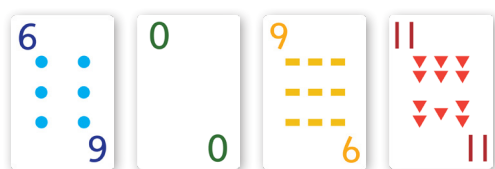# Solving Problems

with

School Friendly Cards Booklet 2

School Friendly Cards

The following puzzles and problems are designed to be used with a standard pack of **School Friendly Cards**. You can substitute a standard pack of playing cards, where Ace = 1, Jack = 11, Queen = 12, King = 13.

The following set of problems involves placing school Friendly or numbered cards in various arrangements. Reasoning similar to what is used in the **"Problem Solving Number Line-Ups"** book and **"Number Line-up Totals"** booklet will be required to solve these problems.

Students will be able to move cards around to try various paths to solution.

Using the Problem Solving activity cards

The problem-solving cards are designed to be printed onto A4 card or paper and cut in half to form A5 cards. The size of the card means that they may easily be projected onto a screen at the front of the class.
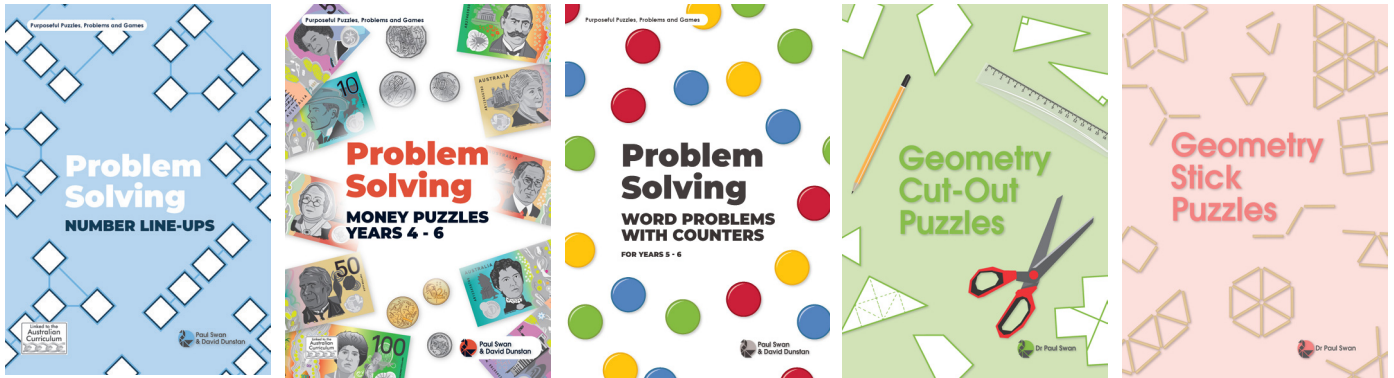
Card Conundrum 4

Arrange the cards 5, 6, 7, 8, 9, 10, 11, 12 and 13 to form the letter x so that both lines total 45.

drpaulswan.com.au

Dr Paul Swan
David Dunstan
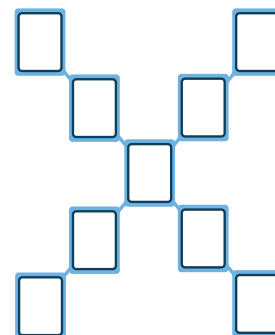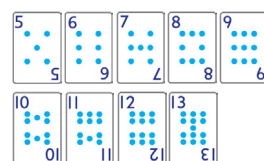
Solving the Problems

The A5 activity cards are used in the 'Problem Solving' series shown below.

Problem Solving Series

This series applies Polya's four step approach to problem solving. These are -

Understand the problem: Students need to read the whole problem carefully, often re-reading the problem to determine what is required.

Devise a plan: Generally this will require manipulating cards on a table.

Carry out the plan: Students will need to group the cards, check their calculation, and record their results in a systematic manner.

Look back: Students will need to check that they have answered the question and the calculations that were made. During the looking back process the problem may be re-examined to check that all solutions have been found.

Presenting the Solutions

Students can solve the problems using School Friendly Cards:

· Individually

· In pairs or groups

· Solutions may then be modelled on the whiteboard using **Jumbo School Friendly Cards.** Adhesive magnets may be placed onto the back of Jumbo School Friendly Cards. As students place the cards onto the whiteboard, they can explain the way they solved the problem.
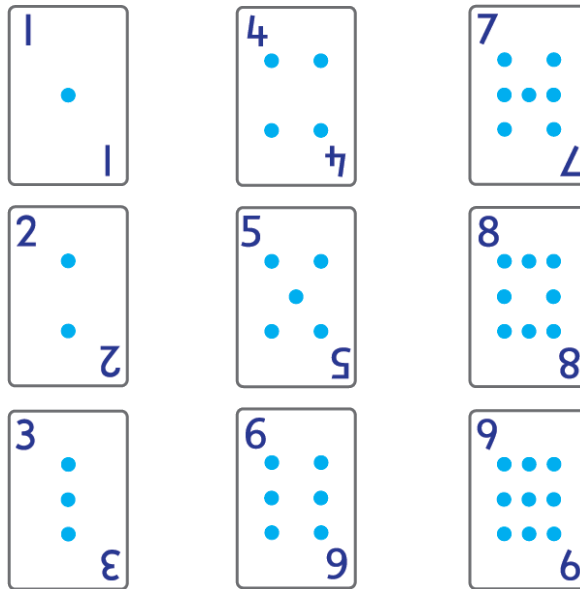
More Card Games and Activities with School Friendly Cards

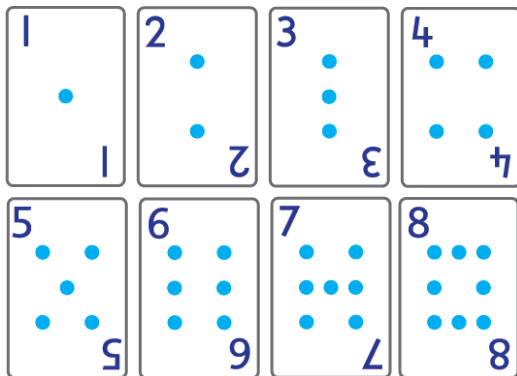

Buy Books & Cards at
www.drpaulswan.com.au

Card Conundrum 1

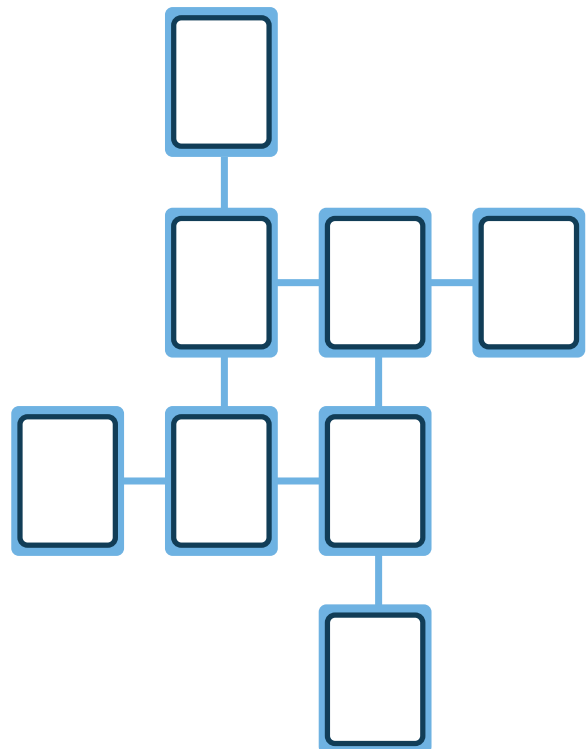Place the cards in three columns as shown.

Move one card from one column to another column so that each column adds to the same number.
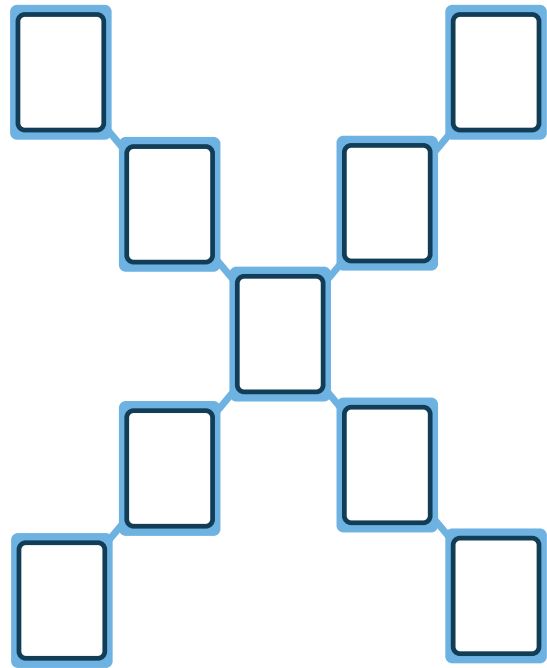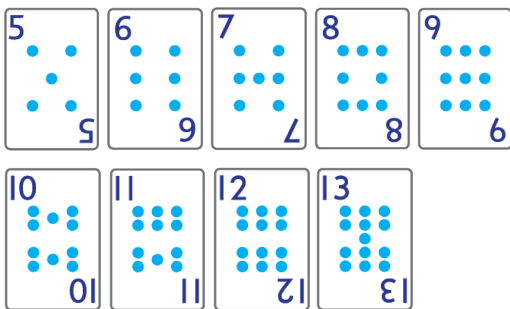

Card Conundrum 2

Place the cards 1, 2, 3, 4, 5, 6, 7, and 8 so that each arm totals 14.
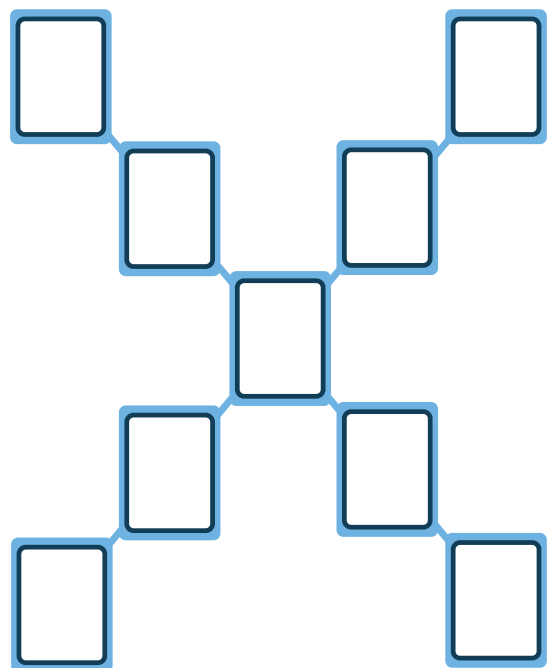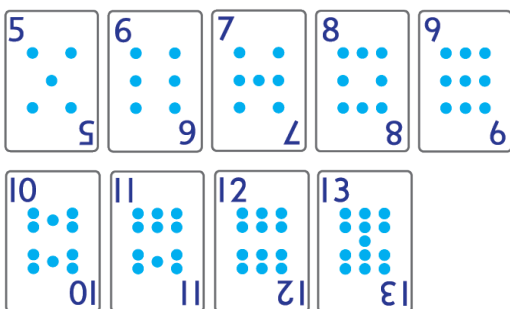
Card Conundrum 3

Arrange the cards 5, 6, 7, 8, 9, 10, 11, 12 and 13 to form the letter x so that both lines total 43.
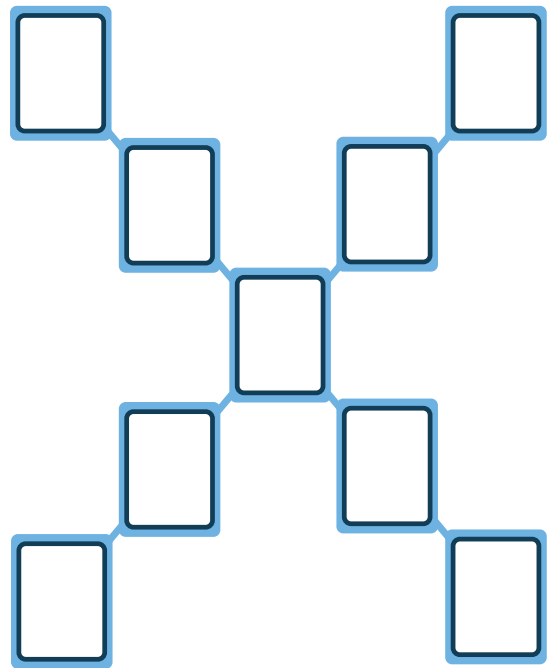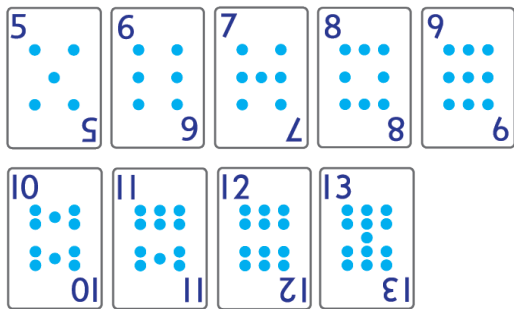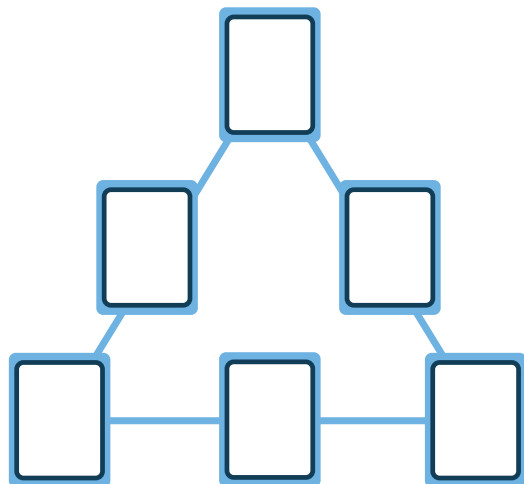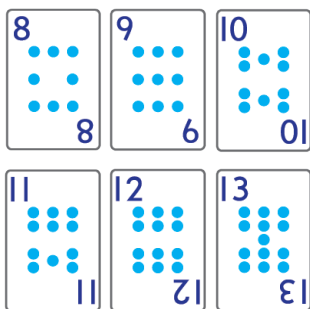
Card Conundrum 4

Arrange the cards 5, 6, 7, 8, 9, 10, 11, 12 and 13 to form the letter x so that both lines total 45.

Card Conundrum 5

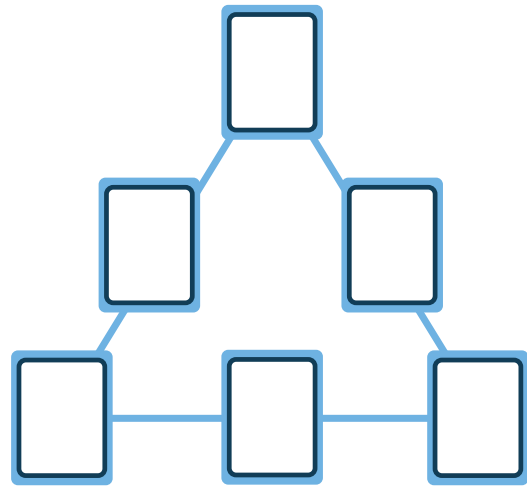Arrange the cards 5, 6, 7, 8, 9, 10, 11, 12 and 13 to form the letter x so that both lines total 47.
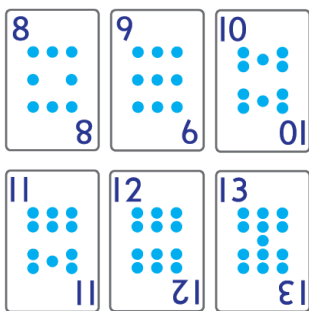

Card Conundrum 6

Arrange the cards 8, 9, 10, 11, 12 and 13 so they form a triangle. Each side of the triangle should total 30.
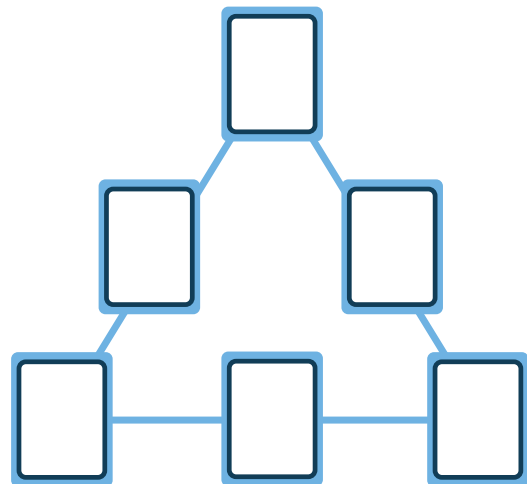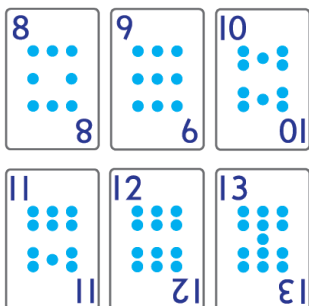
Card Conundrum 7

Arrange the cards 8, 9, 10, 11, 12 and 13 so they form a triangle. Each side of the triangle should total 31.
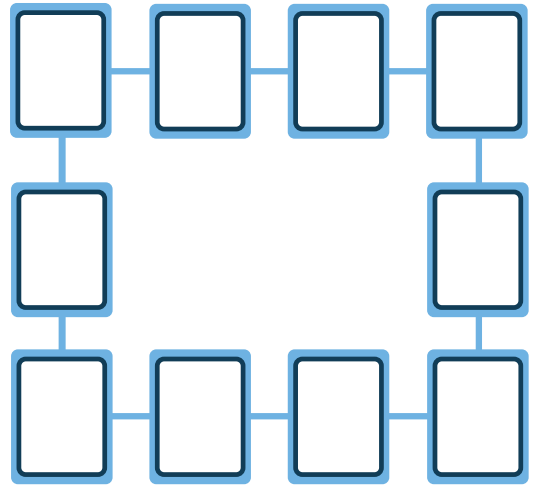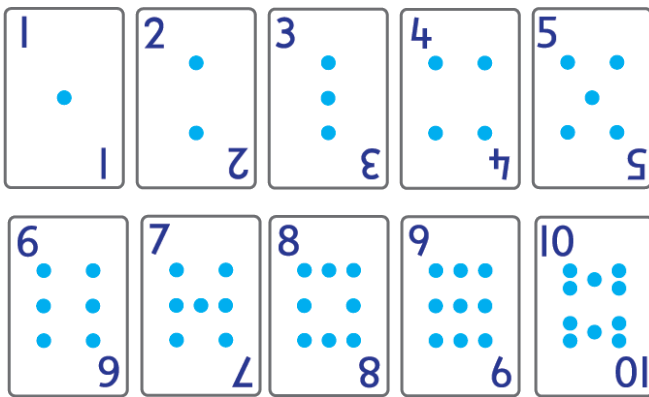
Card Conundrum 8

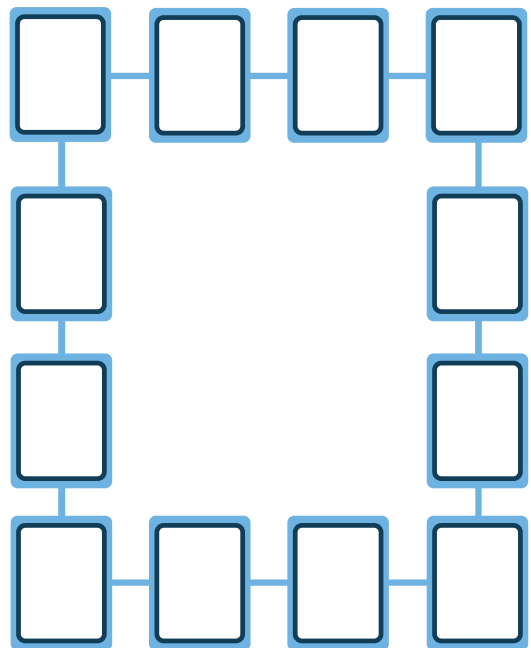Arrange the cards 8, 9, 10, 11, 12 and 13 so they form a triangle. Each side of the triangle should total 33.
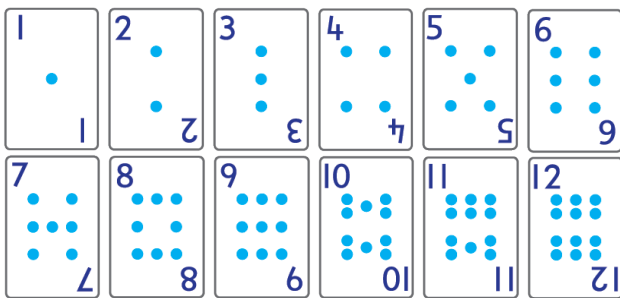
Card Conundrum 9

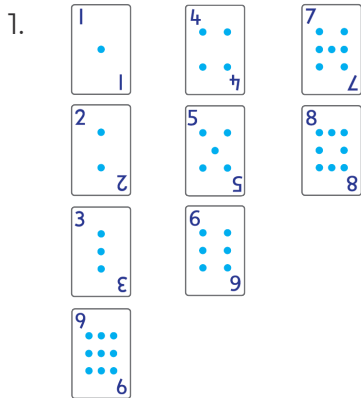Place the cards 1, 2, 3, 4, 5, 6, 7, 8, 9 and 10 so that each row and column adds up to 18.


Card Conundrum 10

Place the cards 1, 2, ,3 ,4, 5, ,6 ,7, 8, 9, 10, 11 and 12 so that each row and column totals 25.

Answers

1.

Using cards allows students to try some different options.

Students can be prompted to calculate the total for each column and consider the difference between the totals. Given that you can only move one card two columns will change total but one will remain the same.
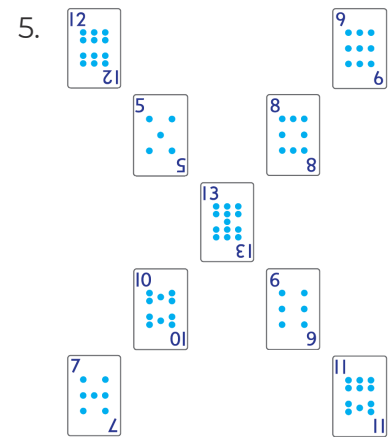
2.
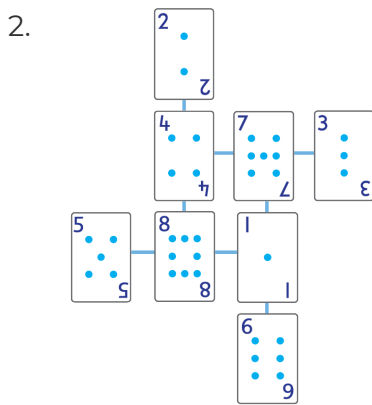
Certain numbers are shared horizontally and vertically and so the placement of these numbers will affect two line totals.

The sum of the four line totals of 14 is 56.

The sum of the '1 to 8' card set is 36.

Therefor the central four shared number cards must total 20.

3.

4.

5.
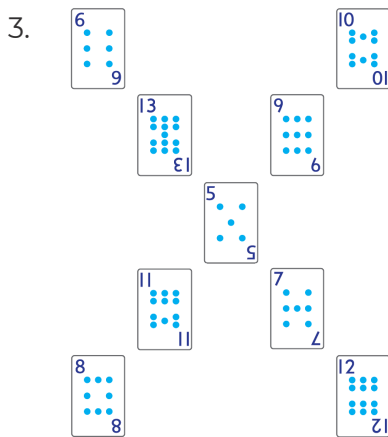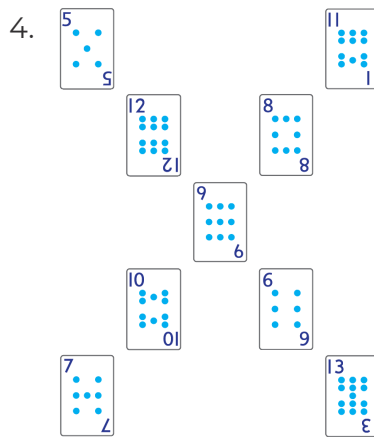
Line Total: 43

Line Total: 45

Line Total: 47

For Q3: The sum of 5 to 13 is 81. 2x the line total of 43 = 86. Therefore the central shared number is 5. The remaining four cards on either side must equal 38.

Q4: Similarly, the middle number can be found to be 9 in the same way. The remaining four cards on either side must total 45 - 9 = 36
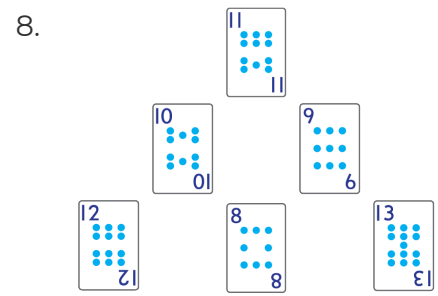
Q5: Similarly, the middle number can be found to be 13 in the same way. The remaining four cards on either side must total 47 - 13 = 34
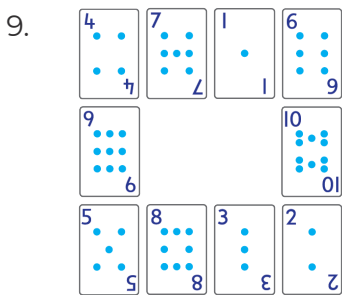
6.

7.

8.
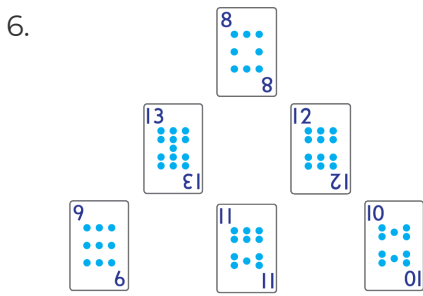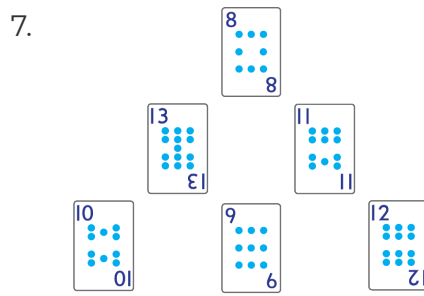
Line Total: 30

Line Total: 31

Line Total: 33

Q6: The sum of the cards 8 to 13 inclusive is 63. Three line totals of 30 is 90. Therefore the three shared numbers on the corners total 90 - 63 = 27.

Q7: Similarly, the three shared numbers total 93 - 63 = 30.

Q8: Similarly, the three shared numbers total 99 - 63 = 36.

9.

Student answers may appear slightly different as the position of the two numbers in the top row might be swapped and similarly in the bottom row. Likewise the two columns can be swapped

As students move cards around to solve this problem they may notice that larger numbered cards need to be placed in the middle position of each column as the columns consist of three cards whereas the rows are made up of four cards

10.
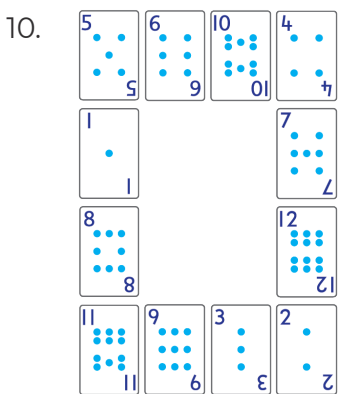
Note there are many solutions to this problem. Some are just rearrangements of this solution where the columns are swapped.

The numbers in each corner are shared so these numbers will have a bearing on a row and column.

The four corner numbers must total 22.

Similar problems may be found at

www.drpaulswan.com.au