



Preview – Information



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Google Slides Lessons Preview





Manitoba Math Curriculum Statistics– Grade 4

3-Part Lesson Format

Part 1 – Minds On!

- Learning Goals
- Discussion Questions
- Quotes
- And More!

GRAPHS

Learning Goal

We are learning to **choose, make, and read** different graphs using data, so we can **show information clearly, compare results, and explain patterns** we notice.



PICTOGRAPHS



Answer the questions about the pictograph.

1 2 3 4 5 6 7 8 9 0

Ways Students Get to School		
Walk	  	1) How many students walk or bike to school altogether?
Bus	      	2) How many more students take the bus than walk to school?
Car	     	3) If 3 more students started walking, what would the new total for walking be?
Bike	   	4) How many fewer students walk than take the bus?
 = 1 Student		5) What is the difference between the number of students who walk and those who go by car?

Part 2 – Action!

- Writing
- Matching
- Drag and Drop
- Drawing
- And More!

Part 3 – Consolidation!

- Exit Cards
- Quizzes
- Reflection
- And More!

PICTOGRAPH

Survey your classmates and use the data to create a pictograph.
Survey Question: Which snack do you like best?

Options	Popcorn	Crackers	Granola Bar	Yoghurt
Tally				
Frequency				

- Which snack was the most popular?
- How many more students chose the most popular snack than the least popular snack?
- Which two snacks had the closest number of votes?
- How many students participated in the survey?

1 2 3 4 5 6 7 8 9 0

Y-axis Title

X-axis Title

Legend  

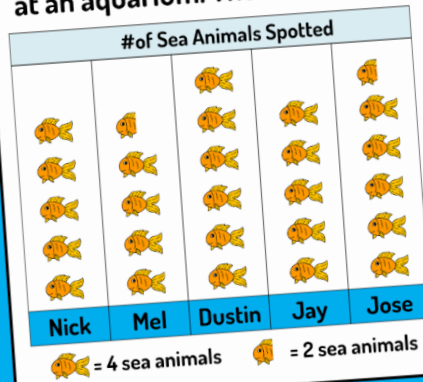


Manitoba Math Curriculum

Statistics– Grade 4

PICTOGRAPHS

Five students counted the sea animals they saw at an aquarium. The results are shown below.



Answer the questions about the pictograph.

- 1) How many sea animals is one goldfish symbol worth?
- 2) How many sea animals is half a goldfish worth?
- 3) Who saw the most sea animals?
- 4) How many sea animals did all 5 students see altogether?
- 5) Did Nick and Mel see more or fewer sea animals than Jay and Jose combined?

1 2 3 4 5 6 7 8 9 0

4.38 Create a pictograph based on the data below.

Type of Sport	# of Students
Soccer	60
Basketball	40
Hockey	45
Volleyball	35
Skating	20

★ = 10 Stickers
★ = 5 Stickers

Favourite Sport				

1 2 3 4 5 6 7 8 9 0

Soccer

Hockey

Questions

- 1) Which sport is the most popular?
- 2) How many students chose basketball?

PICTOGRAPH

Survey your classmates and use the data to create a pictograph.
Survey Question: Which snack do you like best?

Options	Popcorn	Crackers	Granola Bar	Yoghurt
Tally				
Frequency				

- 1) Which snack was the most popular?
- 2) How many more students chose the most popular snack than the least popular snack?
- 3) Which two snacks had the closest number of votes?
- 4) How many students participated in the survey?



1 2 3 4 5 6 7 8 9 0

Y-axis Title

X-axis Title

Legend



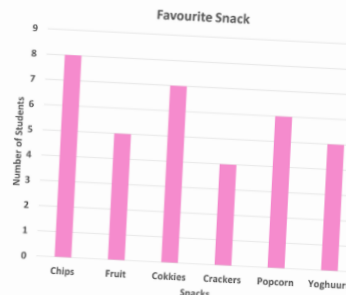


Manitoba Math Curriculum

Statistics– Grade 4

VERTICAL BAR GRAPH

The students in a class were asked which snack they liked best. The results are shown in the bar graph below.



1 2 3 4 5 6 7 8 9 0

- 1) Which snack was most popular?
- 2) Which snack was the least popular?
- 3) How many students chose cookies as their favourite?
- 4) How many students liked fruit and popcorn combined?
- 5) How many more students liked chips than crackers?
- 6) How many students were surveyed in total?

Chips

Fruit

Cookies

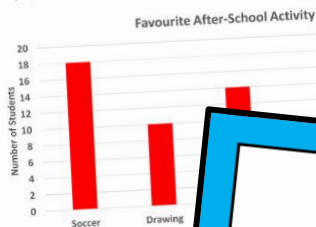
Crackers

Popcorn

Yoghurt

VERTICAL BAR GRAPH

A community centre wants to know which activities students enjoy after school. They collected data from students in one day.



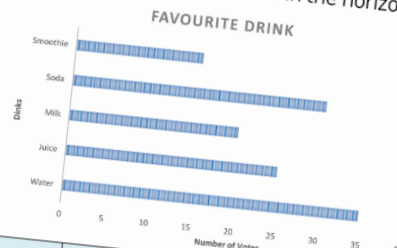
✓ 1 2 3 4 5 6 7 8 9 0 -

- 1) Which activity was the most popular?
- 2) How many more students chose soccer than dancing?

Activities	Soccer	Drinking
# of Students		

HORIZONTAL BAR GRAPH

The students in grade 4 were asked which drink they liked the most. The results are shown in the horizontal bar graph below.



YES

NO

1 2 3 4 5 6 7 8 9 0 -

- 1) What is the scale on the graph? What does it go up by?
- 2) How many grade 4 students were surveyed?
- 3) Which drink was the most popular? How many votes did it get?
- 4) A student says more students liked soda than juice and milk combined. Is the student correct?

Drinks	Smoothie	Soda	Milk	Juice	Water
# of Votes					

Horizontal Pictograph - Candy

A **pictograph** is a graph that displays data using symbols or pictures. Read the pictograph below and answer the questions.

Sam and his friends collected candy on Halloween. The amount of candy each friend collected is displayed below in the pictograph.

Friend	Number of Candies Collected	Frequency
Sam	      	
Steve	     	
Tony	    	

Preview of 25 pages from this product that contains 65 pages total.

a) How much is one candy worth?

b) Who collected the most candy?

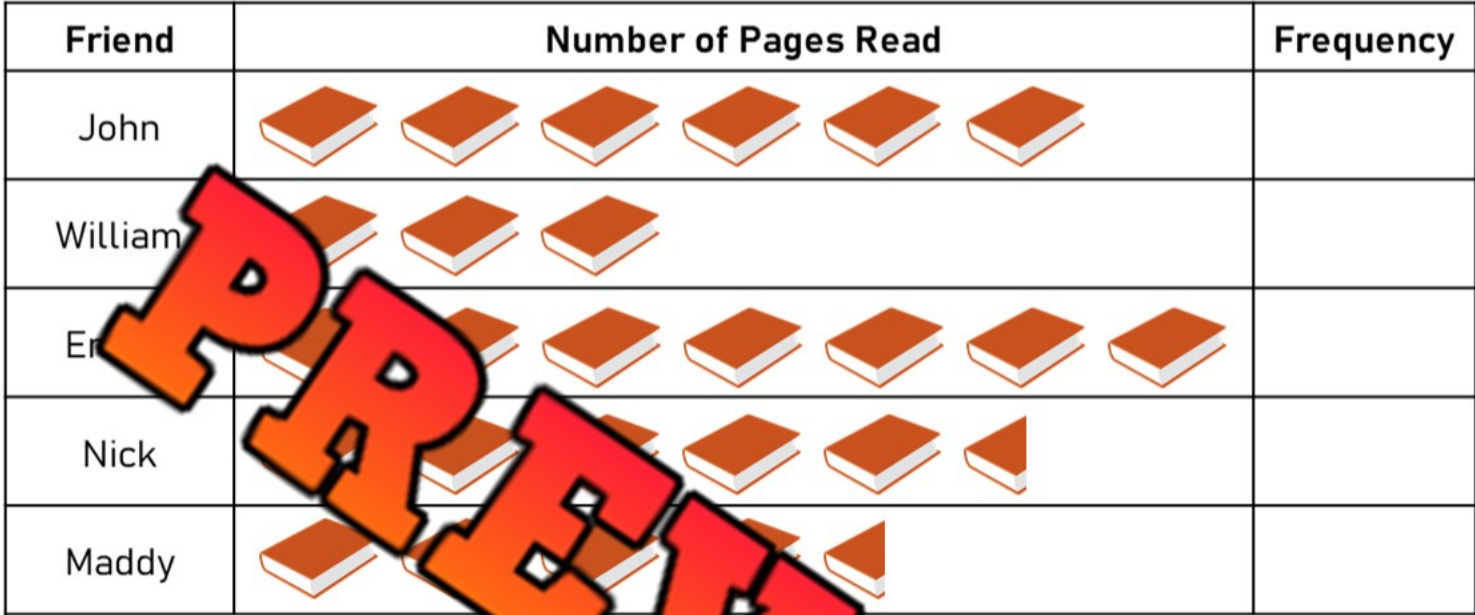
c) How much more candy did Jill collect than Tony?

d) Did Sam and Steve collect more or less candy than Stacy and Jill?

e) How much total candy was collected?

Horizontal Pictograph - Books

Mr. Wilson's class had a competition to see who could read the most pages in their books in a week. The results have been displayed in the pictograph below for the top 5 readers in the class.

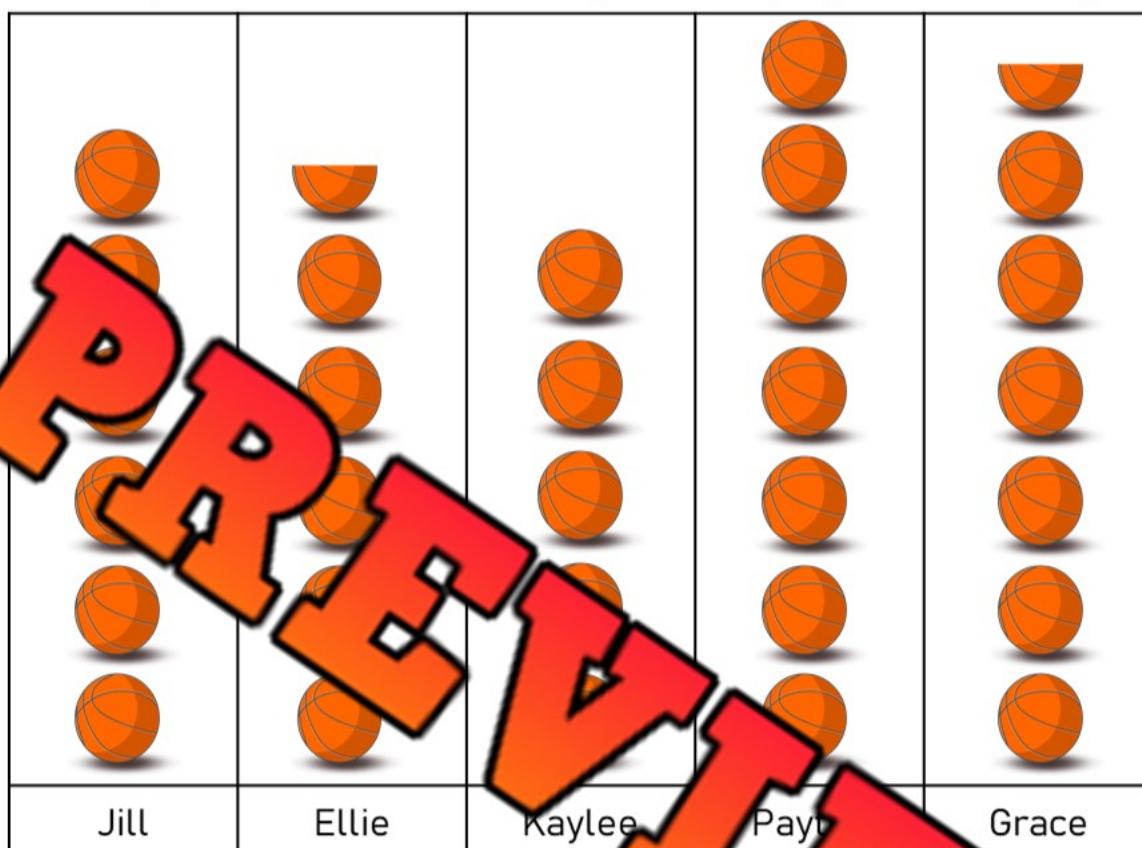


 pages

- | | |
|---|--|
| a) How many pages is one book worth? | |
| b) How many pages is half a book worth? | |
| c) Who read the most amount of pages? | |
| d) How many total pages were read by these 5 students? | |
| e) Who got third place in the competition? | |
| f) How many more pages did Emma read than William? | |
| g) Did Nick and William read more or less books than Maddy and John? Explain. | |

Vertical Pictograph - Basketball Points

Grace's basketball team counted how many points each of the players scored in a tournament. The point totals for the starting 5 are displayed below in a pictograph.



= 2 points

a) How many points is one basketball worth?

b) How many points is half a basketball worth?

c) Who scored the most points in the tournament?

d) How many total points did all 5 girls score?

e) How many more points did Jill score than Ellie?

f) Did Payton and Kaylee score more or less than Grace and Ellie?

g) Did Jill and Ellie score more or less points than Grace and Kaylee?

Name: _____

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Curriculum Connection
SP.1, SP.2

Creating a Vertical Pictogram

James participated in a reading challenge last week. He read each day and wrote down how many minutes he read for each day of the week.



Sunday	15
Monday	30
Tuesday	20
Wednesday	15
Thursday	35
Friday	40
Saturday	20



PREVIEW

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday



= 5 minutes

1) What day did he read the most?

2) How many more minutes did he read on Friday than Wednesday?

3) Did James read more or less on Monday and Tuesday than he did on Friday and Saturday?

Name: _____

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Curriculum Connection
SP.1, SP.2

Creating a Horizontal Pictogram

Kevin and his friends went to an arcade on Saturday. They had a contest to see who could win the most tickets from the arcade games. The results are displayed in the table below.



Kevin	110
Neil	50
Steve	75
Dane	100
Chris	80



Question: Draw a pictograph that displays the data above

Kevin	
Neill	
Steve	
Dane	
Chris	



= 10 tickets

1) Who won the most tickets?	_____
2) How many more tickets did Dane win than Neil?	_____
3) How many more tickets did Kevin get than Steve?	_____
4) Neil and Chris think they have more tickets than Chris and Dane. Are they right?	_____
5) How many total tickets did the 5 kids win?	_____

Name: _____

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Curriculum Connection
SP.1, SP.2

Creating a Vertical Pictogram

Colton played 5 games of basketball last week. The number of points he scored in each game is displayed below. Create a pictogram to show his points.

Game 1	20
Game 2	16
Game 3	18
Game 4	14
Game 5	24



Game 1	Game 2	Game 3	Game 4	Game 5

=

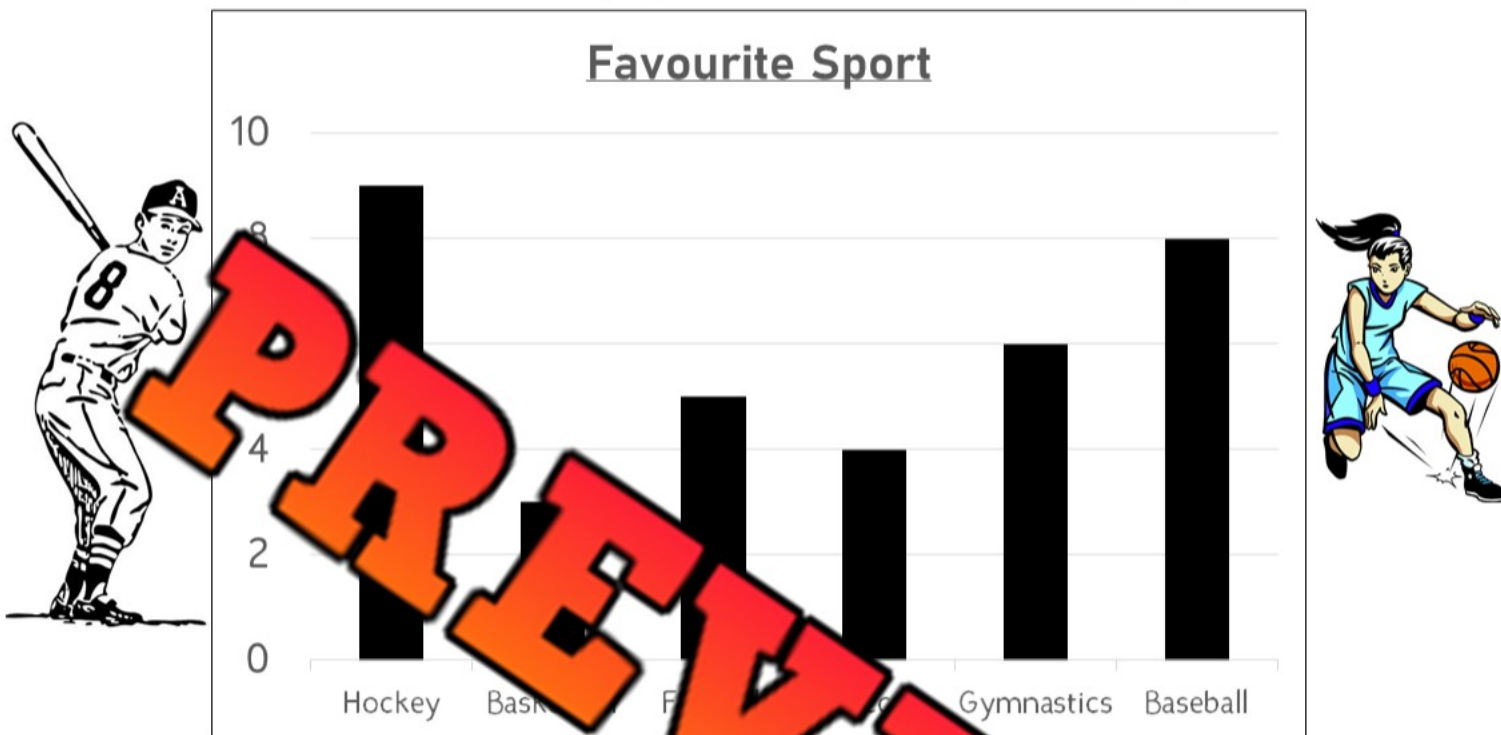
1) Which game did he score the most points? _____ Least points? _____

2) Did he score more or less points in games 1 and 2 than games 4 and 5? _____

3) How many total points did he score in all 5 games? _____

Vertical Bar Graph - Favourite Sport

The kids at camp were asked which sport they liked the best. They surveyed each kid and the results have been displayed below in a vertical bar graph.



a) Which sport was most popular?

b) Which sport was the least popular?

c) How many people chose gymnastics as their favourite?

d) How many kids liked basketball and soccer the best?

e) How many kids liked hockey more than football?

f) What two sports add up to the total votes that hockey received?

g) How many kids were surveyed?

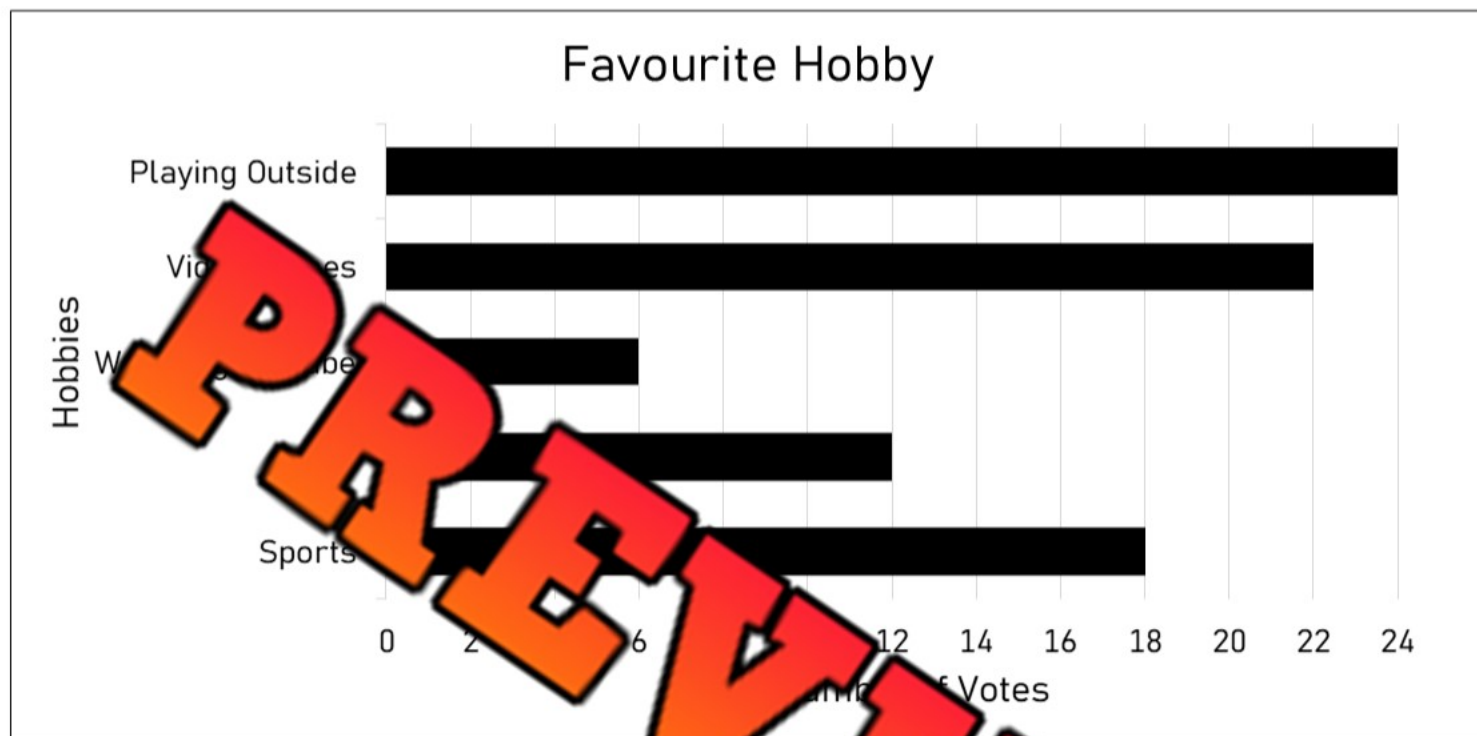
Name: _____

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Curriculum Connection
SP.1, SP.2

Horizontal Bar Graph - Favourite Hobby

100 people were surveyed about their favourite hobby. The results have been displayed in the circle graph below.



a) Which hobby is the most popular? _____

b) What are the 2 labels (titles) for the x and y axis? _____

c) How many people chose video games as their favourite? _____

d) How many people liked playing outside and TV the best? _____

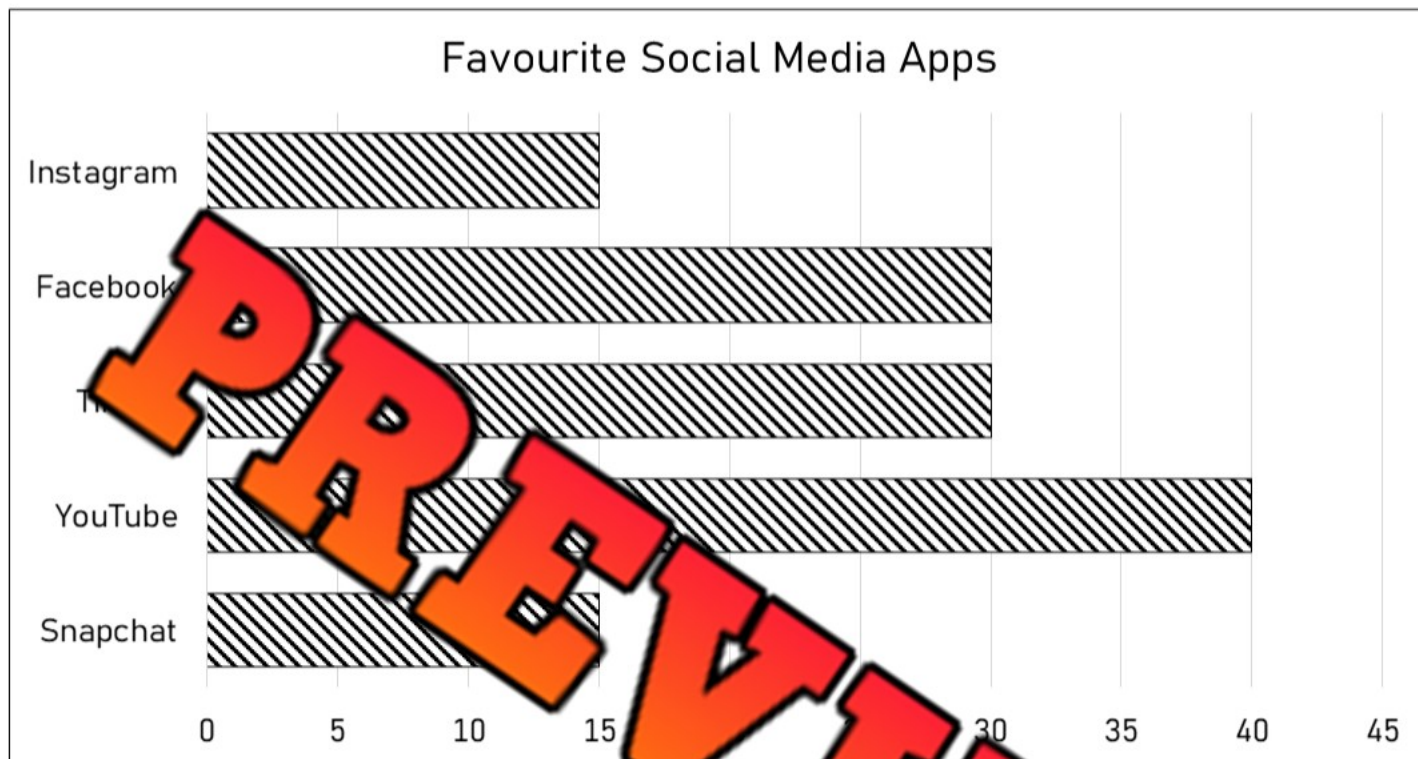
e) How many people liked sports more than watching YouTube? _____

f) What two hobbies add up to the amount of people who chose playing outside? _____

g) How many people were surveyed? _____

Reading a Horizontal Bar Graph - Social Media

The students in grade 4 were asked which social media app was their favourite. The results have been displayed in the horizontal bar graph below.



Part 1

Fill in the frequency table below

Snapchat	YouTube	Tik Tok	Facebook	Instagram

Part 2

Answer the questions below

a) What is the scale on the graph? What does it go up by?	
b) How many grade 4 students were surveyed?	
c) Which social media was the most popular? How many votes did it get?	
d) Henry thinks more students liked YouTube than Snapchat and Instagram combined. Is he correct - Yes/No?	

Reading a Vertical Bar Graph - Favourite Beverage

A restaurant wants to know which drinks to keep in stock. They decide to keep track of what types of drinks customers are ordering in their restaurant for one day.



Part 1 Fill in the frequency table by reading the bar graph above

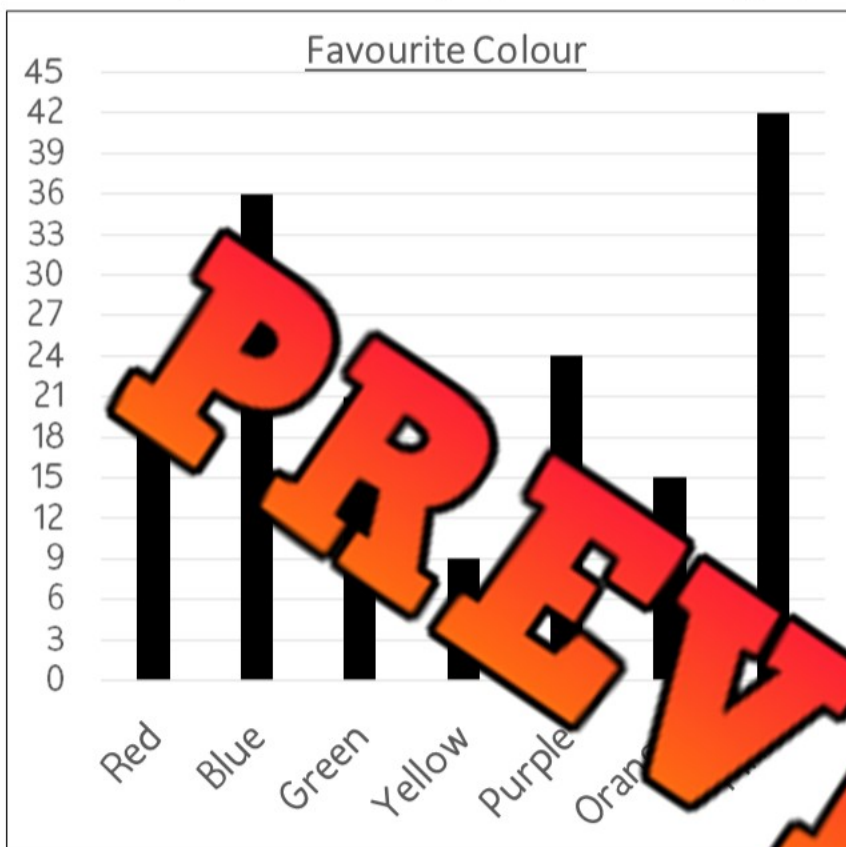
Coffee	Juice	Pop	Water

Part 2 Answer the questions below

1) Which drink should the restaurant keep in stock?	
2) How many more coffees were ordered than juice?	
3) How many drinks were ordered for the day?	
4) How many customers ordered coffee and tea?	
5) Did more customers order pop and water than coffee?	

Vertical Bar Graph - Favourite Colour

The students in grade 4 were asked which colour was their favourite. The results of the survey have been displayed in the bar graph below.

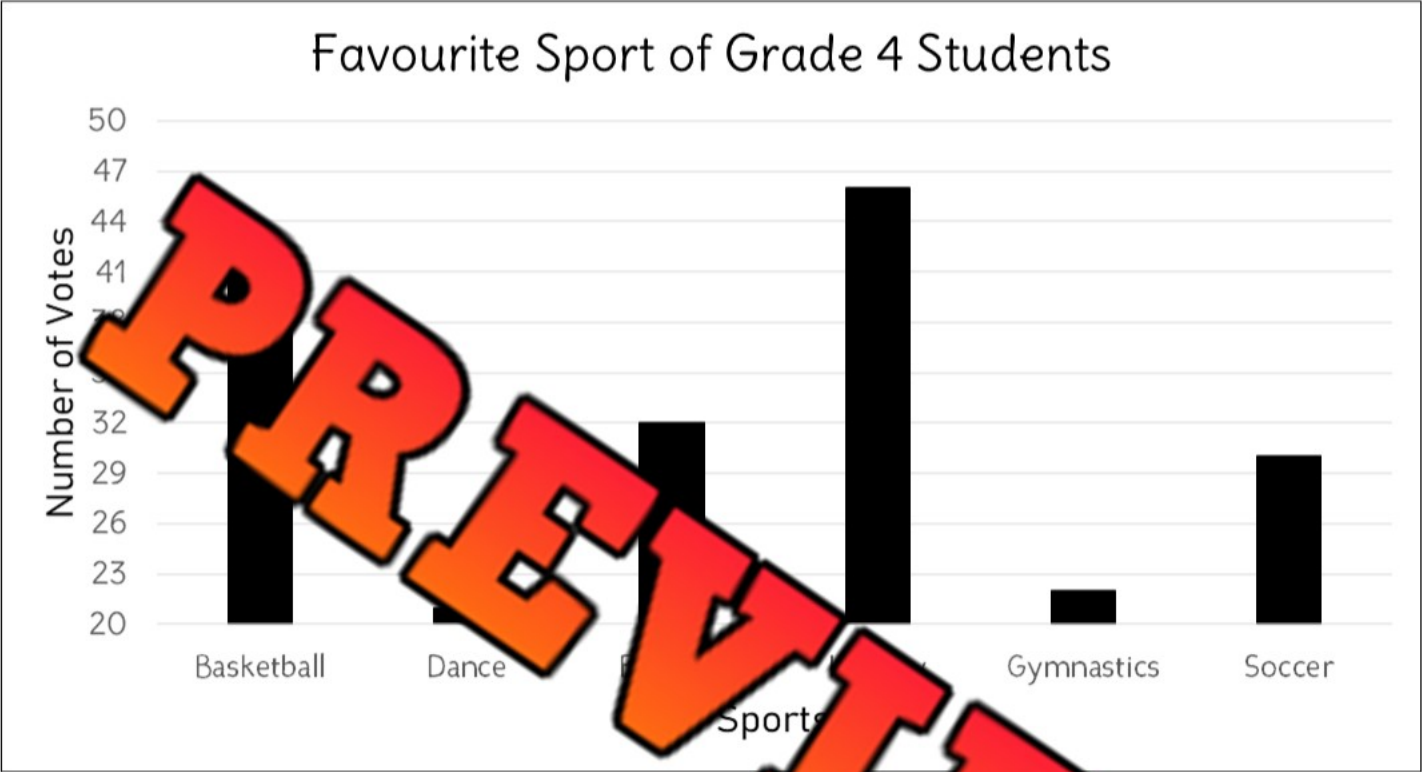


Frequency Table	
Red	
Blue	
Green	
Yellow	
Purple	
Orange	

a) Which colour was most popular?	
b) The title of the graph is not specific enough. What would you change it to?	
c) What is the scale of the graph?	
d) Was pink more popular than yellow and orange together?	
e) Which two colours add up to pink?	
h) How many people were surveyed?	

Reading a Bar Graph - Line Break

The students in grade 4 were asked which sport was their favourite. The results have been displayed in the bar graph below. Notice the scale on the x-axis uses a line break.

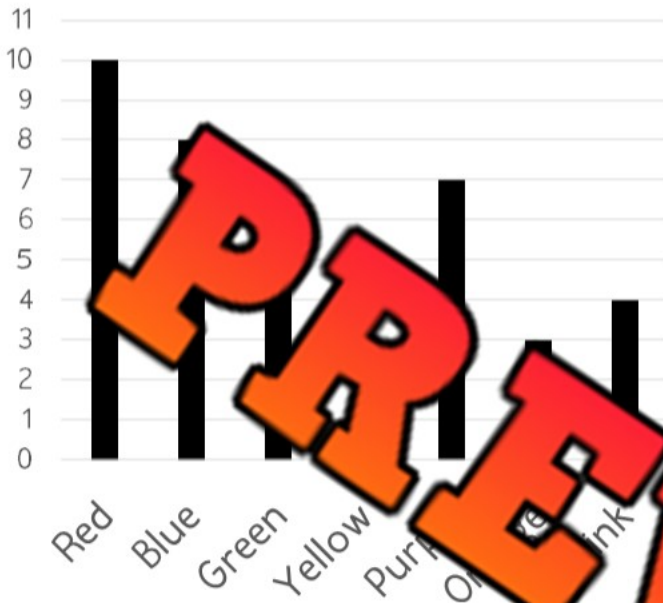


a) What number does the scale on the y-axis start with?	
b) What is the scale on this graph? What does it go up by?	
c) What is the title of the bar graph?	
d) What are the 2 labels (titles) for the x and y axis? → ↑	(x) _____ (y) _____
e) How many more votes did hockey get over dance?	
f) How many students participated in the survey?	

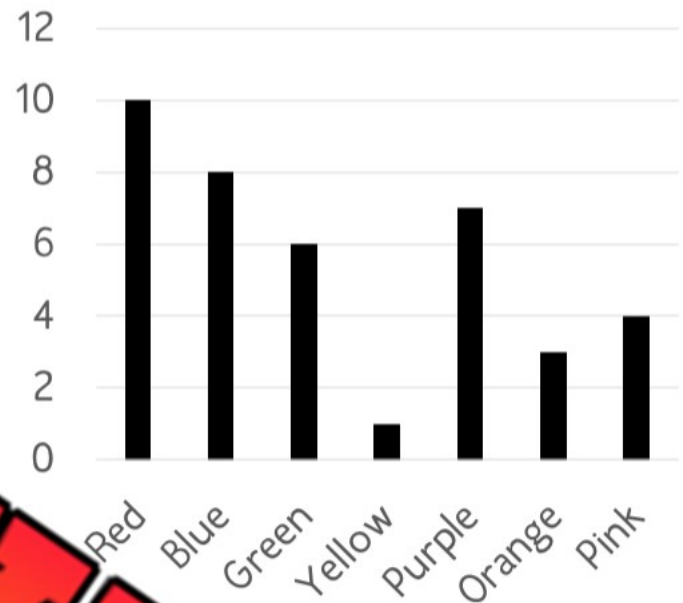
One-to-One vs Many-to-One

The students in grade 4 were asked which colour was their favourite. The results of the survey have been displayed in the bar graphs below.

Favourite Colour – Scale = 1



Favourite Colour – Scale = 2



a) Which colour was most popular?

b) Which colour was the least popular?

c) How many more people liked red then orange?

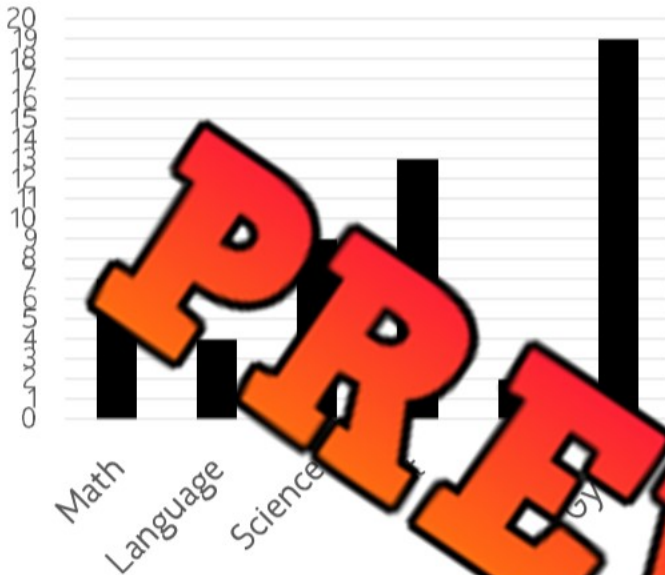
d) How many people were surveyed?

e) What is different about the two graph? Which graph is easier to read?

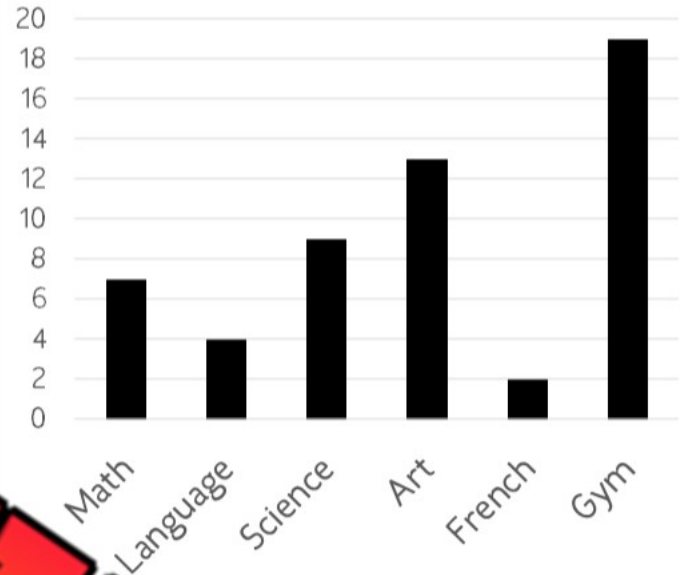
One-to-One vs Many-to-One

The grade 4's from Wellington Elementary School were asked which subject was their favourite. The results have been displayed in two different bar graphs.

Favourite Subject – Scale = 1



Favourite Subject – Scale = 2



a) Which subject was most popular?

b) Which subject was the least popular?

c) How many more students liked gym than French?

d) How many students were surveyed?

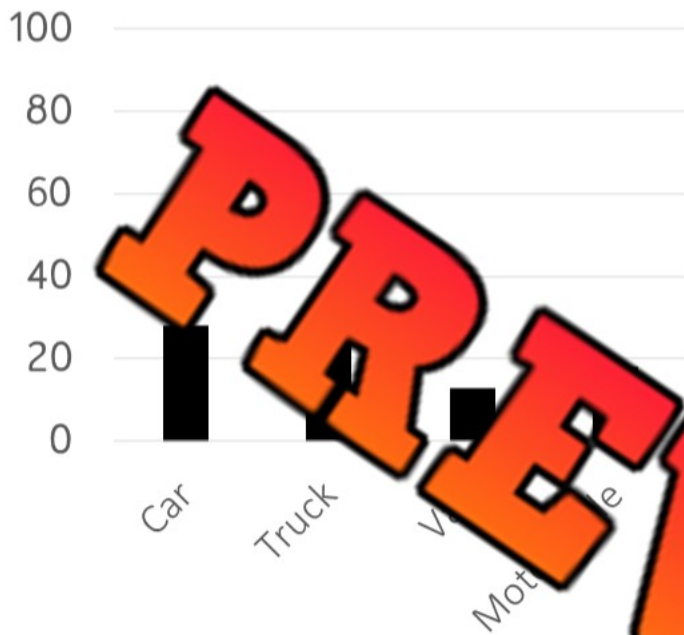
e) What is different about the two graph? Which graph is easier to read?

f) When is it better to use larger numbers for your scale? When should you use smaller numbers, like one-to-one?

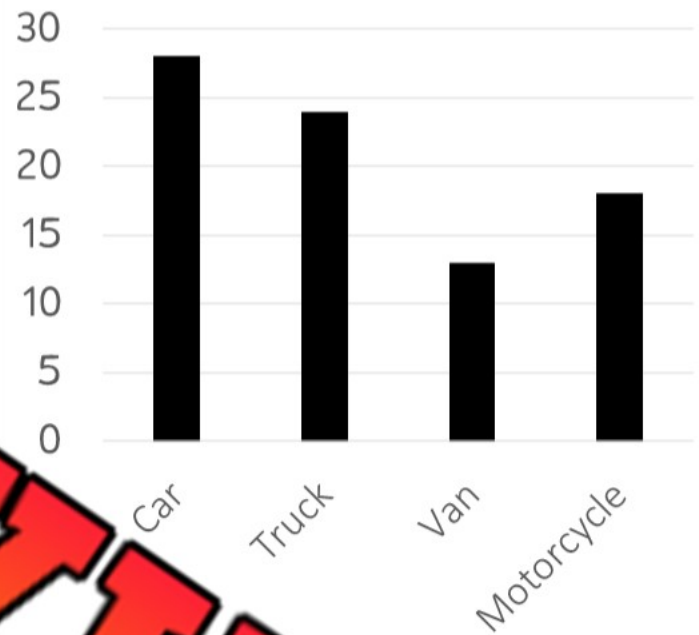
Favourite Vehicle - Examining Scale

The two graphs below display the same data. Examine both graphs and answer the questions below.

Favourite Vehicle – Graph A



Favourite Vehicle – Graph B



Questions

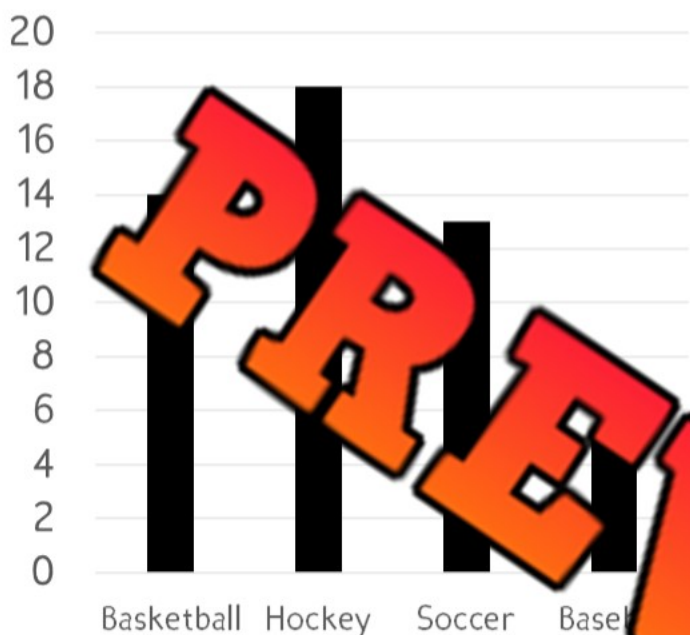
What do you notice about the two graphs?

- What is the scale in Graph A?
- What is the scale in Graph B?
- Which graph uses more of the space?
- Which graph is better? Why?
- What other scales could you use for the data?
 - Go up by _____
 - Go up by _____

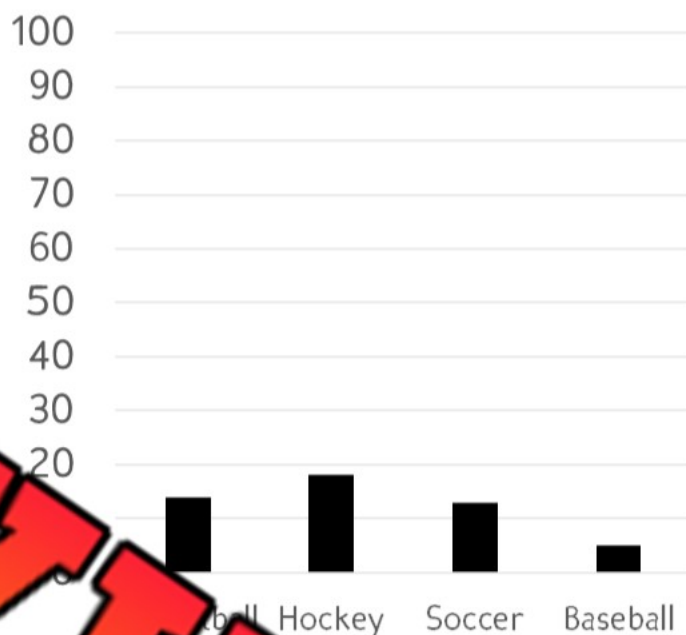
Favourite Sport - Examining Scale

The two graphs below display the same data. Examine both graphs and answer the questions below.

Favourite Sport – Graph A



Favourite Sport – Graph B



Questions

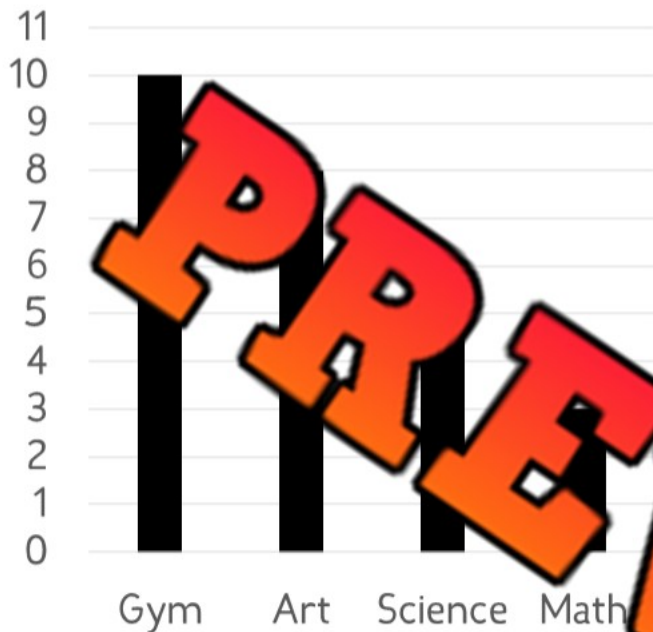
What do you notice about the two graphs?

- What is the scale in Graph A?
- What is the scale in Graph B?
- Which graph uses more of the space?
- Which graph is easier to read and interpret? Why is that graph better?
- Why is it important to choose an appropriate scale?

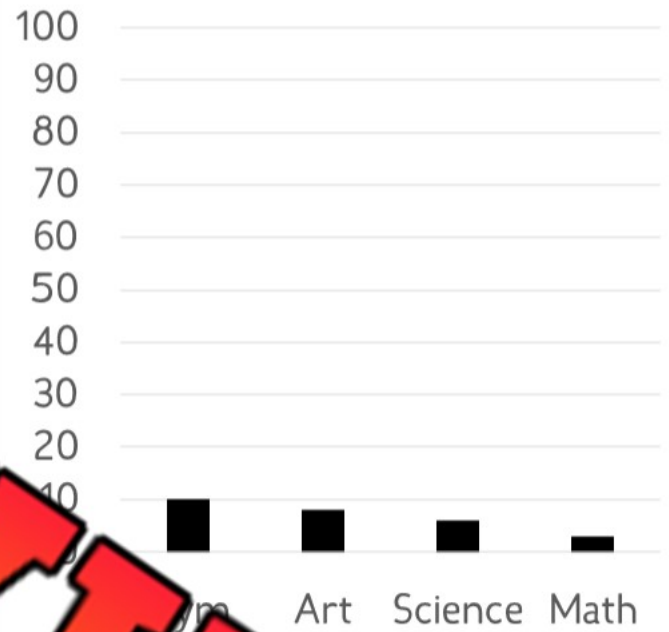
Favourite Subject - Examining Scale

The two graphs below display the same data. Examine both graphs and answer the questions below.

Favourite Subject – Graph A



Favourite Subject – Graph B



Questions

What do you notice about the two graphs?

- What is the scale in Graph A? _____ What is the scale in Graph B? _____
- Did more students like math and gym than art and science?
- How many students were surveyed?
- Which graph is easier to read and interpret? Why is that graph better?
- Why is it better to go up by the smallest increments that allow you to fit all the data on the graph?

Name: _____

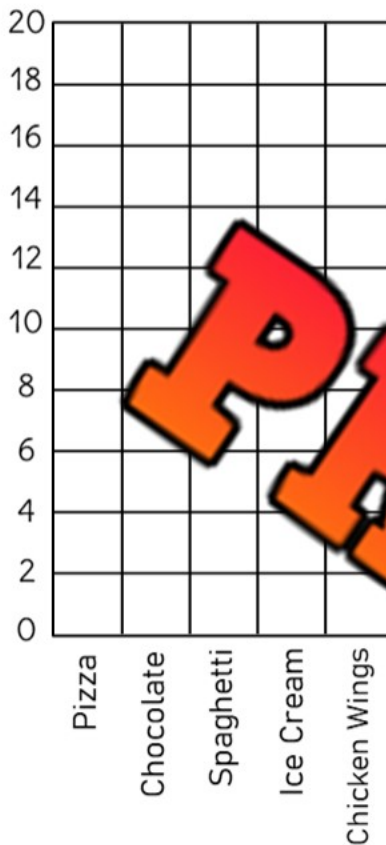
23

Curriculum Connection
SP.1

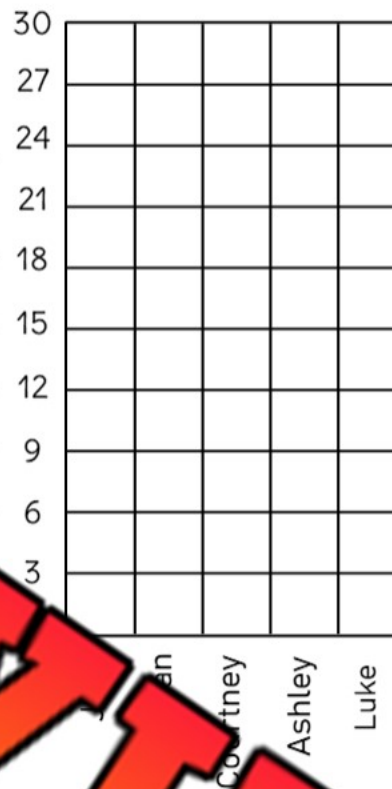
Drawing Bar Graphs

Questions

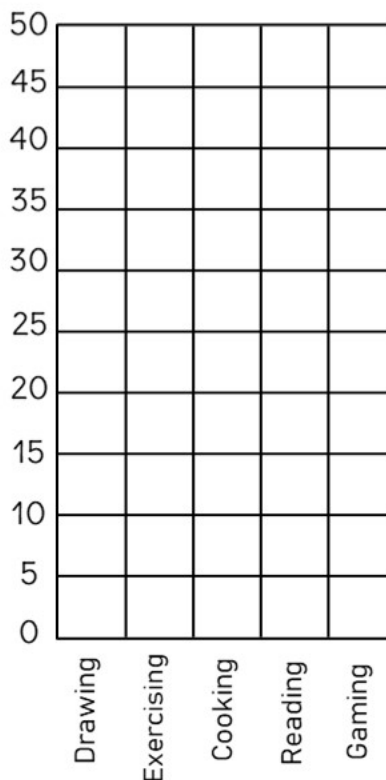
Draw the bars for each of the bar graphs below



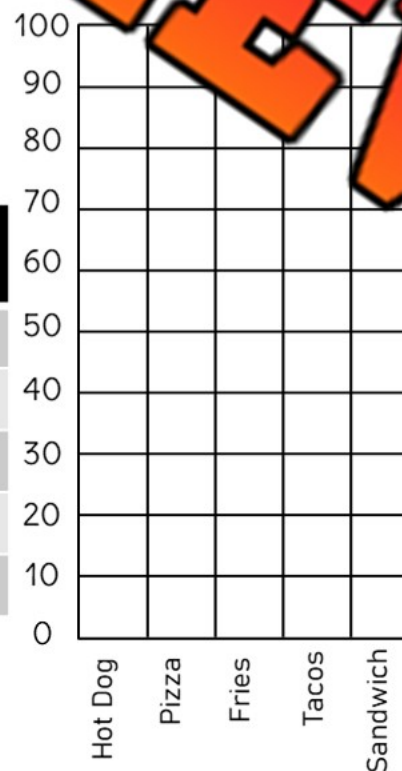
Favourite Food	# of votes
Pizza	16
Chocolate	14
Spaghetti	8
Ice Cream	12
Chicken Wings	10



Player	# of points
Jake	21
Nathan	12
Courtney	18
Ashley	28
Luke	8



Favourite Hobby	# of votes
Drawing	30
Exercising	11
Cooking	29
Reading	13
Gaming	45



Favourite Food	# of votes
Hot Dog	40
Pizza	80
Fries	75
Tacos	35
Sandwich	25

Name: _____

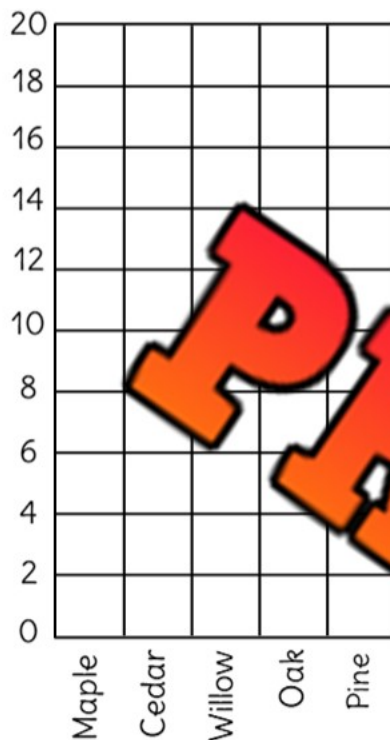
24

Curriculum Connection
SP.1

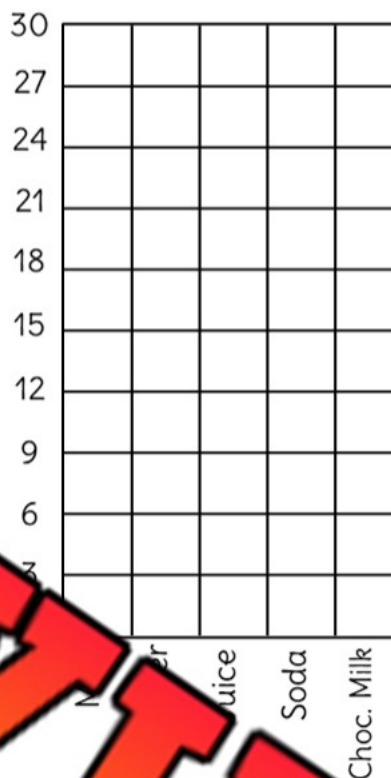
Drawing Bar Graphs

Questions

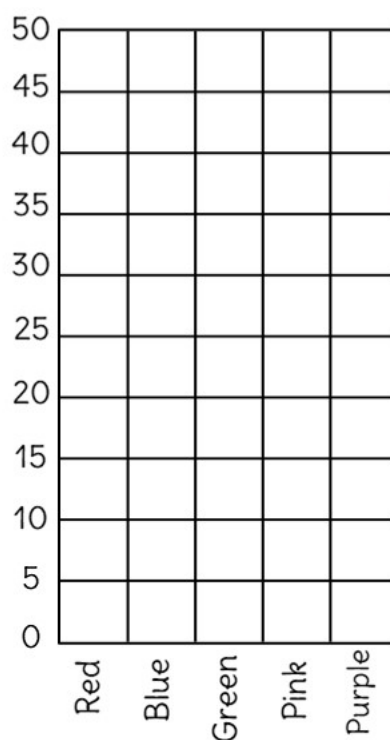
Draw the bars for each of the bar graphs below



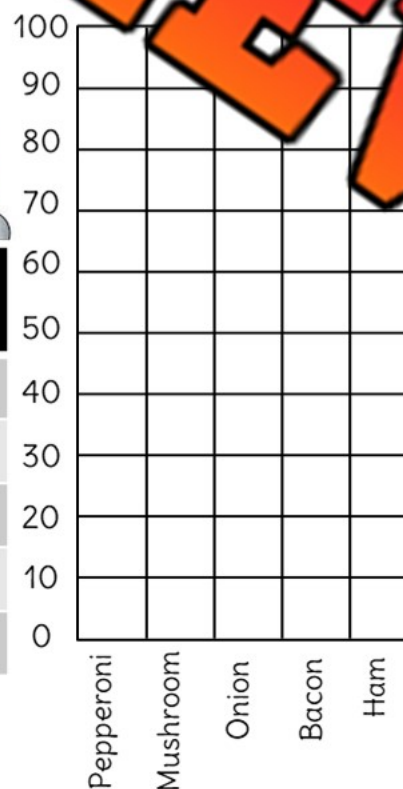
Favourite Tree	# of votes
Maple	11
Cedar	18
Willow	15
Oak	10
Pine	3



Favourite Drink	# of points
Milk	15
Water	19
Juice	10
Soda	25
Choc. Milk	20



Favourite Colour	# of votes
Red	32
Blue	41
Green	16
Pink	44
Purple	21



Favourite Pizza Topping	# of votes
Pepperoni	70
Mushroom	25
Onion	45
Bacon	85
Ham	40

Creating Scale

When you create a scale for your graph, you need to look at the data so you can decide what to go up by. The goal is to create a graph that will fill the graph area.

Step 1: Look at the data. Find the lowest and highest numbers.

Step 2: Count how many lines you have to plot your data.

Step 3: Decide what to go up by to ensure you have enough space to plot ALL the data.



Brownie

Ice Cream

Cookie

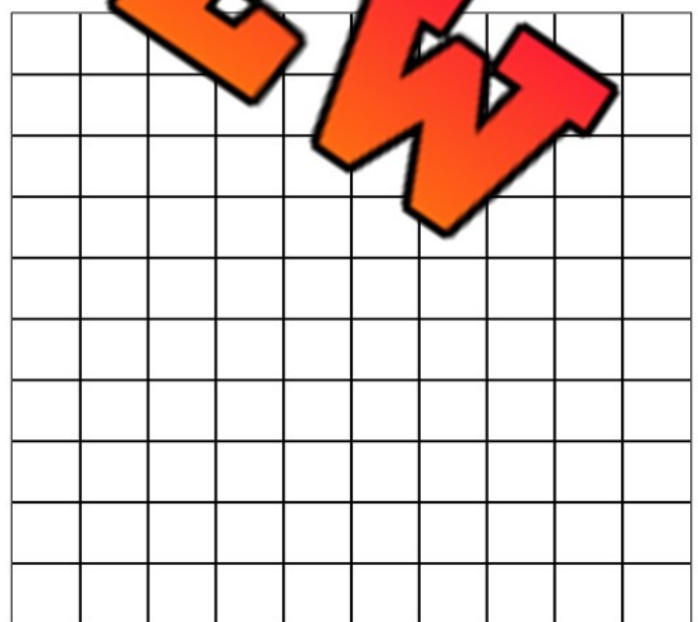
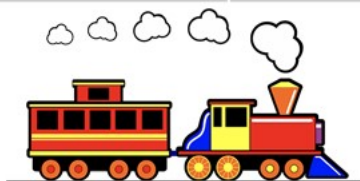
Donut

Pudding

Favourite Dessert	# of votes
Brownie	21
Ice Cream	27
Cookie	15
Donut	12
Pudding	9



Favourite Transportation Method	# of votes
Bus	10
Car	50
Airplane	90
Train	70
Boat	80



Bus

Car

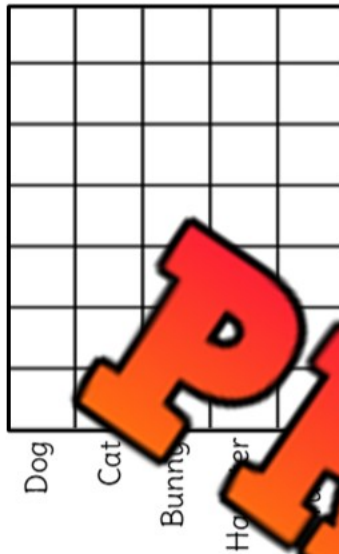
Airplane

Train

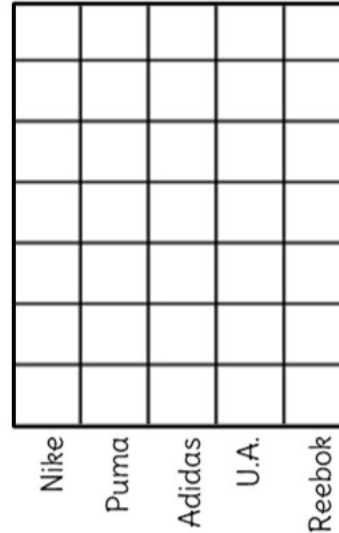
Boat

Creating Scale

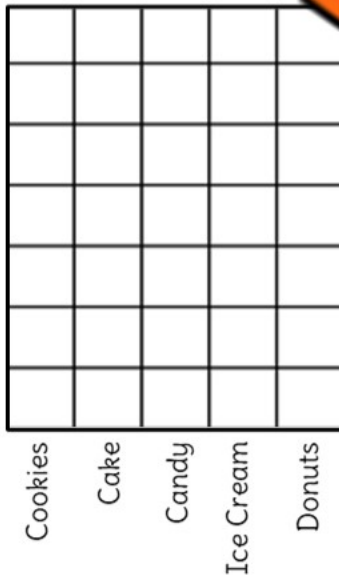
Questions 1) Read the numbers and decide which scale to use. 2) Draw your bar graphs



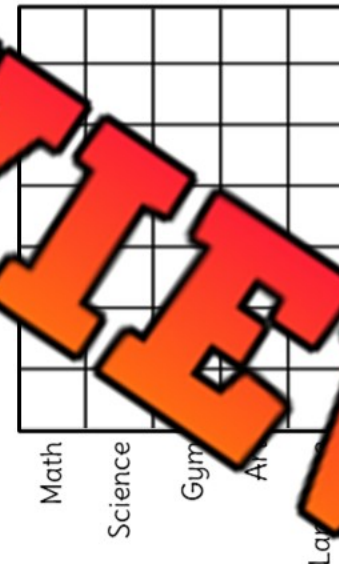
Pets	Votes
Dog	3
Cat	12
Bunny	18
Hamster	15
Turtle	9



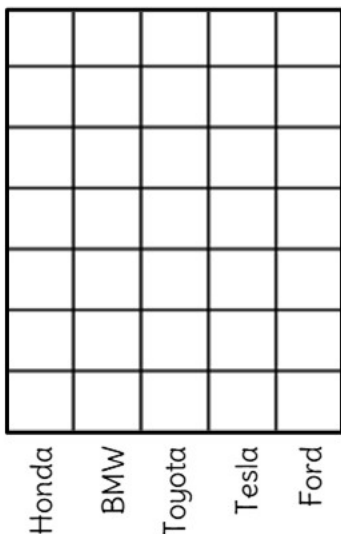
Brand	Votes
Nike	10
Puma	6
Adidas	3
Under Armour	8
Reebok	12



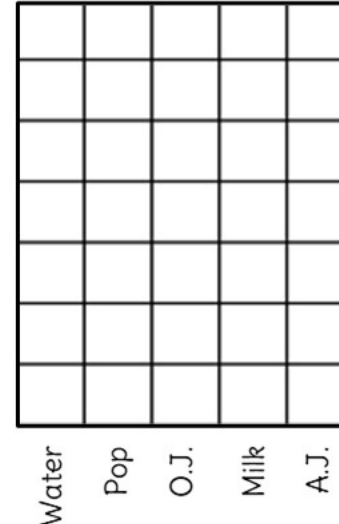
Food	Votes
Cookies	15
Cake	20
Candy	35
Ice Cream	25
Donuts	10



Subject	Votes
Math	8
Science	22
Gym	65
Art	41
Language	30



Cars	Votes
Honda	200
BMW	450
Toyota	225
Tesla	675
Ford	350



Drinks	Votes
Water	700
Pop	1300
Orange Juice	550
Milk	150
Apple Juice	825

Name: _____

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Curriculum Connection
SP.2

Creating an Infographic

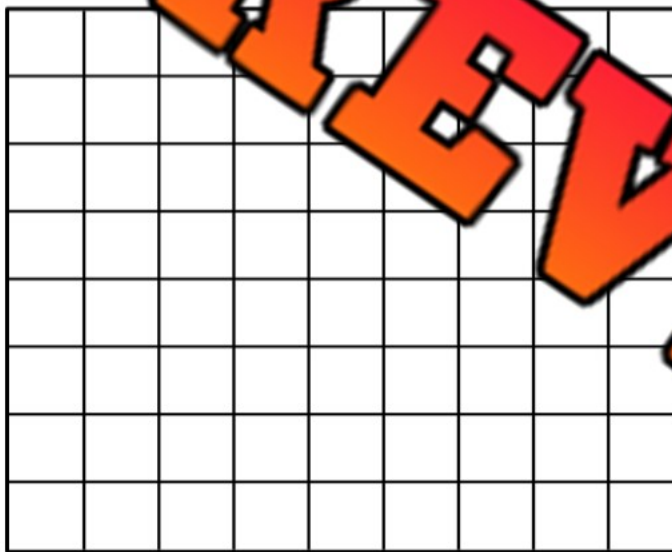
An **infographic** shares information about a topic in multiple ways. Infographics are great for displaying data that can teach an audience about a topic.

Directions

Display the data set in different ways below

50 grade 4s from across Alberta were surveyed, asking what their favourite sport is. The results are in!

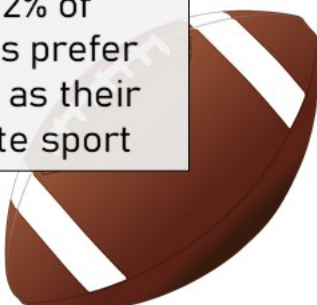
Hockey	Basketball	Baseball	Soccer	Football
		7	7	4



40% of students prefer hockey as their favourite sport



Only 2% of students prefer football as their favourite sport



Hockey	
Basketball	
Baseball	
Soccer	
Football	

Legend



= 2 votes

Unit Quiz - Statistics and Probability

Part 1

Four friends tracked their exercise minutes for one day and displayed it in the pictograph below. Fill in the frequency by reading the pictograph.

Name	Number of Exercise Minutes	Frequency
Dan		
Troy		
Bella		
Le...		

 = 10 minutes

- a) How many minutes is half an hour worth?
- b) Who exercised the most minutes?
- c) How many total minutes did all 4 friends exercise for?

Part 2

Write the scale and draw the bars for each of the bar graphs below



Favourite Food	# of votes
Pizza	12
Chocolate	6
Spaghetti	8
Ice Cream	16
Chicken Wings	6



Player	# of points
Jake	15
Nathan	30
Courtney	15
Ashley	21
Luke	9

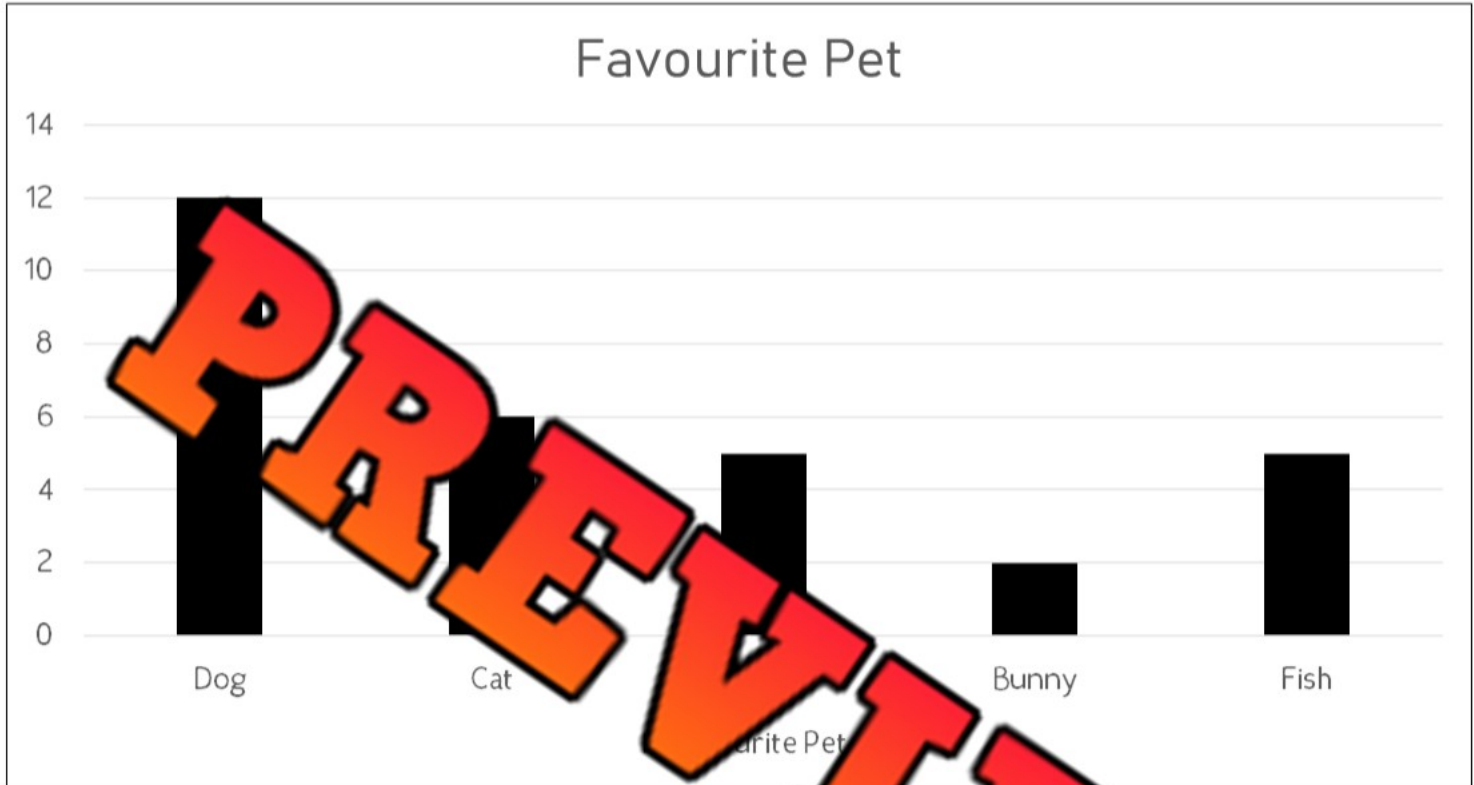
Pizza
Chocolate
Spaghetti
Ice Cream
Chicken Wings

Jake
Nathan
Courtney
Ashley
Luke

Part 3

Read the graph and answer the questions below

Mr. Wilson's class was asked what their favourite pet is. The results are graphed below.



a) Which pet was most popular?

b) How many more votes did dog get than bunny?

c) What is the scale of the graph?

d) Was dog more popular than hamster and fish together?

e) Which three pets together add up to the total number of votes dog received?

f) How many people were surveyed?

Part 4

Graph the data below in a bar graph

The grade 4s were asked which entertainment they liked the best. The results are below.

Movies	TV Shows	YouTube	Video Games	Music
9	12	21	27	15



a) Which form of entertainment was most popular?	
b) How many more votes did video games get than music?	
c) What scale did you choose for the graph?	
d) How many students were surveyed?	