Act it Out or Use Objects

Class Counting
A class contained 32 students. The students were standing in a circle and began to count round the room starting from one, with each student saying one number. As they counted, all those who said even numbers sat down. Once each person had a turn, they continued counting (from 33) using only those students still standing. Again, every student who said an even number sat down. After the second round of counting how many students were still standing?

(This problem can be done with different numbers of students, as long as the number is even.)

Labelled Blocks
Five blocks have each been labelled with one of these letters – H, I, J, K, L. The H block is immediately to the right of the I block. The J block is to the right of the K block. The I is between the L and K. The L is immediately to the left of the I. Where is the K?

Piles of Blocks
Place 14 blocks in three piles. The first pile should have one less than the third. The third pile should have twice as many as the second. How many blocks are there in each pile?

Heights
Four students measured their heights. Nicky was taller than Kelly, but not as tall as Tali. Gene was taller than Tali. Write down their names in order of their heights, from shortest to tallest.

George’s Lemonade
George has a one litre bottle of lemonade. He pours half of the lemonade out into a jug, then gives the bottle to Jenny. Jenny is pours half of what’s left in the bottle into two large tumblers. Then she hands the lemonade bottle to James. James pours half of what’s left in the bottle into a plastic cup.
- How much lemonade is left in the bottle?
- What fraction of a litre is this?
Handshakes
At a party every guest shakes hands with every one of the other 12 guests. How many handshakes were there?

Class Game
Twenty nine students were waiting in a line to play a game. The teacher chose the first person in the line and then every fourth person in the line after that. How many were chosen?

The Yellow Card
Mrs Peters has four squares of yellow cardboard. She asks her class to join them all so they are connected by at least one edge.
- How many different ways can you do this?

Seating Positions
Five students are sitting in a row of chairs along one side of the room. Jennifer sits beside Alison but not beside Peta. Steven sits in the second seat on the left. Alison sits between (but not necessarily next to) David and Peta. Steven sits beside David. Who sits in the middle seat?

Tub Filling
At the water tap there are only three litre and five litre containers. The children must pour exactly seven litres of water into a tub. How can they measure exactly seven litres?

Freak Floods
An extended family was stranded on an island by freak floods. There were four adults and two children who needed to get off the island in a small rowing boat. The boat can carry two children or one adult. How many trips does the boat have to take in order to carry everyone to safety?

Jelly Beans
Each time a student did something helpful, Mrs Turner removed one jelly bean from container B and placed it in container A. If a student did something unhelpful she did the reverse. Container A had more jelly beans than container B. Mrs Turner took three jelly beans from container A and put them in container B. Then from container B she took two jelly beans to put in container A. Both containers then had eight jelly beans.
- How many were in each container in the beginning?

Charlotte’s Shoes
Charlotte has 14 pairs of shoes. Her mother buys her 7 more pairs. How many does she have now?
Buying and Selling
Imagine that you bought a game for $15, then sold it for $20 because you no longer played with it. Then you bought it back for $25 because your sister wanted it. Finally, when you sister got bored with the game, you sold it for $30. How much money did you make or lose?

Meeting Time
Ari called 3 people to arrange a meeting. Each of those people called 3 other people. Each of the 3 other people called 3 more people. How many people knew about the meeting after all calls had been made?

Theatre Seats
The same number of seats has been placed in each row at the theatre. Mrs Abrams chair is in the third row from the front, and the eighteenth row from the back. Mrs Dave’s seat has eight chairs to the left of it and eleven chairs to the right. How many chairs are there in the theatre?

The Lucky Escape
Three children walk down a fifteen step fire escape. Lisa walks down one step at a time. She begins by putting her left foot on the first step. Alex is in a hurry and walks down two steps at a time, starting with his right foot. He starts on the second step. Joel is in even more of a hurry and takes three steps at a time, beginning on the third step with his left foot.
- Which step will be the first one they all step on?
- Will all the children stand on the same step with their left foot?

Water Collection
A woman wants to collect exactly four litres of water from the well for her family. She only has two containers, one that can carry five litres and one that can carry seven litres. How can she measure out exactly four litres or water?

Crossing the River
8 adults and 2 children wish to cross a river in a canoe that can only hold 1 adult or 2 children at any one time. How many trips will it take to cross the river? (A trip = a single crossing of the river). Now try 10 adults and 2 children, then 100 adults and 2 children.

Lunch Date
Ella and her friends are having lunch. Talia is sitting next to Ella. Chloe is sitting between Dharma and Isabel. Dharma is across from Ling. Isabel is across from Ella. Draw the table and the seats or act it out. Write the names on the seats.
Andrew’s Apples
Andrew found 14 apples. John found 10 apples. Jorge found 6 apples and Harry found 4r. How many apples did they find altogether?

Market Day
A farmer is going to market with his hungry dog, two fat geese and three bags of corn. Unless the farmer is present to stop them, the geese will eat the corn and the dog will eat the geese. The farmer has managed to avoid any trouble until he comes to a river that must be crossed in a small rowboat which has only enough room for him and two of the six things he has to bring with him. How can he get all of his possessions across the river without one of the animals eating something? Explain how they can cross the river.

Shapes
Take a rectangular sheet of paper. Cut it on the diagonal to make two congruent triangles. Use the two triangles to make different shapes by joining them vertex to vertex and side to side.
- How many different shapes can you make?
- Draw the shapes.

Wooden Legs
Wendy builds wooden dollhouse furniture. She uses the same kind of legs to make 3 legged stools and 4 legged tables. She has a supply of 31 legs and wants to use them all to make stools and tables.
- Find all the possible ways she can use all 31 legs.
- Explain how you solved the problem and how you know you have found all solutions.

Extra
Wendy sells her furniture to the local toy store. She gets $2 for each stool and $3 for each table. Of all the ways you found, which would earn her the most money?
- Be sure to explain how you know.

Ann’s Apples
Ann has 6 apples. She puts them into 2 equal groups with none left over. Use counters for the apples or draw them. Draw a circle to make the 2 groups.
- How many apples are in each group?
- How many apples does Ann have?
- How many groups does she make?
**Class Line Up**
If Josie is first in line and John is four students behind her, where is John?

**Miguel's Balloons**
Miguel has 8 balloons. He puts them into 4 equal groups with none left over. How many balloons are in each group? Use counters for balloons or draw the counters.
Circle the counters to make 4 equal groups.
- How many balloons does Miguel have?
- How many groups does he make?

**Pizza Party**
There is a contest among the different year levels at Parkhurst State School. The contest lasts for two weeks. The first year level to collect 20 bags of recyclables wins a pizza party.
- Students from Year 2 brought in 4 bags then brought in 7 more bags. How many more bags do they need to win?
- Years 1 and 3 have decided to work together. If Year 1 brought in 12 bags and Year 3 brought in 16 bags, how many do they have altogether?
- At the end of the contest, Year 4 had collected 5 more bags than Years 1 and 3 combined.
- How many bags of recyclables did Year 4 collect?
- At the end of the contest, Year 5 had collected 16 bags. If they collected 5 bags in Week 2, how many did they collect in Week 1?
- If Year 6 collects 9 bags in Week 1 and 8 bags in Week 2, how many more do they have than Year 2?
- How many more bags should Year 2 collect so that they have the same number as Years 1 and 3 combined?

**Ben's Card Collection**
Benny had six boxes of cards in his closet. There were three cards in each box. How many cards did he have?

**Sherry's Book Shelf**
Sherry had a bookshelf. She had twelve books on each shelf. There were three shelves. How many books did she have?

**Mrs Wiley’s Hats**
Mrs Wiley collected hats. She had 15 hats and bought 21 more. How many hats does she have?

**Mike’s Cars**
Mike has 27 cars and gives 13 to a friend. How many cars does he have now?