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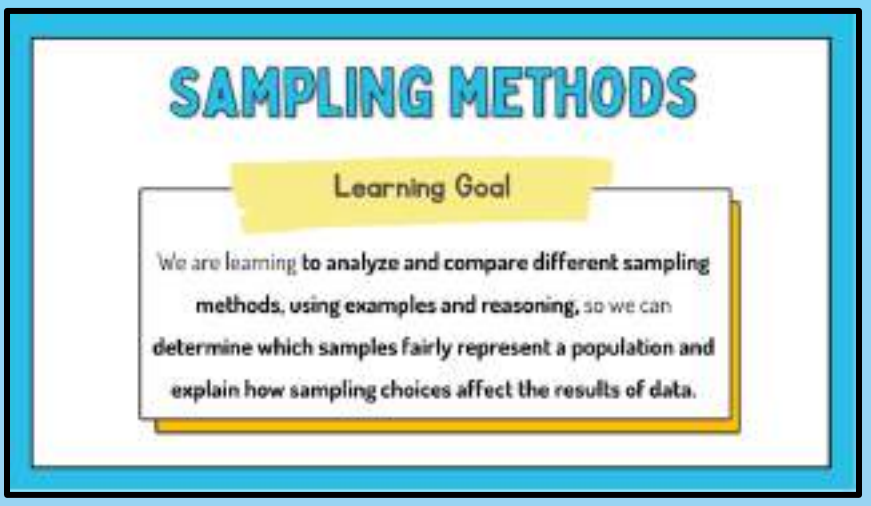
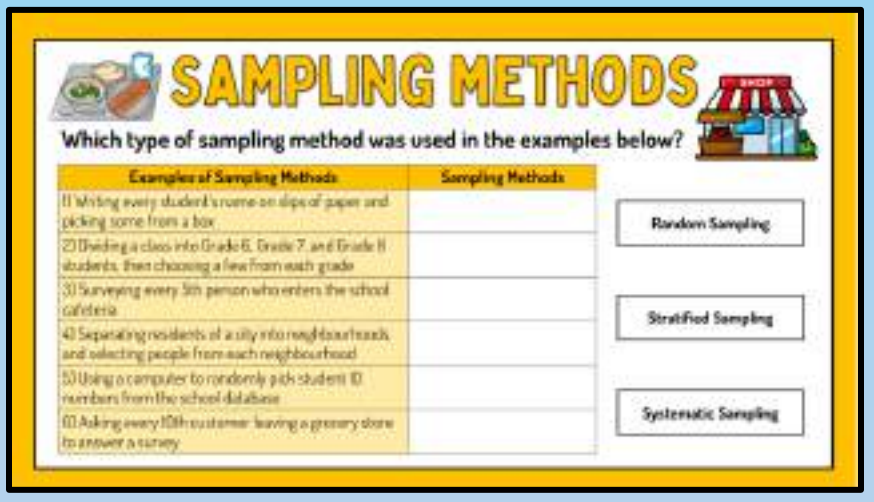
Google Slides Lessons Preview

Ontario Math Curriculum
Data Literacy & Probability – Grade 6

3-Part Lesson Format

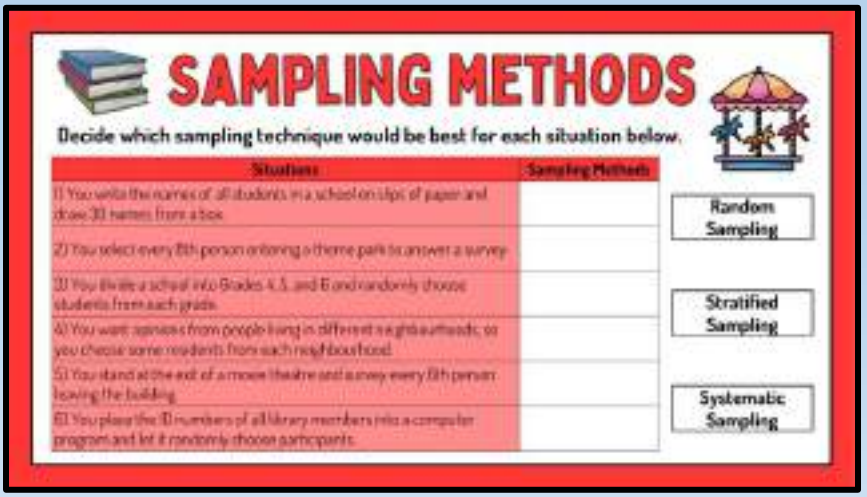
Part 1 – Minds On!
- Learning Goals
- Discussion Questions
- Quotes
- And More!





Part 2 – Action!
- Writing
- Matching
- Drag and Drop
- Drawing
- And More!

Part 3 – Consolidation!
- Exit Cards
- Quizzes
- Reflection
- And More!

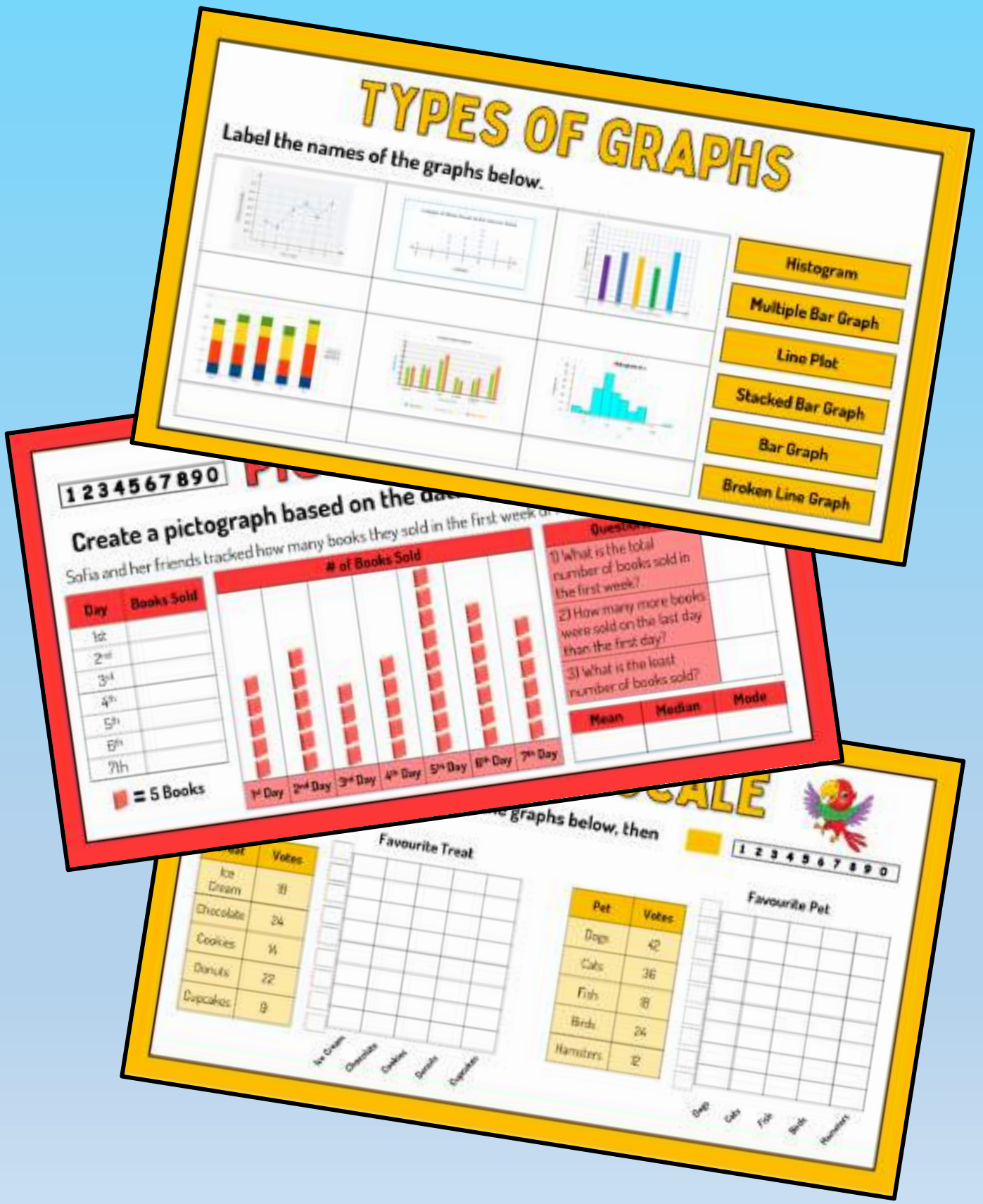


Ontario Math Curriculum

Data Literacy & Probability – Grade 6

Ontario Math Curriculum

Data Literacy & Probability – Grade 6



Workbook Preview

Grade 6
D1. – Data Literacy

	Curriculum Expectations	Pages That Cover the Expectations
D1.1	describe the difference between discrete and continuous data, and provide examples of each	15 – 18, 32 – 33, 48, 61, 69
D1.2	collect qualitative data and discrete and continuous quantitative data to answer questions of interest about a population, and organize the sets of data as appropriate, including using	5 – 14, 36, 46, 48, 52, 56, 61, 63, 69
D1.3		5, 47, 64, 67 100
D1.4	create an infographic about a data set, representing the data in appropriate ways, including in tables, histograms, and broken-line graphs, and incorporating any other relevant information that helps to tell a story about the data	77 - 80
D1.5	determine the range as a measure of spread and the measures of central tendency for various data sets, and use this information to compare two or more data sets	19 – 31, 34 – 36, 52, 59 – 61, 63,
D1.6	analyse different sets of data presented in various ways, including in histograms and broken-line graphs and in misleading graphs, by asking and answering questions about the data, challenging preconceived notions, and drawing conclusions, then make convincing arguments and informed decisions	34 – 40, 50 – 52, 54 – 55, 58 – 60, 65 – 66, 81 - 98

Name: _____ 5

Curriculum Connection
D1.2

Sampling a Population

What is a Population

A **population** is the total set of subjects that fit a particular description. For example, students in Ontario is a population that would include all the students in Ontario.

Sampling a Population

When we want to know something about a population, it is easier to ask a sample of the population ...sus asking everyone within that population. For example, if we wanted to know if th... ...ts in Ontario preferred Math to Science, we could ask 10% of the populati... ...of every student in Ontario. We can assume that the remaining 90% of the p... ...voted in the same way.

...ling a ... saves us a lot of time and money. It works well if we sample t... popul... ...tly if we went to a Science and Technology school in Ontario and a... ...ney ...ath or Science better, they would likely all say Science. This ...e a b... ...f the population.

Instruction Write a sa... ...e po... ...that would **not** be a good representation ...e p...

Population	Survey Ques...n	...ad Sample
Pet Owners in Ontario	What is the best pet?	...Ontario
Parents of Ontario	Which sport is best for kids?	
Students in Ontario	Which city is the best?	
University Students in Ontario	Which university is the best?	
Kids who own a PS5	Which PS5 game is the best?	
Hockey players in Ontario	Which sports store is the best?	
Teachers in Ontario	Which school is the best in Ontario?	

Name: _____ 6

Curriculum Connection
D1.2

Sampling Techniques

Random Sampling
When we select people in a population randomly. Each person in the population has an equal chance to be selected. For example, using a computer generator to randomly choose people from a list.

Stratified Random Sampling
Taking a population and splitting them into groups and then random sampling the groups separately. For example, a school population could be divided into two groups: (1) students who take the bus and (2) those who don't take a bus. A survey could be given to both groups by randomly selecting 10% of the people in both groups. We can learn more information from both groups by using stratified random sampling.

Systematic Random Sampling
Systematic random sampling is when you choose a random sampling strategy before beginning a survey. For example, people could be chosen from an alphabetized list of names, using a starting name and then every fourth name to be randomly chosen.

Part 1 Write which type of sampling technique is being used in the examples below

Example of a Sampling Technique	Sampling Technique
1) Deciding randomly to choose every 5th person in	
2) Having a computer call 10% of Ontario teachers	
3) Splitting the elementary student population into primary	
4) Using a computer to randomly email 20% of the customers of a	
5) Deciding to hand out surveys to every 10th customer who enters a sto	

Part 2 Which sampling technique would you use in the situations below

Situation	Sampling Technique
1) You want to know if more men or women prefer your pizza	
2) You have a mailing list on your computer and want to sample 10% of them	
3) You work at a store and want to survey every 10 people that come in	
4) You are trying to sample 20% of everyone in Ontario by calling them	
5) You want to sample the grade 5 and grade 6 students in Toronto	

Name: _____ 10

Curriculum Connection
D1.2

Qualitative vs Quantitative Data

Quantitative data	**Qualitative data**
Data that uses numbers (measured, counted) - length, height, area, weight, time, etc.	data that uses words (categories) - choices, favourites, foods, colours, etc.

Questions ad the description of the data and circle if it is quantitative or qualitative

1) M y e sale last month	Quantitative Qualitative
2) Heights of d n gr	Quantitative Qualitative
3) Favourite foods of the udent	Quantitative Qualitative
4) Rainfall in April last year	Quantitative Qualitative
5) Favourite colours of the students in your cla	Quantitative Qualitative
6) The weight of different hockey skates	Qua itative e
7) The height of the grade 6 students	itative ualitative
8) Favourite season of the students in your school	Quantitative Qualitative
9) Which town/city people live in that go to your school	Quantitative Qualitative
10) Whether or not you have a pet	Quantitative Qualitative
11) How long it took to get to school	Quantitative Qualitative

Name: _____ 12

Curriculum Connection
D1.2

Quantitative vs Qualitative Observations

Image #1

Image #2

Part 1 bservations about image #1 and put an x if it is quantitative or qualitative

Obse	Quantitative	Qualitative
1) The ve cle ha	x	
2) The vehicle h es		
3) The vehicle is whit d		
4) The vehicle's age is 3 yea		
5) The vehicle has silver rims		
6) The vehicle has 2 headlights		
7) The vehicle is a car		
8) The vehicle drives up to 180km/hour		
9) The vehicle's tires are large		
10) The vehicle weighs 1700 kilograms		

Part 2 Write quantitative and qualitative observations about image #2

Observations	Quantitative	Qualitative
1)		
2)		
3)		
4)		
5)		

Name: _____ 15

Curriculum Connection
D1.1

Discrete or Continuous Data?

Discrete and continuous data are both forms of quantitative data. This means both are numerical, meaning the data is acquired through counting or measuring.

Discrete data is collected when the answers to a survey are only numbers. It is quantitative data that has no relationship between the numbers. For example, "how many pets you have" is discrete data because there is no relationship between 1 and 2 pets. You cannot have 1 and a half pets, only 1 or 2. Discrete data is counted.

With **continuous data**, there is a relationship between the numbers. For example, "how much rain fell there was last week?" You can have 1 and a half millimetres of rain, which means there is a relationship between 1 and 2. Continuous data is measured.

Question: Is each question discrete or continuous?

Tip: Ask yourself if you can split the answer in half.

Question	Discrete/Continuous
1. How many cm of snowfall were in	
2. How many siblings do you have?	
3. What was the average temperature in July?	
4. How many minutes did you read this week?	
5. How many video games do you own?	
6. How many kilometres did you run this week?	
7. How many sports do you play?	
8. What grade are you in?	
9. How many litres of milk do you drink a week?	
10. How many cars does your family have?	

Exit Cards

Cut Out Cut out the exit cards below and have students complete them at the end of class

Name: _____

Is the research question discrete or continuous?

Research Question	Discrete/Continuous
How many times did the phone ring today?	
How many different species of birds did you observe on your nature walk?	
How many seconds did it take for the ice to melt completely?	
How many beats per minute is your resting heart rate?	

Name: _____

Is the research question discrete or continuous?

Research Question	Discrete/Continuous
How many times did the phone ring today?	
How many different species of birds did you observe on your nature walk?	
How many seconds did it take for the ice to melt completely?	
How many beats per minute is your resting heart rate?	

Name: _____

Is the research question discrete or continuous?

Research Question	Discrete/Continuous
How many times did the phone ring today?	
How many different species of birds did you observe on your nature walk?	
How many seconds did it take for the ice to melt completely?	
How many beats per minute is your resting heart rate?	

Name: _____ 17

Curriculum Connection
D1.1

Discrete or Continuous Data?

Questions | Researching a car

You are purchasing a new car over the phone. You ask the car salesman the questions below. Is the data he gives you **discrete** or **continuous**?

Data Collected	Discrete/Continuous
1) How many doors does the car have?	
2) How old is the car?	
3) How many litres does the gas tank hold?	
4) How many wheels does the car have?	
5) How fast does the car go?	
6) How many passengers can the car hold?	
7) How many speakers are in the car?	
8) How many kilometres has the car driven already?	
9) How much does the car cost?	
10) How long does it take to get up to 60km/hour?	
11) How long is the car?	
12) How many decibels do the speakers produce?	

Name: _____ 18

Curriculum Connection
D1.1

Data – Qualitative, Discrete, or Continuous?

Part 1 Researching a basketball team

You are the manager of a basketball team and are researching your next opponent. You decide to collect data based on the questions below. Is the data qualitative, discrete, or continuous?

Data Collected	Qualitative/Discrete/ Continuous
1) How many players on the team?	
2) How tall are their players?	
3) How many points a game do they score?	
4) What colour are their jerseys?	
5) Which teams have they played before?	
6) How many games have they played?	
7) How old are their players?	
8) How many wins do they have this year?	
9) How many seconds do they take before they shoot?	
10) Which type of defense do they play – zone or man?	
11) How many three pointers do they take a game?	
12) What is the name of their mascot?	

Part 2 Write one example of each type of data

Type of Data	Example
Qualitative	
Discrete	
Continuous	

Name: _____ 19

Curriculum Connection
D1.5

MEAN

When we calculate the mean, we are finding the average of a set of numbers.

Example: Three brothers named Josh, Cameron, and Morgan went on an easter egg hunt. Josh found 6 eggs, Cameron found 4, and Morgan found 5. At the end of the hunt, their mother told them to split the eggs equally. So, they decided to put all the eggs in the middle and then divide them equally amongst themselves. They had 6 + 4 + 5 = 15 eggs and 15 ÷ 3 kids = 5 eggs each.

Josh		Morgan		Total		Josh	Cameron	Morgan
13 Candy B		9 Candy Bag	=	33 Candy Bag	=	11 Candy Bag	11 Candy Bag	11 Candy Bag

Mean = 11

Questions allo… total up the candy and then fair share it

Claire	Katie				Claire	Katie	Ashley
9 Candy Bag	5 Candy Bag	Candy Ba	=	=	_____ Candy Bag	_____ Candy Bag	_____ Candy Bag

Mean = _____

Emma	Olivia	Ava		Total				Ava
17 Candy Bag	31 Candy Bag	12 Candy Bag	=	_____ Candy Bag	=	Ca…	…ia	_____ …dy Bag

Mean = _____

Mia	Harper	Charlotte		Total		Mia	Harper	Charlotte
25 Candy Bag	18 Candy Bag	35 Candy Bag	=	_____ Candy Bag	=	_____ Candy Bag	_____ Candy Bag	_____ Candy Bag

Mean = _____

Liam	Noah	William		Total		Liam	Noah	William
41 Candy Bag	27 Candy Bag	34 Candy Bag	=	_____ Candy Bag	=	_____ Candy Bag	_____ Candy Bag	_____ Candy Bag

Mean = _____

Name: _____ 20

Curriculum Connection
D1.5

MEAN

Mean = the average in a set of data

Step 1: Add the numbers in the data set

Step 2: Divide the sum by the amount of numbers in the set.

Example:

Data set: 5, 10, 8, 5

Step 1: 5 + 10 + 8 + 5 = 28

2: 28 ÷ 4 = (7)

Ques' Fi mean for each data set below

, 6	2) 11, 18, 5, 6
3) 22, 18, 16, 20	) 30, 25, 25, 20
5) 18, 28, 15, 35	49
7) 15, 22, 18, 20, 35	8) 71, 85, 64, 79, 56
9) 86, 102, 107, 95, 85	10) 147, 162, 183, 158, 165

Name: _____ 21

Curriculum Connection
D1.5

Calculating Mean – Word Problem

Questions | Answer the question below

1) Jamie sold handmade bracelets over six days. She earned $24 on Monday, $30 on Tuesday, $18 on Wednesday, and on Thursday she had to refund $6 to a customer. On Friday and Saturday, she earned a total of $84.

What was [illegible]'s average daily earnings over those six days?

2) Over the course of a week, Ava tracked how [illegible] each day. On Monday, Tuesday, and Wednesday, she spent 45, 60, [illegible]tes, [illegible]vely. On Thursday and Friday, she forgot to record her times, but [illegible] a total of 110 minutes on those two days combined. On Saturday, she [illegible] Sunday, she studied for 80 minutes.

What was her average daily homework time over the 7 days?

Name: _____ 22

Curriculum Connection
D1.5

Estimating the Mean

The mean is the average number in a data set. When we understand what the mean of a data set is, we can estimate the mean easily without doing any calculations.

For example, in the data set: 22, 18, 16, 25, 20, we can estimate that the mean will be approximately 20, without doing any calculations. This is because the mean has to be between 16 and 25. We can also see that there are two numbers above 20, and two numbers below 20.

Question: Estimate the mean by circling one of the options
Check your answer by calculating the mean

1) 15, [illegible], 17	2) 32, 38, 40, 30, 35
a) 18	a) 30
b) 15	b) 41
c) 20	
d) 12	
3) 65, 78, 61, 70, 76	4) [illegible], 85, 75, 70, 98
a) 82	a) [illegible]
b) 70	b) [illegible]
c) 65	c) 70
d) 76	d) 75
5) 94, 102, 91, 85, 83	6) 105, 100, [illegible],
a) 102	a) 105
b) 83	b) 109
c) 85	c) 100
d) 91	d) 95
7) 112, 125, 118, 110, 125	8) 142, 120, 135, 125, 153
a) 125	a) 135
b) 110	b) 142
c) 118	c) 125
d) 112	d) 153

Name: _____ 23

Curriculum Connection
D1.5

Estimating the Mean – Word Problem

Questions | Answer the question below

A class of students tracked how many jumping jacks they could each do in one minute. The results for 10 students were:

48, 53, 45, 51, 60, 58, 49, 62, 47, 50

1) **Estim** **a** **a** number of jumping jacks without calculating it.

2) Calculate the **exa** **ean**

3) The gym teacher says that any class with a **mean** o re jum cks will get to move on to a regional fitness challenge. Will the class qu m?

4) The teacher decides to let two more students try. They score **65** and **6** ping jacks. **Estimate** the new class **mean.**

5) Then calculate the **exact mean** again to determine if these two scores raise the overall class average to at least 55.

Name: _____ 24

Curriculum Connection
D1.5

MODE

Mode: The number that occurs the most in a data set. The mode is used to calculate data in nominal data sets.

Step 1: Order the numbers from least to greatest
Step 2: Find the number or numbers that show up the most – You can have zero mode or more than one mode.

Example: 5, 3, 7, 3, 9, 11
3, 3, 5, 7, 9, 11 **Answer:** 3

		Ordered List	Mode
1)	28, 32, 4[illegible] 32		
2)	74, 81, 94, 81, [illegible]		
3)	183, 145, 167, 191, 18[illegible]		
4)	201, 218, 214, 218, 214, 218		
5)	311, 361, 311, 361, 361, 351		
6)	518, 501, 562, 501, 561, 571		
7)	781, 772, 713, 781, 713, 713		

1) Eleven students from grade 6 were surveyed, asking them their favourite number from 0-100. The results are presented in the data set below.

91, 78, 75, 84, 68, 75, 91, 84, 93, 85, 91

Which number is the mode (the most popular)? _____

2) Adults were asked to choose a number from the food menu. The results are represented in the data set.

2, 4, 2, 2, 3, 4, 1, 3, 3, 1, 4, 4, 3, 2, 2, 1, 2, 3, 1

1	Fish
2	Chicken
3	Steak
4	Vegetables

Which food choice is the mode? _____

Name: _____ 25

Curriculum Connection
D1.5

Mean and Mode

Hockey Goals
5 9 6 2 9 6 5 6
Mean: _____
Mode: _____

Basketball Points
24 29 35 29 33 24 29
Mean: _____
Mode: _____

Minutes Read Per Day
31 38 41 50 41 38 41
Mean: _____
Mode: _____

[illegible]
91 95 [illegible] 83
Mean: _____
Mode: _____

Name: _____ 26

Curriculum Connection
D1.5

MEDIAN

Median: The median is the middle number in a data set.

Step 1: put the numbers in order from smallest to largest
Step 2: circle the number in the middle.

*** If there is an even amount of numbers in the data set, add the two numbers in the middle together and divide by 2. This is the median.

Data	Ordered List	Median
8, 1[illegible]	4, 7, (8, 8) 12, 15	8 + 8 = 16 16 ÷ 2 = 8
25, 37, 41, 58, 61, 92,		
84, 106, 102, 121, 138, 116, 92		
135, 167, 152, 118, 162, 192		
264, 241, 249, 216, 284, 255		
324, 375, 308, 362, 358, 350		
425, 382, 405, 448, 403, 411		

Name: _____ 27

Curriculum Connection
D1.5

Calculating Median – Word Problem

Questions	Answer the question below

1) Jay wrote down how much money he spent on snacks over the last 10 days:

5.25, 4.75, 6.50, 5.00, 5.25, 7.00, 6.00, 5.75, 5.50, 6.25

He wants to know the median amount he spent per day. What is it?

2) Here[illegible] the l[illegible] minutes) from an athlete's training:

1[illegible], 12.1, 11.9, 12.2, 12.3

She wants to beat h[illegible]edi[illegible] week. What is her median time, and what time would she have to [illegible]

3) Liam tracked the number of minutes he spent reading [illegible] for [illegible]k:

Monday: 15 minutes **Tuesday**: twice as much as Monday **Wedne**[illegible]ore than Monday **Thursday**: 10 minutes less than Tuesday **Friday**: ha[illegible]as[illegible] Wednesday **Saturday**: 25 minutes **Sunday**: a quarter as much as Thu[illegible]

What is the median number of minutes Liam spent reading in a day?

Name: _____ 28

Curriculum Connection
D1.5

RANGE

Range: The range is the difference between the biggest and smallest number in a data set.

Step 1: Find the largest number and the smallest number.
Step 2: Subtract the smallest number from the largest number

Example: 13, 74, 37, 18, 32
Step 1: 13 = smallest 74 = largest
Step 2: 74 – 13 = 61

Part 1 Find the range of the data sets below

		Calculations	Range
1)	8, 12, 15, 8	15 – 4 = 11	11
2)	61, 75, 81, 92, 7[illegible]		
3)	85, 95, 81, 106, 132, 8[illegible]		
4)	205, 135, 178, 171, 164, 199		
5)	234, 241, 258, 226, 231, 247		
6)	318, 365, 343, 352, 368, 376		
7)	433, 418, 427, 406, 448, 439		
8)	518, 475, 428, 596, 604, 410		

Part 2 Find the range in the word problems below

1. Robin collects strawberries for her summer job. She records how many strawberries she collects each day for a week. What is the range of strawberries she collects?

471, 528, 374, 486, 598, 446, 641

2. Steven records how many minutes of screen time he uses on his phone each week. His results for 6 weeks are listed below. What is the range?

247, 311, 485, 375, 201, 399

Name: _____ 29

Curriculum Connection
D1.5

Calculating Range – Word Problem

Questions	Answer the question below

1) A bakery sells 5 types of cookies in different quantities each day.

On Monday, they sold 185 chocolate chip, 212 sugar, 199 oatmeal, twice as many ginger snaps as sugar cookies, and 175 peanut butter cookies.

What is th ge of the number of cookies sold?

2) A farmer w d produced from 6 different fields.

The weights were: , 86 80 kg, 870 kg, and one field produced 40 kg more t iest thers.

What is the range of the weig n th

3) Lila collected 600 stickers in one month. She co s ebruary, and a quarter as many in March. In April, she collected 300 she d arch. What is the range of the number of stickers she collected in these ont

4) A student tracked how many minutes she studied each day:

- Monday – 480 minutes
- Tuesday – half of Monday
- Wednesday – a quarter of Monday
- Thursday – 100 minutes more than Wednesday

What is the range of study times?

Exit Cards

Cut Out Cut out the exit cards below and have students complete them at the end of class

Name: _____

Find the range of the data sets below.

Data Set	Calculations	Range
142, 156, 130, 165, 150, 148		
835, 789, 920, 880, 910, 870		

Find the range in the word problem below.

Liam recorded the number of steps he walked each day for a week.
The step counts for the 7 days were:

5300, 4700, 4900, 5200, 5100, 4800, 5000

Name: _____

Find the range of the data sets below.

Data Set	Calculations	Range
142, 156, 130, 165, 150, 148		
835, 789, 920, 880, 910, 870		

Find the range in the word problem below.

Liam recorded the number of steps he walked each day for a week.
The step counts for the 7 days were:

5300, 4700, 4900, 5200, 5100, 4800, 5000

Name: _____ 31

Curriculum Connection
D1.5

Mean, Median, Mode - Decimals

Questions Fill in the table using the different measures of central tendency

1)	
Data Set	**1.7, 1.9, 2.5, 2.8, 2.1, 1.8, 1.9**
Mean	
Median	
Mode	
Range	

2)	
Data Set	**8.2, 7.5, 6.4, 7.2, 8.1, 7.5, 8.3**
Mean	
Median	
Mode	
Range	

3)	
Data Set	**20.3, 23.5, 20.1, 23.5, 21.5, 23.1**
Mean	
Median	
Mode	
Range	

4)	
Data Set	**24.7, 12.[illegible] 12.4**
Mean	
Median	
Mode	
Range	

Name: _____ 34

Curriculum Connection
D1.5, D1.6

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
S		
Steve		
Tony		
Jill		
Stacy		

 = 12 Candies

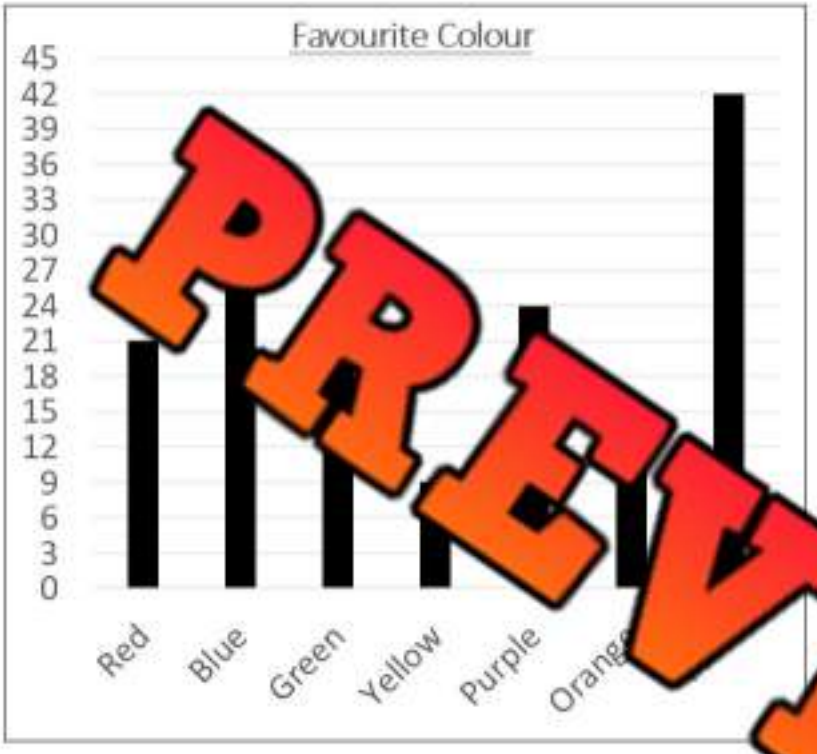
a) How much is one candy worth?	
b) How much is half a candy worth?	
c) Who collected the most candy?	
d) How much more candy did Jill collect than Tony?	
e) How much total candy was collected?	
f) What is the average (mean) number of candies that were collected by the kids?	

Name: _____ 36

Curriculum Connection
D1.2, D1.5, D1.6

Vertical Bar Graph – Favourite Colour

The students in grade 6 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	

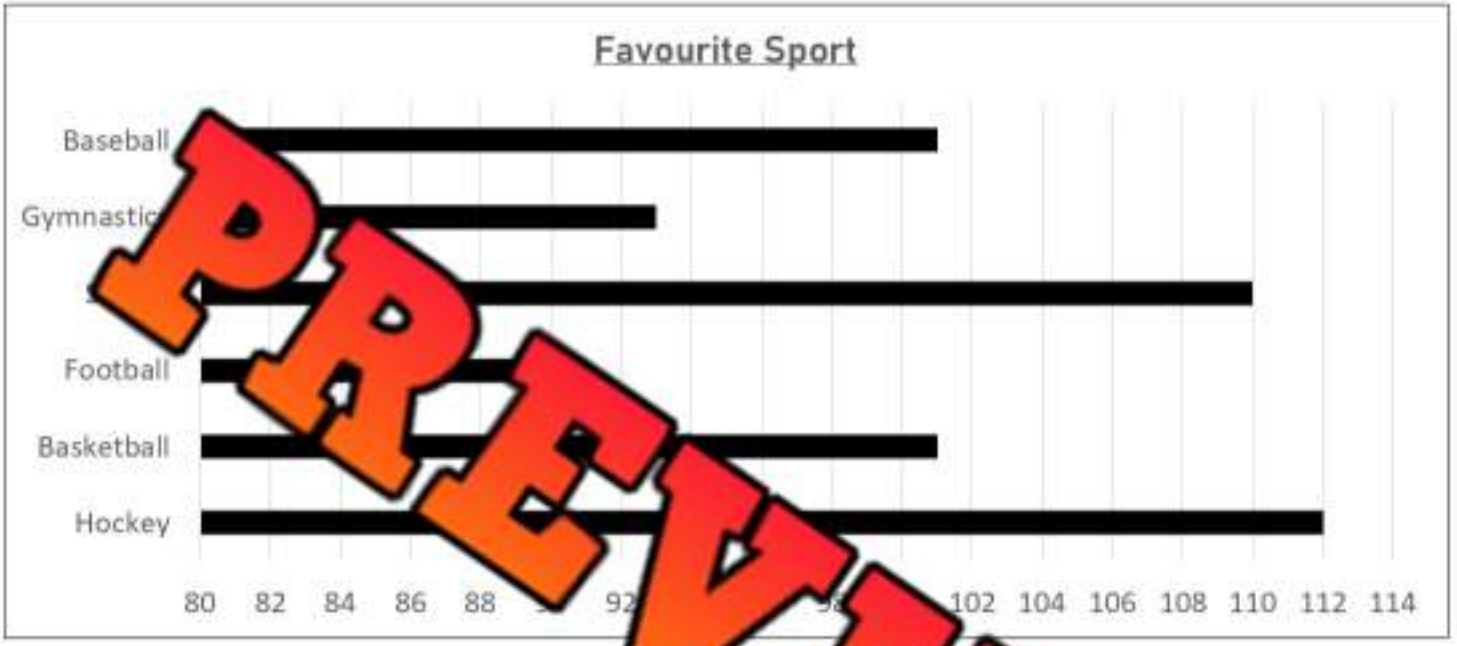
a) Which colour was most popular?	
b) Which two colours add up to pink?	
c) Is the data quantitative or qualitative?	
d) Is the data discrete or continuous?	
e) What is the mean in the data set?	
f) What is the median of the data set?	
g) What is the mode of the data set?	
h) What is the range of the data set?	
i) How many people were surveyed?	

Name: _____ 37

Curriculum Connection
D1.6

Horizontal 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 horizontal bar graph.



Questions | Fill in the tables below

Frequency Table	
Baseball	
Gymnastics	
Soccer	
Football	
Basketball	
Hockey	

Mean	
Median	
Mode	
Range	

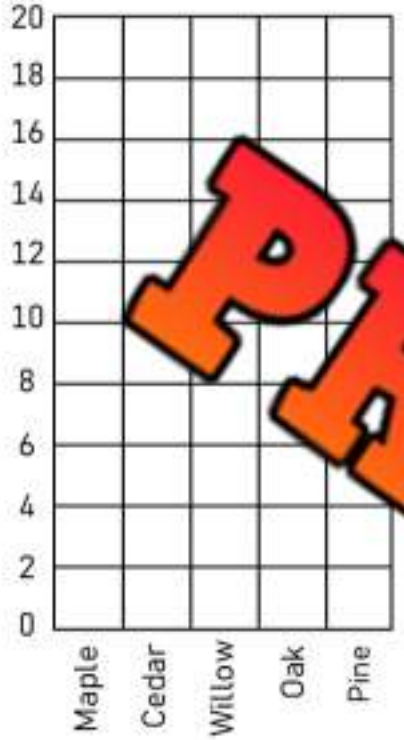
a) Which sport was most popular?	
b) Which sport was least popular?	
c) How many people chose gymnastics as their favourite?	
d) How many kids liked basketball and soccer the best?	
e) How many kids liked hockey more than football?	
f) How many kids were surveyed?	

Name: _____ 42

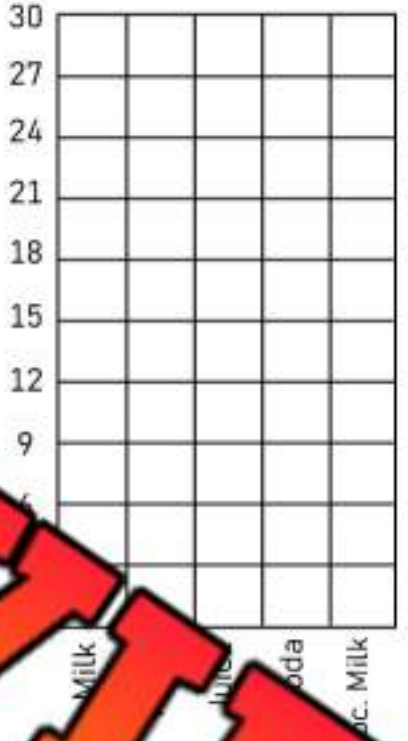
Curriculum Connection
D1.3

Drawing Bar Graphs

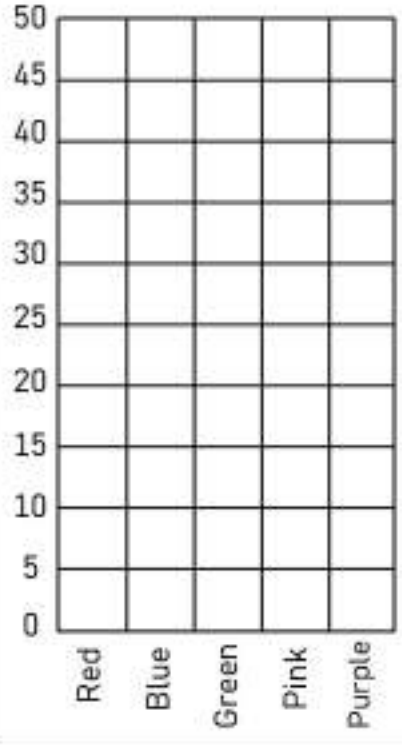
Instruction Draw the bars for each of the many-to-one bar graphs below



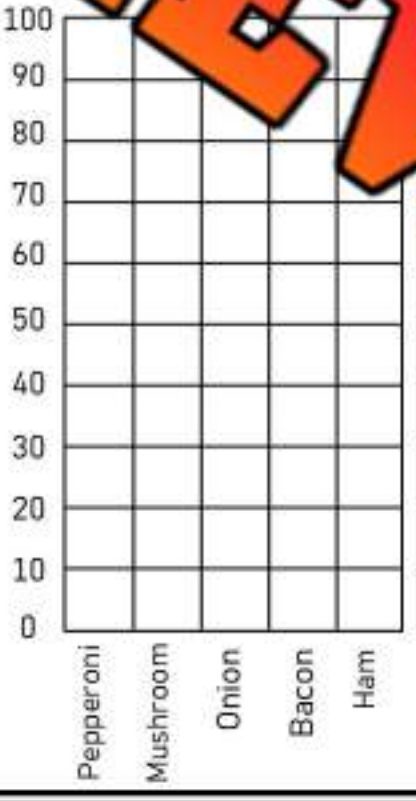
Favourite Tree	# of votes
Maple	11
Cedar	
Willow	
Oak	10
Pine	1



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

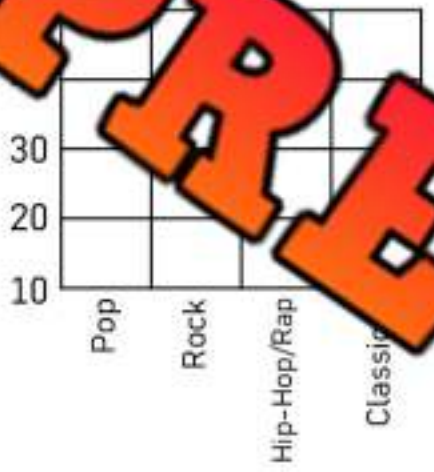
Exit Cards

Cut Out Cut out the exit cards below and have students complete them at the end of class

Name: _____

Draw the bars for the bar graph below.

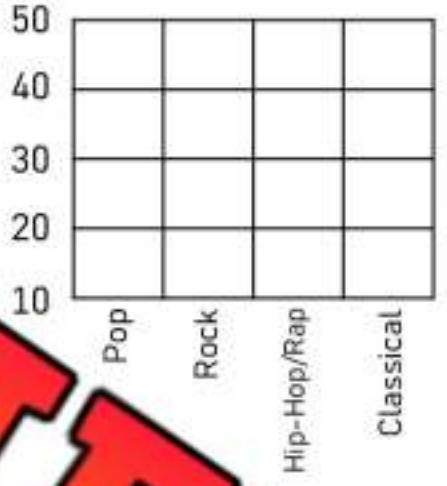
Music	Pop	Rock	Hip-Hop/ Rap	Classical
Votes	35	20	50	45



Name: _____

Draw the bars for the bar graph below.

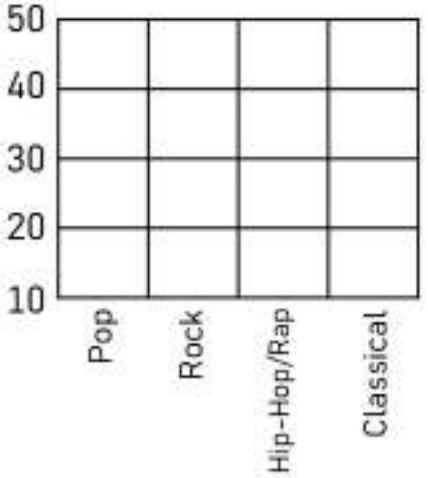
Music	Pop	Rock	Hip-Hop/ Rap	Classical
Votes	35	20	50	45



Name: _____

Draw the bars for the bar graph below.

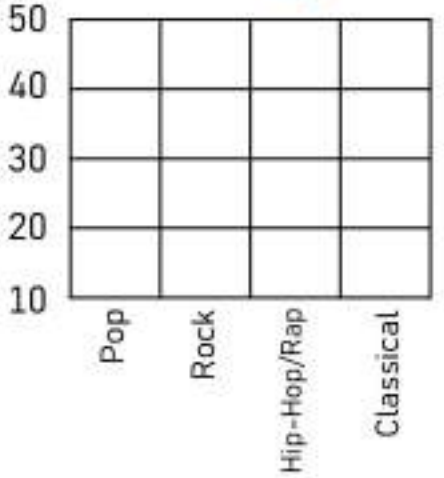
Music	Pop	Rock	Hip-Hop/ Rap	Classical
Votes	35	20	50	45



Nam _____

Draw the bars for the bar graph below.

Music	Pop	Ro		Classical
Votes	35	20		45



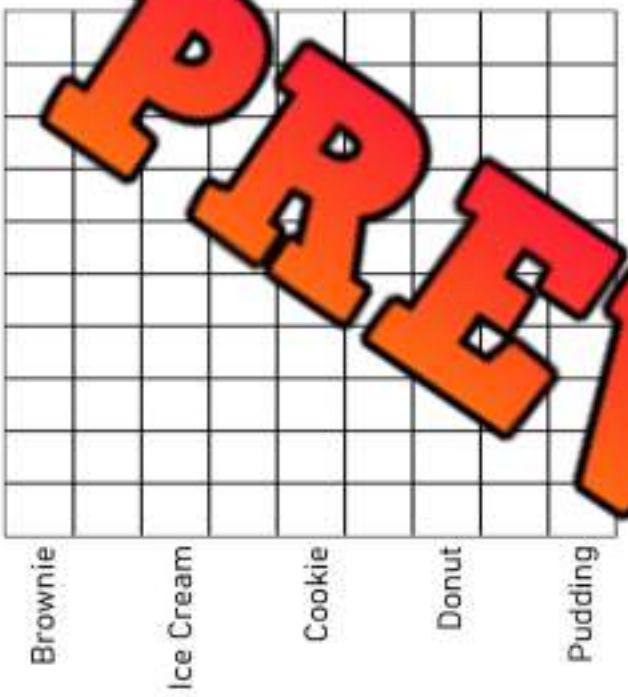
Name: _____ 44

Curriculum Connection
D1.3

Creating Scale

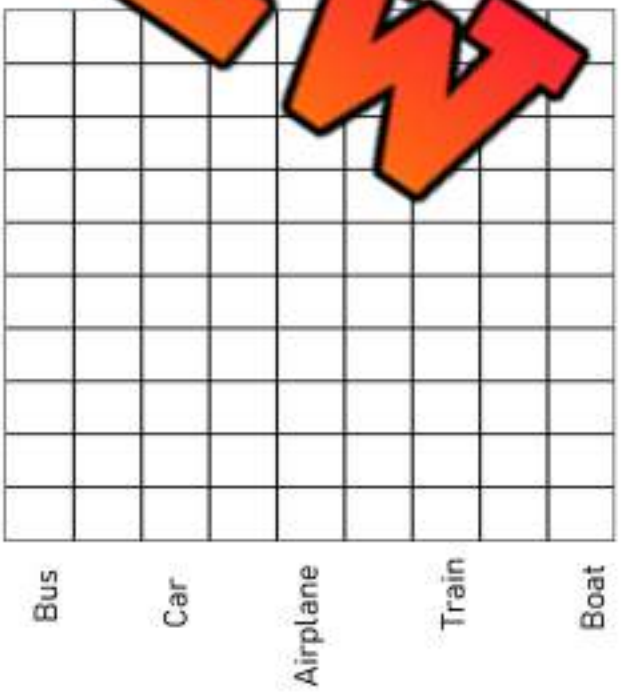
When you create a scale for your graph, you need to look at the data so you can decide what to go up by. The goal is to create a graph that will fill the graph area.

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.



Favourite Dessert	# of votes
Brownie	21
Ice Cream	27
Cookie	15
[illegible]	12
[illegible]	9

Transportation Method	# of votes
Bus	11
Car	49
Airplane	91
Train	70
Boat	82



Name: _____ 48

Curriculum Connection
D1.1, D1.2

Collecting Quantitative Discrete Data

Quantitative discrete data – is data that is collected through counting. We don't use categories, instead we use numbers or intervals.

Examples – number of pets, number of siblings, number of goals scored, number of books read this week

Intervals – You can setup your responses into a group of numbers to allow for a larger range of numbers. For example: 0-4, 5-9, 10-14, 15-19, 20-24

Data Collection Collect data by asking the population your survey question.

Survey Question: _____

Example: How many books did you read this week?

Numbers/Intervals					
Tally					
Frequency					

Interpreting Your Survey Results

1. Which population did you survey? _____

2. Which number/interval was the most popular? _____ least popular? _____

3. Fill in the table below by calculating the measures of central tendency.
Note: You cannot calculate the mean/median if you use intervals.

Mean	Median	Mode	Range

4. What conclusions can you draw from your data? What did you learn?

_____

_____

Name: _____ 49

Curriculum Connection
D1.3

Graphing Quantitative Data

Use the data you collected to plot your graph. Remember the following labels:

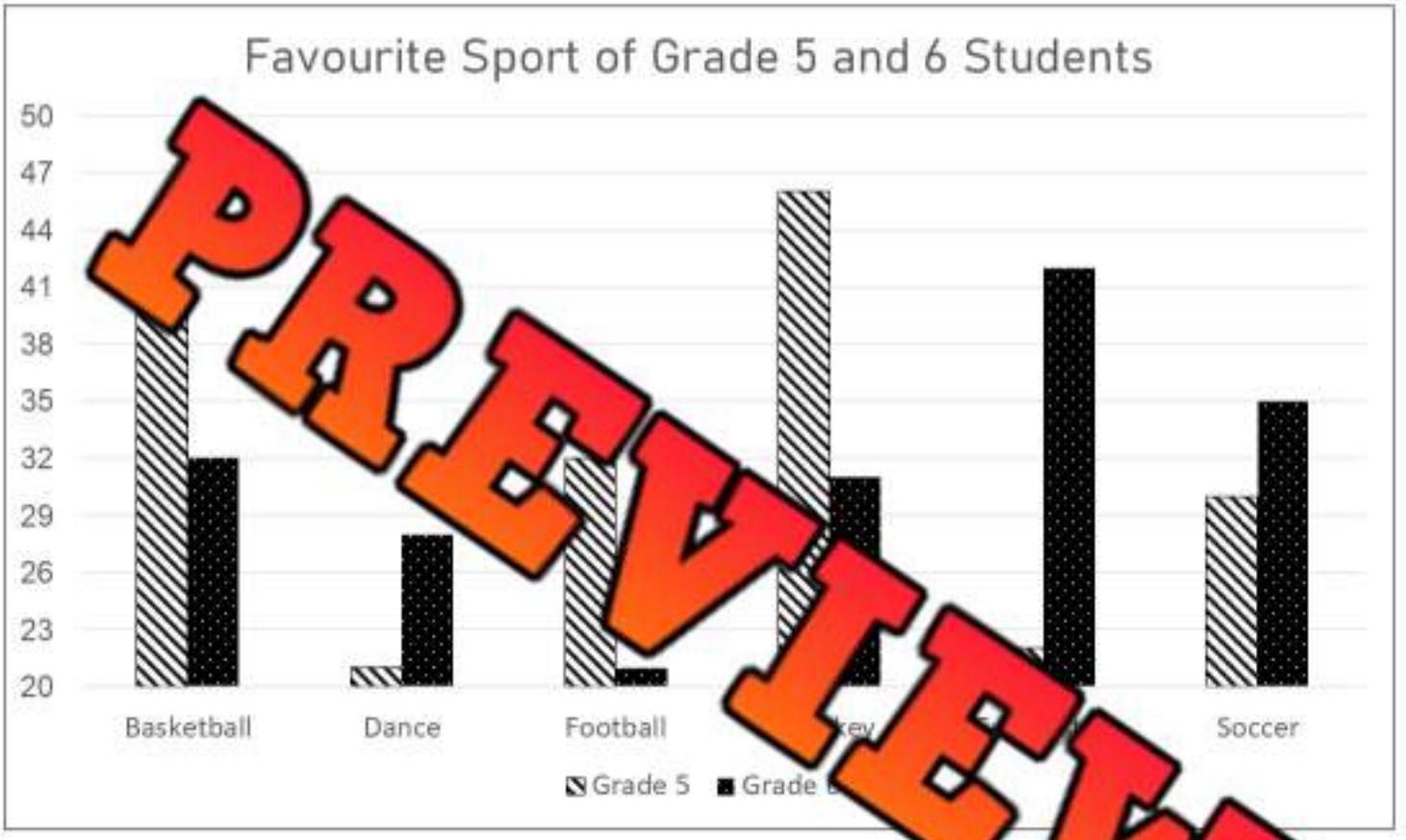
X axis label ☐ Y axis label ☐ Title ☐ Scale ☐ Number/Intervals ☐

Name: _____ 50

Curriculum Connection
D1.6

Interpreting a Double Bar Graph

The students in grades 5 and 6 were asked which sport was their favourite. The results have been sorted by grade in the double bar graph below.



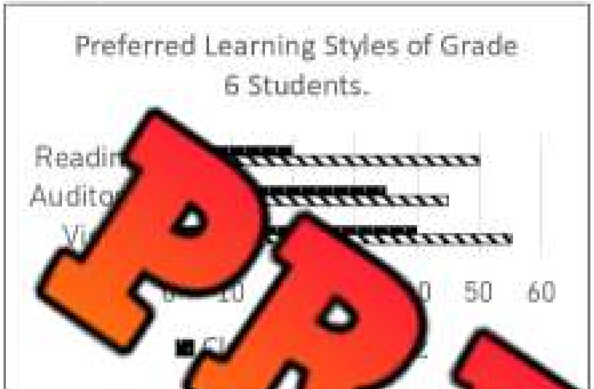
a) Which sport did the grade 5's like the most?	
b) Which sport did the grade 6's like the most?	
c) Which sport got the most votes combined?	
d) How many more votes did hockey get in total over dance?	
e) Did more grade 5s or grade 6s participate in the survey?	
f) How many students participated in the survey?	

Curriculum Connection
D1.6

Exit Cards

Cut Out Cut out the exit cards below and have students complete them at the end of class

Name: ____________________



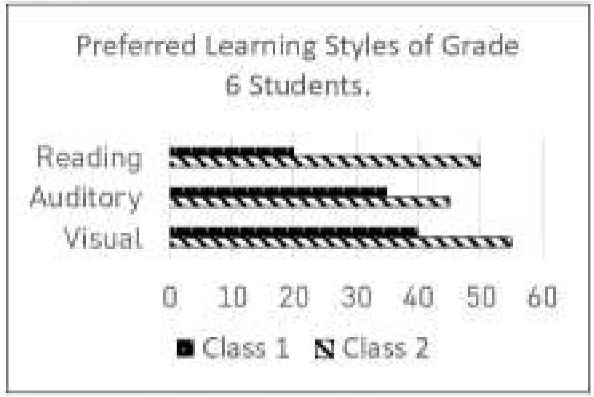
1) Which learning style is the most preferred among the students?

____

2) What is the total number of students who prefer either Visual or Auditory Learning?

____

Name: ____________________



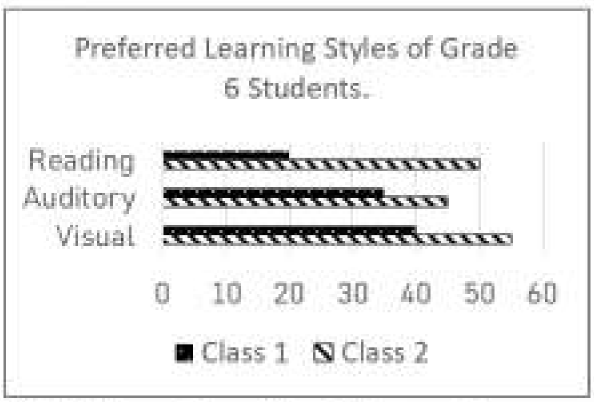
1) Which learning style is the most preferred among the students?

____

2) What is the total number of students who prefer either Visual or Auditory Learning?

____

Name: ____________________



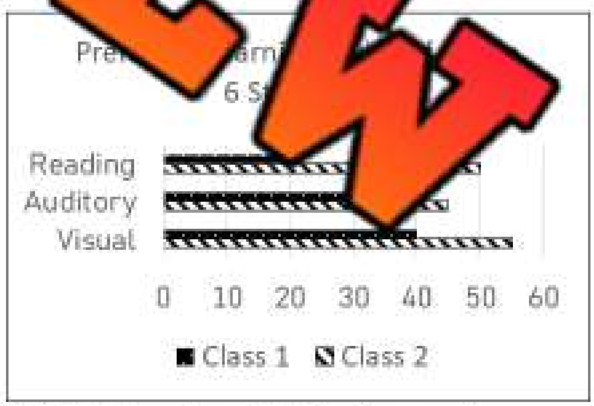
1) Which learning style is the most preferred among the students?

____

2) What is the total number of students who prefer either Visual or Auditory Learning?

____

Name: ____________________



1) Which learning style is the most preferred among the students?

____

2) What is the total number of students who prefer either Visual or Auditory Learning?

____

Name: _____ 52

Curriculum Connection
D1.2, D1.5, D1.6

Survey: Double Bar Graph

When creating a double bar graph, start by collecting data from two different groups. You could survey teachers vs. students, grade 5s vs. grade 6s, people who studied vs those who didn't.

Directions: Complete this organizer to setup your data so you can graph it later. Next, find two groups of people to survey!

Survey Question									
Example: Favourite colour									
Option									
Group 1	Group 2								
Tally	Tally								

1. Did any of the survey results surprise you?

2. Were there big differences between the two groups? Explain potential reasons for the differences.

3. Calculate the mean, median, mode, and range for both groups.

Data Set	Mean	Median	Mode	Range
1)				
2)				

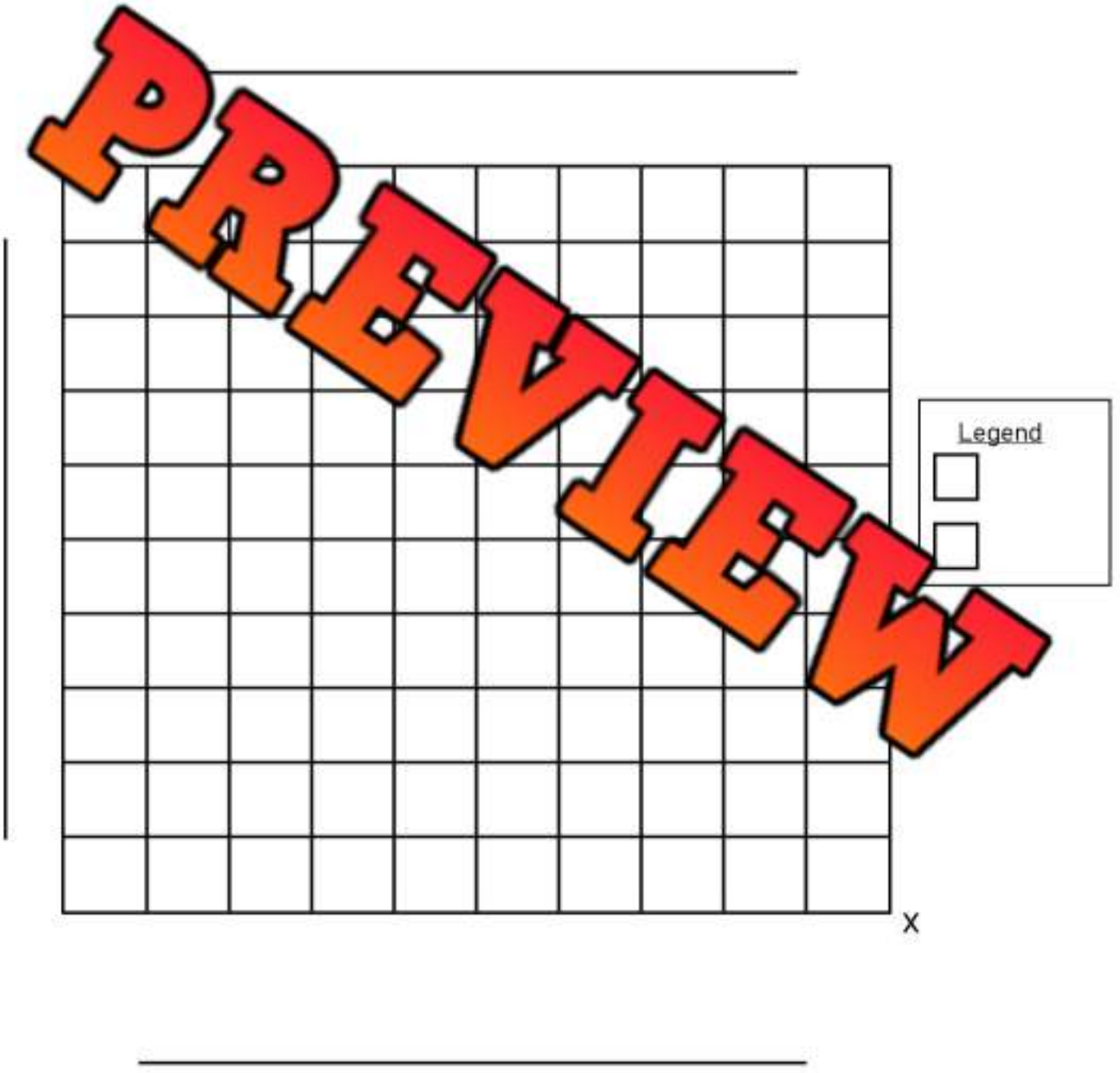
Name: _____ 53

Curriculum Connection
D1.3

Creating a Double Bar Graph

Use the data you collected to plot your graph. Remember the following labels:

X axis label ☐ **Y axis label** ☐ **Title** ☐ **Scale** ☐ **Options** ☐ **Legend** ☐

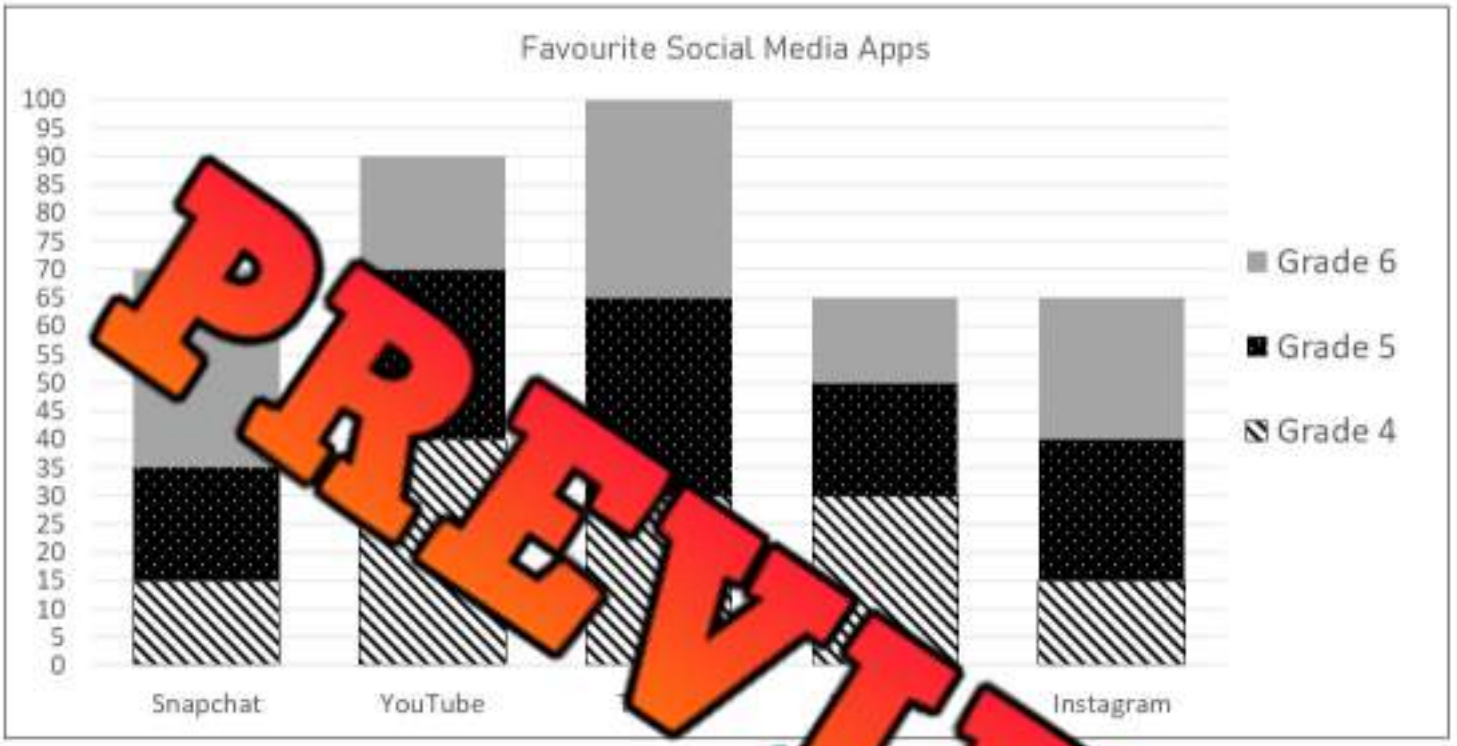


Name: _____ 54

Curriculum Connection
D1.6

Stacked-Bar Graph – Favourite Social Media

The students in grade 4, 5, and 6 were asked which social media app was their favourite. The results have been sorted by grade in the stacked-bar graph below.



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

Grades	Snapchat	YouTube	Tik Tok		
4					
5					
6					

Part 2 Answer the questions below

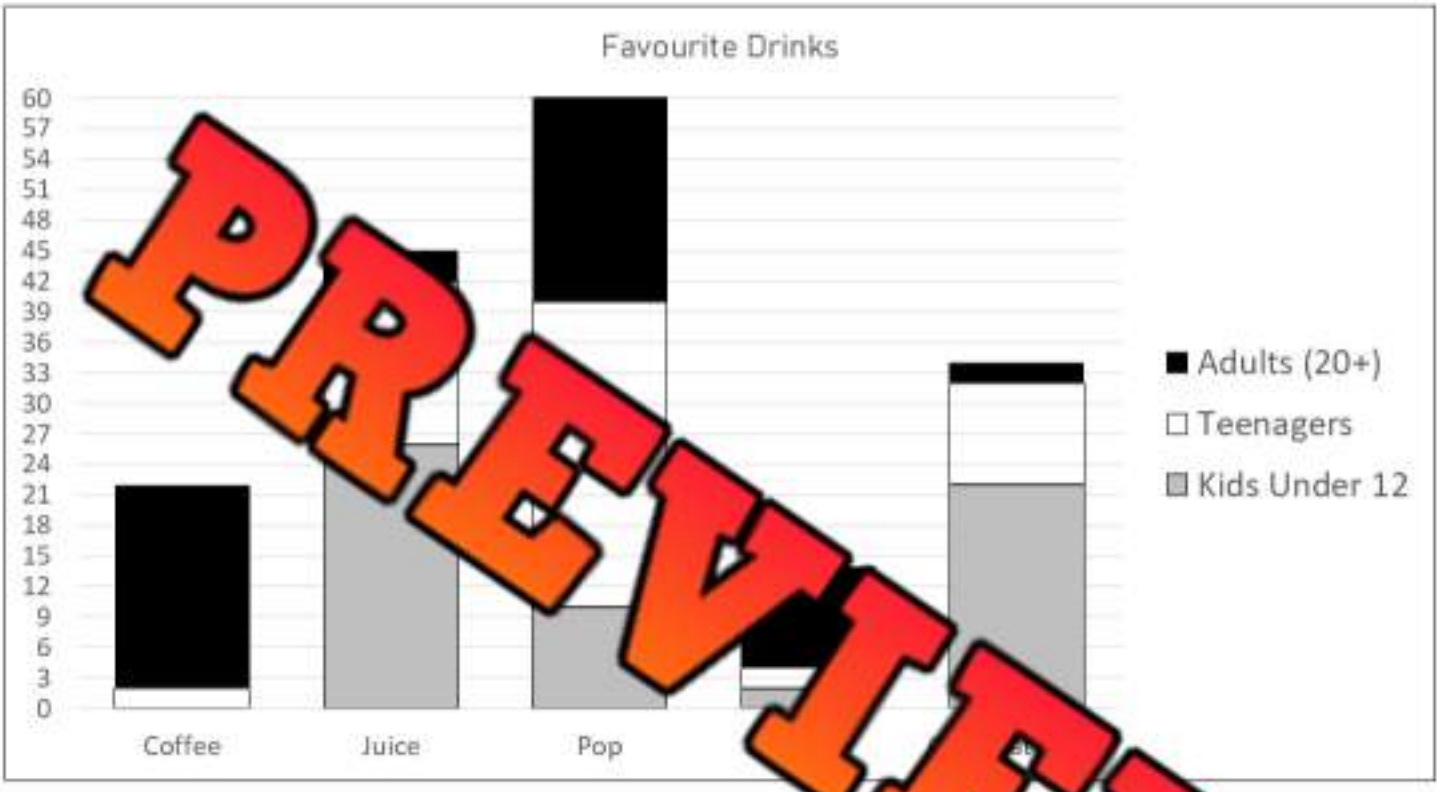
a) How many students in each grade were surveyed?	
b) Which social media was the most popular? How many votes did it get?	
c) Write 2 things you found interesting or surprising from the data.	

Name: _____ 55

Curriculum Connection
D1.6

Stacked-Bar Graph – Favourite Beverage

A restaurant wants to know which drinks to keep in stock. They decide to sample three different age groups – kids under 12, teenagers, and adults 20 years or older. They randomly select individuals from each group.



Part 1 Fill in the frequency table by reading [illegible] graph

Age Group	Coffee	Juice	Pop	T[illegible]	[illegible]ate Milk
12 and Under					
Teenagers					
Adults (20+)					

Part 2 Answer the questions below

a) How many people in each age group were surveyed?	
b) Which drinks would you keep in stock?	
c) Which type of sample was chosen? (random, stratified, or systematic)	

Name: _____ 56

Curriculum Connection
D1.2

Survey – Creating a Stacked-Bar Graph

Assignment	Creating a stacked-bar graph using data you have collected

1. Choose a population that you can segment into 2 or more groups.
   Example - Grade 5 and Grade 6 students

Groups within Population: _____

2. Choose a survey question you would like to learn more about. Think about how the answers might be different based on your different groups.

S								
Op								
Group 1	Group 2							
Tally	Tally							

Interpreting Your Survey Results

1. How many people did you survey? _____

2. Which category was the most popular? _____

3. What did you learn about the different groups in your population? Did the results surprise you? Explain.

_____

_____

4. What is the range of your data? Lowest number: ____ Highest Number: ___ Range: ____

5. If your graph has ten lines on the y axis (up and down), what scale will you go up by?

_____

6. Which type of sampling did you choose? _____

Name: _____ 57

Curriculum Connection
D1.3

Creating a Stacked-Bar Graph

Use the data you collected to plot your graph. Remember the following labels:

X axis label ☐ **Y axis label** ☐ **Title** ☐ **Scale** ☐ **Categories** ☐

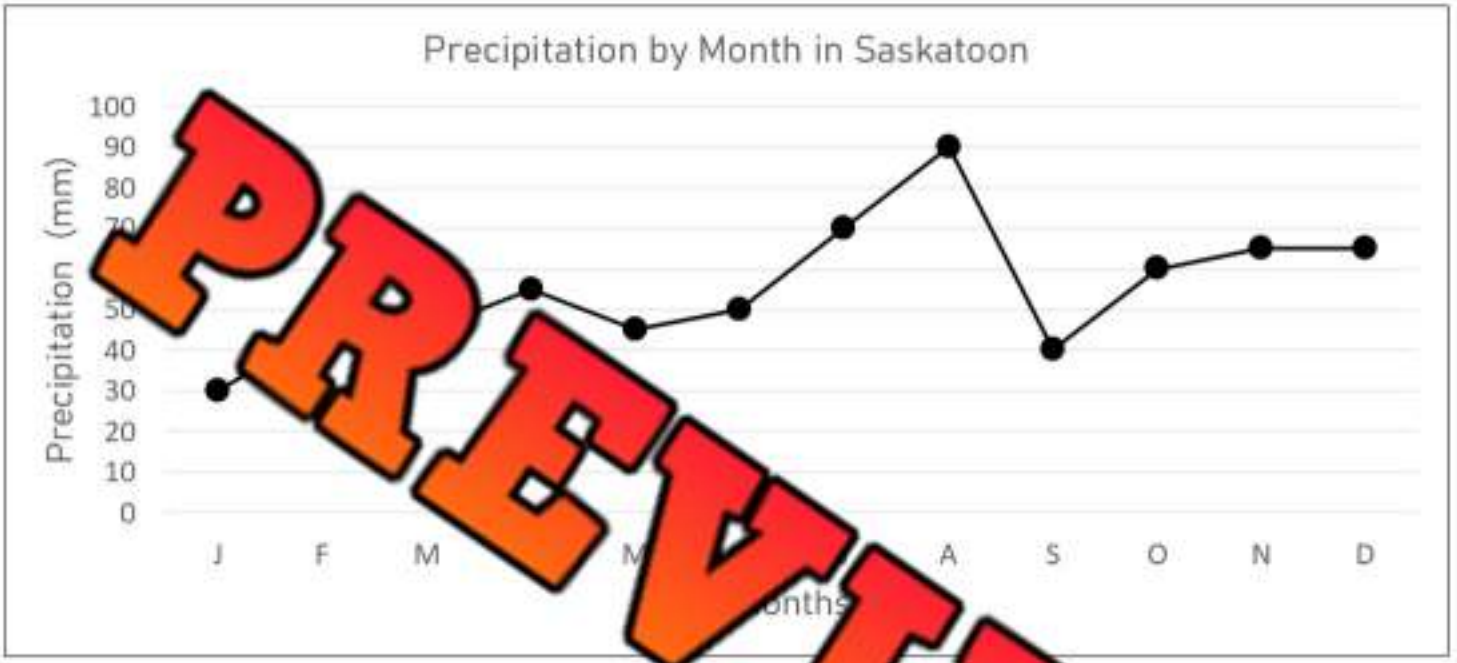
Fill in the frequency table below with your 5 categories and the different groups

Name: _____ 58

Curriculum Connection
D1.6

Interpreting a Broken-Line Graph

Precipitation is the amount of water falling from the sky. It can be in the form of rain, snow, drizzle, sleet, or hail. The data for total precipitation in Saskatoon for 2021 has been represented in the broken-line graph below. Numbers have been rounded to the nearest 5.



Part 1

Fill in the frequency table by reading from the broken-line graph

J	F	M	A	M	J	J	A	S	O	N	D

Part 2

Solve an argument

a) Nolan and Rachel are arguing over which time of year has more precipitation. Nolan says that more precipitation falls from January-June, but Rachel says more falls from July-December. Who is correct? Explain using data to support your answer.

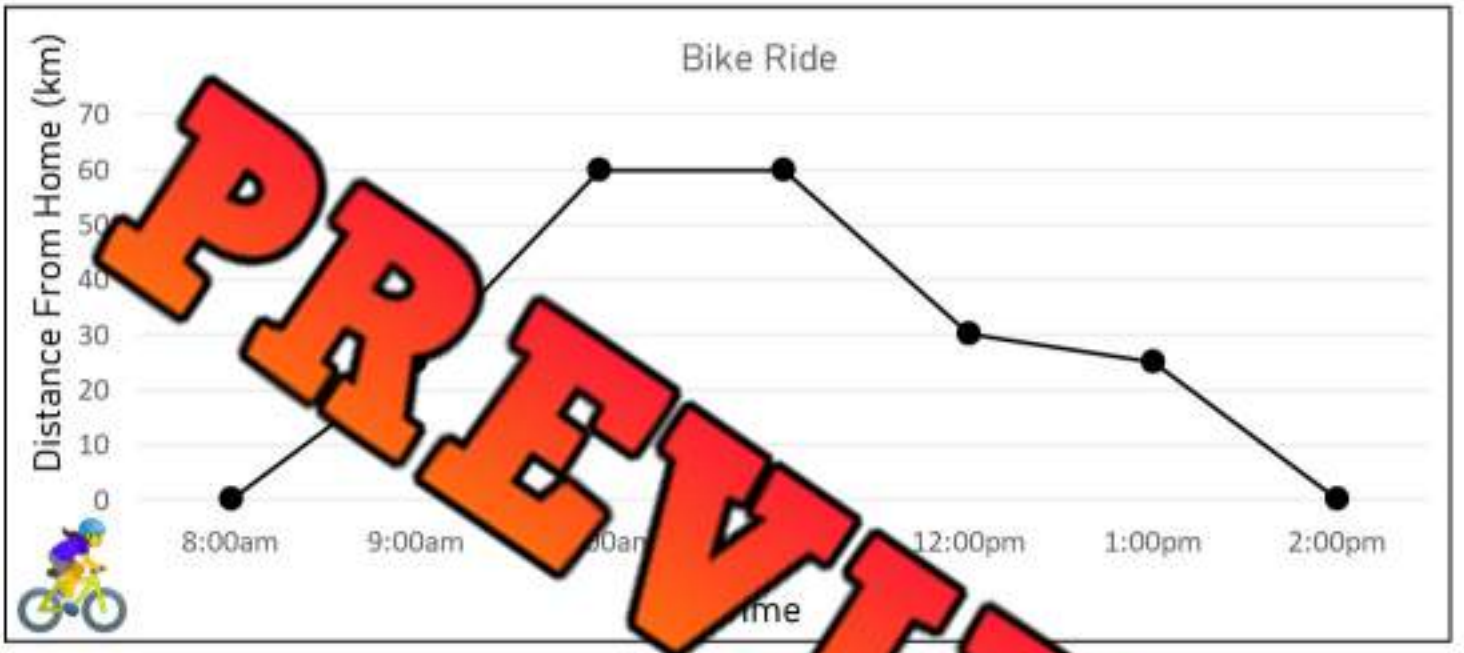
b) Rachel says the largest increase of precipitation happened from January to February, but Nolan thinks it was from September to October. Who is correct? Explain.

Name: _____ 59

Curriculum Connection
D1.5, D1.6

Interpreting a Broken-Line Graph

Jessica went for a bike ride from 8:00am to 2:00pm. She stopped to enjoy some food at a park and then went home. Unfortunately, she had a flat tire on the way home, but she eventually made it.



Part 1 Fill in the frequency table by r the graph above

Time							
Distance Travelled (km)							

Part 2 Answer the questions below

a) How many kilometres in total did Jessica travel?	
b) What time did Jessica stop at the park?	
c) When did Jessica have a flat tire?	
d) What hour did Jessica travel the most kilometres?	
e) On average (mean), how many kilometres did Jessica travel each hour (including the rest hour)?	

Curriculum Connection
D1.5, D1.6

Exit Cards

Cut Out Cut out the exit cards below and have students complete them at the end of class

Name: _____

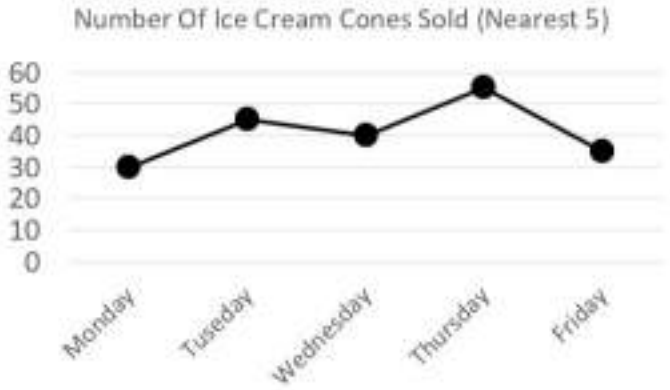
1) On which day were the most ice cream cones sold?

_____

2) How many more ice cream cones were sold on Friday than on Monday?

_____

Name: _____



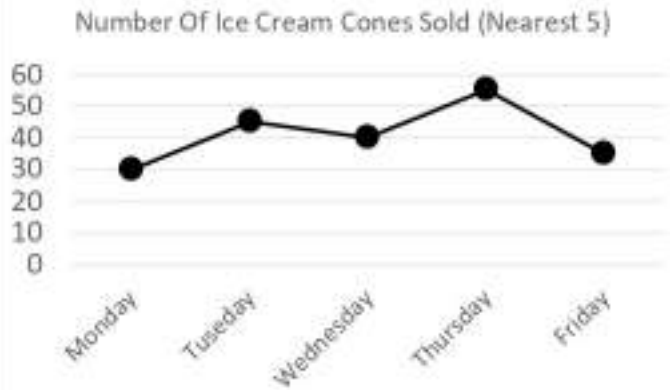
1) On which day were the most ice cream cones sold?

_____

2) How many more ice cream cones were sold on Friday than on Monday?

_____

Name: _____



1) On which day were the most ice cream cones sold?

_____

2) How many more ice cream cones were sold on Friday than on Monday?

_____

1) On which day were the most ice cream cones sold?

_____

2) How many more ice cream cones were sold on Friday than on Monday?

_____

Name: _____ 61

Curriculum Connection
D1.1, D1.2, D1.5

Broken Line Graph – Quantitative Continuous Data

Below is a data table showing how much water is collected in a rain barrel each day over a 7-day period.

Water Collected in a Rain Barrel Over 7 Days	
Day	**Litres of Water Collected**
Mon	0
Tue	12
W	7
Thursday	0
Friday	
Saturday	
Sunday	3

Questions Read the data and a the qu s

1) Do you expect the graph to have a steady patt or will it go up and down?	
2) On which day was the most water collected?	
3) Which days showed a drop in rainfall compared to the day before?	
4) How many days did it not rain?	
5) How many litres did the barrel collect over the 7 days?	
6) What label will you use on the x-axis?	
7) What scale will you use on the y-axis?	
8) What is the average (mean) amount of water collected per day?	

Name: _____ 63

Curriculum Connection
D1.2, D1.5

Collecting Quantitative Continuous Data

Quantitative continuous data is data that is collected through measuring. We don't use categories, instead we use numbers.

Example – height of students, how many steps taken, or time it took to run a lap.

Data Collection Collect data by measuring or researching your question of interest

Que	
Use the box b	ganize ata.

Interpreting The Data

1) Was your data collected from a primary or secondary

2) Fill in the table below by calculating the measures of central ten

Mean	Median	nge

3) What conclusions can you draw from your data? What did you learn?

4) What surprised you about the data you collected? Include at least 1 surprise.

Name: _____ 64

Curriculum Connection
D1.3

Creating a Broken-Line Graph

Use the data you collected to plot your graph. Remember the following labels:

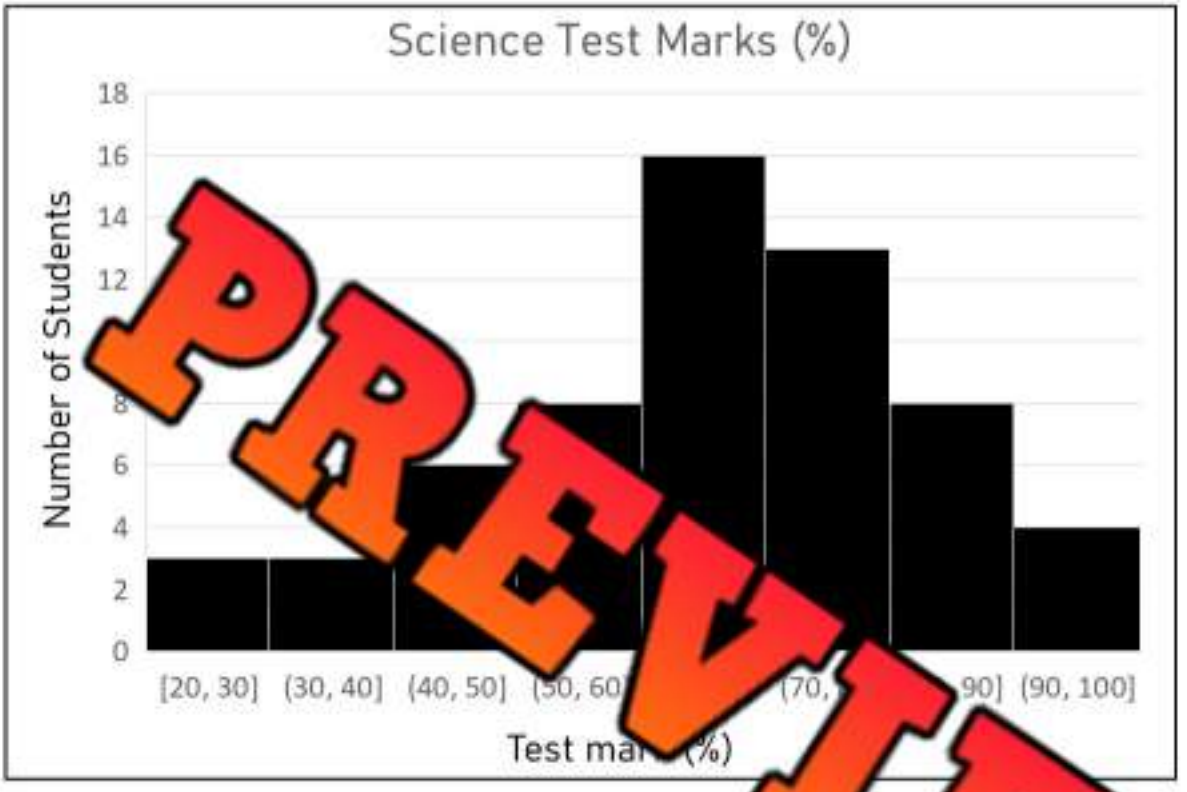
X axis label ☐ Y axis label ☐ Title ☐ Scale ☐ Categories ☐

Name: _____ 65

Curriculum Connection
D1.6

Interpreting a Histogram

A science teacher posted a histogram of the results of the last test.



Questions Fill in the tables below

Frequency Table	
0-9	
10-19	
20-29	
30-39	
40-49	
50-59	
60-69	
70-79	
80-89	
90-99	

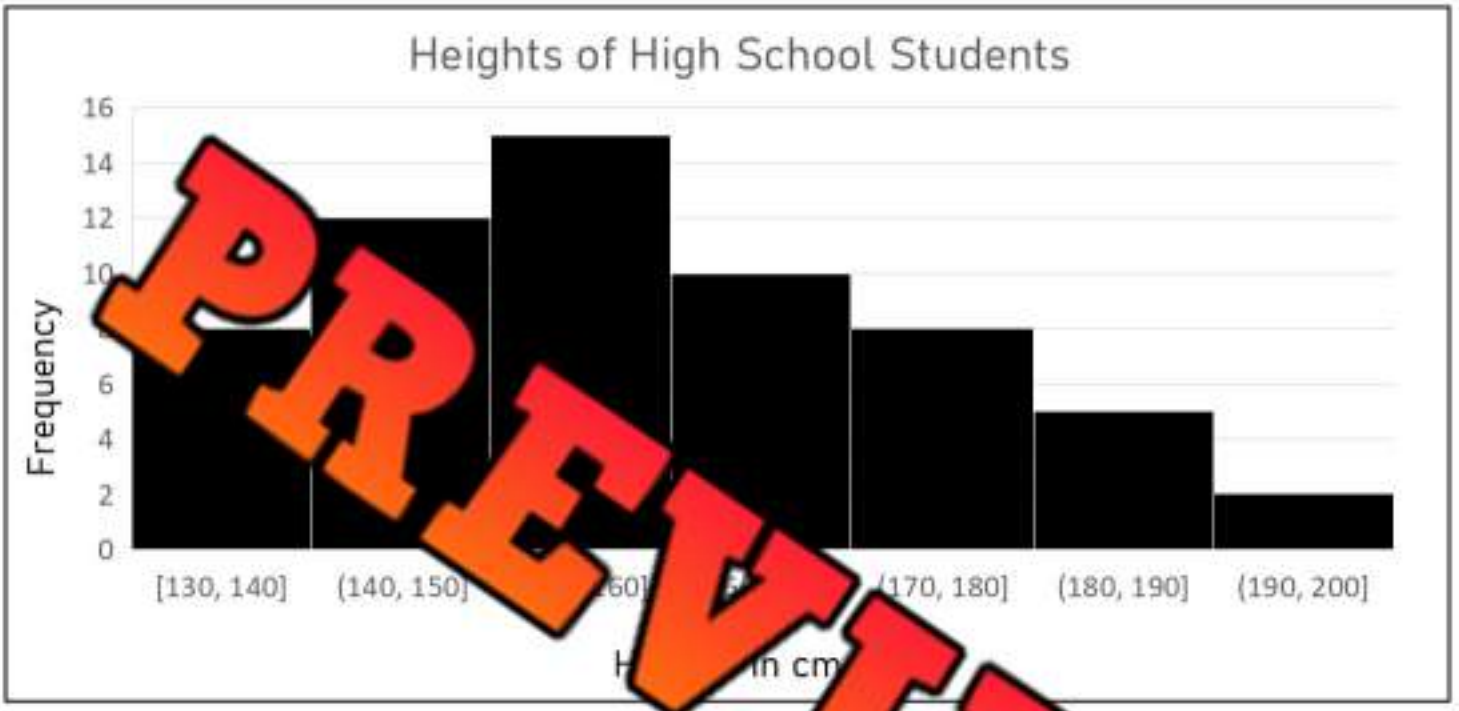
a) Which test score was m popular?	
b) Did most people pass or fail?	
c) How big are the intervals up to 90?	
d) How many students took the test?	
e) How many students got an A (80%+)?	
f) How many students failed the test (<50%)?	

Name: _____ 66

Curriculum Connection
D1.6

Interpreting a Histogram

The heights of 60 high school students at Nationview School were collected and displayed in the histogram below.



Interval	130-140	140-150	150-160	70	180-190	190-200
Frequency						

Questions Fill in the tables below

a) Which height interval do most students fit?	
b) Which height interval is the least common?	
c) How many students are taller than 150 cm?	
d) What is the combined number of students between 160 cm and 190 cm?	
e) Are more students taller or shorter than 160 cm?	

f) What conclusions can you draw from this graph? What did you learn?

_____

_____

Name: _____ 67

Curriculum Connection
D1.3

Creating a Histogram

A class of students was asked to track how many total hours they spent on screens over the course of one week. This included time spent on computers, tablets, phones, and watching TV. The goal was to see how much screen time students were using during their regular routines outside of school.

Below is the raw data showing how many hours each student spent on screens last week. Your task is to organize this data into a frequency table using intervals, then create a histogram to show the results.

Raw Data (Hours per Week):
7, 14, 21, 5, 42, 27, 19, 3, 47, 39, 22, 6, 12, 33, 28, 44, 10, 23, 36, 11, 8

Questions

Make a frequency table and then answer the questions

Interval					
Frequency					

1) What is the title of your histogram?	
2) What does the X-axis represent?	
3) What is the average (mean) screen time?	
4) How many students are represented in the data?	
5) What is the range of screen time in this class?	
6) Did more students have screen time above or below 25 hours?	
7) Do you think this data would look different during summer break? Why?	_____ _____ _____

Name: _____ 68

Curriculum Connection
D1.3

Creating a Histogram

Use the data from the previous page to plot your graph.
Remember the following labels:

X axis label ☐ Y axis label ☐ Title ☐ Scale ☐ Intervals ☐

Name: _____ 69

Curriculum Connection
D1.1, D1.2

Creating Your Own Histogram – Collecting Data

Data Collection Collect data by measuring or researching your question of interest

Question of Interest Example: long jump distances in gym class.	

Use the box below to organize your data.

Questions Answer the question

1) Was your data collected from a primary or secondary source?

2) What kind of data works best for a histogram?

3) Why is it common to see taller bars in the middle of a histogram?

4) What conclusions can you draw from your data? What did you learn?

a) _____

b) _____

Name: _____ 70

Curriculum Connection
D1.3

Creating a Histogram

Use the data you collected to plot your graph. Remember the following labels:

X axis label ☐ Y axis label ☐ Title ☐ Scale ☐ Number/Intervals ☐

Canadians in the workforce

2016 CENSUS

42.6 was the median age of workers in 2016*

Occupations with lower median age

36.6 ...icians, statisticians ...s

36.3 Plu...

34.7 Web designers and develop...

Occupations with higher median age

61.6 Judges

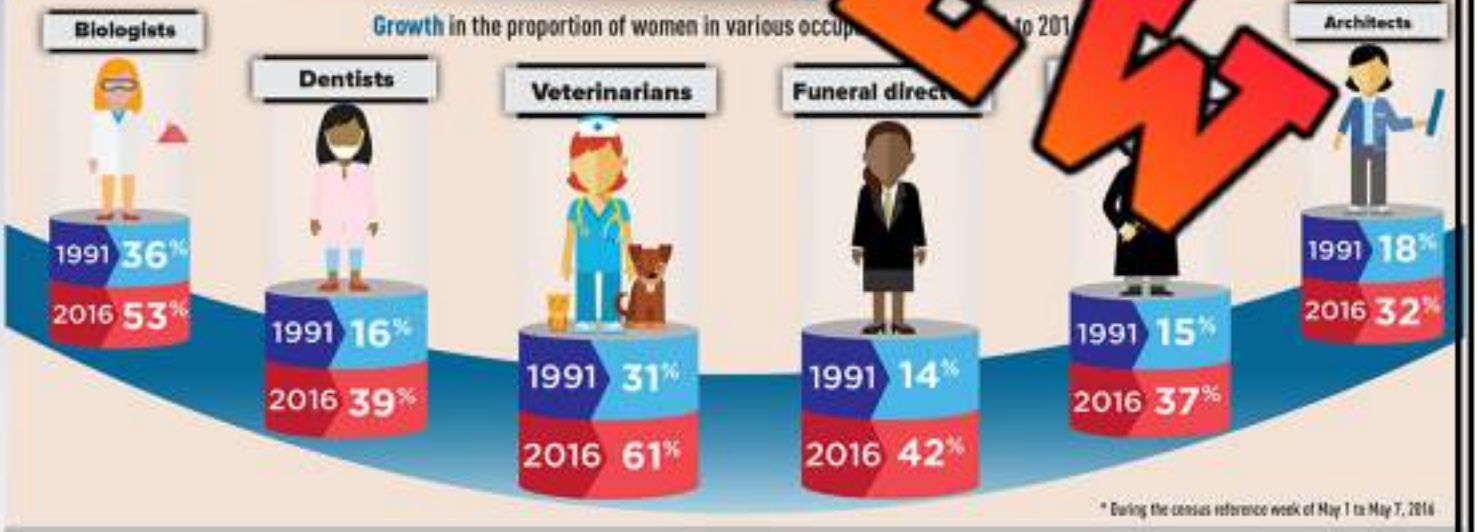
53.6 Bus drivers, subway operators and other transit operators

... School principals and administrators of elementary and secondary education

25 years of gains in wo...'s r...tation

In 2016*, **48%** of workers were w... ...pare...

Growth in the proportion of women in various occup... ...to 201...



* During the census reference week of May 1 to May 7, 2016

Source: Statistics Canada, 2016 Census of Population.

www.statcan.gc.ca/census

Statistics Canada | Statistique Canada

Canada

Name: _____ 77

Curriculum Connection
D1.4

Reading Infographics

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

Directions Find 2 different infographics and answer the questions below

Infograph 1	Title: _____
1) What i ic of the infographic? Why was it made?	
2) What d you the infographic? List at least 3 things.	
3) What did you like about the infogr	

Infographic # 2	Title: _____
1) What is the topic of the infographic? Why was it made?	
2) What did you learn from the infographic? List at least 3 things.	
3) What did you like about the infographic?	

Name: _____ 78

Curriculum Connection
D1.4

Creating an Infographic

Directions Display the data set in different ways below. Write in the boxes and draw pictures

The Canadian Government is worried about how much screen time kids are having each week! Check out the results that speak for themselves!

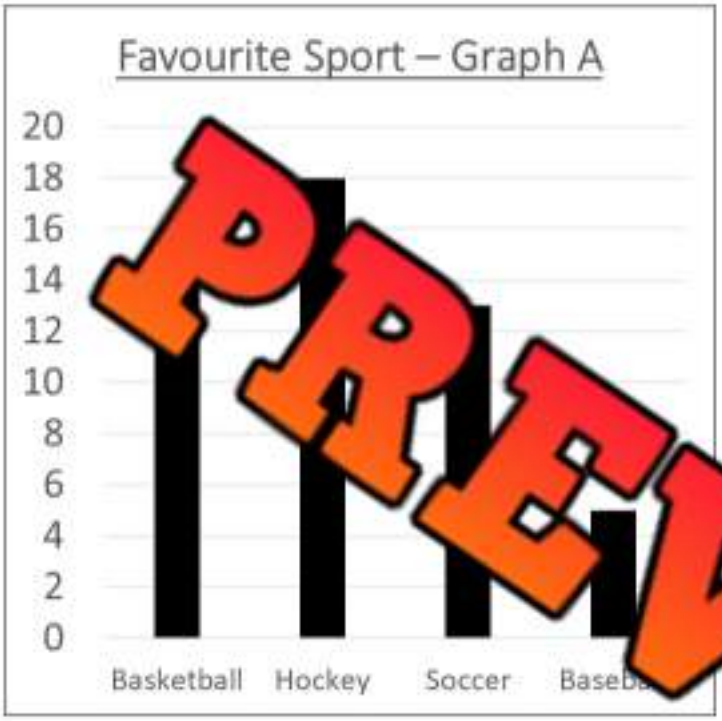
Ages	8	9	10	11	12	13	14	15
Screen (H		5	7	8	12	15	19	24

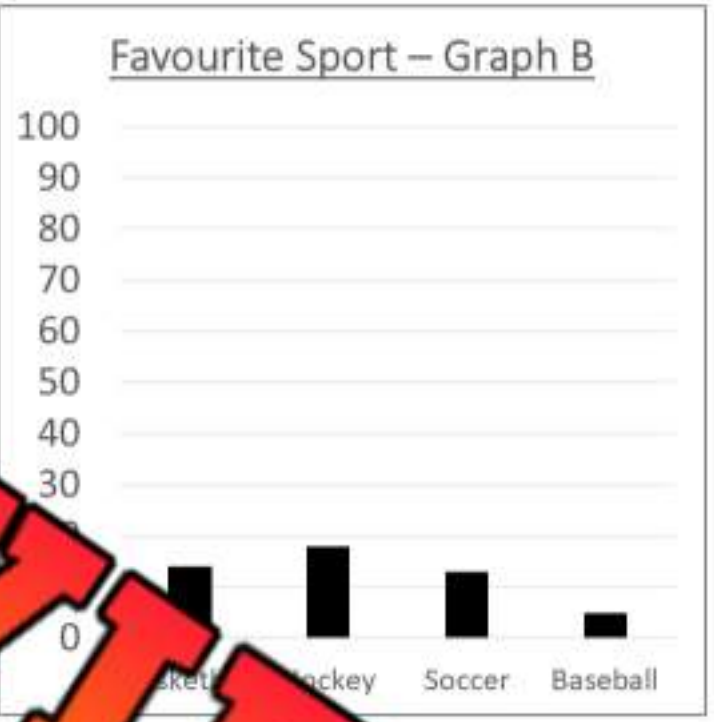
Name: _____ 81

Curriculum Connection
D1.6

Examining Scale – Favourite Sport

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





Questions What do you notice about th[illegible]?

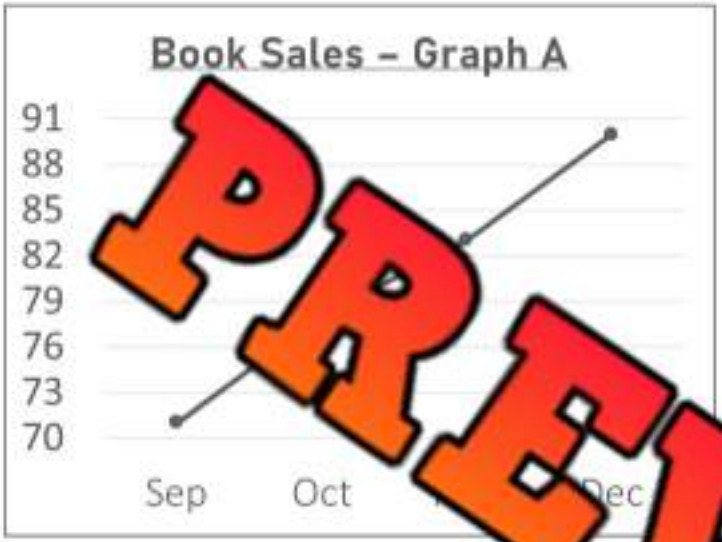
a) What is the scale in Graph A?	
b) What is the scale in Graph B?	
c) Which graph uses more of the space?	
d) Which graph is easier to read and interpret? Why is that graph better?	
e) Why is it important to choose an appropriate scale?	

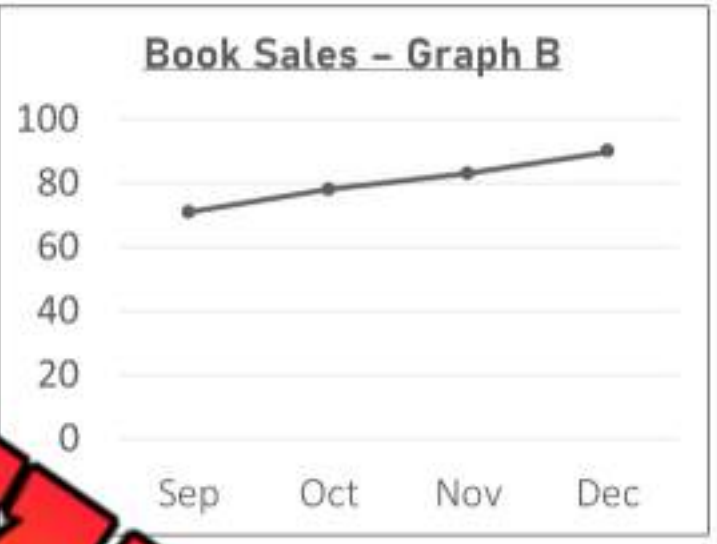
Name: _____ 83

Curriculum Connection
D1.6

Misleading Graphs

Imagine you are selling a book you wrote. You want to show your customers that your book is selling like crazy, and they should buy it now before it sells out. Which graph would you choose for an infographic?





Questions What do you noti[illegible]t the [illegible]s?

a) Which graph would you use to show custo[illegible] that [illegible]ve been growing massively? Why?

b) How are the graphs different? Do they have the same data?

c) How many sales were made from September to December?

d) Does graph A make it seem like more books were sold? Explain.

e) Why is it important to read a graph carefully?

Name: _____ 84

Curriculum Connection
D1.6

Misleading Graphs

Fantastic Footwear is running an ad campaign comparing their products versus their competitor, Super Shoes.

Questions What do you notic[illegible] the t[illegible]phs?

a) Which graph would you use if you were F[illegible]ic Fo[illegible]?

b) How many more votes in total did Fantastic Footwear get over S[illegible]hoes?

c) Are Fantastic Footwear shoes a lot better than Super Shoes? Explain.

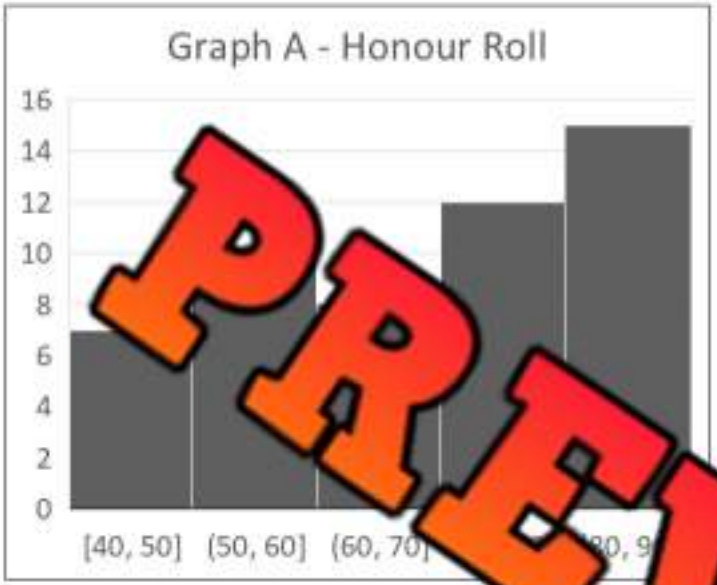
d) Why would advertisers use charts like this to sell their products?

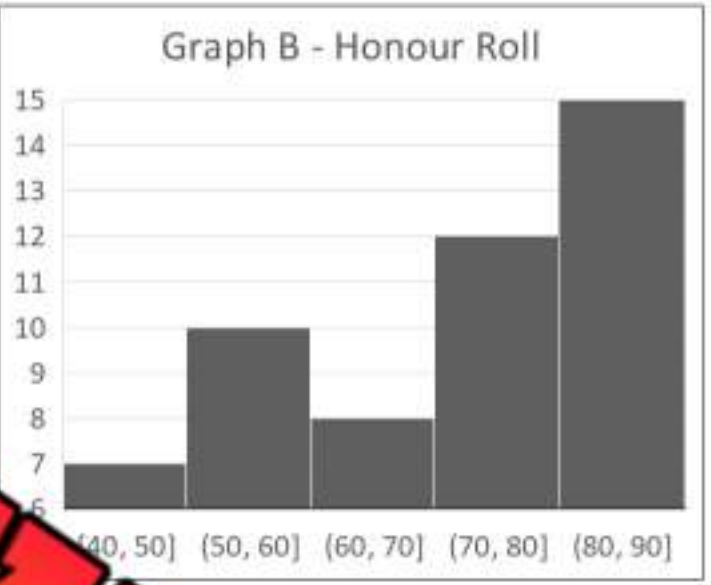
Name: _____ 85

Curriculum Connection
D1.6

Misleading Graphs

Wellington High School is proud of how many students they have on their honour roll (80% or more). They want to show off their success by posting their data.





Questions What do you notic[illegible] the t[illegible]phs?

a) Which histogram should Wellington High [illegible]l us[illegible]t to emphasize their success?

_____

_____

_____

b) How many more students were on the honour roll? _____

c) How many did not make the honour roll? _____

d) Would it be fair to use Graph B? Why or why not?

_____

_____

e) **Make a connection** – Have you ever seen an advertisement use a misleading graph?

_____

_____

Name: _____ 86

Curriculum Connection
D1.6

Misleading Graphs

Part 1 Draw two graphs – one that is misleading and one that is honest

If you were selling cola as a business, how would you graph the data to make it look like your product is much more popular than the other products?

Ho… …aph

Favourite Pop	# of votes
…l Tea	10
…	19
…oot B…	16
…ner…	
Ging…	

Misleading Graph

Part 2 What do you notice about the two graphs?

a) Which graph would the cola business use? Explain why.

b) How did you make the graphs different?

Name: _____ 87

Curriculum Connection
D1.6

Truth or Lie? Graph Edition

Objective

What are we learning about?

Students will learn to identify and explain misleading elements in graphs, developing critical thinking skills and understanding how data can be manipulated in visual representations.

Materials

What you will need for the activity.

- A[illegible]ed [illegible]al graphs (some accurate, some m[illegible]ing)
- Smartboard [illegible] to [illegible]play the graphs
- Classroom [illegible] student[illegible] and view the graphs

Instructions

How y[illegible]mple[illegible]tivity

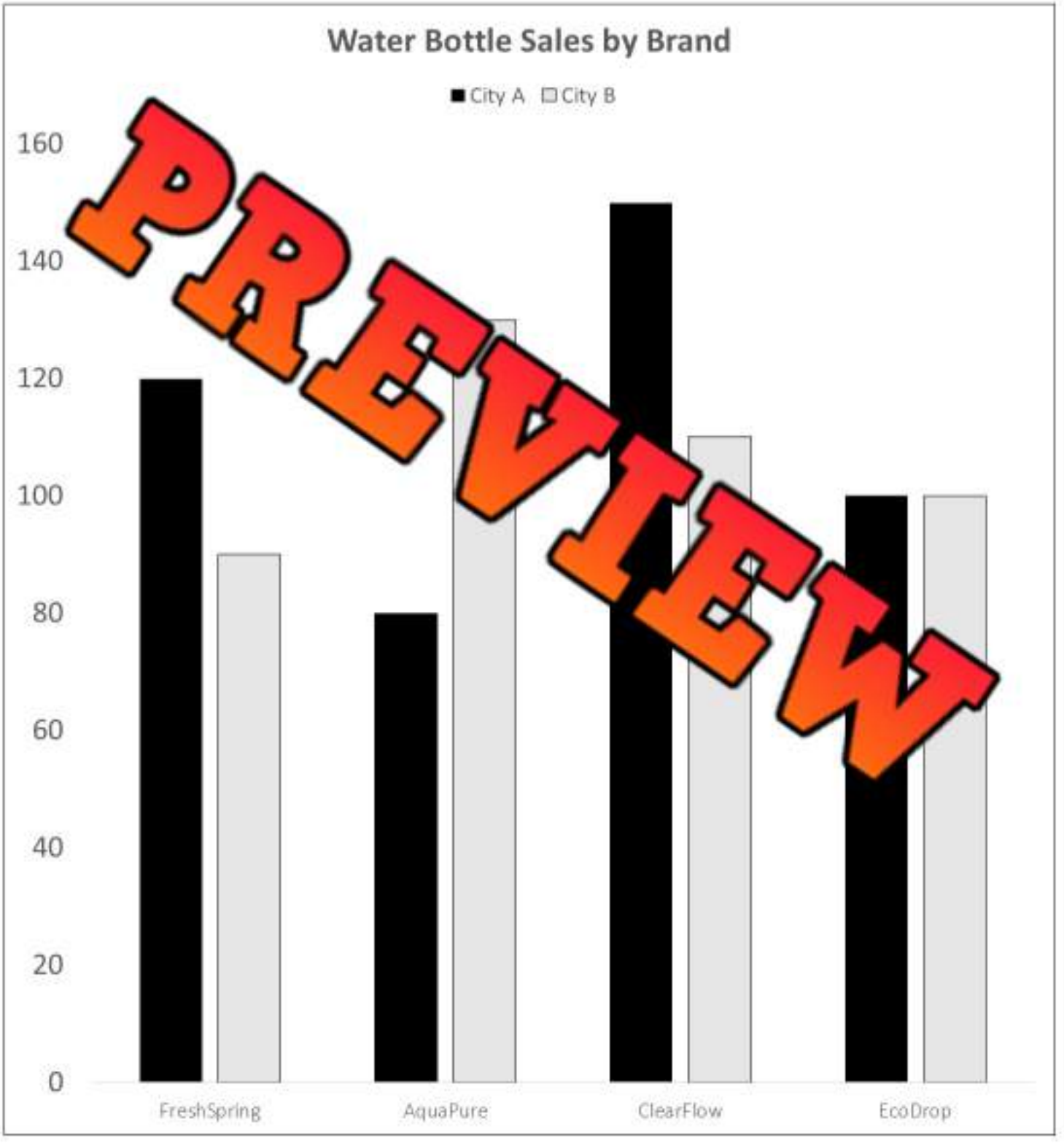
1. Begin by explaining the concept of [illegible]ng g[illegible] to the students, highlighting common ways graphs can be man[illegible]ed (e.g[illegible]ales, omitting data, exaggerating differences).
2. Show each graph one at a time on the smar[illegible]d or[illegible] sure all students can see the graph clearly.
3. After showing each graph, ask the students to use fing[illegible]als [illegible]ir decision. They show one finger if they believe the graph is true [illegible] misleading) and they show two fingers if they believe the grap[illegible]ading in some way).
4. Once all students have made their decisions, invite a few students or groups to explain their reasoning. Ask them to point out specific elements of the graph that make it true or misleading, such as the use of a misleading scale or omitted data.
5. Facilitate a class discussion to reinforce key concepts, summarizing the points made by the students and providing additional examples if necessary.
6. Repeat steps 3-6 for each graph in the set. Encourage students to look for new elements that might be misleading as they view different graphs.
7. After all graphs have been discussed, ask the students to reflect on what they have learned. Provide them with questions to think about or answer in their math journals or as a group.

Name: _____ 88

Curriculum Connection
D1.6

Graph What do you notice about the graph?

A graph comparing the number of water bottles sold from four different brands (FreshSpring, AquaPure, ClearFlow, and EcoDrop) in two cities, City A and City B.

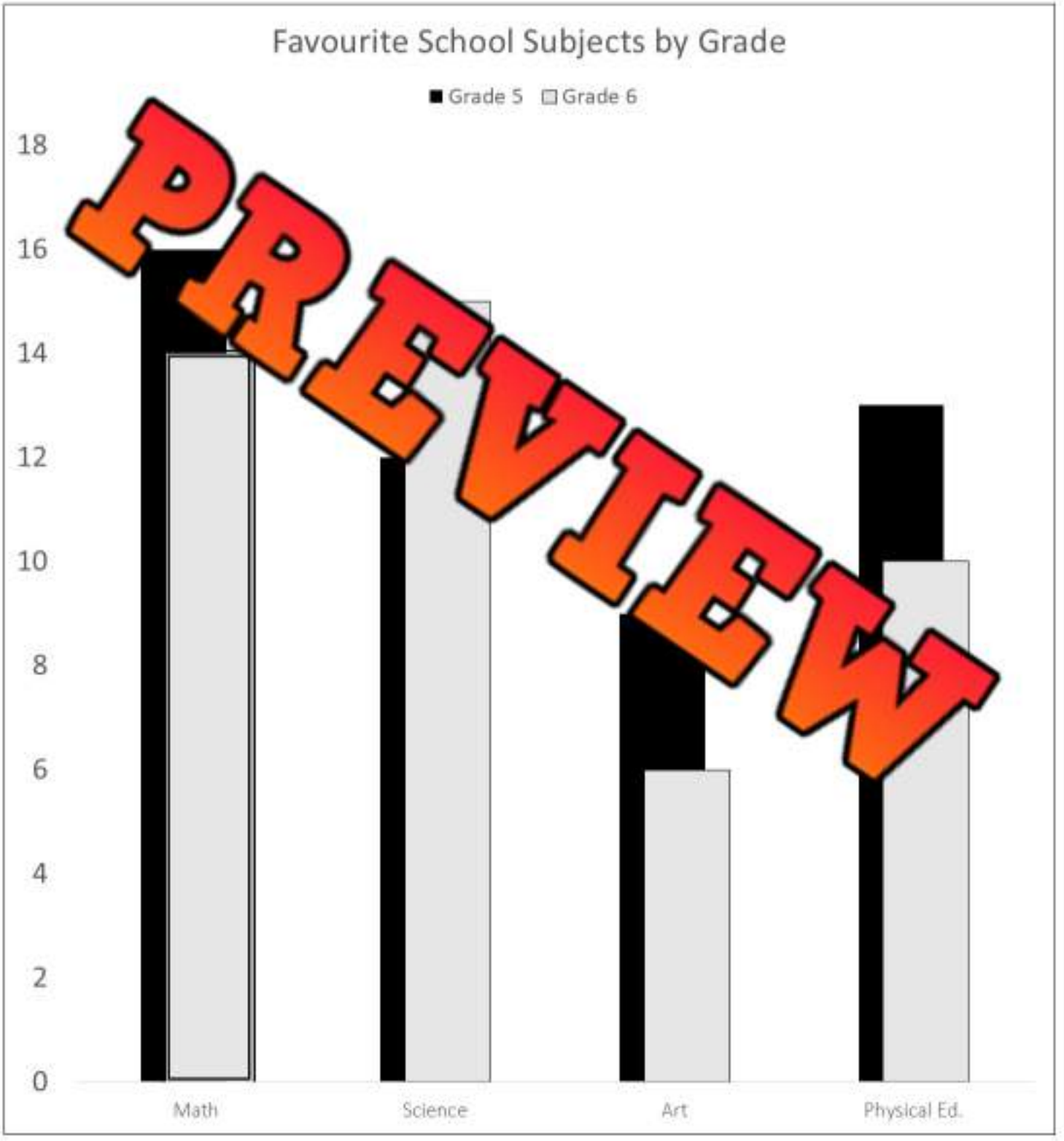


Name: _____ 91

Curriculum Connection
D1.6

Graph What do you notice about the graph?

A graph comparing the number of Grade 5 and Grade 6 students who chose each subject as their favourite in a classroom survey.

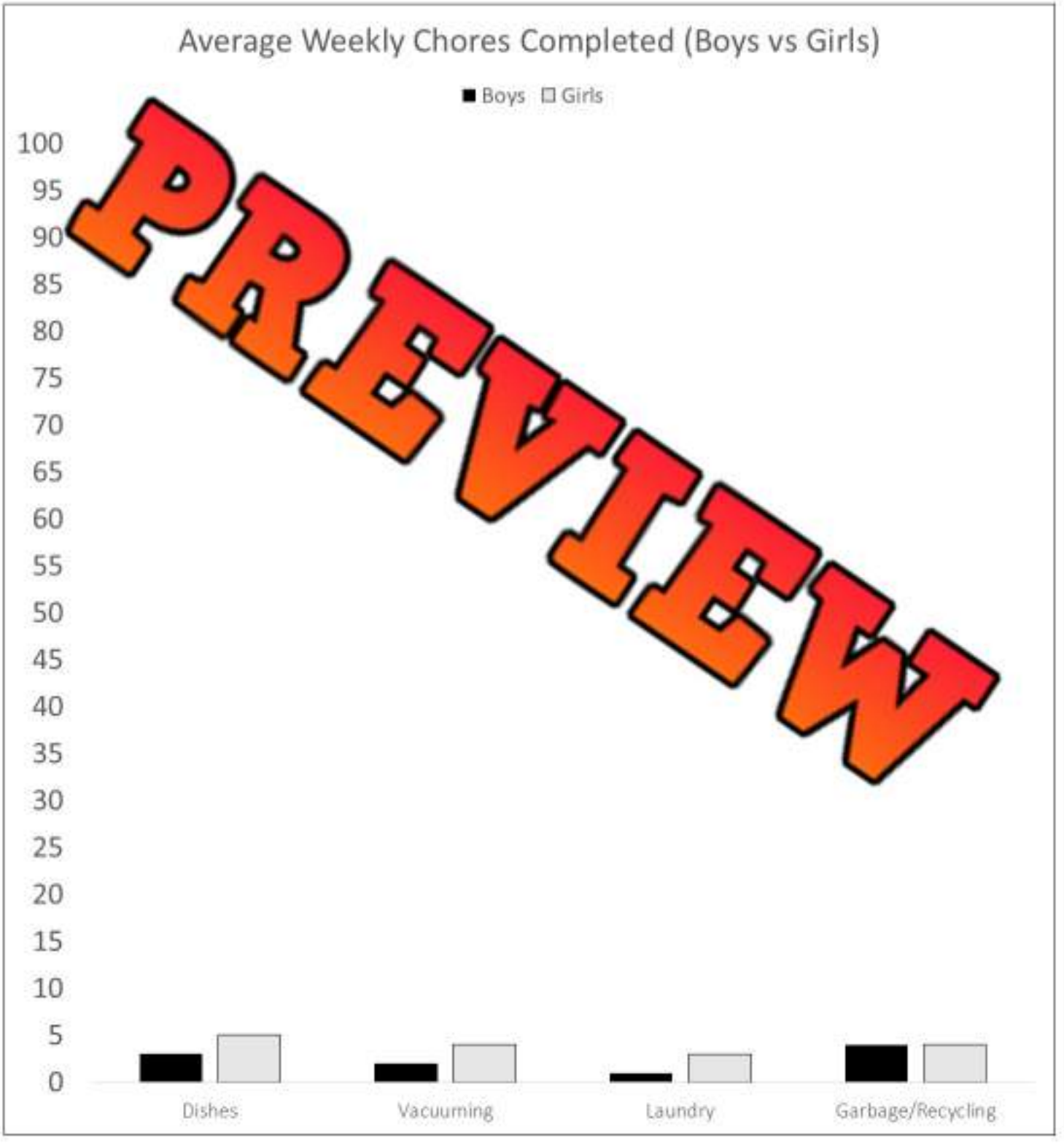


Name: _____ 92

Curriculum Connection
D1.6

Graph | What do you notice about the graph?

A graph comparing the average number of times per week that boys and girls completed different household chores.



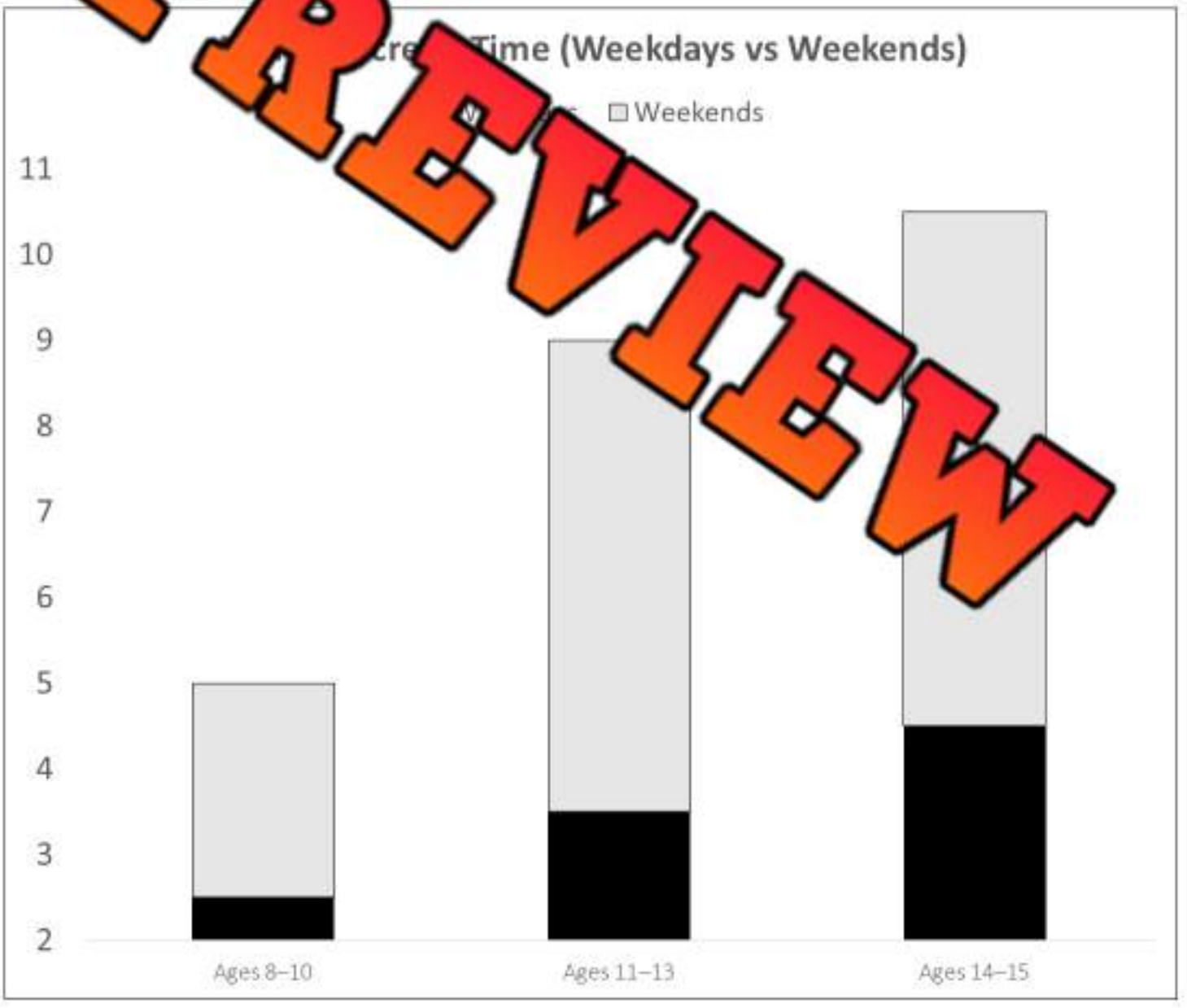
Name: _____ 94

Curriculum Connection
D1.6

Graph What do you notice about the graph?

A graph showing the average number of hours students in different age groups spend on screens during weekdays and weekends.

Age Group	Weekdays	Weekends
Ages 8–10	2.5	2.5
A –13	3.5	5.5
	4.5	6.0

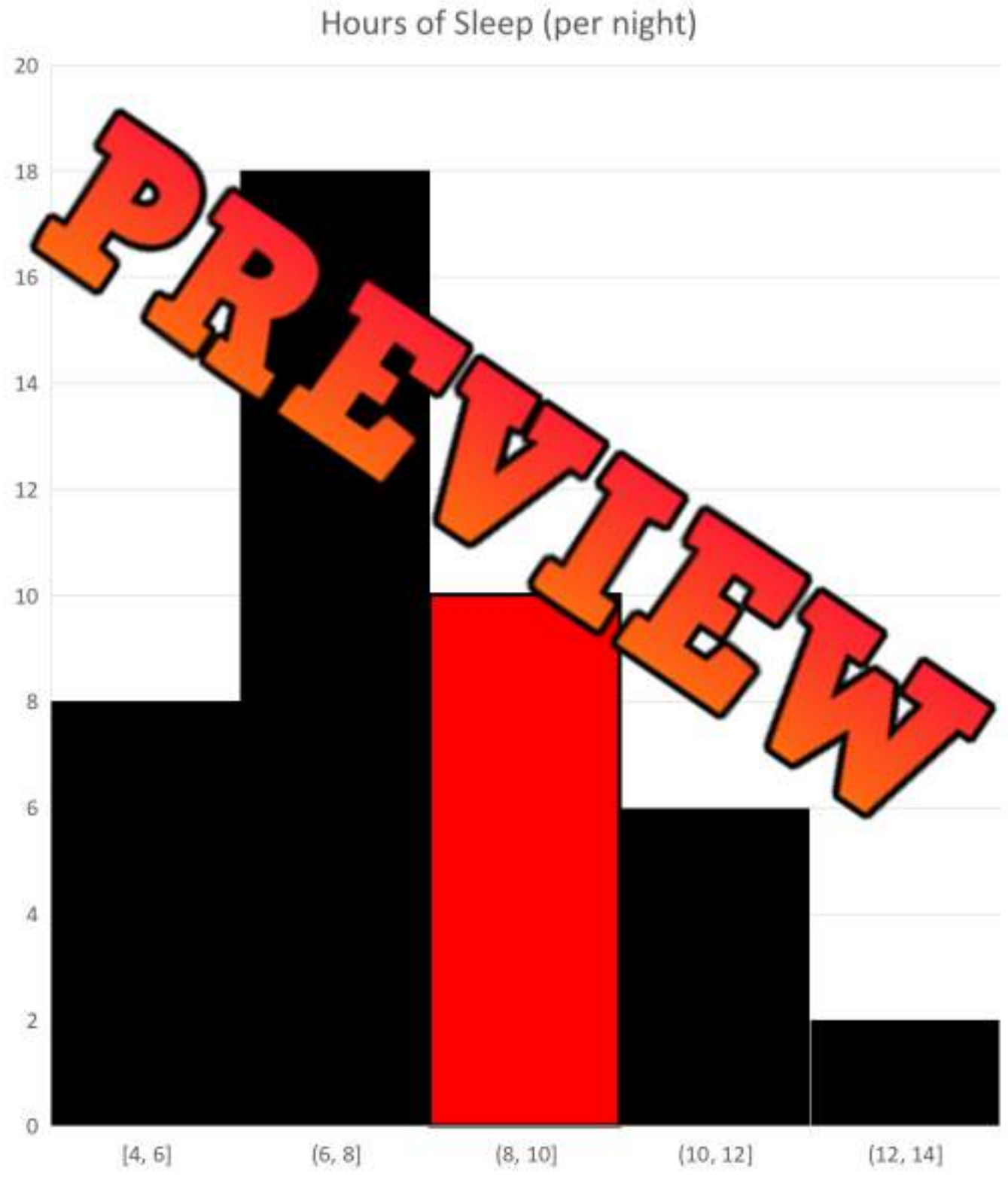


Name: _____ 95

Curriculum Connection
D1.6

Graph	What do you notice about the graph?

How many hours students sleep on a typical school night.



Name: _____ 96

Curriculum Connection
D1.6

Graph | What do you notice about the graph?

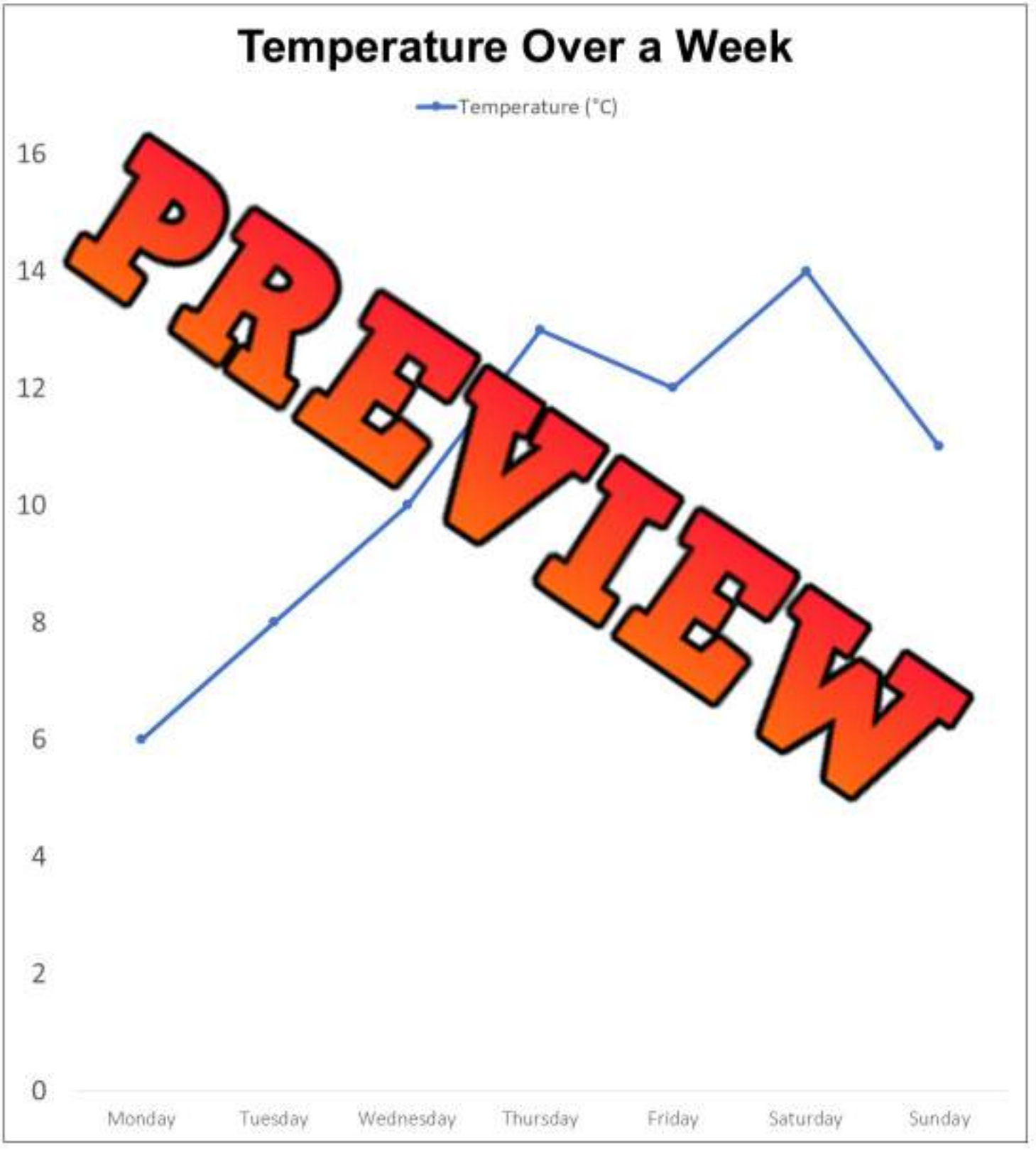
How many texts students sent in a single day.

Name: _____ 97

Curriculum Connection
D1.6

Graph | What do you notice about the graph?

A graph showing how the daily high temperature changed over a week in early spring.

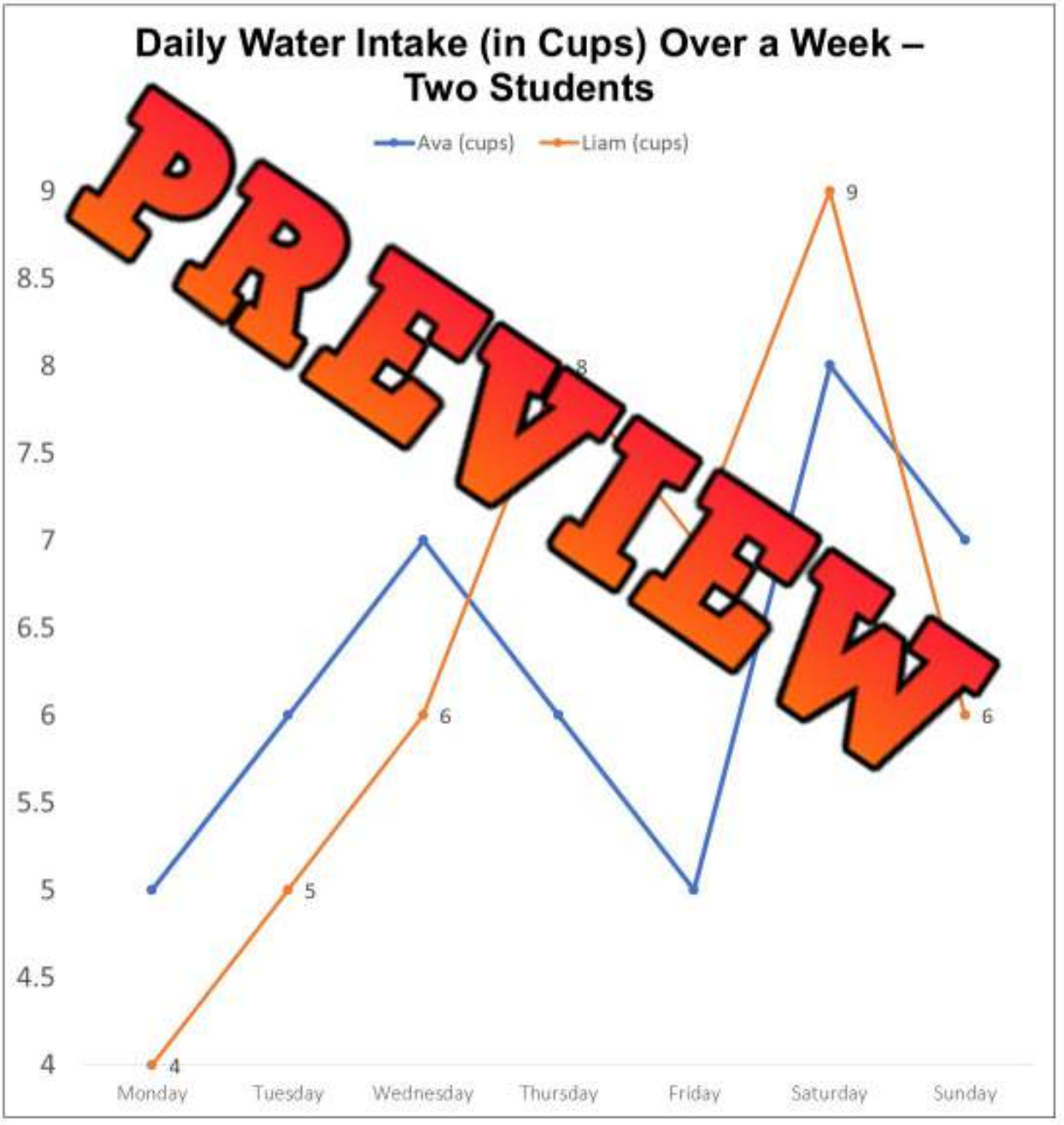


Name: _____ 98

Curriculum Connection
D1.6

Graph | What do you notice about the graph?

A graph comparing how many cups of water two students (Ava and Liam) drank each day over the course of a week.



Name: _____ 99

Curriculum Connection
D1.3

Choosing an Appropriate Graph

Questions Read the data below and decide which type of graph you would use to represent the data

1) You surveyed your classmates asking which sport is their favourite. The results are listed below.

Baseball	Gymnastics	Dance	Hockey	Football
2	35	22	18	12

Which t… p… uld you use to represent the data? Explain your choice.

_____

_____

_____

2) You surveyed the tea… stu… our school asking them which food was their favourite. The res… li…

	Pizza	Pas…	Chic…	Steak	Hot Dogs
Students	22	17		…	25
Teachers	16	21			2

Which type of graph would you use to represent t… …xplai… choice.

_____

_____

_____

3) You are displaying the heights (cm) of students in your school. You want to use intervals to display the data.

<130	130-140	140-150	150-160	160-170	170+
28	44	72	81	53	31

Which type of graph would you use to represent the data? Explain your choice.

_____

_____

_____

Name: _____ 101

Unit Quiz – Data Literacy

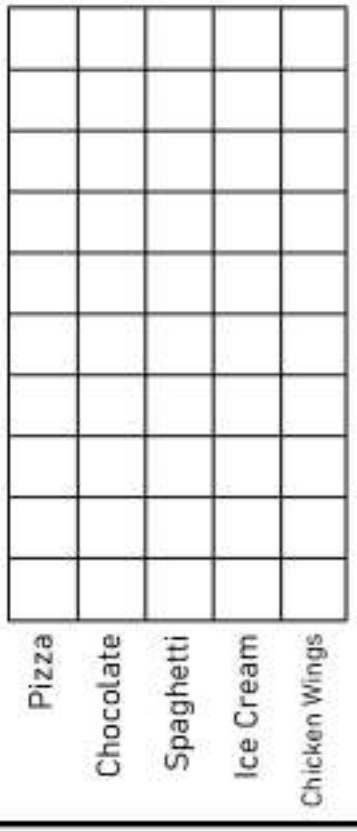
Part 1 Read the description of the data and circle if it is quantitative or qualitative

1) Favourite music genre	Quantitative	Qualitative
2) Heights of students in your class	Quantitative	Qualitative
3) Numbe dents in each classroom	Quantitative	Qualitative

Part 2 tion of the data and circle if it is discrete or continuous

1) Temperatur over long time period	Discrete	Continuous
2) How many siblings has	Discrete	Continuous
3) How tall a tree grows over ye	Discrete	Continuous

Part 3 Draw the bars for each of the bar grap low lculate the averages

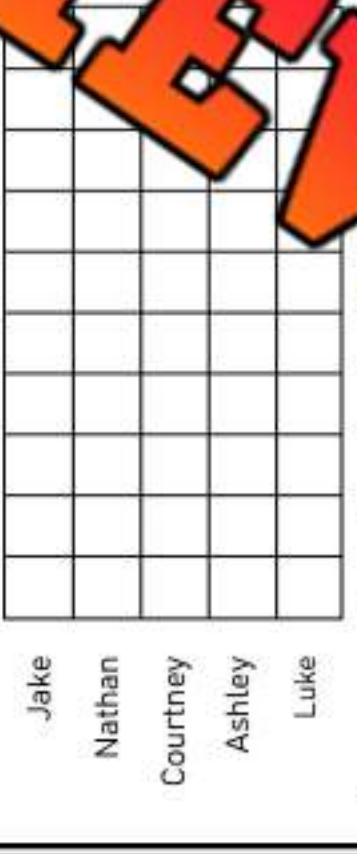


Favourite Food	# of votes
Pizza	27
Chocolate	15
Spaghetti	12
Ice Cream	15
Chicken Wings	21

Mode = _____

Median = _____

Mean = _____



Play	# of points
	70
n	60
Courtney	30
Ashley	70
Luke	90

Mode = _____

Median = _____

Mean = _____

Part 4 Read the graph and answer the questions below

Customers at the dollar-store were asked their age. The results are displayed below in the histogram.

Answer the following questions about t… abo…

1. Fill in the frequency table

Age Interval	10-20	20-30	30-40	…50	…-70	70-80
Frequency						

2. How many customers were surveyed? _____

3. What is the scale of the graph? _____

4. Which age category is largest? _____ smallest? _____

5. How many more people in their 40s shopped than people in their 30s?_____

6. What are 3 conclusions you can make from the histogram?

_____

_____

_____

Part 5 Graph the data below in a broken-line graph

The data for the amount of snowfall in Edmonton is presented in the table below. Graph the data as a broken-line graph. Make sure to label your graph properly.

Month	Oct	Nov	Dec	Jan	Feb	Mar	Apr
Snowfall (cm)	8	24	19	50	75	9	5

Calculate the averages below	
Averages	**Answer**
Mean	
Median	

1) Which month had the most snowfall? _____

2) Which month had the least snowfall? _____

3) How much did it snow in total during these 7 months? _____

4) Is this data discrete or continuous? _____

5) What conclusions can you make from this data? List at least 2.

_____

_____

Grade 6
D2. Probability

	Curriculum Expectations	Pages That Cover the Expectations
D2.1	use fractions, decimals, and percents to express the probability of events happening, represent this probability on a probability line, and use it to make predictions and informed decisions	105 - 121
D2.2	determine and compare the theoretical and experimental probabilities of two independent events happening	122 - 136

Name: _____ 105

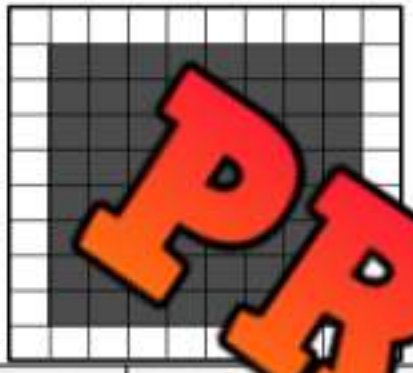
Curriculum Connection
D2.1

Finding Probability Using Fractions, Decimals, and Percents

Imagine throwing a dart blindly at a wall with a target on it. The probability of hitting the target depends on the size of the target compared to the wall. Complete the questions below using the shaded area as the target and the wall as the entire grid.

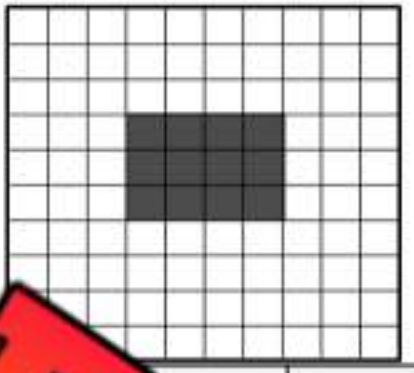
Questions Represent the probability of hitting the target using a fraction, decimal and percent

1)



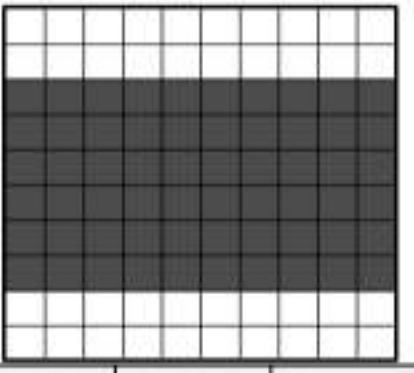
Fraction	Decimal	Percent

2)



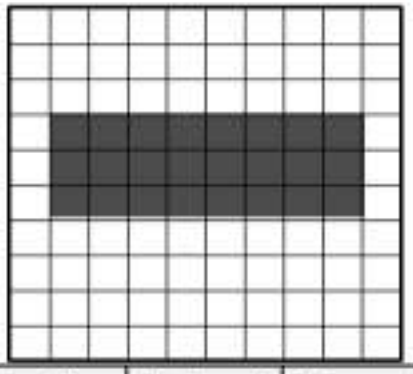
Fraction	Decimal	Percent

3)



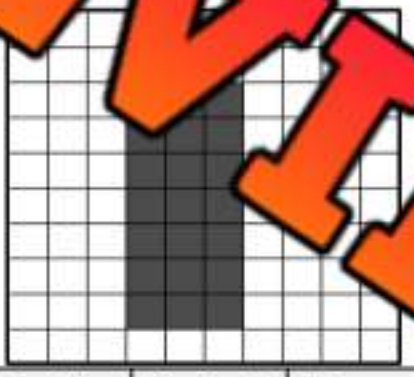
Fraction	Decimal	Percent

4)



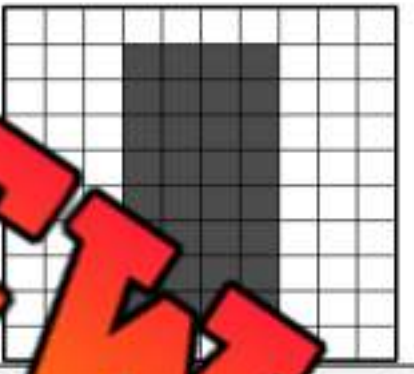
Fraction	Decimal	Percent

5)



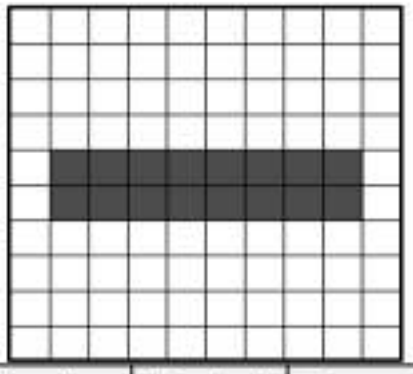
Fraction	Decimal	Percent

6)



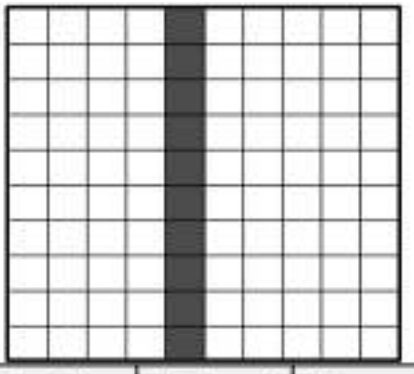
Fraction	Decimal	Percent

7)



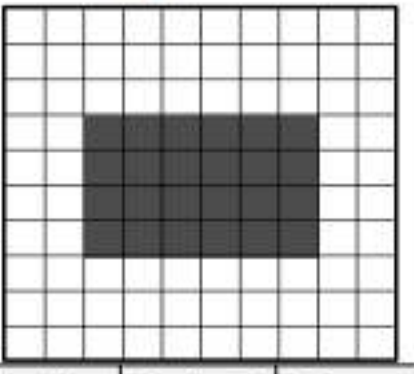
Fraction	Decimal	Percent

8)



Fraction	Decimal	Percent

9)



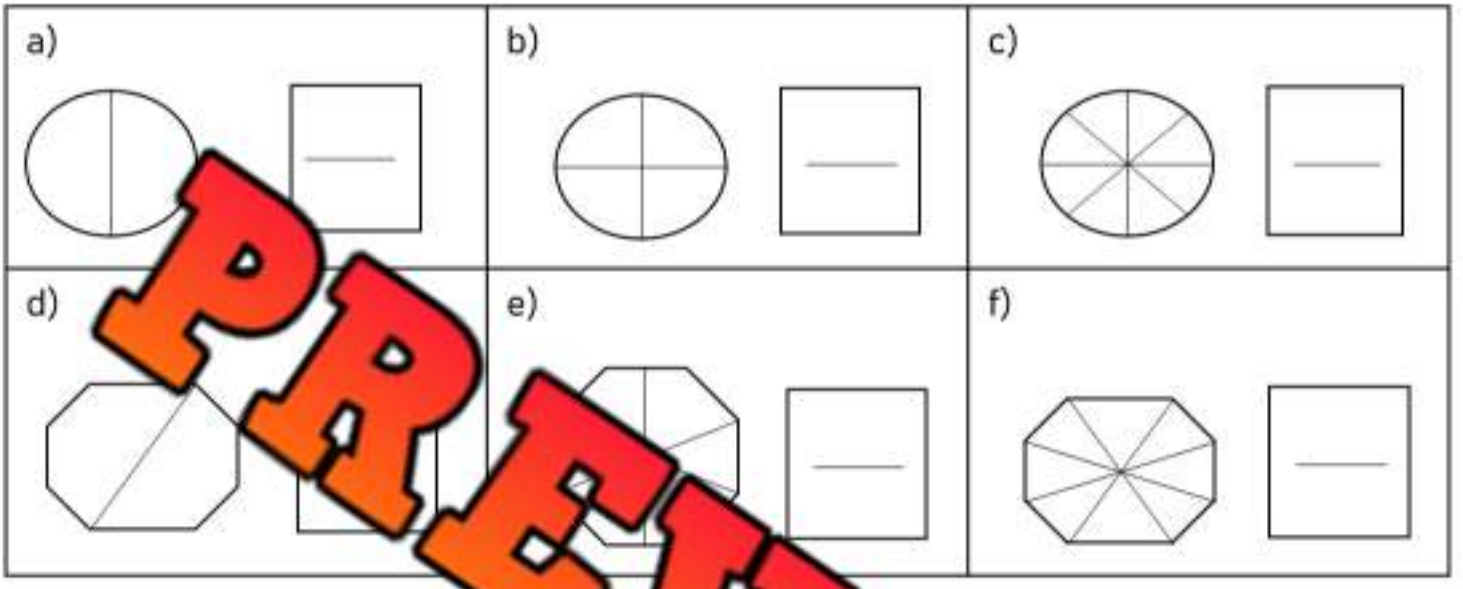
Fraction	Decimal	Percent

Name: _____ 108

Curriculum Connection
02.1

Probability – Finding Halves

Part 1 Shade in half of the shapes. Write the fraction of shaded shapes to total shapes



Part 2 What is half of the number? Write the fraction

	Number	Half	Fraction	Decimal	Percent
1	20	10	$\frac{10}{20}$	0.5	50%
2	16				
3	22				
4	38				
5	56				
6	36				
7	84				

Name: _____ 109

Curriculum Connection
02.1

Probability - Quarters

Part 1 Shade in one quarter of the shapes. Write the fraction of shaded shapes to total shapes

a)  ___

b)  ___

c)  ___

d)  ___

e)  ___

f)  ___

Part 2 Shade in [illegible]uarte[illegible]hapes. Write the fraction of shaded in shapes

a)  ___

 ___

c)  ___

Part 3 Fill in the tables below

	#	One Quarter	Fraction
1	20	5	$\frac{5}{20}$
2	80		
3	60		
4	24		
5	48		
6	68		
7	96		

	#	[illegible]ee	[illegible]tion
1	60		$\frac{45}{60}$
2	40		
3	72		
4	16		
5	44		
6	84		
7	92		

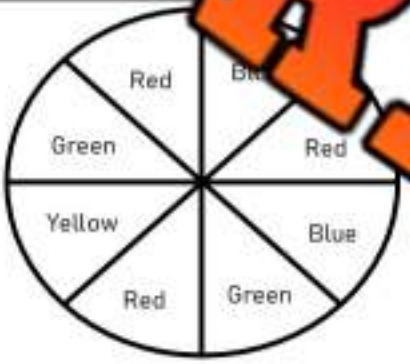
Name: _____ 110

Curriculum Connection
D2.1

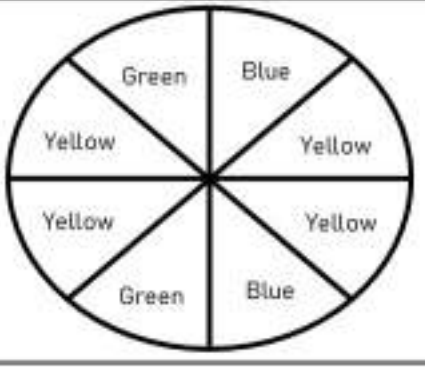
Theoretical Probability - Spinner

Directions Read the spinner and represent the probability using a fraction/decimal/percent

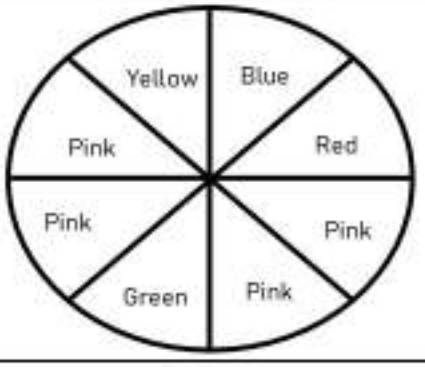
	Fraction	Decimal	Percent
a) Spinning a red	____		
b) Spinning a blue	____		
c) Spinning a blue or red	____		



	Fraction	Decimal	Percent
a) Spinning a [illegible]	____		
b) Spinning [illegible]	____		
c) Spinning a yellow	____		



	Fraction	Decimal	Percent
a) Spinning a green or blue	____		
b) Spinning a yellow	____		
c) Spinning a yellow, green or blue	____		



	Fraction	Decimal	Percent
a) Spinning a blue or green	____		
b) Spinning a blue or yellow	____		
c) Spinning a pink	____		

Name: _____ 111

Curriculum Connection
D2.1

Theoretical Probability – Rolling a Dice

Rolling a Dice: A dice has 6 sides. Each side has a number of dots between 1 and 6. When you roll a dice, you have an unlikely chance of rolling a certain number.

Questions Circle the fraction that represents the probability of the event

1. What is the likelihood of you rolling a 1?

Impossible | Unlikely | Even Chance | Likely | Very Likely | Certain

$\frac{0}{6}$ $\frac{1}{6}$ $\frac{3}{6}$ $\frac{4}{6}$ $\frac{5}{6}$ $\frac{6}{6}$

Decimal	Percent

2. What is the likelihood of you rolling a 5?

Impossible | Very Unlikely | Likely | Very Likely | Certain

$\frac{0}{6}$ $\frac{1}{6}$ $\frac{2}{6}$ $\frac{3}{6}$ $\frac{6}{6}$

Decimal	Percent

3. What is the likelihood of you rolling a 1, 2

Impossible | Very Unlikely | Unlikely | Even Chance

$\frac{0}{6}$ $\frac{1}{6}$ $\frac{2}{6}$ $\frac{3}{6}$ $\frac{4}{6}$

Percent

4. What is the likelihood of you rolling a 1, 2, 3, or 4?

Impossible | Very Unlikely | Unlikely | Even Chance | Likely | Very Likely | Certain

$\frac{0}{6}$ $\frac{1}{6}$ $\frac{2}{6}$ $\frac{3}{6}$ $\frac{4}{6}$ $\frac{5}{6}$ $\frac{6}{6}$

Decimal	Percent

5. What is the likelihood of you rolling an odd number?

Impossible | Very Unlikely | Unlikely | Even Chance | Likely | Very Likely | Certain

$\frac{0}{6}$ $\frac{1}{6}$ $\frac{2}{6}$ $\frac{3}{6}$ $\frac{4}{6}$ $\frac{5}{6}$ $\frac{6}{6}$

Decimal	Percent

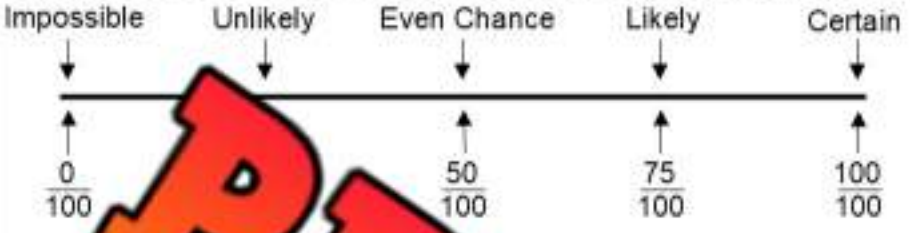
Name: _____ 113

Curriculum Connection
D2.1

Describing the Likelihood of Events – Probability Line

Questions Circle the probability of each event happening on the probability line and then write the fraction, decimal, and percent

1) It has rained 13 out of the last 50 days. What is the probability it will rain tomorrow?

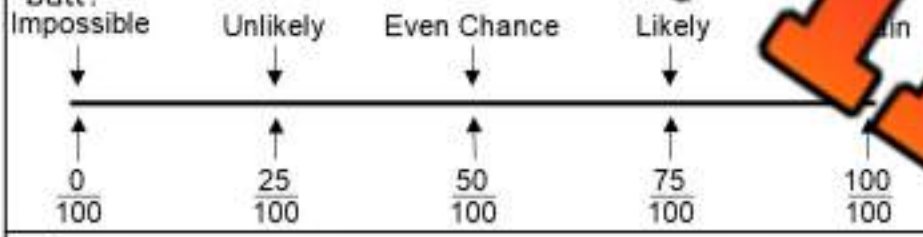


Fraction	Decimal	Percent

2) Steve [illegible] out of 25. What is the probability he will make his next shot?

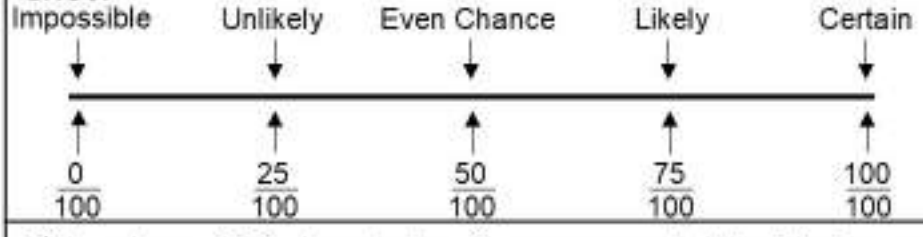
Fraction	Decimal	Percent

3) Heather hits 4 out of 10 balls in bas[illegible] bility she will hit the next ball?



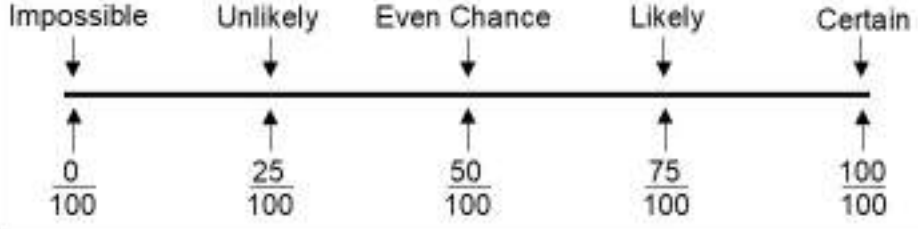
Fraction	Decimal	Percent

4) Caleb has a 0.421 three-point average. What is the chance h[illegible]ext shot?



Fraction	Decimal	Percent

5) In a box of 12 chocolates, 3 are caramel. What is the probability you will get a caramel?



Fraction	Decimal	Percent

Name: _____ 117

Curriculum Connection
D2.1

Describing the Likelihood of Events

Gumball Machine

There are 24 gumballs in a machine. What is the likelihood of you pulling out a red (R), yellow (Y), green (G), or blue (B) gumball?

Frequency Table Fill in the frequency table below

Colour	Frequency
Gre	

Questions
1) Describe the probab imp qually likely, likely or certain
2) Represent the probability of ut a as a fraction/decimal/percent

Event		Decimal	Percent
1. What is the probability of pulling out a green gumb			
Probability:			
2. What is the probability of pulling out a pink gumball?			
Probability:			
3. What is the probability of pulling out a blue or green gumball?			
Probability:			
4. What is the probability of pulling out a red or yellow gumball?			
Probability:			
5. What is the probability of pulling out a blue, red, yellow, or green gumball?			
Probability:			
6. What is the probability of pulling out a red gumball?			
Probability:			

Name: _____ 118

Curriculum Connection
D2.1

Describing Probability – Cars Passing By

Josh watched the cars pass by his house today. He took note of how many people were in each car. He filled out the frequency table below.

Number of People in Car	1	2	3	4	5	Total
Numb f Cars	45	71	34	18	10	
cimal						
Percent						

Questions	Answe ques

1) Fill in the table above using a fracti decimal per

2) Estimate the probability that the next car t has n it

3) Estimate the probability that the next car to pass has 3 p ple

4) Estimate the probability that the next car to pass has at least 4 people in it.

5) Estimate the probability that the next car to pass has at least 2 people in it.

6) If you had to guess, how many people do you think would be in the next car? Explain.

Name: _____ 119

Curriculum Connection
D2.1

Sports Statistics

Questions | Baseball Statistics – 2021 Regular Season Offensive Statistics

Vladamir Guerrero Jr. had an impressive MLB season in 2021. His number of hits are listed below.

	Singles	Doubles	Triples	Home Runs	Total Hits
Type	115	21	1	51	
Fr[illegible]n					
Decimal					
Percent					

Questions | Answer the questions b[illegible]

Question	[illegible]cent
1) When Guerrero gets a hit, what is the probability he will...	
i) get a double	
ii) get a single	
iii) get a triple	
iv) get a home run	
2) Guerrero had 600 at bats last year. What is the probability he will get hit?	
3) In baseball, a player's batting average is the probability of them getting a hit shown as a decimal. What was Guerrero's batting average in 2021?	

Name: _____ 120

Curriculum Connection
D2.1

Sports Statistics

Questions | Bo Bichette's 2021 stats

Bo Bichette led the American League in hits in his 2021 season. His number of hits are listed below.

	Singles	Doubles	Triples	Home Runs	Total Hits
Type o	131	30	1	29	
Fra					
Decimal					
Percent					

Questions | Answer the questions bel

Question	Deci	Percent
1) When Bichette gets a hit, what is the probability he will		
i) get a double		
ii) get a single		
iii) get a triple		
iv) get a home run		
2) Bichette had 640 at bats last year. What is the probability he will get hit?		
3) What was Bichette's batting average in 2021?		
4) Bichette's teammate Teoscar Hernández had 550 at bats and 163 hits. Who had a better batting average?		

Name: _____ 121

Curriculum Connection
D2.1

Probabilities

Questions | Answer the questions below

1) In Regina on New Years Day, it has snowed 21 of the last 50 years.	
a) What is the probability of it snowing on New Years Day as a...	
Fraction	
Decimal	
Percent	
b) Describe th… of it s… next New Years Day – likely, unlikely, equally l… rtain… le.	

2) A survey of 20 000 new ca… fou… uyers had a major mechanical problem in the first year they ha… eir …	
a) What is the probability of...	
i) Having a mechanical issue in the … ar as …	
ii) Not having a mechanical issue in the first yea… tion	

3) A hockey team played 45 games last year. Their results are below (… …, ties)

W	T	L	W	W	L	W	L	L	W	L	W	…	W	L
L	W	T	W	L	W	L	W	T	W	W	L	W	W	L
L	W	L	L	W	L	L	W	W	L	W	W	L	T	W

Fill in the table below.

Results				Total
Fraction				

Name: _____ 122

Curriculum Connection
D2.2

Theoretical vs Experimental Probability

Theoretical Probability
What should happen

Example - The theoretical probability of flipping a heads is 1 time out of 2 or ½.

Experiment Probability
What did happen after the event (experiment)

Example – You flipped a coin 10 times and got 7 heads. The experimental probability is 7/10.

Part 1 Write the theoretical probability of the events happening below

Question	Fraction	Decimal	Percent
1) W… …obability of flipping a heads?			
2) What is the… …f flipping a tails?			
3) What is the theore… …g a heads if you flipped the coin 20			

Part 2 Experimental Probability … coin … es and record your results

1) How many heads and tails do you think you … out o…

Heads	Tails
	20

2) Perform the experiment by flipping a coin 20 times. Record h… ma… you get.

	Tallies	Frequency	Fraction	Deci…	Percent
Heads					
Tails					

3) Was the theoretical probability and experimental probability the same? Should it be the same? Explain.

Name: _____ 123

Curriculum Connection
D2.2

Theoretical vs Experimental Probability

Examples of Theoretical and Experimental Probability
Theoretical: You should roll a 3 once every 6 rolls = 1/6
Experimental: You rolled a 3 twice when you rolled a dice six times = 2/6

Part 1 Circle if the example is theoretical or experimental probability

Example	Theoretical or Experimental
1) If [illegible] 0.300, you should get a hit 3 out of [illegible] nes.	Theoretical Experimental
2) You flipped a [illegible] mes a [illegible] ads 4 times.	Theoretical Experimental
3) You made 4 out of 10 [illegible] shots [illegible] sketball game.	Theoretical Experimental
4) You won a 50/50 draw after buying 1 [illegible] of [illegible] sold.	Theoretical Experimental
5) There is a 40% chance that it will rain today.	Theoretical [illegible]rimental
6) You have a ¼ chance of pulling out a spade from a de[illegible] of cards.	[illegible]etical

Part 2 Is the example theoretical or experimental probability? F[illegible]e table.

Example	Theoretical or Experimental	Fraction	Decimal	Percent
1) You should get a hit in baseball twice in every 5 at bats.				
2) The Weather Network says there is a 75% chance of it snowing today.				
3) You pulled a diamond card 7 out of 20 times from a deck of cards.				

Name: _____ 124

Curriculum Connection
D2.2

Theoretical vs Experimental Probability – Sock Drawer

Part 1 Write the theoretical probability of the events happening below

Your sock drawer is a mess! You have 50 socks in there in 5 different colours – white, blue, black, green, and red. Here is the breakdown of the socks in your drawer.

Colour of Sock	White	Yellow	Black	Green	Red
Number of Socks	18	8	14	4	6

1) If you [illegible] drawer 50 times without looking, what is the theoretical probability you will pull each of the colours below.

Colour of Sock	White	Yellow	Black	Green	Red
Fraction					

Part 2 Complete the experiment and find the experimental probability

2) Close your eyes and point to a random spot in the box below with your eraser. Repeat this for 50 trials and tally your results below.

W	R	B	Y	W	B	W	[illegible]				B	W
B	W	W	R	B	W	B	Y	B	Y	[illegible]		G
Y	B	B	G	W	Y	R	W	B	W	W	B	W
B	Y	G	W	G	W	Y	R	R	R	W	Y	

Colour of Sock	White	Yellow	Black	Green	Red
Tally					
Fraction					
Percent					

Name: _____ 125

Curriculum Connection
D2.2

Theoretical vs Experimental Probability – # of Events

The theoretical and experimental probability of an event happening is not guaranteed to be the same. Performing more trials in an experiment will cause the experimental probability to be closer to the theoretical probability.

Example – if you flip a coin 2 times, it is easy to picture getting heads twice in a row. That would mean the experimental probability of getting a heads was 100% or 2/2. However, if you flipped the coin 100 times, it is almost impossible to get 100 heads in a row.

Part 1 ite the theoretical probability of the events happening below

	cal Probability	Fraction
1) Rolling a 1 o ce		
2) Rolling a 3 on d dic		
3) Rolling a 2 or a 5 o e		
4) Rolling a 6 on a 6-sided		

Part 2 Follow the instruct low t te the experiments

1) Roll the dice 6 times. Tally your results

1	2	3	4	5	6

2) Roll the dice 60 times. Record how many of each number you get.

	1	2	3	4	5	6
Tallies						
Fraction						

3) Did the experimental probability get closer to the theoretical probability when you rolled the dice more times? Explain why this should happen.

_____

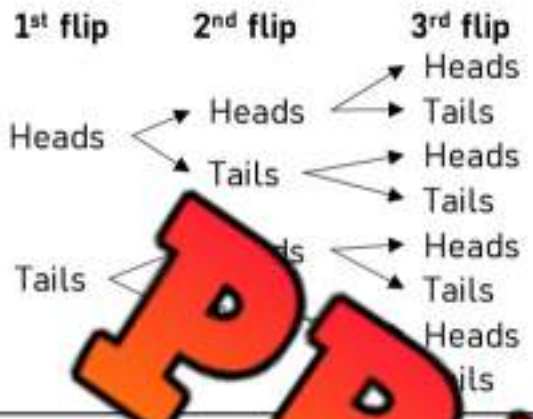
_____

Name: _____ 126

Curriculum Connection
D2.2

Theoretical Probability – Tree Diagrams

A tree diagram is used to show the probability of an outcome happening when we have more than one event



Combinations
HHH
HHT
HTH
HTT
THH
THT
TTH
TTT

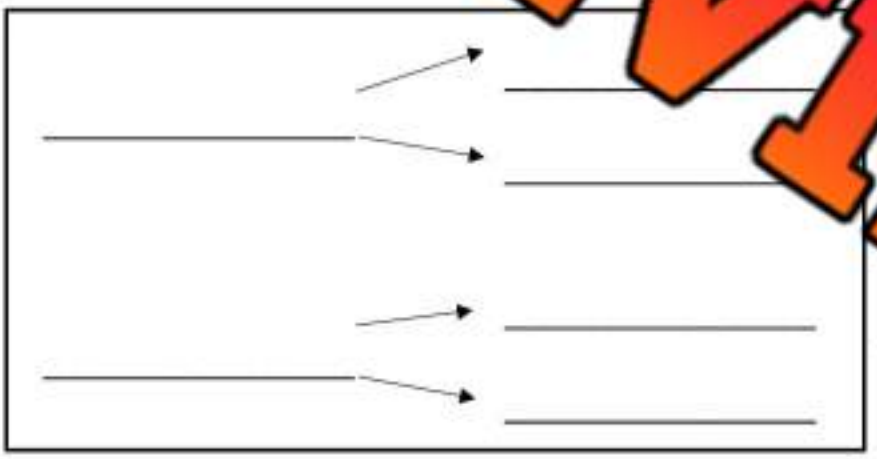
If you flip a coin three times, you could have 8 different combinations of outcomes.

HHH, HHT, HTH, HTT, THH, THT, TTH, TTT

This means you have a 1/8 probability of flipping three heads or tails in a row.

Questions Dra[illegible]agram[illegible] how many different combinations you could have

An ice cream shop sells [illegible]s of i[illegible]m and two different cones. Show the combinations of ice cream [illegible] hav[illegible] diagram below.



Combinations

Menu
- Waffle cone (W)
- Sugar cone (S)
- Chocolate (C)
- Vanilla (V)

1) How many combinations of ice cream could you have? _____

Combinations	Fraction	Decimal	Percent
a) Waffle cone with chocolate:			
b) Waffle cone with vanilla:			
c) Sugar cone with chocolate:			
d) Sugar cone with vanilla:			

Name: _____ 127

Curriculum Connection
D2.2

Theoretical Probability – Tree Diagrams

Questions Draw a tree diagram to show how many different combinations you could have

A pizza shop sells regular and gluten-free crust pizza. They have 2 types of cheese and 2 types of toppings. When you order, you can only get 1 type of cheese and 1 type of topping on your pizza. Check out their menu. Draw a tree diagram to show all the combinations of pizza.

Menu

- Thin crust (THIN)
- Thick crust (THICK)
- Mozza cheese (MC)
- Cheddar cheese (CC)
- Pepperoni (P)
- Mushrooms (M)

Combinations

1) How many combinations of pizza could you have? _____

What is the probability of a customer ordering a...	Fraction	D	Percent
2) Thin crust with mozza cheese and pepperoni			
3) Thin crust with cheddar cheese and mushrooms			
4) Thick or thin crust with mozza and pepperoni			
5) Thick crust with mozza or cheddar cheese and mushrooms			
6) Thin crust with cheddar or mozza cheese and mushrooms or pepperoni.			
7) Thin or thick crust with cheddar or mozza cheese and pepperoni			

Name: _____ 128

Curriculum Connection
D2.2

Drawing Tree Diagrams

Questions Draw a tree diagram to help you find the probability of different combinations

A restaurant sells hot dogs, sausages, and cheeseburgers. They also have toppings and sauces. Customers may only choose 1 topping, and 1 sauce for each food. What is the probability a customer orders a specific combination of food, topping, and sauce?

Food	Topping	Sauce
Hot Dog (H)	Onion (O)	Ketchup (K)
Sausage (S)	Pickles (P)	Mustard (M)
Cheeseburger (C)		

1) How many combinations of food could you have? _____

What is the probability of a customer ordering a...	Fraction	Decimal	Percent
2) Hot dog with onion and ketchup			
3) Cheeseburger with pickles and mustard			
4) Hot dog or sausage with onion and ketchup			
5) Hot dog or sausage with onion or pickles and mustard			
6) Cheeseburger with onion or pickles and ketchup or mustard			

Exit Cards

Cut Out Cut out the exit cards below and have students complete them at the end of class

Name: _____

Draw a tree diagram to help you find the probability of different combinations

A pizza shop lets customers create their own mini pizza by choosing one option from each category: crust, sauce, and topping. They have 2 types of crusts, 2 types of sauces, and 2 types of toppings.

Crusts	Sauces	Toppings
Thin Crust (T)	Tomato (TO)	Pepperoni (P)
Thick Crust (TH)	Alfredo (A)	Mushrooms (M)

Name: _____

Draw a tree diagram to help you find the probability of different combinations

A pizza shop lets customers create their own mini pizza by choosing one option from each category: crust, sauce, and topping. They have 2 types of crusts, 2 types of sauces, and 2 types of toppings.

Crusts	Sauces	Toppings
Thin Crust (T)	Tomato (TO)	Pepperoni (P)
Thick Crust (TH)	Alfredo (A)	Mushrooms (M)

Name: _____ 133

Curriculum Connection
D2.2

Probability of Two Independent Events – Flip/Roll

When you complete two activities that do not affect each other, we call them **independent events**. One example is flipping a coin and then rolling a six-sided die. What happens in the coin flip doesn't change what happens with the die — so they're independent!

We can use a tree diagram to show all the possible outcomes. Each first branch shows the result of the coin flip (Heads or Tails). Each second branch shows all the possible outcomes of the die roll (1 to 6) for each coin result.

That mean[illegible]u'll have:

- 2 choi[illegible]he coin (H or T)
- 6 cho[illegible]e die (1, 2, 3, 4, 5, 6)

So, t[illegible] outcomes.

Draw Draw[illegible]n to[illegible]all the possible outcomes.

1) How many possible outcomes are there in total? _____

2) Questions	Fraction	Decimal	Percent
a) What is the probability of getting Heads and a 4?			
b) What is the probability of getting Tails and a number greater than 4?			
c) What is the probability of getting a 2, no matter what the coin shows?			
d) What is the probability of getting Tails and an even number?			

Name: _____ 134

Curriculum Connection
D2.2

Probability of Two Independent Events – Spinner/Cube

Liam spins a spinner that has **four equal** sections: red, blue, green, and yellow. Then, he randomly picks one cube from a bag that contains **1** white cube, **1** black cube, and **1** grey cube. After each trial, the spinner is spun again, and the cube is returned to the bag.

Draw Draw a tree diagram to show all the possible outcomes.

1) How many possible outcomes are there in total? _____

2) Questions	n	al	Percent
a) What is the probability of getting blue and then a grey cube?			
b) What is the probability of getting red and a cube that is not white?			
c) What is the probability of getting any colour and a black cube?			
d) What is the probability of getting yellow or green, and the white cube?			

e) Is this an example of independent events? How do you know?

_____

_____

_____

Name: _____ 135

Curriculum Connection
D2.2

Experimental Probability of Two Independent Events

Activity Complete the experiment below to find the experimental probability

Question: What is the experimental probability of getting two heads in a row when flipping a coin?

Directions:
1) Flip a [illegible] twice
2) Rep[illegible]es
3) Re[illegible]s in the frequency table

Results	Frequency
HH	
HT	
TT	
TH	

1) Fill in the table b[illegible] to [illegible]imental probability as a percent, decimal, and fraction.

Results	Fractio[illegible]	[illegible]al	Percent
HH			
HT			
TT			
TH			

2) Fill in the table below to determine the theoretical probabili[illegible] below if you completed 30 trials (each trial is flipping a coin tw[illegible]

Results	Fraction	Decimal	Percen[illegible]
HH			
HT			
TT			
TH			

3) If you performed this experiment 100 times instead of 30, would you be closer to the theoretical probability? Explain.

_____

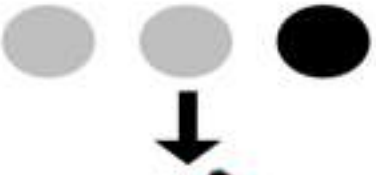
_____

Name: _____ 136

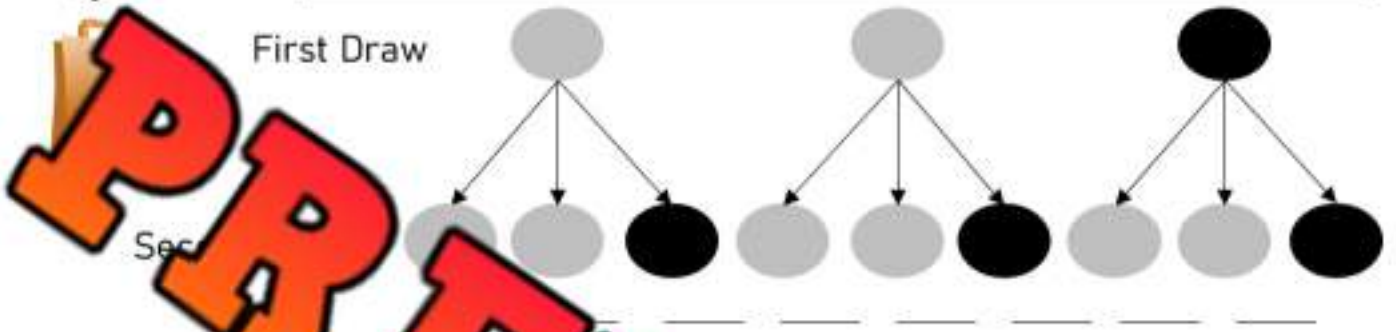
Curriculum Connection
D2.2

Probability of Two Independent Events

Part 1 Theoretical Probability – Answer the questions below



You have three marbles in a bag. There are two grey marbles and one black marble. You draw one marble from the bag and put it back before drawing the second marble. Fill in the combinations below the second draw of marbles



1) How many possible

2) Use the tree diagram to

ow.

What is the probability of you choosing	Fraction	Decimal	Percent
a) Two grey marbles			
b) One grey and one black marble (in any orde			
c) Two black marbles			

Part 2 Experimental Probability – Answer the q ns

Perform the activity below. Put 2 grey marbles and one black marb in a choose 3 marbles with two of the marbles being the same colour. Draw one mar d then return it to the bag before drawing again.

Results	Frequency
GG	
GB	
BB	
BG	

1) Was your experimental probability the same as the theoretical probability you figured out above?

_____

_____

2) If you decided to draw the 2 marbles 100 times, would you be closer to the theoretical probability? Explain.

_____

_____

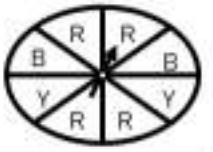
Name: _____ 137

Unit Quiz - Probability

Part 1 Circle if the example is theoretical or experimental

Example	Theoretical or Experimental
1) You should get a tails 5 out of 10 times when flipping a coin.	Theoretical Experimental
2) You sho[illegible]ke 30 three pointers out of 100 because [illegible] percentage is 30%.	Theoretical Experimental
3) You m[illegible]e 10 f[illegible] ou[illegible] 13.	Theoretical Experimental
4) You have a 1/100 [illegible]ce [illegible] 50/50 draw because you have 1 ticke[illegible] 100 so	Theoretical Experimental

Part 2 Read the spinner and circle t[illegible]abili[illegible]ch scenario. Then write the fraction.



1) What is the likelihood of landing on a red [illegible]

Impossible — Unlikely — Even Chance — Likely — [illegible]

$\frac{0}{8}$ $\frac{2}{8}$ $\frac{4}{8}$ $\frac{6}{8}$ $\frac{8}{8}$

[illegible]ctio	[illegible]imal	Percent

2. What is the likelihood of landing on a blue part?

Impossible — Unlikely — Even Chance — Likely — Certain

$\frac{0}{8}$ $\frac{2}{8}$ $\frac{4}{8}$ $\frac{6}{8}$ $\frac{8}{8}$

Fraction	Decimal	Percent

3. What is the likelihood of landing on a red or yellow part?

Impossible — Unlikely — Even Chance — Likely — Certain

$\frac{0}{8}$ $\frac{2}{8}$ $\frac{4}{8}$ $\frac{6}{8}$ $\frac{8}{8}$

Fraction	Decimal	Percent

Marbles

There are 24 marbles in a bag. What is the likelihood of you pulling out a white, grey, or black marble?

Part 3 Fill in the frequency table below

Marble Colour	Frequency
White	

Part 4 1) Descri… Probabi… …ible, unlikely, equally likely, likely or certain
2) Represent… Prob… …out a marble as a fraction/decimal/percent

Even…	Fraction	Decimal	Percent
1. What is the probability of pulling out… marb…			
Probability:			
2. What is the probability of pulling out a grey mar…			
Probability:			
3. What is the probability of pulling out a white marble?			
Probability:			
4. What is the probability of pulling out a black, white, or grey marble?			
Probability:			
5. What is the probability of pulling out a black or white marble?			
Probability:			
6. What is the probability of pulling out a green marble?			
Probability:			

Part 5 Draw a tree diagram to help you find the probability of different combinations

A gym instructor runs a workout class. She always picks 3 different exercises to do one after the other. She switches up the exercises each class. Her options for each exercise are below.

Exercise 1	Exercise 2	Exercise 3
Push-ups (PUSH)	Squats (SQ)	Running (RU)
Pull-ups (PULL)	Lunges (L)	Swimming (SW)
Shoulder Press (SP)		Rowing (RO)

1) Draw a tree diagram below.

2) How many combinations of exercises could you have? _____

What is the probability of the instructor choosing...	Fraction	Decimal	Percent
3) Push-ups, squats, and running			
4) Pull-ups, lunges, and rowing			
5) Shoulder press, squats or lunges, and swimming			
6) Push-ups or pull-ups, lunges, and running or swimming			
7) Shoulder press, squats or lunges, and running, swimming, or rowing			

Part 6 Probability of Two Independent Events – Two Coin Tosses

Maya flips a coin two times in a row.

Draw a tree diagram to show all possible outcomes of the two flips.

1) How many possible outcomes are there in to

2) Answer the questions below.			Percent
a) What is the probability of getting heads both times?			
b) What is the probability of getting one head and one tail?			
c) What is the probability of getting at least one tail?			
d) What is the probability of getting two of the same result?			

e) How do we know this is an example of independent events?