

# Listening to Music

## Purpose:

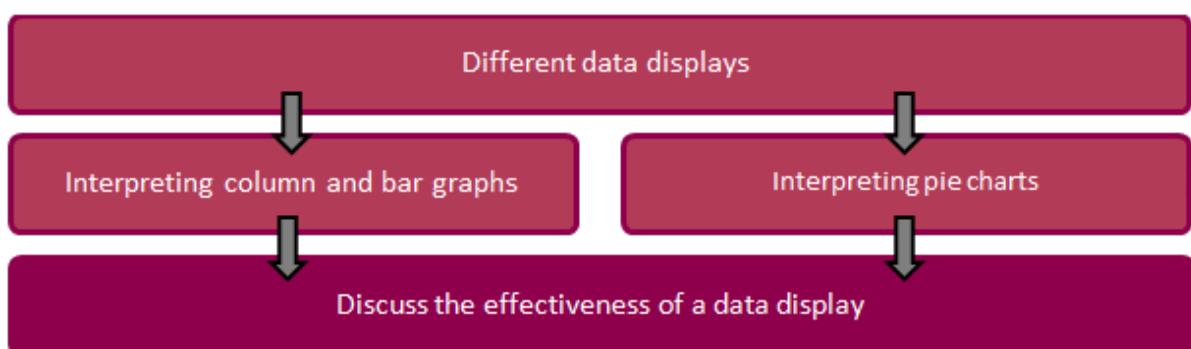
The purpose of this activity is to engage students in discussion, evaluating the effectiveness of data displays in presenting the findings of a statistical investigation.

## Achievement Objectives:

S3-2: Evaluate the effectiveness of different displays in representing the findings of a statistical investigation or probability activity undertaken by others.

## Description of mathematics:

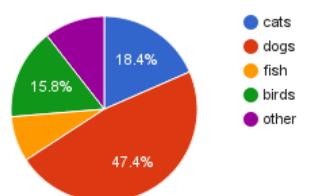
The background knowledge and skills that should be established before and/or during this activity are outlined in the diagram below:



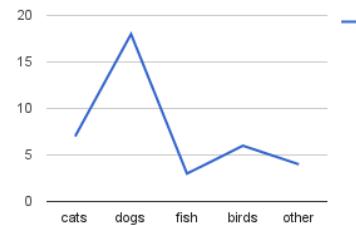
## Different data displays

Label each of the following as bar graph or column graph or line graph or pie chart.

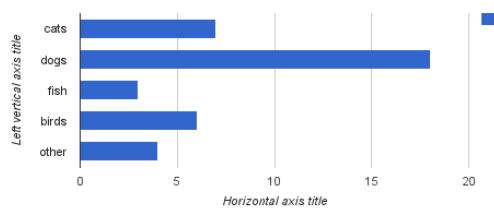
Pets



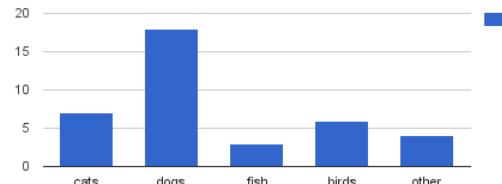
Class Pets



Class Pets

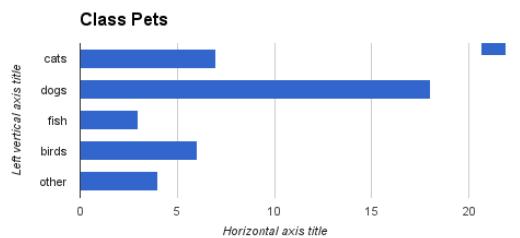


Class Pets



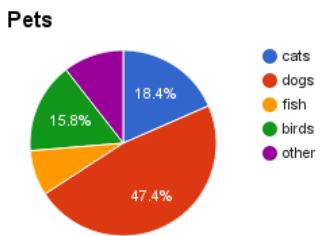
## Interpreting column and bar graphs

How many pets are there, within the class, that are neither cats nor dogs?



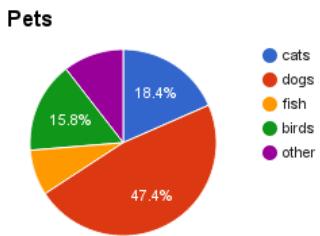
## Interpreting pie charts

What percentage of the pets within the class are fish or birds?



## Discuss the effectiveness of a data display

Discuss the effectiveness of this display in showing which are the more popular types of pet.



This activity may be carried out with step by step guidance, or by allowing the student to follow their own method of solution. The approach should be chosen in sympathy with students' skills and depth of understanding.

## Activity:

A year 6 class investigated how people listen to music with the following question:  
Which way do you **usually** listen to music?

They grouped their data and set it out on the table below:

	Year 6	Older siblings	Student Teachers	Teachers	Parents
Radio	2	6	0	7	12
Streaming	18	8	4	0	0
Downloaded	0	2	1	3	8
CDs	2	0	1	5	9
Live	0	0	1	0	0
Mixture	4	3	1	2	10
Other	0	0	0	0	0

When they analysed the data, they came up with the following conclusions:

- Older people (parents and teachers) listen to the radio or their own CDs, itunes, etc.
- Younger people prefer the internet.

Discuss the **effectiveness** of the **data table** in leading to their conclusions.

## The arithmetic approach

The student is able to evaluate the effectiveness of the table of data at conveying a message.

Prompts from the teacher could be:

1. Look at each of the class conclusions.
2. Find the data in the table that led to each of these conclusions.
3. Make any necessary calculations that would allow you to draw your own conclusions.
4. Comment on whether you agree with the class conclusions.
5. Comment on the effectiveness of the table in allowing draw conclusions and to agree/disagree with the class.

T: Tell me about this question mark.

S: Well, I've got student teachers as young because they say they are. But they look just as old as teachers.

T: So you are questioning how the category shows age?

S: Yeah, it would be better to use age in years if we were allowed to do that.

Older People: Radio, CD's, downloads

↓  
Teachers, Parents

$$17 + 39 = 56$$

Younger People: streaming

↓  
Year 6, Siblings, Student Teachers? \*Discuss

$$26 + 19 + 8 = 53$$

44/56 is most ✓       $56 - 12 = 44$   
of them listening to radio/CD's/downloads  
 $12/56$  is some might be in their mixture

So yes, I agree with the class

$18 + 8 + 4 = 30$   
 $30/53$  is more than  $1/2$  streaming quantifiers

So yes, I agree with the class.

It was easy to find the numbers.

I needed from the table so it's good

✓ evaluation of effectiveness of table

## The conceptual approach

The student is able to evaluate the effectiveness of the table of data at conveying a message, noting limitations and suggesting improvements.

Prompts from the teacher could be:

1. Look for trends in the data and think about how this might have led to the class conclusions.
2. What, in your opinion, is/are the key feature(s) of the data?
3. Is the data arranged in the best possible way?
4. What could the class have done to make the trends/features clearer to see?

### The Music Survey

T: Tell me about how you listen to music showing your age.

S: Young people use the internet, mainly their phones to listen to music, so it's streaming mainly, and old people use old schools stuff like the radio and iTunes.

T: Does the data reflect this?

S: Sort of. It's hard to see because it's not that well sorted.

I agree that how you listen to music shows how old you are\* but you can't lump the teachers in with the parents because some teachers are youngish and also maybe some of the brothers and sisters <sup>in</sup> haven't been identified are really old so it would have been better to sort the type of music listening by age group.  
*suggested improvement.*

\*Discuss