

The Key to Teaching Statistics through Music

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Voices Conference

Using Music

- ♪ Good focus (hook) for lessons.
- ♪ Music has mathematics
- ♪ Connects to students' world.
- ♪ Addresses student interests.
- ♪ Universal language.
- ♪ Collect and represent data
- ♪ Connections
- ♪ Wide participation.
- ♪ Address standards – NCTM, -important in teacher preparation classes

Lollipop[©] Statistics



SOUND/PHRASE	FREQUENCY
Lollipop	
Pop	
Oh lolli lolli lolli	
Ba boom ba...	
Clicks	



Foran & Goldsby, 2019

“Lollipop” by Beverly Ross and Julius Dixon is used by permission of the copyright owner, Edward B. Marks Company

Bar Graph



LOLLIPOP	OH LOLLI...	POP	BA BOOM BA...	CLICKS

Frequency Table



SOUND/PHRASE	TALLY	FREQUENCY
Lollipop		
Pop		
Oh lolli lolli lolli		
Ba boom ba...		
Clicks		

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Foran & Goldsby, 2019

Lollipop Lyrics

Lollipop lollipop

Oh lolli lolli lolli

Lollipop lollipop

Oh lolli lolli lolli

Lollipop lollipop

Oh lolli lolli lolli

Lollipop POP

Call my baby lollipop, tell you
why,

His kiss is sweeter than an apple
pie.

And when he does his shaky
rockin' dance,

Man, I haven't got a chance.

I call him lollipop lollipop

Oh lolli lolli lolli

Lollipop lollipop

Oh lolli lolli lolli

Lollipop lollipop

Oh lolli lolli lolli

Lollipop POP

Sweeter than candy on a stick,

Huckleberry, cherry or lime;

If you had a chance, he'd be
your pick,

But lollipop is mine.

Lollipop lollipop

Oh lolli lolli lolli

Lollipop lollipop

Oh lolli lolli lolli

Lollipop lollipop

Oh lolli lolli lolli

Lollipop POP

Crazy way he thrills-a me,

Tell you why,

Just like-a lightning from the sky,

He loves to kiss me till I can't see
straight.

Gee, my lollipop is great.

I call him Lollipop lollipop

Oh lolli lolli lolli

Lollipop lollipop

Oh lolli lolli lolli

Lollipop lollipop

Oh lolli lolli lolli

Lollipop lollipop

Lollipop lollipop

Oh lolli lolli lolli

Lollipop lollipop

Oh lolli lolli lolli

Lollipop POP

Lollipop lollipop

Oh lolli lolli lolli

Lollipop lollipop

Oh lolli lolli lolli

Lollipop lollipop

Oh lolli lolli lolli

Lollipop lollipop

POP

Thunder Statistics

SOUND/PHRASE	FREQUENCY
Thunder	
Thun-thun-thunder	
Lightning and the thunder	
Feel the thunder	
Drumbeat	

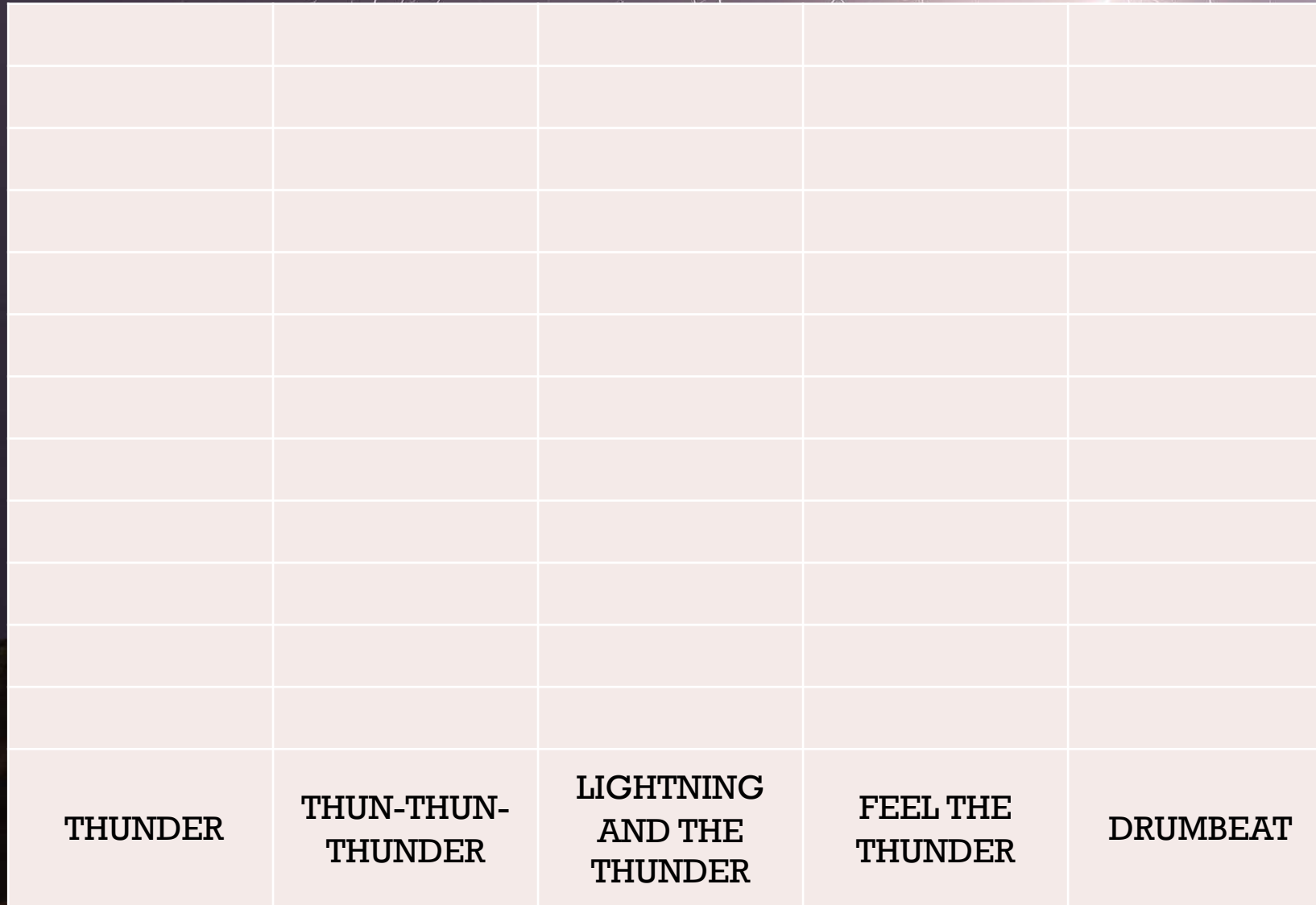


Frequency Table

SOUND/PHRASE	TALLY	FREQUENCY
Thunder		
Thun-thun-thunder		
Lightning and the thunder		
Feel the thunder		
Drumbeat		



Bar Graph



Thunder Lyrics

Just a young gun with a quick fuse
I was uptight, wanna let loose
I was dreaming of bigger things
And wanna leave my own life
behind
Not a yes sir, not a follower
Fit the box, fit the mold
Have a seat in the foyer, take a
number
I was lightning before the thunder

Thunder, thunder
Thunder, thun', thunder
Thun-thun-thunder, thunder,
thunder
Thunder, thun', thunder
Thun-thun-thunder, thunder

Thunder, feel the thunder
Lightning and the thunder
Thunder, feel the thunder
Lightning and the thunder
Thunder, thunder, thunder

Kids were laughing in my classes
While I was scheming for the
masses
Who do you think you are?
Dreaming 'bout being a big star
They say you're basic, they say
you're easy
You're always riding in the back
seat
Now I'm smiling from the stage
while
You were from the stage while
You were clapping in the nose
bleeds

Thunder
Thunder, thun', thunder
Thun-thun-thunder, thunder,
thunder
Thunder, thun', thunder
Thun-thun-thunder, thunder
Thunder, feel the thunder
Lightning and the thunder

Thunder, feel the thunder
Lightning and the thunder
Thunder

Thunder, feel the thunder
Lightning and the thunder,
thunder

Thunder, feel the thunder
Lightning and the thunder,
thunder

Thunder, feel the thunder
Lightning and the thunder,
thunder

Thunder, feel the thunder
Lightning and the thunder,
thunder

Thunder, feel the thunder
Lightning and the thunder,
thunder

Thunder, thunder, thunder
Thun-thun-thunder, thunder
Thunder, thunder, thunder
Thun-thun-thunder, thunder
Thunder, thunder, thunder
Thun-thun-thunder, thunder
Thunder, thunder, thunder
Thun-thun-thunder, thunder

Songwriters: Alexander Junior Grant / Benjamin Arthur
McKee / Daniel Coulter Reynolds / Daniel James Platzman /
Daniel Wayne Sermon / Jayson M. DeZuzio Thunder lyrics ©
Universal Music Publishing Group

Happy by Pharrell Williams

It might seem crazy what I'm 'bout to say
Sunshine she's here, you can take a break
I'm a hot air balloon that could go to
space

With the air, like I don't care baby by the
way

Huh, because I'm happy
Clap along if you feel like a room without
a roof

Because I'm happy
Clap along if you feel like happiness is the
truth

Because I'm happy
Clap along if you know what happiness is
to you

Because I'm happy
Clap along if you feel like that's what you
wanna do

Here come bad news, talking this and that
(Yeah) Well, give me all you got, and don't
hold it back
(Yeah) Well, I should probably warn you
I'll be just fine
(Yeah) No offense to you, don't waste
your time

Here's why
Because I'm happy
Clap along if you feel like a room without
a roof

Because I'm happy
Clap along if you feel like happiness is the
truth

Because I'm happy
Clap along if you know what happiness is
to you

Because I'm happy
Clap along if you feel like that's what you
wanna do

Hey, come on, uh

Bring me down, can't nuthin' (happy)

Bring me down

My level is too high to bring me down
(happy)

Can't nuthin', bring me down (happy)

I said, let me tell you now, unh (happy)

Bring me down, can't nuthin', bring me
down (happy, happy, happy)

My level is too high to bring me down
(happy, happy, happy)

Can't nuthin' bring me down (happy,
happy, happy)

I said

Because I'm happy
Clap along if you feel like a room without
a roof

Because I'm happy
Clap along if you feel like happiness is the
truth

Because I'm happy
Clap along if you know what happiness is
to you

Because I'm happy
Clap along if you feel like that's what you
wanna do

Because I'm happy
Clap along if you feel like a room without
a roof

Because I'm happy
Clap along if you feel like happiness is the
truth

Because I'm happy
Clap along if you know what happiness is
to you

Because I'm happy
Clap along if you feel like that's what you
wanna do

Come on, unh bring me down can't

nuthin' (happy, happy, happy)

Bring me down my level is too high
(happy, happy, happy)

Bring me down can't nuthin' (happy,
happy, happy)

Bring me down, I said

Because I'm happy

Clap along if you feel like a room without
a roof

Because I'm happy

Clap along if you feel like happiness is the
truth

Because I'm happy

Clap along if you know what happiness is
to you, eh eh eh

Because I'm happy

Clap along if you feel like that's what you
wanna do

Because I'm happy

Clap along if you feel like a room without
a roof

Because I'm happy

Clap along if you feel like happiness is the
truth

Because I'm happy

Clap along if you know what happiness is
to you, eh hey

Because I'm happy

Clap along if you feel like that's what you
wanna do, heh come on

Songwriters: Pharrell L Williams





Happy lyrics © Sony/ATV Music Publishing LLC,

Warner/Chappell Music, Inc, Universal Music Publishing Group

3-Level Rubric

ELEMENT	TARGET	ACCEPTABLE	UNSATISFACTORY	POINTS
Frequency Table	Neat, correct table.	Correct table.	Some errors in the table. Not neatly done.	
Counts	Counts accurately, efficiently. Recorded using groupings of tallies.	Counts accurately or with some self-correction. May use groupings of tallies.	Difficulty in counting and recording the counts.	
Graphs	Neat, accurate graph with accurate intervals. Title given. Bars are accurately drawn.	Neat graph with good intervals. Title given. Bars are fairly accurate.	Difficulty with graphing. Incorrect or missing title. Incorrect counts given. Intervals are not appropriate. Bars are incorrectly drawn.	
Group Work	Active participation. Cooperative. Leads or facilitates the discussion.	Active participation. Works with the others.	Does not participate or participates in unacceptable manner.	
Total Points				

Extensions/Variations

-  Count other musical elements.
-  Count the “lollipop lollipop o lolli lolli” as one phrase.
-  Use another song as a follow-up.
-  Assign for homework to find a song and do the activity

More advanced statistics


- 📌 For higher-level statistics, have students compare the number of albums sold by their favorite artists.
 - 📌 Find top 5 albums.
 - 📌 Mean and SD of albums
 - 📌 To increase sample size, group by genre.

CAUTIONS

- ♪ Select music with appropriate lyrics.
- ♪ Select music with countable elements.
- ♪ Use music with a beat that will get them involved.
- ♪ For the homework assignment, give guidelines on music that can be used.
- ♪ Assign members as best for your class to the elements to be counted.
- ♪ Have all tools ready to go.

Suggested Songs

- **Lollipop** by the Chordettes
- Yakkety Yak by the Coasters
- Mr. Lee by the Bobbettes
- Rockin' Robin by Bobby Day
- Stand by Me by Ben E. King
- Hit the Road Jack by Ray Charles
- Sea Cruise by Frankie Ford
- **Thunder** by Imagine Dragons
- **Happy** by Pharrell Williams
- Perfect by Ed Sheeran
- Believer by Imagine Dragons
- Can't Stop the Feeling by Justin Timberlake
- Firework by Katy Perry

The background is a close-up, warm-toned photograph of a musical score. The paper is aged and yellowed. A pencil lies diagonally across the lower half of the frame. The text "Questions or Comments?" is centered in a white box with a black border. The text is in a large, bold, black serif font. The background shows musical staves with notes and clefs, though they are out of focus. Some legible text on the score includes "A. Sax.", "Cors. / 1", and "Tpts. 2".

**Questions or
Comments?**

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