Moving Numbers

Overview

Moving numbers is comprised of a series of non-threatening number puzzles and tasks which:

- Provide practice in addition skills
- Encourage strategic thinking or problem solving strategies
- Can be used individually as warm up activities for sessions
- Can be used to change the pace or mood in a session
- Can be given as a challenge task for students waiting while others complete practice exercises.

As a collection of tasks they could also be used as 'Problem Solving Stations' (see below).

Skills and Knowledge

- Addition
- Guess and check problem solving strategy
- Using moveable pieces to solve problems

Preparation and Materials

Copies of Activity Sheets 1 – 4 (1 per student)

1 copy Activity Sheets 1 – 4 on coloured card (if used for problem solving stations)

Copy Activity Sheet 5 on to coloured card or stiff paper. Cut the sets of moveable numbers and store in envelopes (1 set per individual or pair of students)

Suggested Procedure

The instructions for each of these puzzles or tasks are given on the Activity Sheet and should be self explanatory.

As indicated above, you can use these as single activities in the classroom or as Problem Solving Stations. Both methods are described briefly below.

Individual tasks within a session

For each task distribute a copy of the Activity Sheet to each student or pair of students.

Also distribute one set of moveable numbers to each student or pair.

Explain:

- *In the envelope is a set of numbers*
- *These moving pieces are a good strategy to use for puzzles and problem solving*
- *They allow you to try out different combinations without having to keep rubbing out when they don't work*
- *Each of the questions asks you to use different numbers*

- *Take the numbers you need out of the envelope*
- *Move them around on the paper until you find the correct arrangement*
- *Now write the correct numbers on your paper*
- *Finally, put the numbers back in the envelope*

When students have completed the tasks on the Activity Sheet, encourage them to use the numbers and try and create a puzzle of their own for other students to solve.

Problem Solving Stations

This term refers to a series of tasks set up on tables around the room. Students, in pairs, move around the room attempting the various tasks.

For variety it is useful to combine number tasks, such as these, with a collection of spatial puzzles and tasks.

The task or problem is usually displayed prominently on the wall or on the table. The items that students need to perform the task are arranged on the table. These items could include:

- Sets of numbers to manipulate during the task
- Coloured pencils or textas
- Copies of the task on which students can record their solutions.

Using a recording sheet

A list of tasks with spaces for students to record their answers can also be incorporated into the activity to give it an extra element of seriousness.

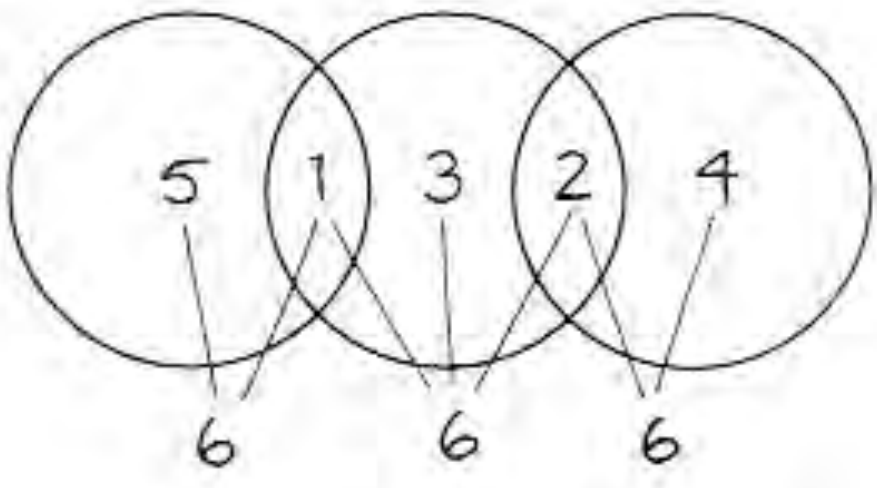
The students then take the list around from table to table and make a record of the tasks they completed successfully.

The record sheet can incorporate columns for comments and perhaps columns which students can tick to indicate the degree of difficulty (eg easy, challenging, too hard)

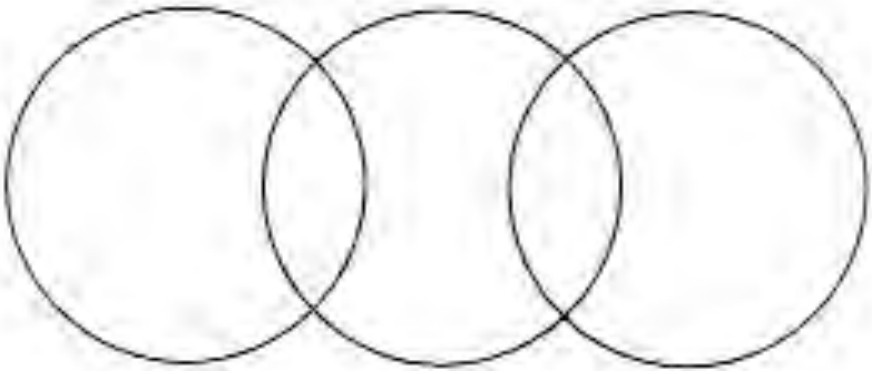
Numbers in Circles

Activity Sheet 1

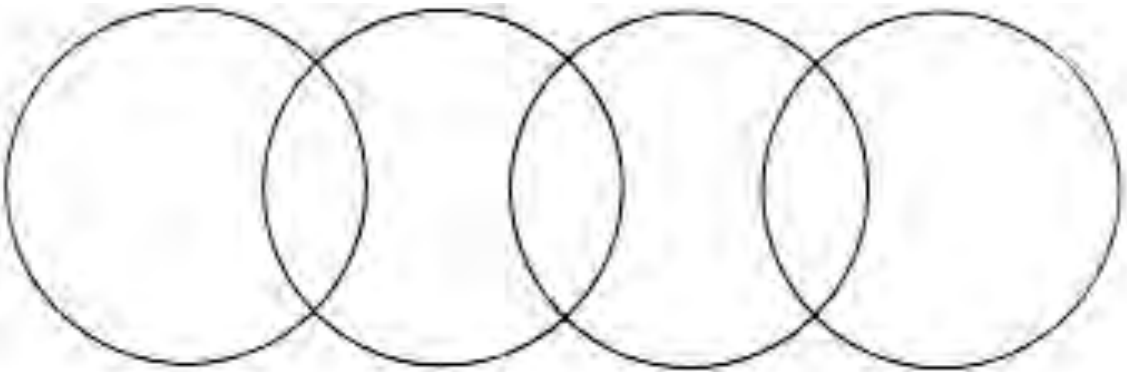
All the numbers inside each of these circles add up to 6



Put the numbers 2, 3, 5, 7, 8 into the circles so that inside each circle the numbers add up to 10



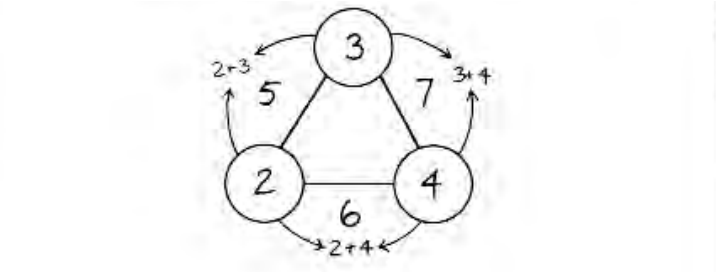
Use 3, 4, 5, 6, 7, 8, 9 in these to total 15 in each circle

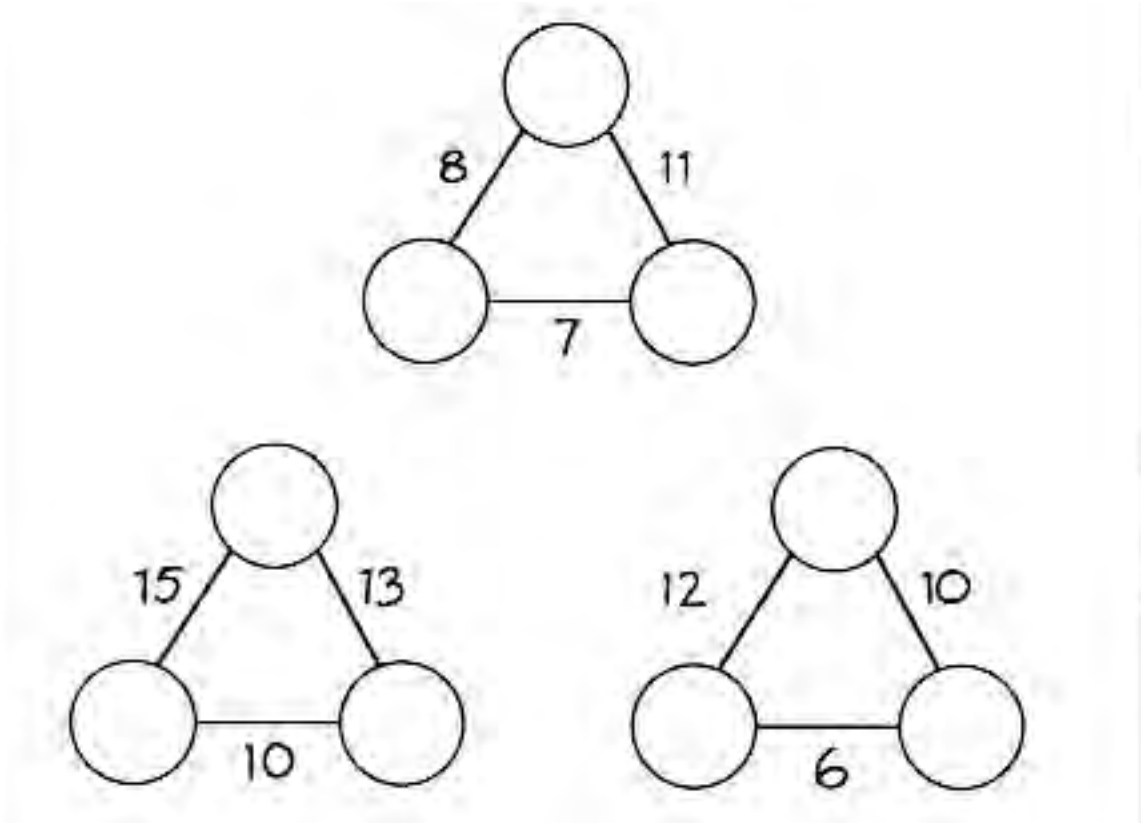


Numbers in Triangles

Activity Sheet 2

Put numbers in the circles so that each pair adds up to the number between them. For example:





Now make up one of these puzzles for a friend to solve.

1. Arranging the Digits

Find all the numbers you can make with these three digits

1 2 3

Extension: How many numbers can you make with the 4 digits:

1 2 3 4

2. The Coded Alphabet

If A = 1, B = 2, C = 3, D + 4, etc.

How many points is your name worth?

Is your name worth more points than the person sitting next to you?

Extension:

Can you find a word worth 50 Points?

Can you find a word worth 100 points?

Magic Squares

Activity Sheet 4

In these squares all the **rows**, **columns** and **diagonals** add up to the **same** total.

8		
	5	*7*
		2

Use all the digits from 1 to 9.

In other words,
1, 2, 3, 4, 5, 6, 7, 8, 9.

2	*4*	*6*
		1

Use all the digits from 0 to 8.

These are:
0, 1, 2, 3, 4, 5, 6, 7, 8.

	2	
	6	*8*
	10	

Use all the digits from 2 to 10.

		11
8	*13*	*6*

Use all the digits from 5 to 13.

Digit Sheet

Activity Sheet 5

✂ Copy onto card or stiff paper and cut into sets of digits.

1	1	1	1	1	1	1	1
2	2	2	2	2	2	2	2
3	3	3	3	3	3	3	3
4	4	4	4	4	4	4	4
5	5	5	5	5	5	5	5
6	6	6	6	6	6	6	6
7	7	7	7	7	7	7	7
8	8	8	8	8	8	8	8
9	9	9	9	9	9	9	9
0	0	0	0	0	0	0	0