

Counting Pane

I put this together from remnants of old resources. I suggest you check things before using them.

The original materials were in various formats. You should be able to edit this pdf to get what you want.

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May be used for any educational purposes

Counting Pane A1

Write down the numbers of all the squares with a red.

How many are there?

What would the next be?

Counting Pane A2

Write down the numbers of all the squares with a green.

How many are there?

What would the next be?

Counting Pane A3

Write down the numbers of all the squares with pink.

How many are there?

What would the next be?

Counting Pane A4

Write down the numbers of all the squares with brown.

How many are there?

What would the next be?

Counting Pane A5

Write down the numbers of all the squares with raspberry.

How many are there?

What would the next be?

Counting Pane A6

Write down the numbers of all the squares with grey.

How many are there?

What would the next be?

Counting Pane A7

Write down the numbers of all the squares with orange.

How many are there?

What would the next be?

Counting Pane A8

Write down the numbers of all the squares with purple.

How many are there?

What would the next be?

Counting Pane A9

What colours are in square 24?

What numbers do these colours stand for?

Counting Pane A10

What colours are in square 45?

What numbers do these colours stand for?

Counting Pane A11

What colours are in square 100?

What numbers do these colours stand for?

Counting Pane A12

What colours are in square 60?

What numbers do these colours stand for?

Counting Pane A13

Look at square 5. It has a pink stripe and a blue stripe.

There are 5 more squares exactly like this.

How many can you find? Write down the numbers of those you find.

Counting Pane A14

Look at square 4. It has a green stripe, a yellow stripe and a blue stripe.

There are 5 more squares exactly like this.

How many can you find? Write down the numbers of those you find.

Counting Pane A15

Look at square 9. It has an orange stripe, a red stripe and a blue stripe.

Can you find any more squares exactly like this? Write down the numbers of those you find.

Counting Pane A16

Look at square 8. It has a grey stripe, a green stripe, a yellow stripe and a blue stripe.

Can you find any more squares exactly like this? Write down the numbers of those you find.

Counting Pane B1

Write down the numbers of all the squares with a red and a brown.

Do you notice anything about the other colours in these squares?

Counting Pane B2

Write down the numbers of all the squares with a grey and a yellow.

Do you notice anything about the other colours in these squares?

Counting Pane B3

Look at the pattern of orange.

Why does it do this?

Counting Pane B4

Look at the pattern of pink.

Explain why it looks like this.

Counting Pane B5

Look at the line of greys in squares 8, 16, 24 and 32.

Find another line of greys sloping the same way. Write down the numbers. What do you notice about the numbers?

Find another line of greys.

Counting Pane B6

How many greens are there in each of the columns?

Try to explain why this happens.

Counting Pane B7

How many browns are there in each of the columns?

Try to explain why this happens.

Counting Pane B8

Which columns are least colourful?

Why is this?

How many colours do they each have?

Counting Pane B9

- a) How many squares are all blue?
 - b) How many squares have two colours?
 - c) How many squares have three colours?
 - d) How many squares have four colours?
 - e) How many squares have five colours?
 - f) How many squares have six colours?
 - g) How many squares have seven colours?
- Remember that there are 100 squares altogether.

Counting Pane B10

- a) Which colours are not in column 1?
 - b) Which colours are not in column 3?
 - c) Which colours are not in column 5?
 - d) Which colours are not in column 7?
 - e) Which colours are not in column 9?
-so which colours don't appear in any of these columns?and why?

Counting Pane B11

Which colours are in every column?
Explain how you think this happens.
Which colour is in only one column?
Why?

Counting Pane B12

Look at the last column.
Which colours are in every square?
Why does this happen?

Counting Pane B12

Look at the line of reds in squares 3, 15, 27 and 39.
Another line of reds starts at 21. Write down the numbers on the line, without looking at the grid. Then check your answer.
Do the same for the lines starting with 51 and 81.

Counting Pane B14

Look at the line of greens in squares 4, 16, 28 and 40.
Another line of greens, parallel to this, starts at 12. Work out what number it ends at. Check your answer on the grid.
A line of greens ends at 100. Where does it begin?

Counting Pane B15

How many squares have a raspberry stripe?
Starting at square 91 each time, how many straight lines would you need to draw to pass through all of them?

Counting Pane B16

Grey and orange are both in square 72 but they are not together in any other square. Can you find other pairs that appear in the same square as each other only once on the grid?

Counting Pane C1

Counting Pane C2

Use a 10 by 10 grid, or draw your own.

In each square write in **all** the numbers which will divide into the number of that square. Do not forget to include 1 and the number of the square itself.

Go to card C2 or C3.

Complete a 10 by 10 grid. (See card C1)

Count the numbers in each square. Shade any square with an odd number of numbers in it.

What is special about the shaded squares?

Counting Pane C3

Counting Pane C4

Complete a 10 by 10 grid. (See card C1)

Shade every square which has only two numbers.

What is special about the shaded squares?

The pinks going straight down near the centre of the grid make a very noticeable line. Why does it happen?

Find other interesting lines and try to explain why they are there.

Counting Pane C5

Counting Pane C6

Find the first square with
(a) 3 colours (b) 4 colours (c) 5 colours
(d) 6 colours (e) 7 colours

Which would be the first with 8 colours?

Which would be the first with all the colours?

What percentage of the squares

- a) are plain blue?
- b) are only blue and yellow?
- c) are only blue and red?
- d) have six colours?

Counting Pane C7

Counting Pane C8

Look for parallel lines of colour and write down the numbers of the squares. Try to find patterns in the numbers you have written.

You could choose parallel lines going across the page, or up and down, or sloping, in either direction.

How many squares are half blue?

What fraction of the squares is this?

Counting Pane C9

How many squares are one third blue?

What percentage of the squares is this?

Counting Pane C10

What fraction of

- a) square 5
- b) square 10
- c) square 12

is used for each colour? What are these in percentages??

Counting Pane C11

What percentage of the squares have a purple stripe? What fraction is this?

What percentage of the squares have a yellow stripe? What fraction is this?

Counting Pane C12

How many squares are one quarter yellow?

What percentage of all yellow squares is this?

Counting Pane C13

What fraction of square 35 is used for each colour?

What percentage of the square is this?

What fraction of square 30 is used for each colour? What percentage of the square is this?

Counting Pane C14

How many squares with green also have a brown stripe?

What percentage of all green squares is this?

Counting Pane C15

What would happen if you used more colours for more factors on a larger grid?

Make some new versions of *Counting Pane*.

Counting Pane C16

Make up some questions of your own, relating to your *Counting Pane*.

Answers to cards

- A1 33 reds
- A2 25 greens
- A3 20 pinks
- A4 16 browns
- A5 14 raspberries
- A6 12 greys
- A7 11 oranges
- A8 10 purples
- B1 6, 12, 18, 24, 30, 36, 42, 48, 54, 60, 66, 72, 78, 84, 90, 96 They all have yellow and blue.
- B2 8, 16, 24, 32, 40, 48, 56, 64, 72, 80, 88, 96
They all have green and blue.
- B3 **
- B4 **
- B5 **
- B6 0, 5, 0, 5, 0, 5, 0, 5, 0, 5 **
- B7 0, 3, 0, 3, 0, 3, 0, 3, 0, 3 **
- B8 Columns 1, 3, 7 and 9 have 4 colours **
- C1 **
- C2 They are square numbers.
- C3 They are prime numbers.
- C4 **
- C5 a)4 b)6 c)12 d)24 e)60
120; 2520
- C6 a)22% b)12% c)8% d)8%
- C7 **
- C8 30%; three tenths
- A9 blue = 1, yellow = 2, red = 3,
green = 4, brown = 6, grey = 8
- A10 blue = 1, red = 3, pink = 5, orange = 9
- A11 blue = 1, yellow = 2, green = 4,
pink = 5, purple = 10
- A12 blue = 1, yellow = 2, red = 3, green = 4,
pink = 5, brown = 6, purple = 10
- A13 25, 55, 65, 85, 95
- A14 44, 52, 68, 76, 92
- A15 27, 81, 99
- A16 16, 32, 64, 88
- B9 a)22 b)30 c)16 d)13 e)8 f)8 g)3
- B10 Yellow, green, brown, grey, purple do not appear in any odd-numbered columns.
- B11 Blue, red, raspberry and orange are in every column. Purple is in only one column. **
- B12 Blue, yellow, pink and purple. **
- B13 21, 33, 45, 57, 69; 51, 63, 75, 87, 99; 81, 93
- B14 60; 52
- B15 14 **
- B16 **
- C9 16; 16%
- C10 a)one half; 50% b)one quarter; 25%
c)one fifth; 20%
- C11 10%; one tenth; 50%; one half
- C12 11; 22%
- C13 one third; thirty three and a third%
one sixth; sixteen and two thirds%
- C14 8; 32%
- C15 **
- C16 **

** Discuss pupil's answers

Number Game

This game works well for all pupils up to about Year 9.

You need:

One chair for each child, arranged in a circle. Label chair 1.
A sticky label for each child, numbered consecutively.

Before the game:

Arrange the pupils and their chairs in a circle. Point out which is to be position number 1 and which way the numbers go. (The teacher could choose to be in position 1 as this is probably the least interesting place to be.)

Stick a label on each child's back 'at random'. Tell them that they must find out what the number is by asking questions. The questions may only be answered by 'yes' or 'no'. They should choose a different person for each question. Questions could be

Is there yellow in my square?	Does it have a lot of colours?
Is it on the top row?	Is it more than 20?

When a child knows his number he should find his chair and sit on it.

When all children are seated, ask number 1 to make sure number 2 is next, etc., all round the circle.

Give the pupils a quick-fire series of instructions (after a slower practice). The actions can be varied according to the ability of the children and the space available. There are hundreds of possible questions.

Examples: Stand up if you have a yellow. Sit down.
Stand up if you have a red.
Wave your arms if you have brown.
Stand up if you have yellow. Stay standing if you have green. Stay standing if you have grey.
(Ask other pupils which numbers are still standing)
'First red' go and shake hands with all other reds.
Stand up if you are sitting next to a green.
Point at a yellow.
Wave if you are between two yellows.

Beware - those pupils who only have blue will have very little to do and could become bored. Phrase some questions especially for them.

Examples: Stand up if you have a blue. Sit down if you have any other colours.



