Census 2006

Third and Fourth Class

Lesson Four ~ All About Us

Theme
The census - all about us

Objectives
That the child will be enabled to:
- Collate and process data from the classroom census
- Represent and interpret classroom data using different types of graph (on/off computer)
- Make decisions in choosing appropriate types of graph for a particular purpose
- Consider how this data may be useful in decision making and improving classroom life
- Become familiar with the April calendar
- Further develop an awareness of the upcoming census on April 23rd 2006

Tasks
- Revision of key messages from Lessons 1-3
  - Activity 1: Compiling classroom data
  - Activity 2: Representing the data using concrete materials
  - Activity 3: Creating graphs – block graphs, bar charts, bar line graphs
  - Activity 4 :Using ICT to create graphs

Extension work: Using the calendar

Language
Incorporation of previously learned language into the real activity of the class census.
Collect, question, information, form, ask, Sunday, April, population, age, address, male, female, count, country
Revision of language of comparison: taller/shorter, more/less, most/least etc.
Statistics, data, tally, graph, Venn diagram, block graph, Carroll diagram

You will need
- April 2006 Calendar M 4.1
- Calendar Quiz M 4.2
- Census Tally Sheet from Lesson Three M 3.5
- Classroom Census Graph Templates M 4.3 a b c
- Data analysis – Transport to school M 4.4
- Birthday chart graph templates M 4.5 a b c
- Creating graphs using ICT M 4.6
- Census Board Games based on calendar M 4.7 a b
- Calendar Conundrum M 4.8 a b c

Key Messages
- A classroom census is a great source of information. A classroom census can be designed to provide facts and figures (statistics) to help planning within the school.
- Each step of the data collection process is important for a successful outcome.
- Data can be represented in different ways.

Assessment
- The children will demonstrate their increasing understanding of the census process through representation and interpretation of the data collected in the classroom census.
- The children will correctly identify, create and interpret a variety of graphs e.g. block graphs, bar charts, bar-line graphs, pie charts…
- The children will begin to make decisions about which type of graph to use for a particular purpose.
- Be able to use the language of the census in meaningful discussion on the topic.

Teacher Observation Tips
Be aware of children who are finding the work very easy and try them out with more challenging tasks such as comparing two sets of data, predicting what type of result they expect, setting up a survey of their own for home…
If they are comfortable with computers you could demonstrate how Excel spreadsheets can be used to manipulate data and let them work away.

Integration and Linkage
Maths: Number – Sorting, Combining and Comparing sets, Counting / Data Representation and Interpretation
Algebra – Number Theory
Measures: Time – Work with calendar

Home/School links
- Using the home PC to create graphs using a spreadsheet program
- Have fun with the calendar board game/calendar quiz – deciding on a new set of rules/new questions for the quiz

Teacher's Notes

Oral/Mental Starter

Use the calendar as a target number board for oral and mental maths (**M 4.1)**
Familiarise children with the April 2006 calendar using questions from the calendar quiz (**M 4.2**)

Talk and Discussion – What we learned

Revision of key messages from previous lessons – what do we remember?

- The census is a very important source of information on our country.
- Facts and figures provided by the census are essential for planning for the future.
- A classroom census is a rich source of information and can be designed to provide facts and figures (statistics) to help planning within the school.
- Each step of the data collection process is important for a successful outcome.
- Data can be represented in graphical, diagrammatic or pictorial form as well as in report form.

Encourage the children to discuss how the classroom census was carried out and to outline each step of the data collection process.

Brainstorm

What might happen to the data now? How can we handle such a large amount of data – would we get mixed up? (use of computers in handling large amounts of data). What type of graph should we use? How will we know if we have represented all of the information accurately?

Activity 1 – Compiling the data (information) – the children as computers

- The children have completed a class/individual tally sheet using the collected data from Lesson 3. The overall results can again be reviewed. This will involve counting/checking the data sets based on the information provided by the children. This provides an opportunity for the teacher to ask questions based on the data sets e.g. How many children have green eyes? How many birthdays in January? How many people walk to school? Do more children travel to school by bus or by car?

Activity 2 – Representing data using concrete materials

Sample lesson sequence for one data set

- Take one question from the Classroom Census Form e.g. Where do you live?

In the town ☐ In the country ☐

Again this will raise questions of where the town ends and the country begins and will show the need for accurate descriptors.

- Consider how we might show this information. Suggest the use of concrete materials to represent this data e.g. cubes, links … Ask the children how they can differentiate between the two pieces of information (colour).
- Distribute the cubes to the children giving a red cube to those who live in the town and a blue cube to those who live in the country.
- Talk about the ways in which we can represent the information using the cubes e.g. block graph
- The children may suggest creating a block graph using the cubes.

- Construct a tower of red cubes to represent those who live in the country and a tower of blue cubes to represent those who live in the town. These towers should be displayed and clearly labelled on the mathematics table or at the magnetic board.
- The children can then examine the data sets and answer questions e.g. Which tower is taller? Which set has most? Do more people live in the town than in the country? By how many? Are fewer people living in the country or in the town? How many people live in town? How many more people live in the country? Which tower is shorter? Which group of people do the red cubes show? How many people altogether?
- Does this tell the true story about our class? What does it not tell us? (How many boys live in the country? How many girls? How could we find out? Which type of graph might tell us this?) Talk to the children about other ways in which the same information can be shown without using concrete materials e.g. symbols/drawings/name cards on Venn diagram or Carroll diagram (pictorial representation).
- Ask the children if we could show the data in any other way on a block graph (one sticker per person, colour in one square per person etc). Discuss what information we need to have on a block graph. Add in each element one by one. Why do we need a title for the graph? (we wouldn't know what it was about otherwise). Do we need labels for the columns, what should they say? Could we have different sized boxes? Why not?
- Create a class block-graph on a large chart. Each child can either colour in or paste on a square to the chart.
- Test your chart by bringing in a child from another class to 'read' the results. Can they read the story we are trying to tell?
- Choose one method for demonstration purposes.

Activity 3 – Representing data in graphical format

- Consider how the rest of the data could be represented. Block graph, bar chart and bar-line graph templates have been provided to allow for further discussion and data representation of data sets i.e. transport to school, birthday month (See Resources).

- Choose one or more of these graphs to complete with the class. These templates can be used over a number of weeks with the whole class or some templates could be used for early finishers or for those who need further help with this concept.

- An important aspect in the data collection process is data analysis when data sets are compared and discussed.

- Some sample questions have been provided in the Data Analysis sheet for the block graph on 'Travel to School'. These questions could be adapted for other data sets. Always encourage the children to create their own questions – what would they like to find out? (See **M 4.4**)

Activity 4 – Representing data using ICT

- Discuss with the children how data can be represented using the computer as a resource e.g. making lists, tables, graphs …
- Introduce the children to the concept of using spreadsheets
- Familiarise the children with the program Microsoft Excel and the spreadsheet screen
- Take a data set e.g. How many have a computer/PC at home?
- Check the data result that has been collated i.e. those who have/who do not have a computer

- Demonstrate how this data can be represented in graphical format using a spreadsheet. The steps of this process have been outlined in **M 4.6**.
- Provide children with the opportunity to explore this program and to try creating different types of graphs to represent the same data set.
- These graphs can be printed out and displayed in the classroom or in booklet format.
- It is important to discuss the types of graphs created and to consider which is the most appropriate.
- Emphasis should also be placed on the analysis of this data and how it might be used in a meaningful way.

Extension Work

- Calendar Work – to highlight the Census date i.e. April 23rd 2006, a calendar has been provided with this lesson. This provides an opportunity to familiarise the children with the calendar as well as to develop an awareness of the up coming census.

- A fun way in which the calendar can be used is as a board game with dice and counters. The Census Board Game is included with this lesson (with two levels of difficulty).

- The Census Conundrum provided in the pack provides an enjoyable way to revise the layout of the calendar. Snippets are taken from the April 2006 calendar and children must fill the blanks with the missing April dates. A blank template is also provided for children to create their own conundrum!

Plenary

Depending on which activity you did, discuss the work completed.

Home-School Links

- Discussing data that has been collected
- Creating graphs at home using templates and data tally sheets
- Using the home PC to create graphs using a spreadsheet program
- Having fun with the calendar board game / calendar quiz – deciding on a new set of rules / new questions for the quiz
- Calendar conundrum – completing puzzle or creating a new puzzle using the blank template

April 2006

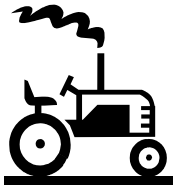
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
					Start	1
2 ★	3	4	5	6 ▲	7	8
9	Easter holidays begin 10	11	12	13	14	15 ★
Easter Sunday 16	17 ★	18	19 ▲	20	21	22
23	24	25	26	27	28	29 ▲
30	Finish					

Calendar Quiz

- How many days in April?
- Is this number odd or even?
- On what day does April begin/end?
- In what season is April? How many days in this season?
- How many children in your class have birthdays in April?
- On what date is Easter Sunday?
- On what date do the Easter holidays begin?
- Census 2006 will be held on what date?
- On what day of the week will the Census be held?
- How many more days to Census day?

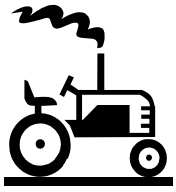
- List the odd/even numbers in April
- Can you find an even number on the bottom row?
- Call the multiples of 4
- Is there any number that is double/treble another number?
- Find two numbers with a difference of eight
- Find factors of …
- Census day is on 23rd April – use numbers on the calendar to make the number 23.
- On what date is Easter Sunday?
- Let's explore patterns on the calendar:
  ~ What pattern do you see in each row?
  ~ What pattern do you notice in each column?
  ~ Examine the patterns created by diagonals
  ~ Take a square of numbers e.g. 1, 2, 8, 9 ~ add the diagonals – what do you notice?

How we travel to school



Walk	Cycle	Bus	Car	Other

How we travel to school



	Walk	Cycle	Bus	Car	Other
10					
9					
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7					
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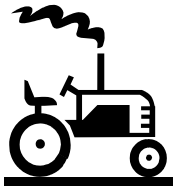
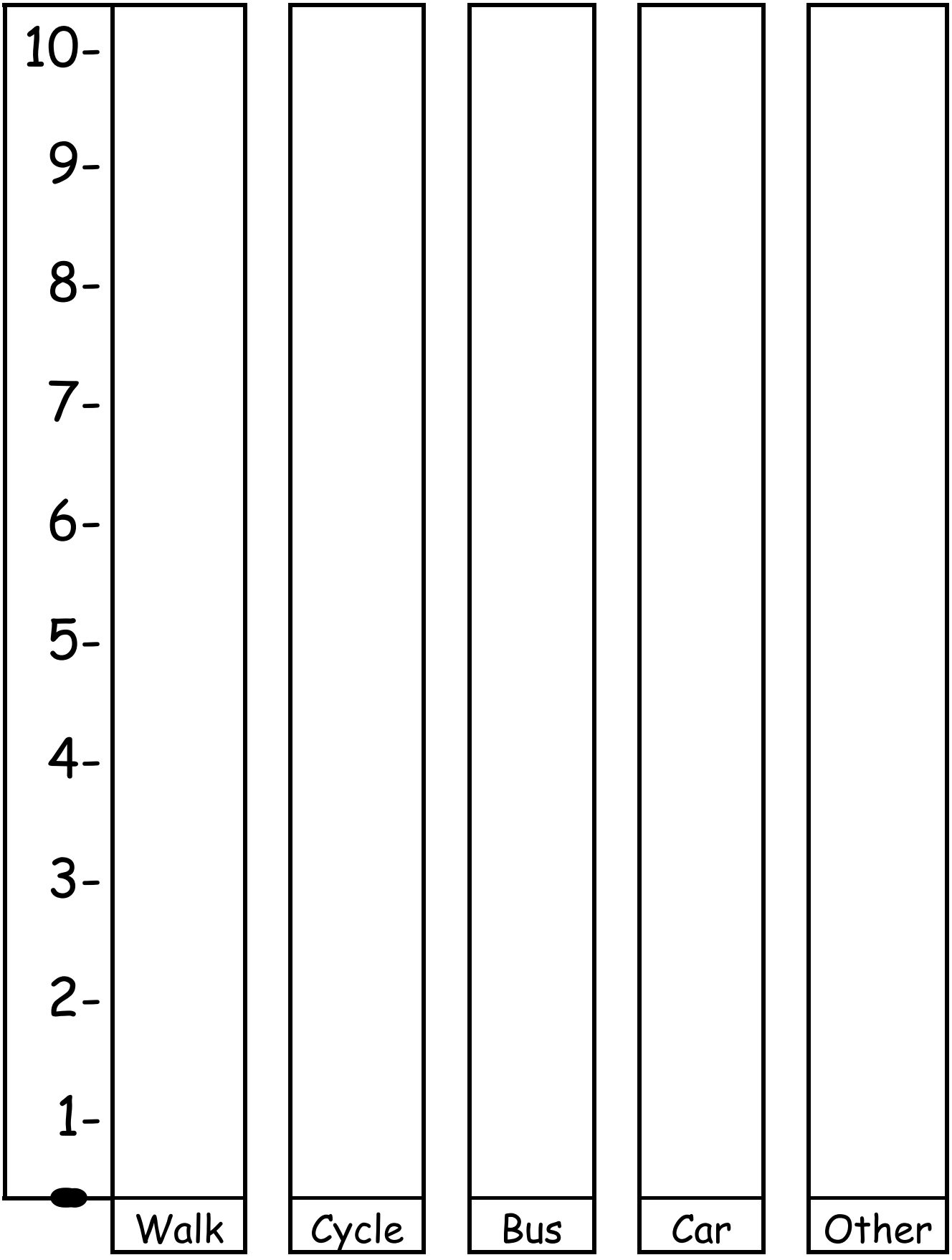
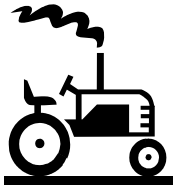
3					
2					
1					

How we travel to school





Data Analysis
Travel to School



Have a look at the block graph

- Which set is the biggest?
- Which set is the smallest?
- Let's order the sets from smallest to biggest.
- How many people walk to school?
- Do more people travel to school by bus or by car?

Why do you think this is so?

- What other ways do people travel to school?
- Do less people walk or cycle to school?
- How many people travel to school in a vehicle ?
- Let's order the sets from biggest to smallest.

Think of some questions <u>you</u> could ask…

_____

_____

_____

_____

M 4.5 a

Birthday Chart

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec

M 4.5 b

Birthday Chart

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec

M 4.5 c

Birthday Chart

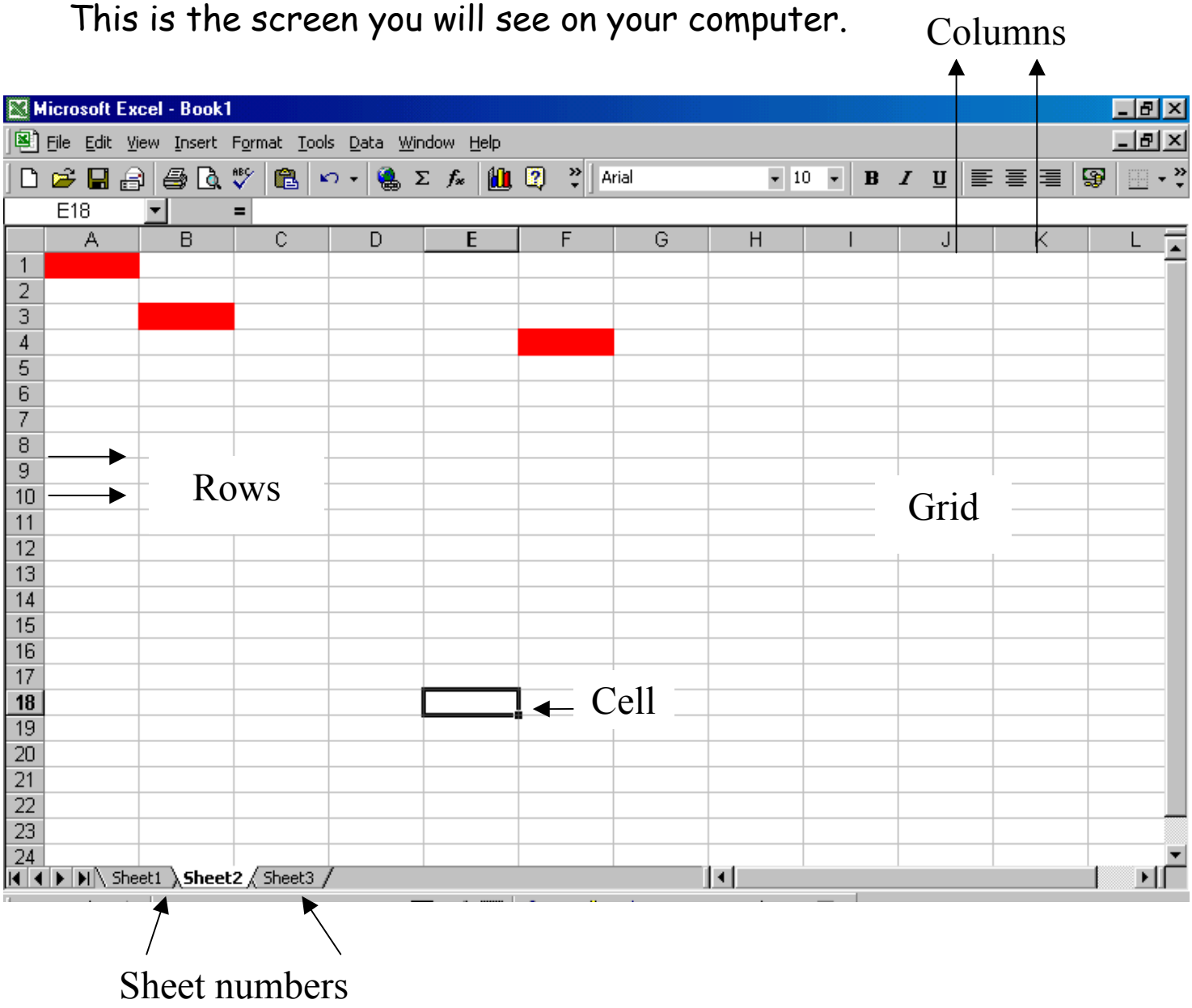
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
8-												
7-												
6-												
5-												
4-												
3-												
2-												
1-												

Creating Graphs on the Computer

Use a program called Microsoft Excel

- Click on Start
- Click on Programs
- Click on Microsoft Excel … wait for the program to open…

This is the screen you will see on your computer.



<u>Take some time to explore this screen:</u>

- Can you find the rows / columns?
- The entire sheet looks like a table / grid and each little box is called a cell.

Let's create a graph using some of the data collected in the Classroom Census e.g.

Do you have a computer at home?

The number of people who have a computer is _____
The number of people who do not have a computer is _____

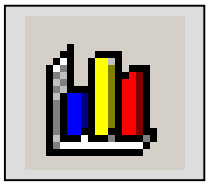
To create a graph

- Click into Cell A1 on the spreadsheet and type the word 'Computer'
- Click into Cell B1 and type in the number of children in the class that have a computer
- Click in to Cell A2 on the spreadsheet and type the words 'No Computer'
- Click into Cell B2 and type in the number of children in the class that do not have a computer

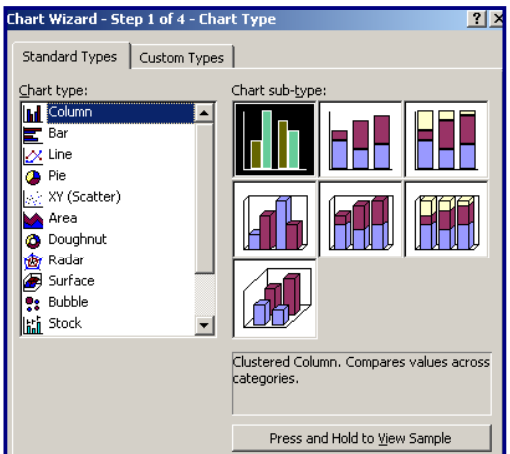
Now that you have all the data entered into the computer, it is time to create the graph

- Highlight the data you want to use for the graph.

Click on the 'Chart Wizard' button at the top of the screen.



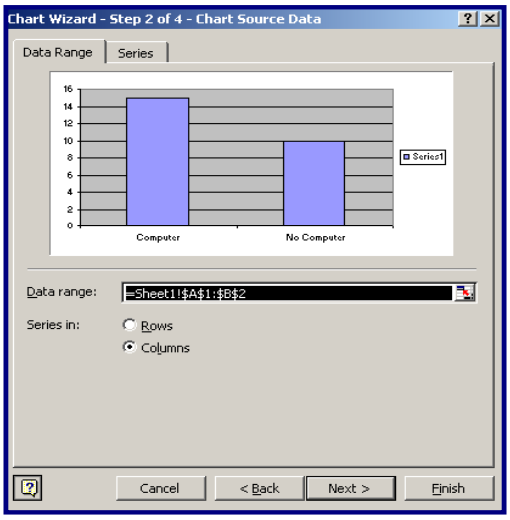
This wizard will guide you through all the steps you will need to make a graph on the computer



Step 1:

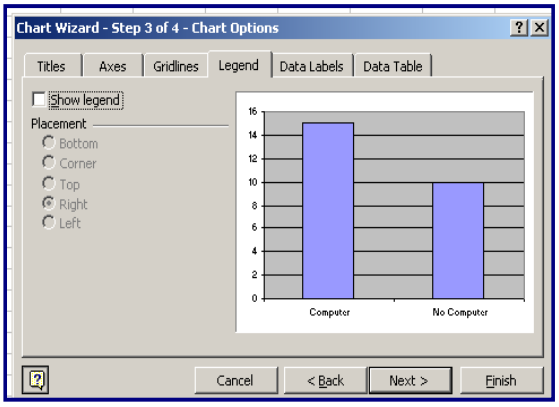
- Choose the type of graph you want the computer to create e.g. column graph, bar chart, pie-chart…

- Use the **'Press and Hold to View Sample'** button to see the graph drawn
- Then click on **Next**



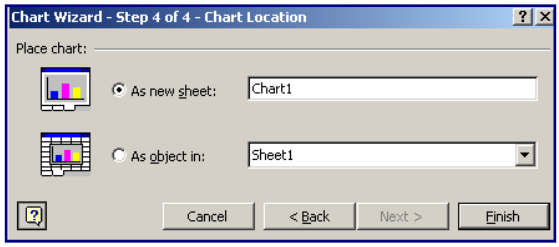
Step 2:

- You will see the data you have chosen for you graph represented here
- Click on **Next**



Step 3:

- This step provides you with Chart Options
- Click on **Titles** if you would like to put a title on the graph
- Click on the **Legend** tab and make sure the Show **Legend** box is empty
- Click on **Next**



Step 4:

- This step shows where the chart will be located
- Click on **As New Sheet**
- Click on **Finish**

Census Board Game

Game 1

Game: 2 players

You will need: Census game-board, one six-sided die, counters of two different colours

How to play:

1. Decide who will start by allowing each player to throw a die. The player with the highest number begins.
2. To start play, Player 1 rolls the die and moves that number of spaces e.g. roll a six – move six spaces.
3. If a player lands on a space with a star, this player takes another turn.
4. If a player lands on a space with a triangle, this player misses a turn.
5. The first player to reach the finish line or to land exactly on CENSUS DATE i.e. 23rd April is the winner.

Challenge:

Encourage children to invent their own rules for the Census Game.

Census Board Game

Game 2

Game: 2 players

You will need: Census game-board, one six-sided die, counters of two different colours

How to play:

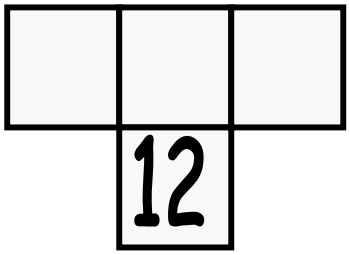
1. Decide who will start by allowing each player to throw a die. The player with the highest number begins.
2. To start play, Player 1 rolls the die and moves that number of spaces e.g. roll a six – move six spaces.
3. Player 1 checks if the number in the space he/she has landed on is odd or even.
4. Player 1 rolls the die again. If the number in the space is odd and the player has rolled an odd number, he/she can move that number of spaces. If the number in the space is even and the player has rolled an even number, he/she can move that number of spaces. If the roll of the die and the number in the space do not match, the die is given to Player 2.
5. Player 2 takes a turn.
6. The first player to reach the finish line or to land exactly on CENSUS DATE i.e. 23rd April is the winner.

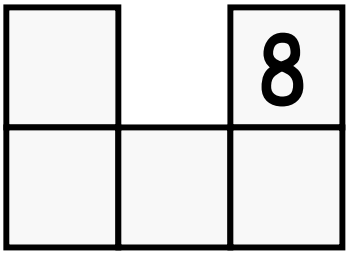
Challenge:

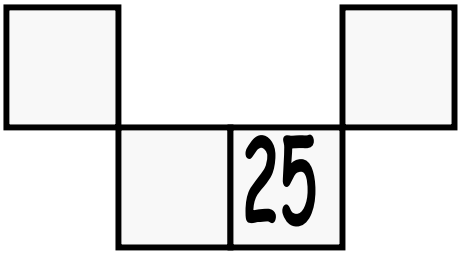
Encourage children to invent their own rules for the Census Game.

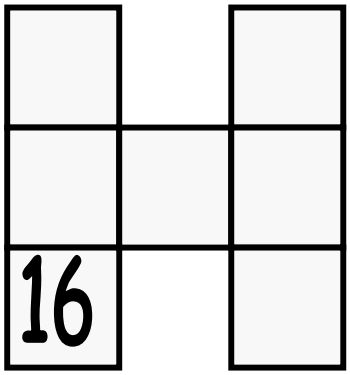
Calendar Conundrum

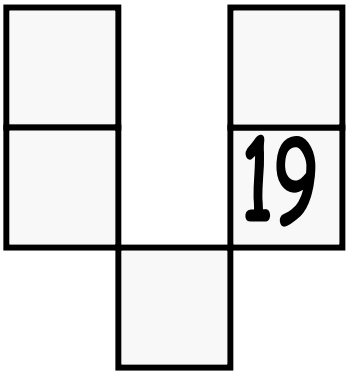
There is a problem with the classroom printer and it only prints some of the numbers on the April calendar. Can you help by filling in the missing numbers?

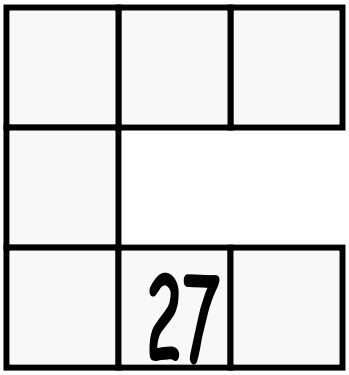


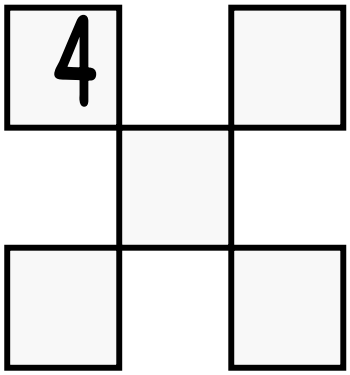


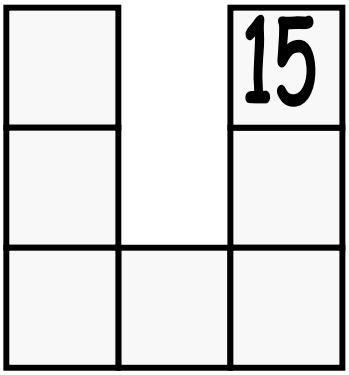


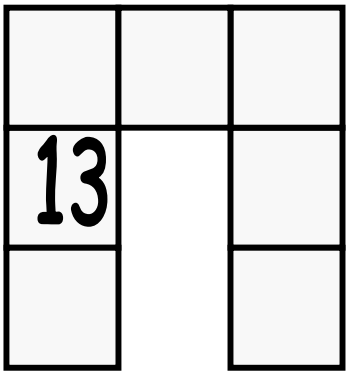


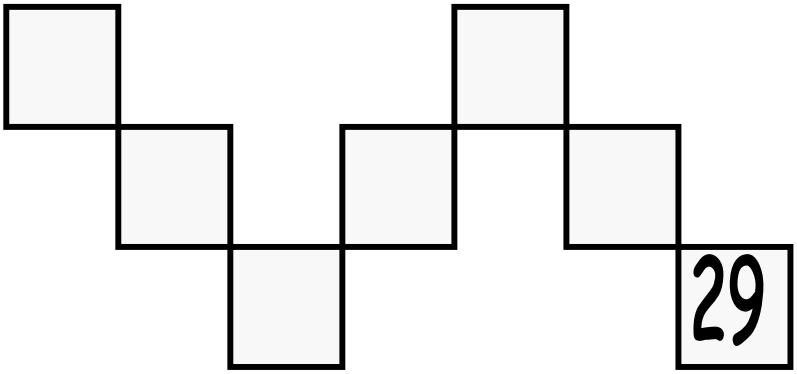












Calendar Conundrum
Solution

4	5	6
	12	

6		8
13	14	15

16		19
	24	25

2		4
9	10	11
16		18

10		12
17		19
	25	

12	13	14
19		
26	27	28

4		6
	12	
18		20

13		15
20		22
27	28	29

6	7	8
13		15
20		22

9				13
	17		19	
		25		
				29

Calendar Conundrum

There is a problem with the classroom printer and it only prints some of the numbers on the April calendar. Can you help by filling in the missing numbers?