

Key Stage 1 Problem Solving

Assessment problem:

Three cars have to drive across a bridge, (one red, one blue, one green) in what different orders can they cross over?

Preparation activities

- Use Oral and Mental starter time on the days before the problem solving session to consider problems that will rehearse similar problem solving skills (choose from):
 - How can three children line up?
 - If I have to put 10p, 5p and 2p into a slot machine for a bar of chocolate, in what order can I feed in the coins?
 - I have a drink, an apple and a sandwich for lunch. In what order can I eat them?
 - How many ways can the Three Billy Goats Gruff cross the rickety bridge?
- Discuss recording methods (drawing, using full words, using initial letters)
- Model and discuss using a systematic approach
- Model writing statements about the problem (*I know there are six ways to eat the lunch because I put the drink first, then the apple first and then the sandwich first*)

When tackling the car problem allow majority of children to choose own recording method(on plain paper) and any apparatus they like to use (counters in three colours, multilink, sketches of cars on scraps of paper).

Least able can be supported with outlines of cars which they colour in - encouraged to order and record using shorter notation under the drawings.

If a child thinks they have found all the ways allow them to make a permanent record (useful for assessment) and then pose the same problem with 4 cars of different colours.

Level Statements

Level	Evidence in work
1c	<ul style="list-style-type: none">• represent work using objects and pictures
1b	<ul style="list-style-type: none">• represent and discuss work using objects and pictures• recognise and use simple patterns or relationships - (the red car is going first in these pictures)
1a	<ul style="list-style-type: none">• represent and discuss work using objects and pictures, ask questions• they can use a pattern they have recognised to predict - (there are 2 ways with the red car going first and 2 ways with the blue car going first...)
2c	<ul style="list-style-type: none">• Discuss work using simple mathematical language and ask questions about it (first, second, third. Same number of ways for each car)
2b	<ul style="list-style-type: none">• Beginning to represent their work using symbols (able to record using r,b,g to represent colours or coloured dots)• Discuss their work. They respond appropriately to questions (explain how they are finding different solutions)

2a	<ul style="list-style-type: none"> • They can discuss their work • They ask and respond appropriately to questions including 'What would happen if...?' (what would happen if there were only 2 cars/ or a yellow car arrived? Do not need to know the answer but can talk about how the problem would change)
3c/3b	<ul style="list-style-type: none"> • They are beginning to organise their work and sometimes check results (looking for repeats) • Pupils discuss their mathematics work (I am trying all the ones with red car first) • Pupils show that they usually understand a general statement by finding a particular example to match it (can see and describe the symmetry in the answers)
3a <i>working on 4 car problem</i>	<ul style="list-style-type: none"> • They are beginning to organise their work and consistently check results (looking for repeats) • Pupils discuss their mathematics work and are beginning to explain their thinking (I kept the red car first and moved the others around) • Pupils show that they consistently understand a general statement by finding a particular example to match it (predict that there will be the same number of ways for each car going first, use fact to convince themselves that their total answer is correct)

Name _____

Date _____

Three cars have to drive across a bridge, (one red, one blue, one green)
in what different orders can they cross over?

Show your answers:

Blank area for writing answers.

Write about how you did the problem:

Blank area for writing the solution process.



Photocopy and cut into strips

