30, the points on the graph between these two values have no meaning.)

They should be able to predict the probability of an event happening based on the results represented on a bar graph. This implies that they should have completed the modules on probability first or at least be able to calculate probability.

1. Peter made a large six-sided die from cardboard and stuck some small weights inside so that it was not a 'fair' die. These were the results when he threw it a few times.

**Frequency**



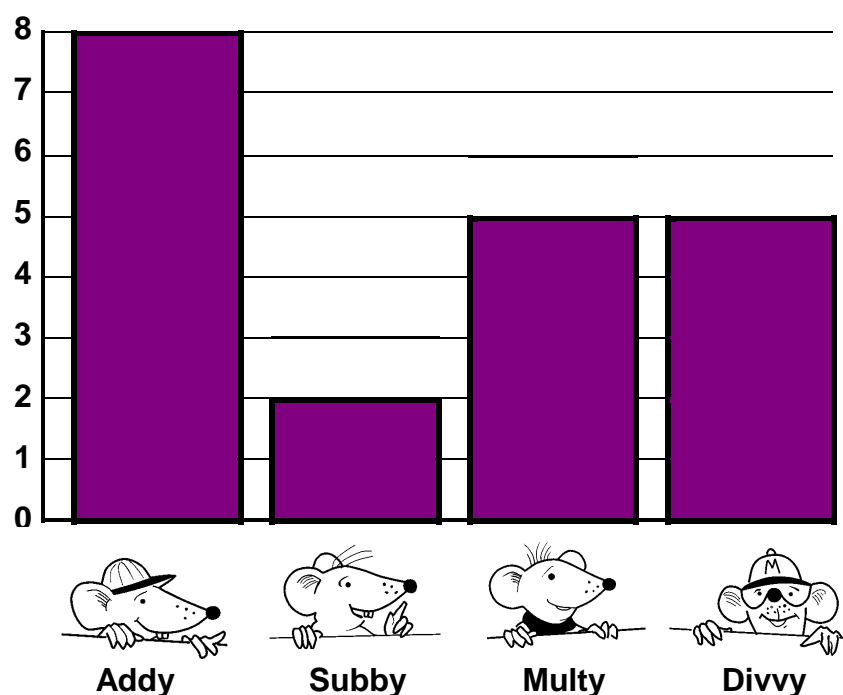
- a) How many times did Peter throw the die altogether?
- b) Which number was the mode?
- c) What was the difference in frequencies between the most and least common numbers?
- d) If this graph shows how the weights are really affecting Peter's die, what is the probability that on his next throw he will get a number 5 ?

Hint: You need the answer to part a) for this question.



- e) What is the probability that he gets more than 4 on his next throw?

1. Addy, Subby, Multy and Divvy have twenty races over 200m. (This is a long way for a rat - even a Maths Rat!). This table shows how many times each of them won.



- Who won the most races?
- Which two Maths Rats won the same number of races?
- What was the difference between the maximum number of wins and the minimum number of wins?
- If they run another race, what is the probability of Multy winning?
- What is the probability of Addy winning?
- If they run four more races and each Maths Rat wins one race, what fraction of all the races has Subby won?
- If the Maths Rat that wins the least number of races gets a wooden spoon, who is that going to be?

1. Children were asked to bring items for a school fete. Here are the number of items each child brought.

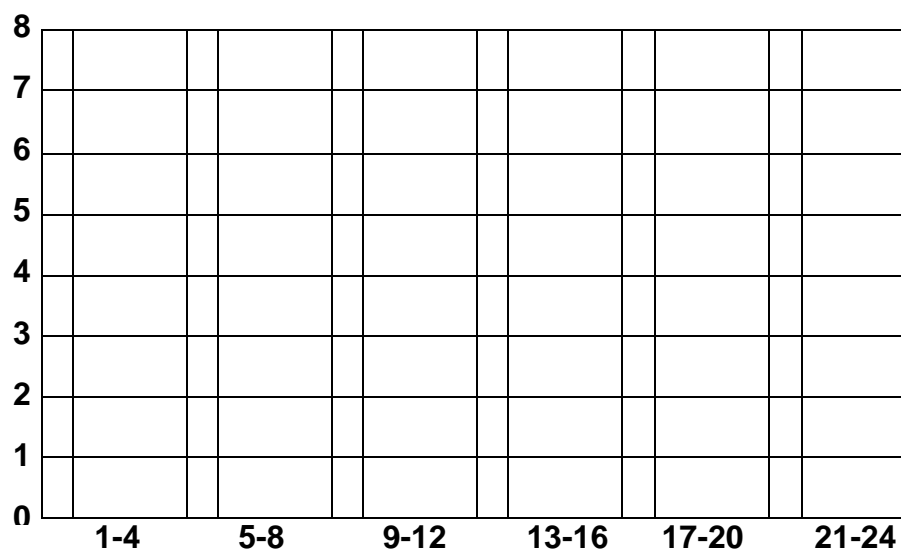
8, 7, 12, 2, 3, 14, 10, 6, 4, 12, 23, 14, 18, 9, 10, 17, 16, 17,

9, 10, 3, 7, 4, 24, 13, 16, 17, 2, 5, 3, 17, 22, 19, 6, 20, 6, 12

Put these in the table in groups of four (1 - 4, 5 - 8 and so on). The first has been done for you.

Number of items	Frequency
1 - 4	7
5 - 8	
9 - 12	
13 - 16	
17 - 20	
21 - 24	

Now draw a block graph of these results. Label the axes.



- How many children brought items for the fete?
- For which group did the children bring the fewest number of items?
- Which is the modal group (the group with the highest number of items)?

1. As people went through the checkout in a supermarket, the number of items in their baskets was counted. Here are the results:

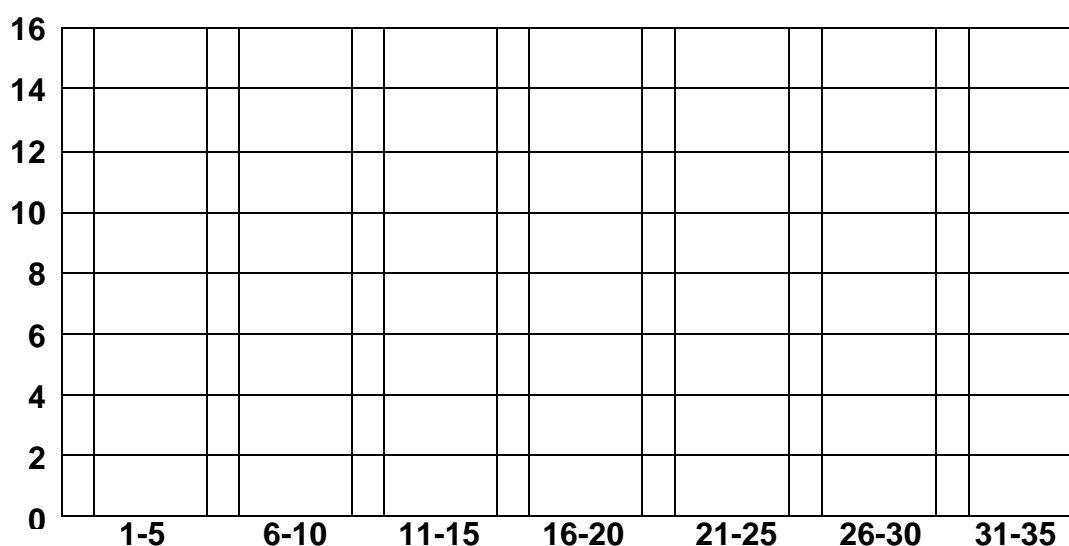
12, 19, 2, 13, 6, 20, 21, 8, 34, 31, 4, 7, 9, 18, 24, 6,

8, 8, 10, 23, 12, 25, 13, 8, 4, 20, 25, 9, 17, 1, 6, 22, 8

Put these in the table in groups of five (1 - 5, 6 - 10 and so on). The first has been done for you.

Number of items	Frequency
1 - 5	4
6 - 10	
11 - 15	
16 - 20	
21 - 25	
26 - 30	
31 - 35	

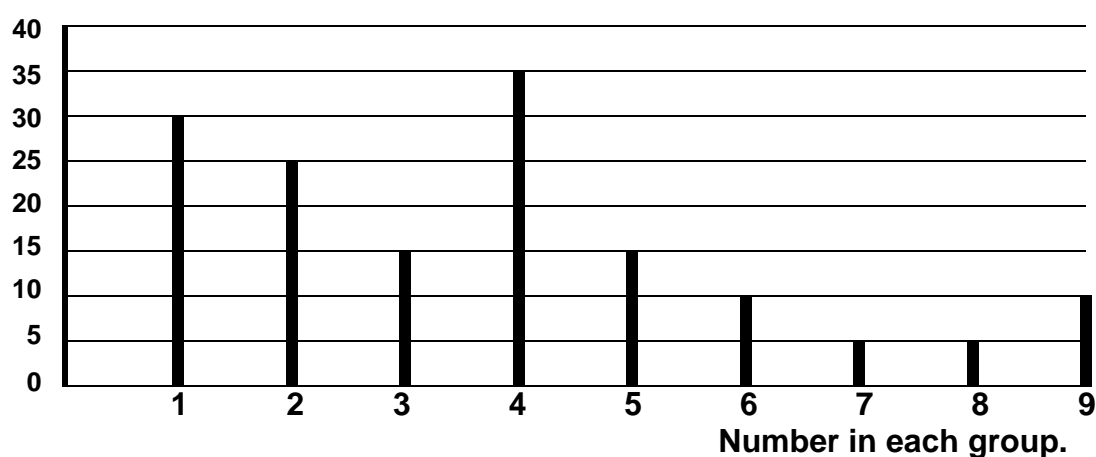
Now draw a block graph of these results. Label the axes.



- a) Which is the modal group (the group with the highest number of items)?
- b) What is the range of the frequencies? (Range is the difference between the largest and the smallest values.)
- c) Which groups had the same number of items?

1. Here is a *bar line graph* that shows how many people there were in each group going into a cinema.

**Frequency**

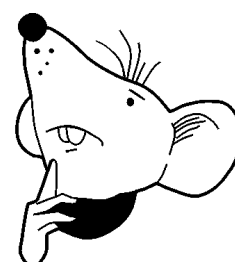


- a) How many people went in on their own?
- b) How many groups had four people in?
- c) How many groups had at least five people in?
- d) Which is the modal group size?
- e) What is the range of the frequencies?
- f) How many groups were there altogether?
- g) What fraction of the groups had more than three people in?

Now here's a question for all you geniuses out there!

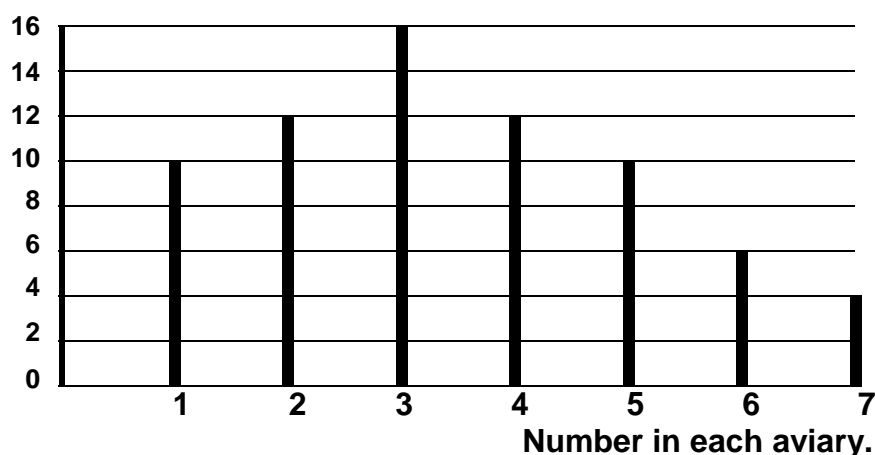
***How many people went to the cinema with four other people?***

Think very carefully.



1. Here is a *bar line graph* that shows the number of birds in different aviaries in a bird sanctuary.

Frequency

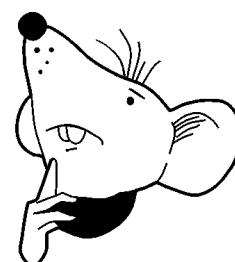


- a) How many birds lived on their own?
- b) How many aviaries had six birds in?
- c) How many aviaries had at least three birds in?
- d) Which is the modal group size?
- e) What is the range of the frequencies?
- f) How many aviaries were there altogether?
- g) How many birds were there altogether?

Now here's a question for all you geniuses out there!

***Why is it wrong to join up the tops of the bars in the line bar graph to make a line graph?***

Think very carefully about this.





**1. Carry out your own survey on pets.**

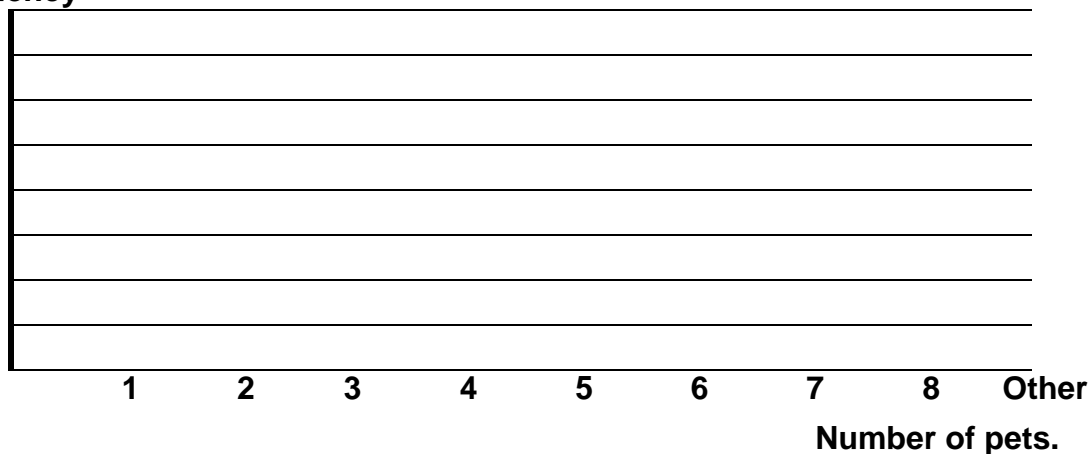
Ask as many people as you can (up to 50) how many pets they have.

Record the results as tallies in the table below:

Number of pets	Frequency
1	
2	
3	
4	
5	
6	
7	
8	
Other	

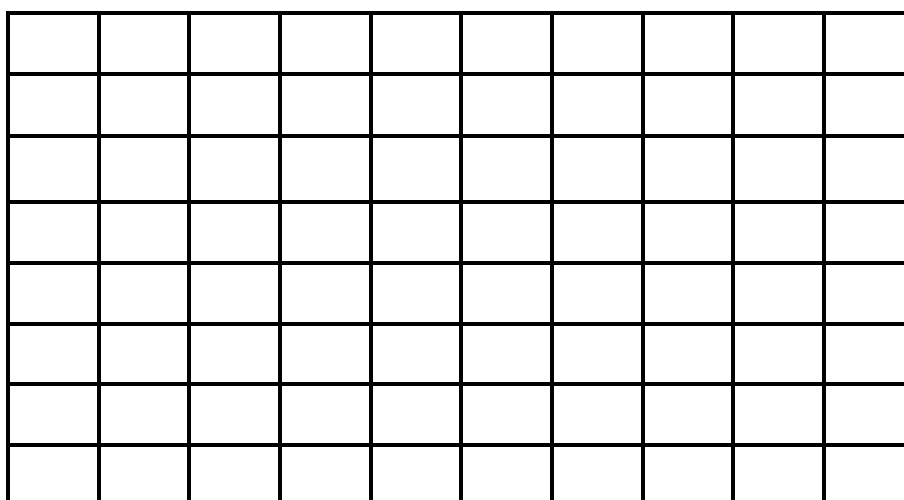
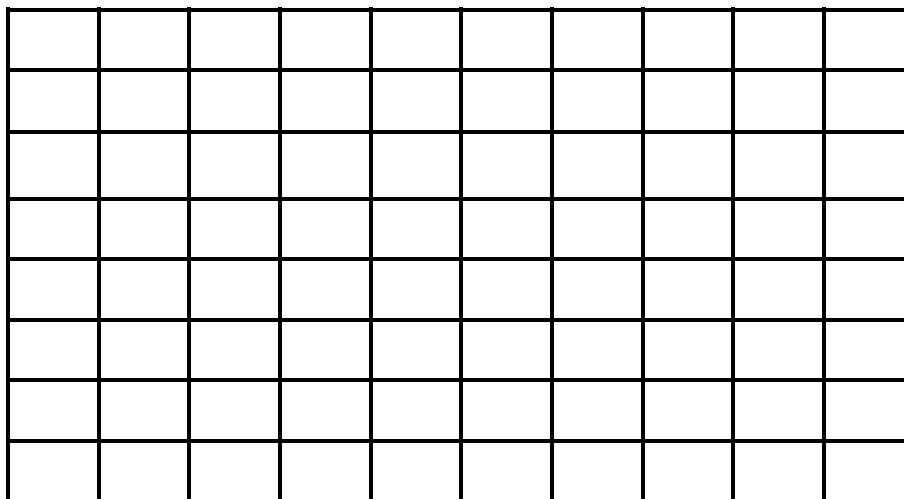
Now draw a line bar graph to show your results. You will have to put the numbers on the vertical axis yourself. Do you need to go up in ones, or in twos, or perhaps in fives?

**Frequency**



Ask your friend some questions about your graph and table.  
Look at the two previous worksheets if you need ideas.

**Here are some blank graphs that you may use for your own data.**



**Answers****Page 3**

1. a) 22    b) 5    c) 5    d)  $\frac{6}{22}$     e)  $\frac{7}{22}$

**Page 4**

1. a) Addy    b) Multy and Divvy    c) 6    d)  $\frac{5}{20}$  or  $\frac{1}{4}$     e)  $\frac{8}{20}$  or  $\frac{2}{5}$   
 f)  $\frac{3}{24}$  or  $\frac{1}{8}$     g) Subby

**Page 5**

1.    1 - 4    7  
       5 - 8    7  
       9 - 12    8  
       13 - 16    5  
       17 - 20    7  
       21 - 24    3

a) 37    b) 21 - 24    c) 9 - 12

**Page 6**

1.    1 - 5    4  
       6 - 10    12  
       11 - 15    4  
       16 - 20    5  
       21 - 25    6  
       26 - 30    0  
       31 - 35    2

a) 6 - 10    b) 12    c) 1 - 5 and 11 - 15

**Page 7**

1. a) 30    b) 35    c) 45    d) 4    e) 30    f) 150    g)  $\frac{80}{150}$  or equivalent fraction

Multy's question: Fifteen groups of five people equals 75 people altogether.

**Page 8**

1. a) 10    b) 6    c) 46    d) 3    e) 12    f) 70    g) 244

Multy's question: It is wrong because the intermediate values on the horizontal axis have no meaning - ie no aviary has 3.6 birds etc.