Census 2006

Fifth and Sixth 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
- 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 data using concrete materials
  - Activity 3: Representing the data in graphical format: block graphs, bar charts, bar line graphs
  - Activity 4: Using ICT to create graphs

Extension activities
Calendar work
Census Board Games
Calendar Conundrum

Language
Revision 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 S 4.1
- Calendar Quiz S 4.2
- Census Tally Sheet from Lesson 3 – S 3.5
- Transport Graph Templates S 4.3 a, b, c
- Data analysis – Transport to school S 4.4
- Birthday Graph Templates S 4.5 a, b, c
- Accommodation Graph Templates S 4.6 a, b, c
- Data analysis – Accommodation S 4.7
- Use of ICT to create spreadsheets S 4.8
- Census Board Games S 4.9 a, b
- Calendar Conundrums S 4.10 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.
- It is important to review the methods used to gather data to make sure they were fairly gathered and reported.

Assessment
The children will
- demonstrate their increasing understanding of the census process through representation and interpretation of the data collected in the classroom census
- identify how a computer is essential in the collection of large amounts of data
- correctly identify, create and interpret graphs e.g. block graphs, bar charts, bar-line graphs, pie-charts…
- make decisions about which type of graph to use for particular purposes
- demonstrate understanding of the importance of fairness and accuracy in collecting and collating data
- demonstrate an increasing ability to retrieve and interpret information presented in a variety of ways including flowchart, table, diagram, list, web, survey, question…

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…
Note children who are beginning to develop their ability for working in groups, developing their ability to listen and respond to argument, becoming more able to justify and defend opinion. Particularly note children who are beginning to show evidence of developing in the higher-order skills and set them more challenging and responsible tasks. (See Cross-curricular links in the Teacher Notes).

Integration and Linkage
See Census 2006 Activities for a full list of integration opportunities.

Teacher's Notes

Oral/Mental Starter

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

Talk and Discussion – What we learned

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

- Many everyday problems can be solved or prevented by collecting data from others and by using this data to make changes for the better.
- 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? Discuss the role 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 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. In what type of accommodation do you live?

Detatched ☐ Semi-detatched ☐ Terraced ☐ Flat/Apartment ☐ Trailer ☐ Other ☐

- Consider how we might show this information. Suggest the use of concrete materials to represent this data e.g. cubes, learning links … Ask the children how they might differentiate between the different data sets (colour)
- Distribute the cubes to the children giving a different colour cube to each data set.
- Talk about the ways in which we can represent the information using the cubes e.g. block graph, bar chart, bar-line graph …
- The children may suggest constructing a block graph/bar chart using the cubes.
- Construct a tower of cubes to represent each data set. These towers should be displayed and clearly labelled on the mathematics table or on the magnetic board.

- The children can then examine the data sets and answer questions e.g. Which tower is the tallest? Which set has most? Do more people live in detached or semi-detached houses? What is the difference between these sets? Are fewer people living in terraced houses or in flats/apartments? How many more people live in terraced than semi-detached houses? Which tower is the shortest? Which data set is represented by the red cubes?
- Were these results as you predicted? What information is not given to us? How could we source this information?
- Ask the children if we could represent 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 (S 4.3 a, b, c); birthday month (4.5 a, b, c)

- 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 graphs on Travel to School (S 4.4) and Type of Accommodation (S 4.7). 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?

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 S 4.8
- 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 S 4.1 – 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 Conundrums (S 4.10 a, b, c) 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

- Discuss the data that has been collected
- Create graphs at home using the templates and data tally sheets
- Use 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
- 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					

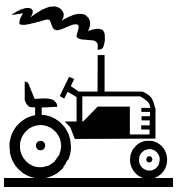
Calendar Quiz

- How many days in April?
- Talk about this number ... Is it even/odd? a prime number? List its factors…
- Write the number of days in April as a fraction of the number of days in a year
- 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?
- When will the Easter holidays begin?
- Census 2006 will be held on what date?
- On what day of the week will the Census be held?
- From today 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?

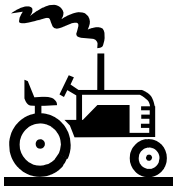
S 4.3 a

How we travel to school



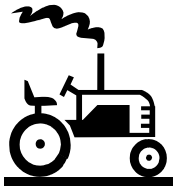
Walk	Cycle	Bus	Car	Other

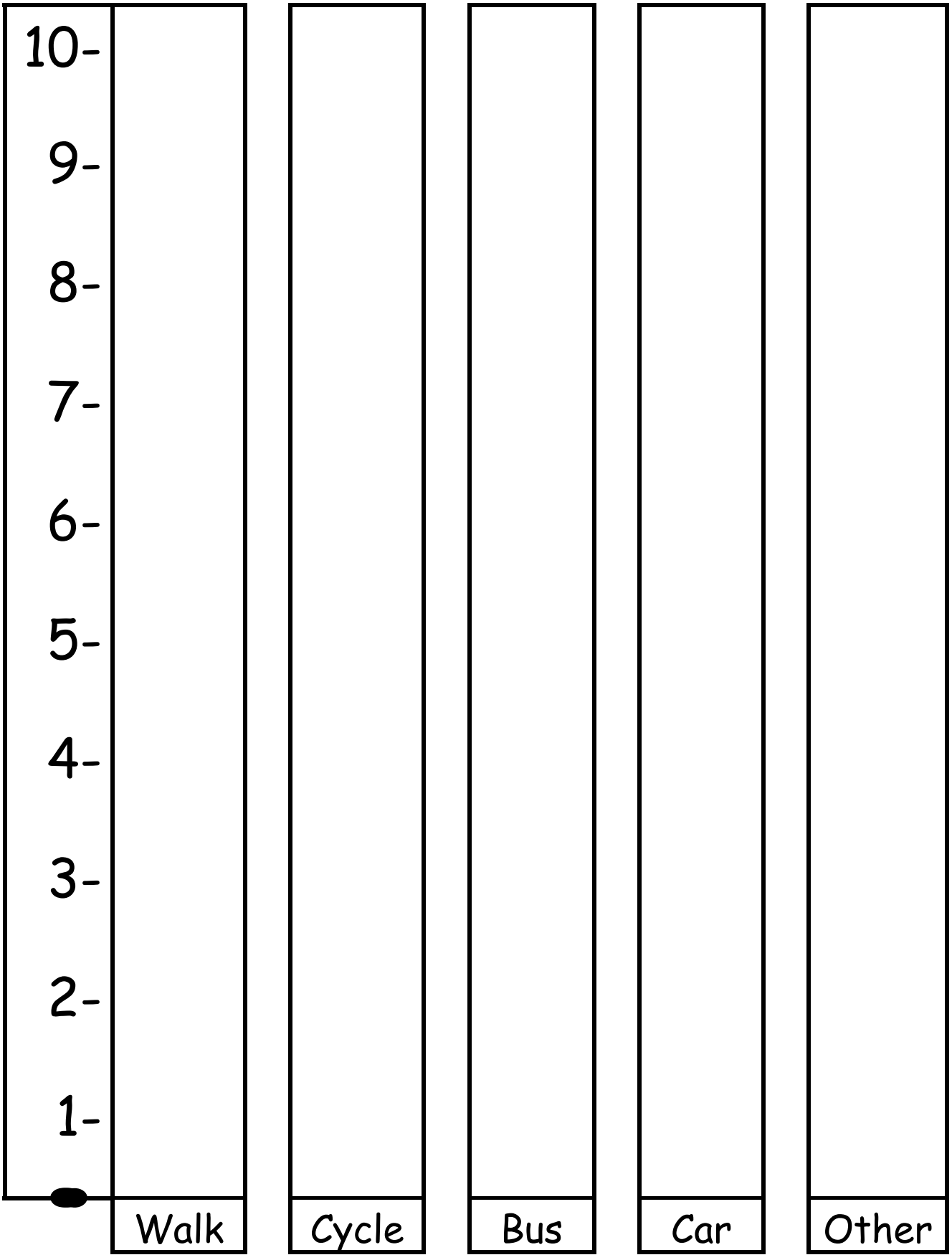
How we travel to school



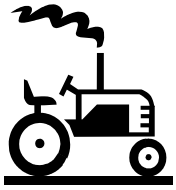
	Walk	Cycle	Bus	Car	Other
10					
9					
8					
7					
6					
5					
4					
3					
2					
1					

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…

_____

_____

_____

_____

S 4.5 a

Birthday Chart

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

S 4.5 b

Birthday Chart

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

S 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-												

Type of Accomodation

Detached	Semi-d	Terraced	Apartment	Trailer	Other

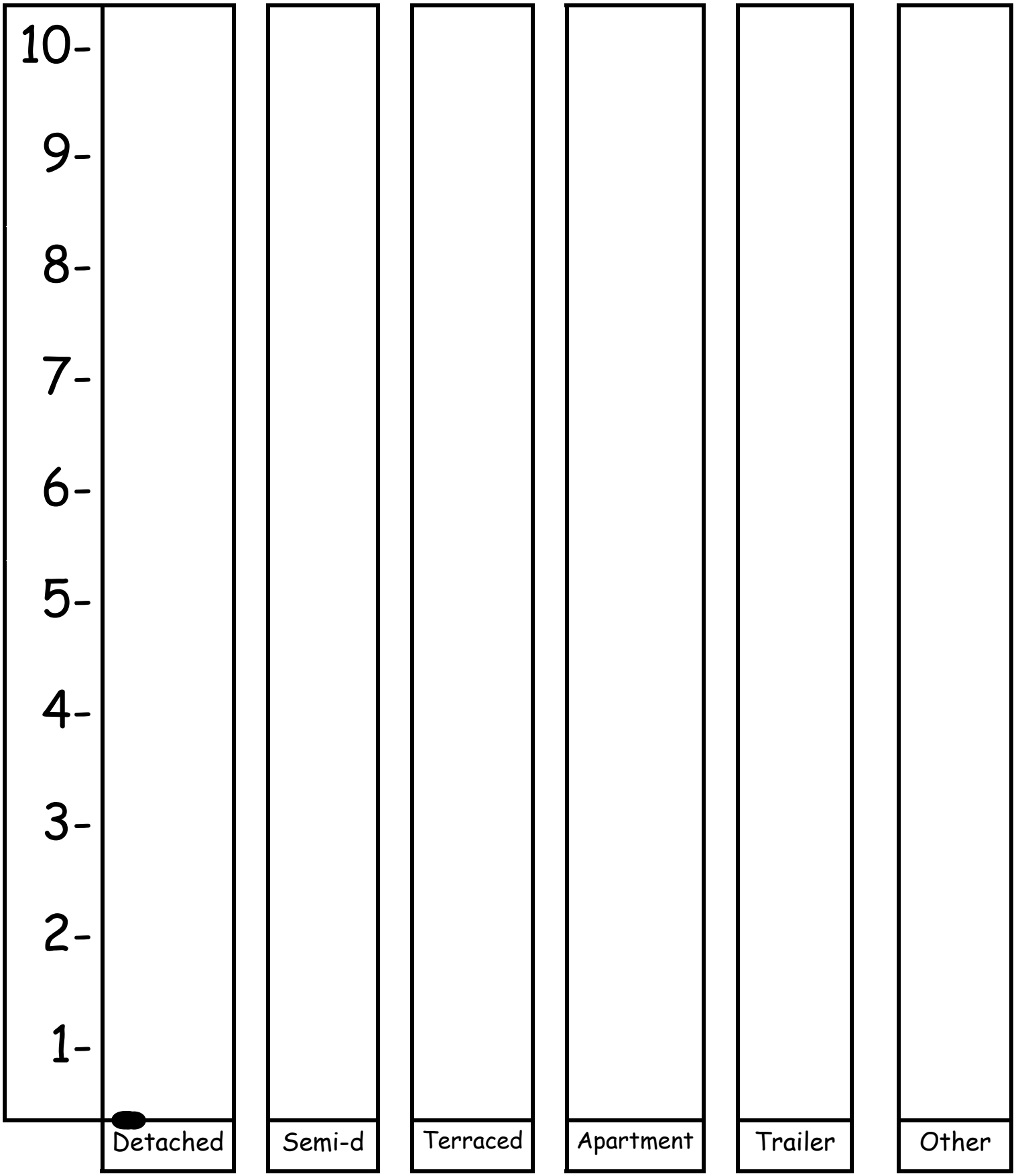
S 4.6 b

Type of Accomodation

	Detached	Semi-d	Terraced	Apartment	Trailer	Other
10						
9						
8						
7						
6						
5						
4						
3						
2						
1						

S 4.6 c

Type of Accomodation



Data Analysis
Type of Accomodation

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 live in a terraced house?
- How many people live in a trailer?
- Do more people live in a detached or semi-detached house?
- What other type of accommodation could people live in?
- Do less people live in a terraced or detached house?
- How many people live in a house?
- Let's order the sets from biggest to smallest.

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

_____

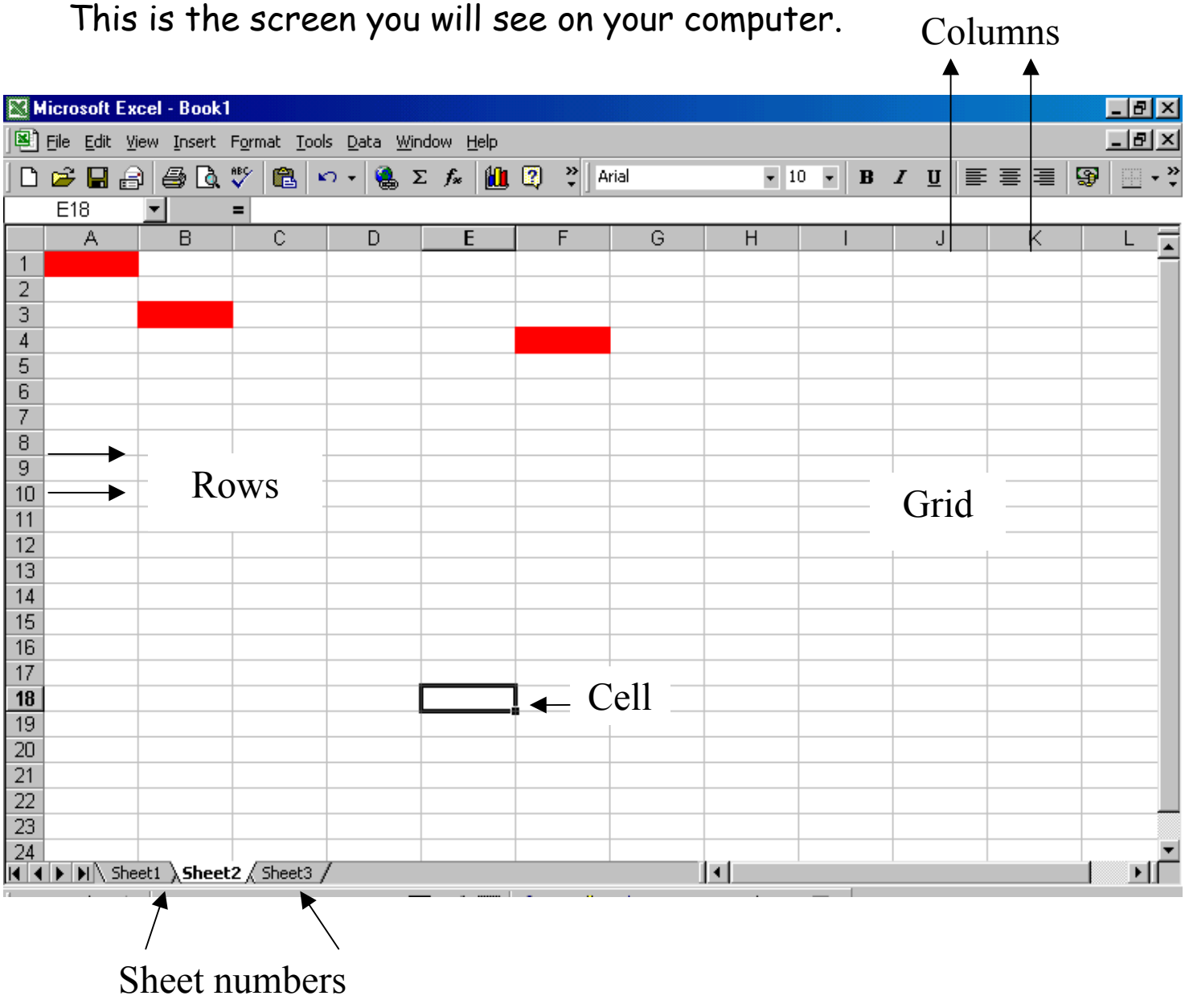
_____

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 _____

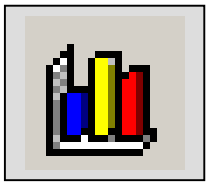
To create a graph

- 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.

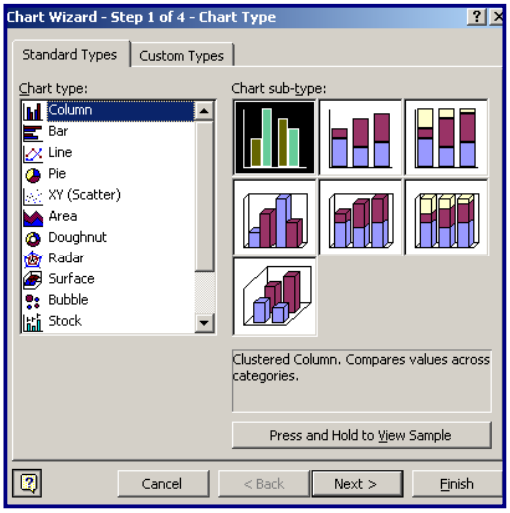
Click on the 'Chart Wizard' button at the top of the screen.



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

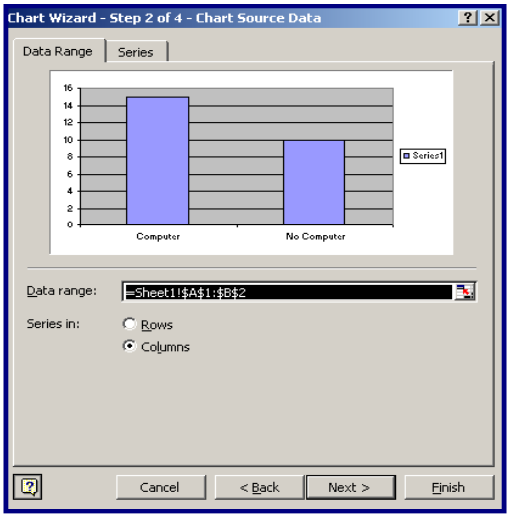
Step 1:

- 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**



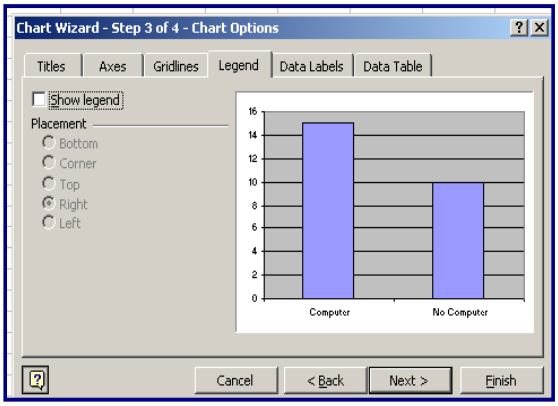
Step 2:

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



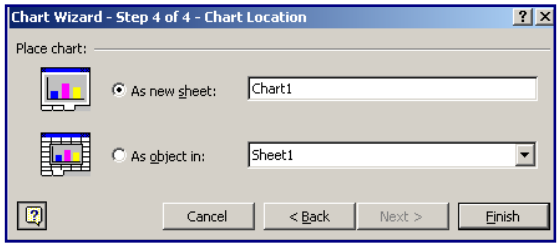
Step 3:

- 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**



S 4.9 a

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.

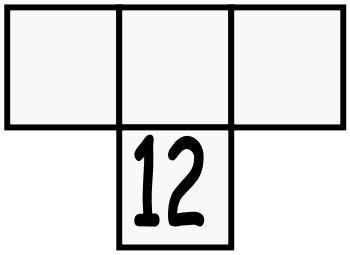
Challenge:

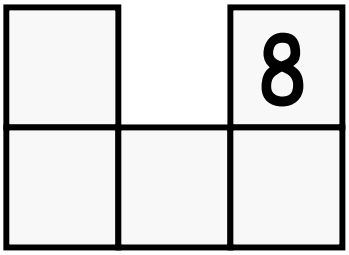
Encourage children to invent their own rules for the Census Game.

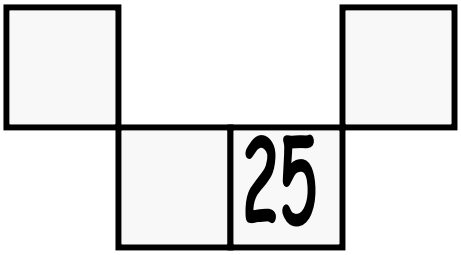
S 4.10 a

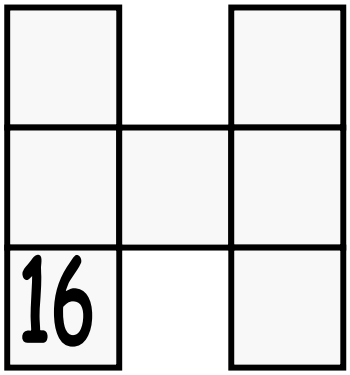
Calendar Conundrum

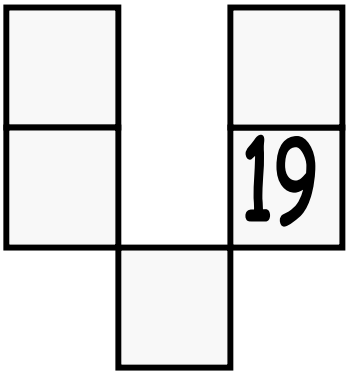
There is a problem with the classroom printer and it only prints some of the numbers on the April calendar. Can you help by filling in the missing numbers?

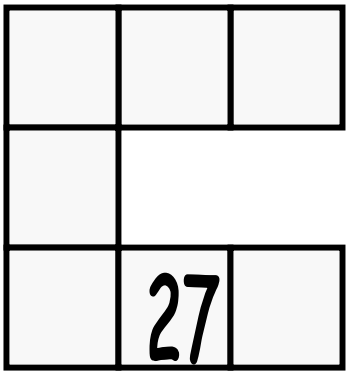


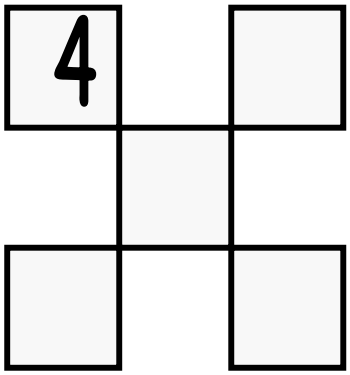


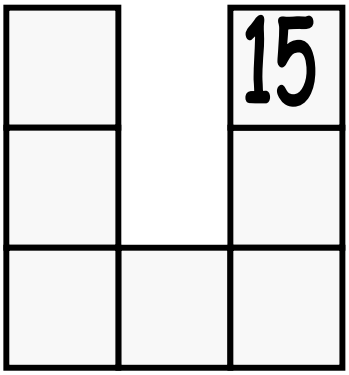


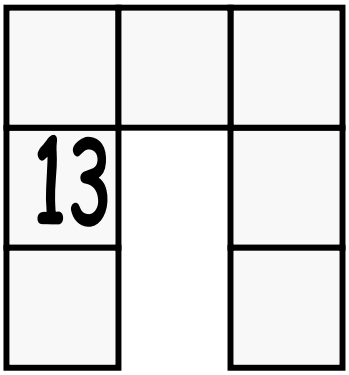


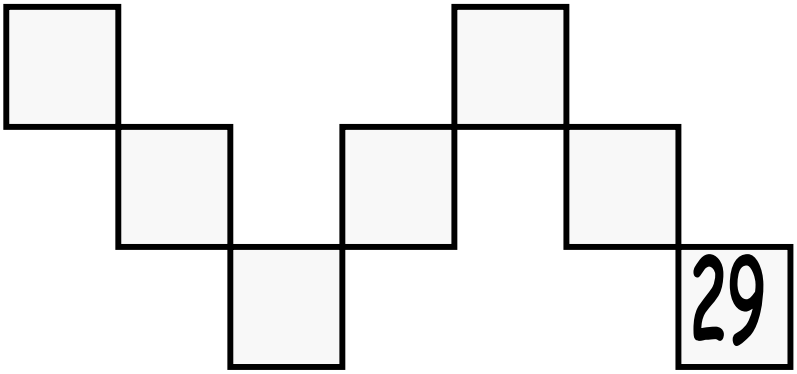












Calendar Conundrum
Solution

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?