

FP Numerical Reasoning using Counters



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**Activities and ideas to
develop reasoning skills
in the FP classroom, using
counters.**

1

Nim 7: 2 players, Start with 7 counters. Each player can take 1 or 2 counters in turn. The winner is the player who takes the last counter. Is it best to go first or 2nd? Can children develop a winning strategy? Does the strategy work with other numbers of counters? Does it make a difference if an odd or even number of counters are used?

Use Number Facts and Relationships

2

Make Four. Give children a 7x6 grid and 20 counters of one colour each, e.g. one person is red and the other person blue. Players take it in turn to place a counter on the grid. The winner is the first person to get four of their counters in a row. Can children develop and explain a winning strategy? Does it matter if you go first or second?

Use Number Facts and Relationships

3

Give children a row of counters in a repeating pattern, e. g. RBYGR. Ask children prediction questions that would use their tables, e.g. The 30th counter would be Y, true or false? Explain.

Use Number Facts and Relationships

4

Give children 3 red counters and 3 blue counters Challenge children to move the counters to the other side in the least amount of moves. Counters can only be moved to an adjacent empty square or jump one counter to an empty square. Can children develop and explain a winning strategy? What is the smallest number of moves it can be completed in? Prove it.



Use Number Facts and Relationships

5

Give children a number of counters, e.g. 12. If I gave Tom half my counters, I would have 5 left. True or false? Prove it.

Fractions

6

Put a container at the front of the class and ask which statement is true. 'If everybody in the class put in a counter, the jar would be $\frac{1}{2}$ full. No, it would be full.' This can be extended with putting in different numbers of counters and finding a $\frac{1}{4}$ or simplified with fewer numbers of children. Another extension could be...If we all put in 1 counter the jar will be $\frac{1}{2}$ full so if we all put in 2 counters it will be $\frac{2}{4}$ full. True or false?

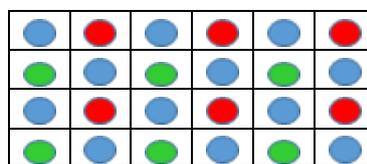
Fractions

7

Show children a grid of counters of different colours e.g.

Ask questions such as...Half the counters are green. True or false?

If I changed the green counters for blue counters, $\frac{1}{2}$ the counters would be blue.



Fractions

8

Give children 3 different coloured pots (BRG) and a number of counters. Pose questions such as... The pots hold 7 counters altogether. There are 3 more counters in the blue pot than the green pot and the green pot has 1 less counter than the red pot. How many counters in each pot?

Use Number
Facts and
Relationships

9

Give children 2 red pots, 2 blue pots and 2 red and 2 blue counters. Can children place the counters in the pots so that each combination is different?

Pattern

10

Carys has 5 more counters than Sam. Sam has 2 more than Tom. There are 30 altogether. How many does each child have?

Use Number
Facts and
Relationships

11

Give children a 4x30 grid and a red, blue, yellow and green counter. Red counters can move the number called, blue 2x the number called, yellow 3x and green 10x. Call out numbers between 1 and 5. Children move their counters, aiming to get all their counters to the end of the grid as close as possible, e.g. If the green counter crosses the line but the rest of the counters are still halfway – they lose. What strategies do they develop? Who can get all their counters to the end with the smallest gaps?

Use Number
Facts and
Relationships

12

I have up to 20 counters. If I count my counters in twos, I have 1 left over. If I count in fives, I have 4 left over. How many counters have I got? (19)

Use Number
Facts and
Relationships

13

Number 4 pots 1- 4 and give children a number of counters, e.g. 3 counters. Challenge children to get the counters in the pots. Is it possible to score 9? How many ways could you score 9?

Use Number
Facts and
Relationships

14

Give children 21 counters and 3 pots. The pots can only have an odd amount of counters in them. How many ways can children find of sharing the counters out? Have you found all the ways? How do you know?

Use Number
Facts and
Relationships

15

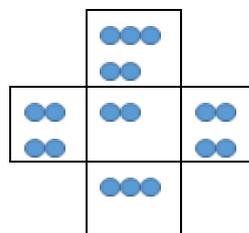
Give children 3 pots and 15 counters. Can they share them so that each pot holds one less than the pot before?

Use Number
Facts and
Relationships

16

Give children 15 counters and a blank cross grid. Challenge them to make each line add to 10, e.g.

How many different ways can you find? Have you got them all?
(6,5,4)



Use Number
Facts and
Relationships