

1. When we try to solve problems, there can be four types of outcomes, which are:

| |
|----|
| 1) |
| 2) |
| 3) |
| 4) |

2. How do the solutions to these following problems illustrate the four types of outcomes above? Of course, you'll need to solve the problems first!

| | |
|------------------------------|--------------------------------------------------|
| a) Pay \$1.85 using 11 coins | b) Pay \$1.85 using the smallest number of coins |
| c) Pay \$1.85 using 3 coins | d) Pay \$1.85 using only quarters and dimes |

3. A hockey championship is designed as a best-of-five playoff between two teams, the Reds and the Blues. How many different sequences of wins and losses can result in the Red team winning the series?

4. Assuming the A, B, C, D represent different digits in the range 1 to 9, then find A,B, C and D so that the multiplication is true.

$$\begin{array}{r} \text{C B A} \\ \times \text{A} \\ \hline \text{D C C A} \end{array}$$

5. **Challenge Problem:**

There are five cars in a race, each with one of the colours red, grey, blue, orange or yellow. The driver of each car wears a helmet of the colour red, grey, blue, orange or yellow. Complete the table.

- No driver had a car with the same colour as his helmet
- No car finishes the same place as its number
- Car 3 did not finish in the first 3 places
- The driver wearing the red helmet won the race.
- Car 4 was yellow
- The orange car finished behind the red car.
- Car 5 finished in third place
- The driver of car 2 hated the driver wearing grey helmet but liked the driver of the red car
- The driver of the orange car wore a grey helmet.
- The driver wearing the blue helmet finished ahead of these three different cars, car 1 , red car, grey car
- The grey car finished last.
- Car 2 was neither the orange car nor the grey car
- Car 3 bumped the red car on the first lap.
- The driver who finished last wished to have had the orange helmet.

| Car Number | Car Colour | Helmet Colour | Place in Race |
|------------|------------|---------------|---------------|
| | | | |
| | | | |
| | | | |
| | | | |

(Hint: you can do this just using the provided table, and repeatedly going through the clues).