CHRISTMATHS CAROLS

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1. Fairytale of Arboretum Street

(Fairytale of New York)

Last lesson before Christmas, up in ME3
Mr Day said to me, won't have another one
And then he sang a song, 'The Mocks Revision Blues'
I turned my face away, and thought what should I do?

Logged on to Classroom, and then turned off my phone
I need to concentrate; I'll save it for a break
So happy Christmaths. I love revision
I can see a better time, when all our grades come true

There's Corbett and MathsPad,
They've got videos, I'm told
And there's questions to go through,
If you're still not sold

When you first start to plan on a cold Christmas Eve
You'll probably see MyMaths there waiting for thee

It wasn't handsome, wasn't pretty
It was rather quite messy
When the hand finished writing,
It could hardly be read

Papers were flailing
All the marks they were missing
You cried in a corner,
Then worked on through the night

The girls of 11 Further Maths,
Revising all day long
But ensuring they took a break,
For Christmas day

PMT, Maths Genie,
Or Kerboodle, you'll see
They are there, just beware, make sure it's our course.

Dr Frost Maths and 1st Class Maths,
They have all the best tasks
Happy Christmas, my class,
I pray God that they pass

The girls of 11 Further Maths,
Revising all day long
But ensuring they took a break,
For Christmas day

I might just get a seven,
Or even maybe an eight
You still believed in me,
When I first got a U

You must not stay up late,
Your rest's important too
Can't make it on your alone,
There's much support around you

The girls of 11 Further Maths,
Revising all day long
But ensuring they took a break,
For Christmas day

2. O Sum All Your Data

(O Come, All Ye Faithful)

O sum all your data,
Careful and correctly,
O sum it, O sum it and divide by n.

Sum and divide it,
Be it lengths or angles.
O sum up all your data
Do it now, save time later,
And use your calculator
To find the mean.

Survey the people,
All the population,
Count all the citizens as best you can.

Count up your answers,
See which one is highest.
But if that is too ample,
Then, just as an example,
A simple random sample
Should work out just fine.

Analyse your findings,
Plot them on a chart now,
O plot it, O plot it, with points so clear.

Bar graphs and pie charts,
Histograms or scatter,
O plot all of your data,
Make it neat, use labels later,
Your chart will be much greater
Than numbers alone.

3. Hark! The Herald Angles Sing

(Hark! The Herald Angles Sing)

Hark, the herald angles sing
Trigonometry is king!
Cosine, sine are functions mild
Tangent soon is reconciled.

Joyful calculations fly!
Solve for theta, phi, and psi
Inverse functions we proclaim
Bring us angles back again.
Hark, the herald angles sing
Trigonometry is king!

What if there is no right angle?
How can we avoid a tangle?
You could use the cosine rule
a^2 equals b^2 plus…

… c^2 minus 2 b c…
times the cosine of angle A.
Use this well and you might see,
SOH-CAH-TOA's not necessary.
Hark, the herald angles sing
Trigonometry is king!

4. Finding Factor Pairs

(Walking in the Air)

We're finding factor pairs
We're trying to find the HCF
The multiplication tables
Are proving useful now

I'm working very hard
I'm thinking of a factor tree
I'm finding I can use
A Venn diagram too

Far across the page
The factors go by like trees
The composites and the primes
The lists of factor pairs

Children draw Venn diagrams
Taken by surprise
Nobody in the class
believes their eyes

We're finding LCM
We're multiplying the union
We're finding LCM
as well as HCF

Suddenly the prime factors helping us more now
To find the LCM and the HCF with apparent ease

We're finding prime factors

We're trying to find the HCF
And the Venn diagram helps us in more ways than one

5. Statistical Wonderland

(Winter Wonderland)

Sampling, all the data,
Stratified, and clustered later.
A beautiful sight,
Number crunching tonight,
Walking in a statistical wonderland.

Gone away is the confusion,
Here to stay is my conclusion.
With graphs that we plot,
And insights we've got,
Walking in a statistical wonderland.

In the middle we can find the median,
Add them and divide, that is the mean.
Take the bottom from the top for the range,
And the mode is the most popular in town.

Later on, we'll find an outlier,
Further out than we'd desire.
Use the data we've got,
To draw a box plot,
Walking in a statistical wonderland.

In the middle we can find the median,
Add them and divide, that is the mean.
Find the upper and the lower quartiles,
The interquartile range is what's between.

Histograms, aren't they thrilling?
But you feel, there's something missing?
Since mu went away, it feels mean to stay…
Walking in a statistical wonderland.

6. O Factor Tree

(O Christmas Tree / O Tannenbaum)

O Factor Tree, O Factor Tree,
You start with one whole number.
O Factor Tree, O Factor Tree,
You start with one whole number.
You split each number into two,
Until no more is left to do.
O Factor Tree, O Factor Tree,
You start with one whole number.

O Factor Tree, O Factor Tree,
Your branches lead to primes now!
O Factor Tree, O Factor Tree,
Your branches lead to primes now!
We break it down again, again,
Till primes are all that still remain.
O Factor Tree, O Factor Tree,
Your branches lead to primes now!

O Factor Tree, O Factor Tree,
Same primes, whichever path now!
O Factor Tree, O Factor Tree,
Same primes, whichever path now!
The order may be different here,
But prime factorisation's clear.
O Factor Tree, O Factor Tree,
Same primes, whichever path now!

O Factor Tree, O Factor Tree,
Use powers to write neatly!
O Factor Tree, O Factor Tree,
Use powers to write neatly!
In Venn diagrams we then compare,
For HCF and LCM.
O Factor Tree, O Factor Tree,
Use powers to write neatly!

7. To Show Parallël

(The First Noël)

To show parallël, the angles we'll see,
must certainly fall into categories three:
alternate or corresponding; they have equality,
while co-interior angles are supplementary.

Parallël, parallël, to show parallël;
these are some ways to show parallël.

In a parallëlogram -ogram -ogram,
the opposite sides are parallël.
In a trapezium -eziuzm -ezium,
only one pair are parallël.

Parallël, parallël, to show parallël;
these are some ways to show parallël.

If y equals mx + c,
m is the gradient of the line, you see.
If two lines share a gradient between
Then you know that parallël they be.

Parallël, parallël, to show parallël;
these are some ways to show parallël.

With vectors broken up into i and j's,
we find the scale factor can show us the way.
If the same for i and j, the vectors must be
Parallël all the way to infinity

Parallël, parallël, to show parallël;
these are some ways to show parallël.

8. Dividin' Around The Christmas Tree

(Rockin' Around The Christmas Tree)

Dividing around the Christmas Tree
All the Christmas fraction fun
Dividing where you can see
Every teacher has a blast

Dividing around the Christmas Tree
Let the reciprocal sing
Later we'll have to simplify
And we'll do some arithmetic

You will get a mathematical feeling
When you hear
Voices singing, "find the reciprocal
and divide fractions properly.

Dividing around the Christmas Tree
Do not use KFC
Everyone's calculating merrily
by using the reciprocal

You will get a mathematical feeling
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Voices singing, "find the reciprocal
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9. Sin on Cos Can Turn Into Tan

(Santa Claus is Coming to Town)

You'd better swot up, it's hard to get by
Unless you know the graphs from 0 to 2π,
Sin on cos can turn into tan.

You're squaring sin x, squaring the cos,
You're going to get one whatever x was,
Sin on cos can turn into tan.

You even know the hard ones,
you barely have to check
You know that 1 + tan squared x
becomes the square of sec!

You've drawn it all out, it's easy to see,
Cos pi by six is half of root 3
Sin on cos can turn into tan.

You've picked up all the formulas,
you've read them through and through
The area of a sector
is r-squared theta over two

You used to hate radians, now it's your strength
Since you learned that r theta gives the arc-length
Sin on cos can turn into tan.

Your teacher’s in a Santa hat,
you swear that you don’t know her
Because there’s really no excuse
for ho-ho-soh-cah-toa.

You'd better swot up, it's hard to get by
Unless you know the graphs from 0 to 2π,
Sin on cos can turn into tan.
Sin on cos can turn into tan.

10. Rudolph the Statistician

(Rudolph the Red-Nosed Reindeer)

Rudolph the statistician
Sampled data everywhere.
Mean heights and heart conditions
Calculated with great care.

All his investigations
Turned raw data into sense.
Careful with interpretations,
Conclusions backed by evidence.

Then one foggy Christmas Eve
Santa came to say,
"Rudolph, with your pencil write,
What gifts should I take tonight?"

Rudolph picked a random sample,
Stratified by age and place,
Gave equal representation
Allowing him to make his case.

Careful how he asked the questions,
Kept the wording plain and clear,
No leading phrasing slipped in there,
Ensuring that it wasn't unfair.

Santa looked at Rudolph's tables,
Scratched his head and sighed,
"Rudolph, all these numbers blur,
I don't know what to infer."

Rudolph drew up charts and graphs,
Bars and lines were clearly shown,
Patterns started to emerge now,
Helping trends be quickly known.

Rudolph looked at which gifts came up,
Found the mode that topped the list,
Checked the mean cost of those choices,
So the budget would persist.

Santa heard what Rudolph said,
And was pleased indeed,
“Rudolph, your stats are so bright,
The children’s gifts will all be right”

11. The Twelve Days of Newton

(The Twelve Days of Christmas)

On the first day of Christmas, Newton gave to me:
an apple falling from a tree.

On the second day of Christmas, Newton gave to me:
two refracting prisms,
and an apple falling from a tree.

On the third day of Christmas, Newton gave to me:
three Motion Laws,
two refracting prisms,
and an apple falling from a tree.

On the fourth day of Christmas, Newton gave to me:
four flying comets,
three Motion Laws,
two refracting prisms,
and an apple falling from a tree.

[Days 5 to 12 as below]

On the twelfth day of Christmas, Newton gave to me:
twelve homework problems,
eleven differential equations,
ten feuds with Hooke,
nine orbiting planets,
eight tides of water,
seven spectrum colors,
six reflecting telescopes,
FIVE OPTIC RINGS,
four flying comets,
three Motion Laws,
two refracting prisms,
and an apple falling from a tree.

12. For Cosine, Tan and Sine

(Auld Lang Syne)

Should SOHCAHTOA be forgot
When trig is brought to mind?
The unit circle is your friend
For cosine, tan and sine.

For cosine, tan and sine, my dear,
For cosine, tan and sine,
The unit circle helps you out
With cosine, tan and sine.

And surely x gives you the cos
And y gives you the sine,
The tangent is the gradient
Of th'hypotenuse incline.

For cosine, tan and sine, my dear,
For cosine, tan and sine,
The unit circle helps you out
With cosine, tan and sine.

And there's a hand my trusty friend
To work out the length of lines
In each right-angled triangle
With cosine, tan and sine.

For cosine, tan and sine, my dear,
For cosine, tan and sine,
The unit circle helps you out
With cosine, tan and sine.