



**Ebook Code:
REUK0005**



(KS 1/2) For Ages 8 - 10

Everyday Maths Book 2

**Mathematics problems
set in a real world
context.**

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© Ready-Ed Publications - 2010

Published by Ready-Ed Publications (2010) PO Box 276 Greenwood WA 6024

Email: admin@readyed.co.uk Web Site: www.readyed.co.uk

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ISBN 1 86397 168 8

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Teachers' Notes

The idea of Problem Solving activities often conjures up images of numbers and objects that have no direct meaning for students other than teaching the basic problem solving strategies. The activities in this set are designed to present real life problems in a realistic context so as to provide children with situations in which every day problem solving and comprehension skills are required.

The activities are based around recurring characters who find themselves exposed to a range of problems that need to be solved; the sorts of problems that students may one day encounter.

Most pages include a challenge activity, usually an extension of the main problem, which will further consolidate comprehension skills. Included throughout the book are brainteaser pages which focus on a particular problem solving strategy, highlighted at the foot of the page. These brainteasers can be photocopied and individually glued on to card so as to create a set. Students might like to think up their own brainteasers to add to the set.

Problem Solving Strategies

There are many strategies for solving every day maths problems. Some of the main problem solving strategies have been explained below. In some cases examples of problems are given where the particular strategy can be applied.

Guess and check:

Probably the first strategy children might try and definitely the easiest. By making a guess and checking their answer children have a point of reference on which to base all other guesses.

An example:

I am thinking of two consecutive numbers that when multiplied give 182. A guess might be to try 14×15 which would give 210. Obviously the next guess would try lower numbers.

14					
15					
Total	210				

Act it out:

Students quite often need to visualise the problem, especially where people or objects are concerned. Counters, coins and students can be used to help solve the problem.

Some examples:

There are 48 players in the darts championships. Each player stays in the competition until they lose a game. How many games must be played to find the club champion?

A caterpillar crawls up the tree 2 m every day. Every night it slips back 50 cm. The tree trunk is 10.5 m tall. How long will it take for the caterpillar to reach the top of the trunk?

Make a model:

When problems cannot be acted out, the next best thing is to make a model using cubes, matches and so on.

Make a drawing, diagram or graph:

Graphs and diagrams are particularly useful for trying different combinations or clarifying information.

An example:

Jack has a rectangular field that has an area of 360 m. What are the possible dimensions of the rectangle?

Look for a pattern:

This strategy can be used in many number and space activities to help simplify the problem.

Number patterns: It takes three matches to make a triangle, 5 matches to make 2 triangles.

How many matches are needed to make 3 triangles?

Spatial Patterns: How many squares are there on a checker board?

Construct a table:

By organising data in a more meaningful way children can better see relationships, patterns and possibly missing information. This strategy is best used where different information is given about each person or object in the problem. A table can include all the information and eliminate irrelevant information.

An example:

Tim, Jess, Max, Jane, Tannie and Kelly each play sport over the weekend. They all play a different sport. Match the person to their sport based on the following:

Tim doesn't like swimming but enjoys cricket.

Jess likes tennis more than swimming.

Kelly enjoys netball.

Max won't play hockey.

Jane doesn't like cricket or diving.

Tannie plays the sport that Max doesn't like.

	Swimming	Tennis	Netball	Hockey	Cricket	Diving
Tim	X				✓	
Jess	X	✓				
Kelly						
Max				X		
Tannie				✓		
Jane					X	X

The solution can then be found through the process of elimination.

Make a list:

All possibilities can be listed when using this strategy and again the process of elimination can be used.

An example:

You have three T-shirts: red, blue and yellow; and four pairs of jeans: green, black, navy and light blue. How many different combinations can you wear?

Restate the problem:

This is best used to make sure students fully comprehend the problem and know what they need to do to find the solution.

An example:

At the supermarket Sarah bought some groceries. All the things she bought were the same price and she bought as many things as the total number of pence she was charged for each item. If her bill was £6.25 how many things did she buy?

This could then be rephrased as: How many things can be bought with £6.25 where they all cost the same amount?

GARAGE SALE

Crazy Charlie's Mum was tired of Charlie's old toys and bikes lying around the shed and warned that Charlie better do something fast or she would throw out everything at the rubbish dump. Crazy Charlie knew that although he didn't really want any of his old toys, he would be able to get some money for them.

He labelled each object with a price and had quite a few customers attend the sale.

Use the information to help answer the questions below.



1. Counting Carrie spent her pocket money on the Batman and Robin costumes and some old books. If she spent £9.00 altogether, how many books did she buy?
2. Mary Measure spent a total of £5. If she only bought two items, what did she buy?
3. Spacy Sam spent all of his £20 on the old bike, a book on horses and some lucky dips. How many lucky dips did he end up with?
4. Arty Ash bought the rollerskates and managed to get the swing for half price. How much change did he get from £20?
5. Neil Number didn't buy any lucky dips or old books but managed to spend £27.50. What did he buy?
6. Crazy Charlie's cousin bought the left-over items. How much did he spend and what did he buy?



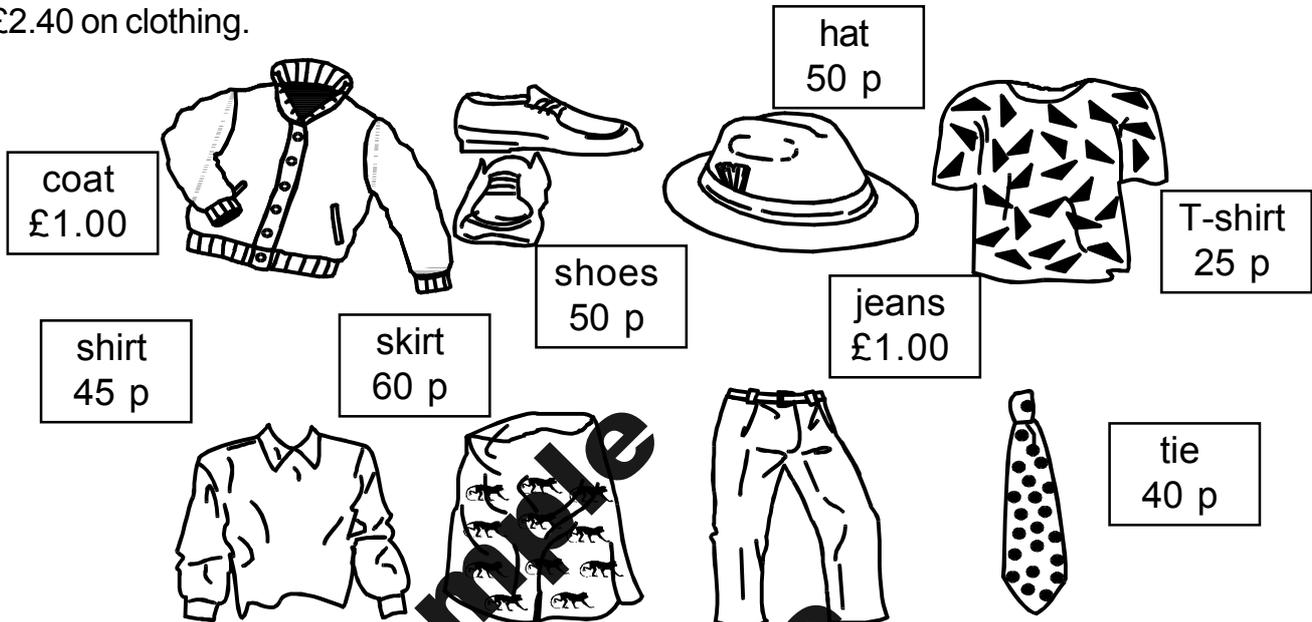
Challenge:

How much money did Crazy Charlie end up with?

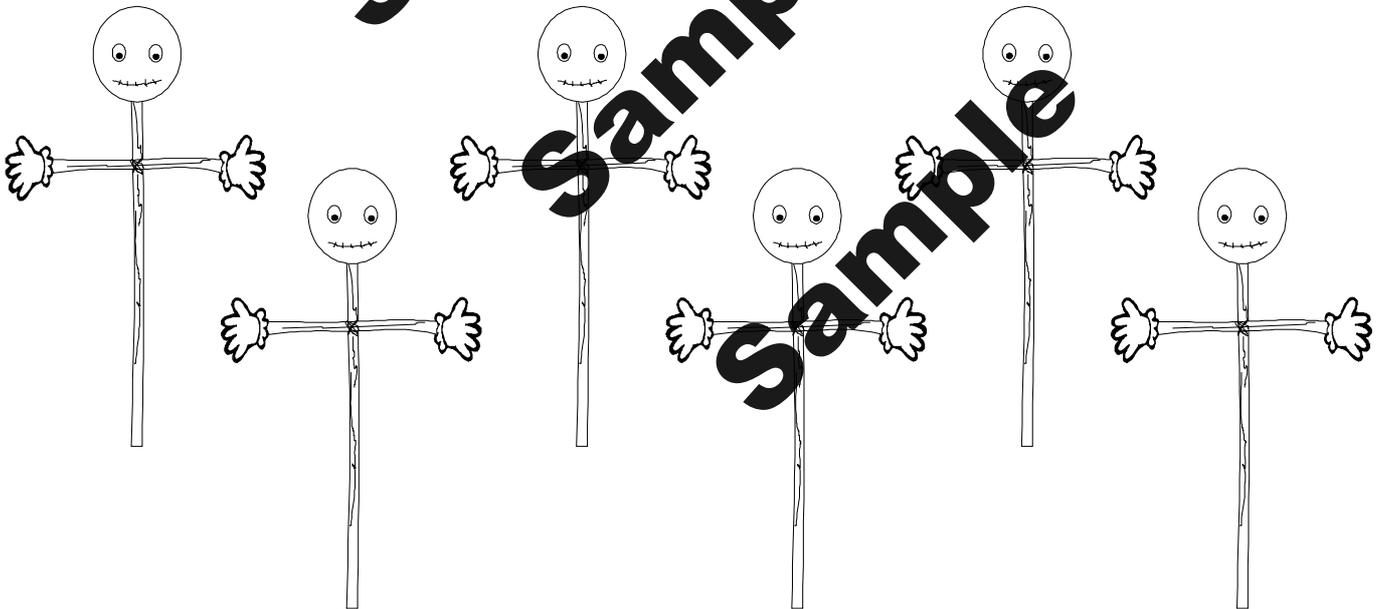
Name

SCARECROW!

Spacy Sam was tired of the crows eating all his newly planted seeds and decided to take some action. He went to the local second-hand shop and saw quite a selection of clothes which he thought would look good on a scarecrow. Spacy Sam could only afford to spend £2.40 on clothing.



1. On the scarecrows below draw six different combinations Spacy Sam could use that would cost £2.40 or less. Tick the scarecrow outfit he should buy.



2. Sam also needs to buy some more seeds. Circle the bargain bin below which represents the best value.



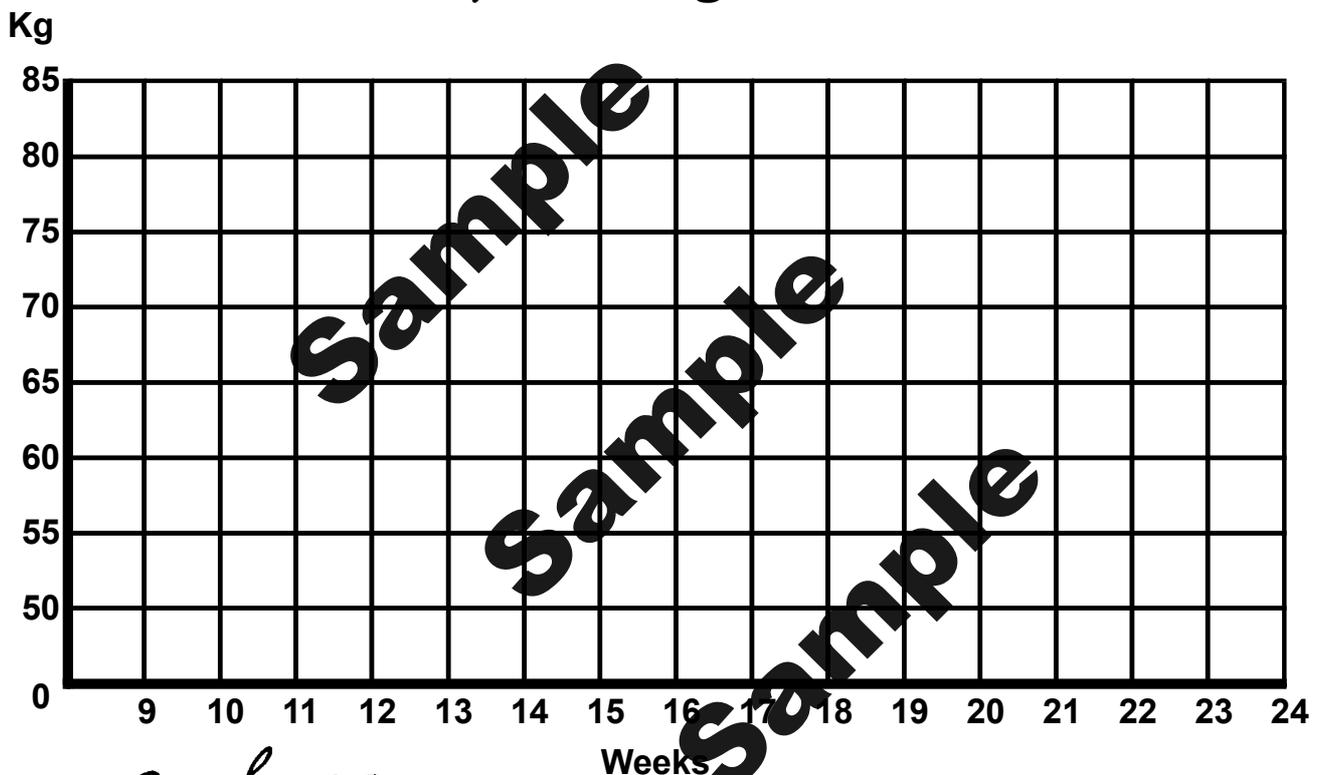
Name

WEIGHT WATCHING 2

Record Myrtle's weekly weight loss on the graph below:

Week	Kilos	Week	Kilos	Week	Kilos	Week	Kilos
Week 9	75	Week 13	74	Week 17	72	Week 21	66
Week 10	74	Week 14	72	Week 18	70	Week 22	64
Week 11	73	Week 15	71	Week 19	68	Week 23	63
Week 12	73	Week 16	73	Week 20	67	Week 24	62

Myrtle's Weight Loss



Challenge:

Considering Nora put on weight while she was on her diet (Weeks 12 and 16), what was her overall weekly average weight loss from Weeks 9 - 24?



Name

PARCEL Pile-Up

Neil Number has a new after school delivery job. He delivers parcels for Mr Hammer at the Hardware Store. He has a large pile of packages that need to be dropped off this afternoon, however, he can only fit a certain number in his bike basket at a time in these combinations:

- 3 square parcels 
- 2 square parcels and a rectangular parcel 
- 4 circular parcels. 
- 2 rectangular parcels and 2 circular parcels 

1. What is the least amount of trips Neil can do the delivery in for the following days:

<u>Monday</u>	<u>Tuesday</u>	<u>Wednesday</u>	<u>Thursday</u>	<u>Friday</u>
5 squares	7 squares	2 squares	4 squares	1 square
3 circles	6 circles	2 circles	5 circles	7 circles
4 rectangles	4 rectangles	2 rectangles	2 rectangles	6 rectangles

Monday:

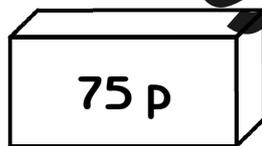
Tuesday:

Wednesday:

Thursday:

Friday:

2. Costs per delivery are as shown below:



How much will Neil Number receive for each day's work?

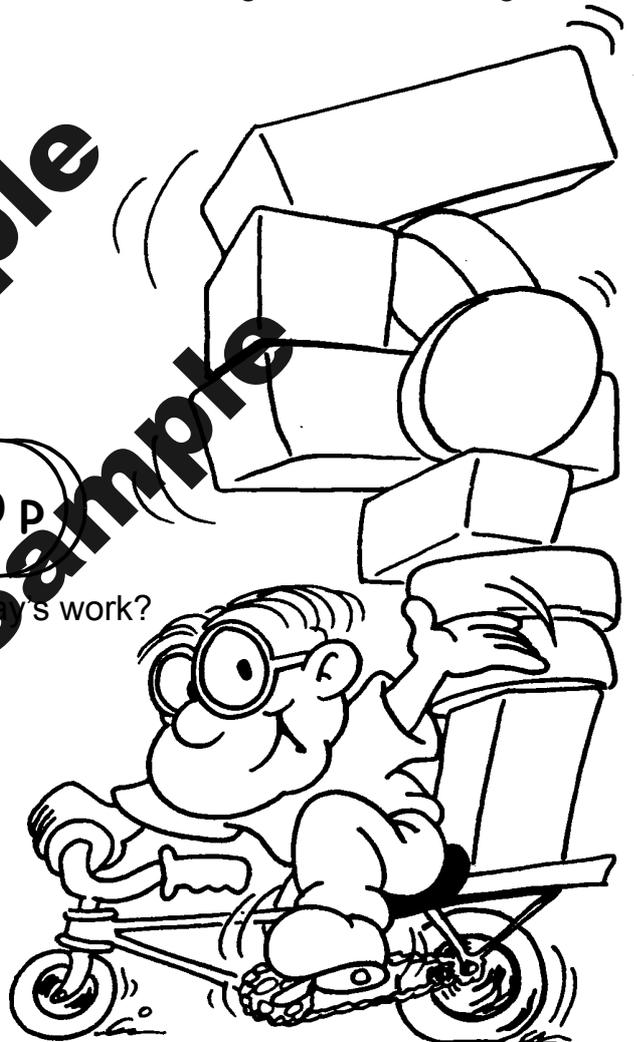
Monday:

Tuesday:

Wednesday:

Thursday:

Friday:



Challenge:

Mr Hammer has given Neil Number the choice of being paid either per parcel or per trip he makes. He is offering £1.80 per trip. Based on the deliveries that Neil did this week, should he accept Mr Hammer's offer?