Workbook Preview

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Grade 7
D1. – Data Literacy

	Curriculum Expectations	Pages That Cover the Expectations
D1.1	explain why percentages are used to represent the distribution of a variable for a population or sample in large sets of data, and provide examples	5 - 7
D1.2	collect qualitative data and discrete and continuous quantitative data to answer questions of interest, and organize the sets of data as	8 – 18, 50 – 51, 53 – 55, 68, 71, 76, 85, 87
D1.3		9, 52, 82 – 3
D1.4	create an infographic about a data set, representing the data in appropriate ways, including in tables and circle graphs, and incorporating any other relevant information that helps to tell a story about the data	95 - 100
D1.5	determine the impact of adding or removing data from a data set on a measure of central tendency, and describe how these changes alter the shape and distribution of the data	19 – 39
D1.6	analyse different sets of data presented in various ways, including in circle 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	43 – 47, 57 – 67, 70, 73 – 75, 78 – 81, 101 - 118

Preview of 120 pages from this product that contains 265 pages total.

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D1.1

Representing Distribution Using Percentages

Why Use Percentages?

Percentages are used to show the distribution of a variable. Using percentages makes the data easier to read than simply just using the frequency.



For example: Which table is easier to draw conclusions from?

Ways I Get To Work	
Persona[illegible]icle	3558
[illegible]	241
[illegible]	[illegible]742
[illegible]s	[illegible]9
Total	5000

Ways I Get To Work			
Personal Vehicle	3558	0.71	71%
Bike	231	0.5	5%
Walk	752	0.15	15%
Bus	459	0.09	9%
Total	5000	1.00	100%

PREVIEW

Questions Fill in t[illegible]hy ac[illegible]entages and decimals

1) Favourite Colour			
Options	**Frequency**	**Decimal**	**%**
Blue	2560		
Red	2123		
Pink	1575		
Green	3742		
Total			

2) [illegible]avourite Music Genre			
O[illegible]s	**F[illegible]cy**	**Decimal**	**%**
[illegible]k	[illegible]5		
Pop	[illegible]232		
Rap	[illegible]242		
Country	2940		
Total			

3) Top 50 Movies All Time - Genres			
Options	**Frequency**	**Decimal**	**%**
Comedy	11		
Action	15		
Drama	22		
Horror	2		
Total			

4) Best Season to Travel			
Options	**Frequency**	**Decimal**	**%**
Summer	12845		
Fall	5207		
Winter	24543		
Spring	7405		
Total			

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Exit Cards

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

Name: _____

Fill in the relative frequency tables

Favourite Ice Cream Flavour			
Options	Frequency	Decimal	%
Chocolate			
Vanilla			
Strawberry	500		
Mint	205		
Total			

Name: _____

Fill in the relative frequency tables

Favourite Ice Cream Flavour			
Options	Frequency	Decimal	%
Chocolate	125		
Vanilla	920		
Strawberry	500		
Mint	205		
Total			

Name: _____

Fill in the relative frequency tables

Favourite Ice Cream Flavour			
Options	Frequency	Decimal	%
Chocolate	125		
Vanilla	920		
Strawberry	500		
Mint	205		
Total			

Name: _____

Fill in the relative frequency tables

Favourite Ice Cream Flavour			
Options	Frequency	Decimal	%
Chocolate	125		
Vanilla	920		
Strawberry	500		
Mint	205		
Total			

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D1.1

Relative Frequency Distribution

Frequency Tables Versus Relative Frequency Tables

A **relative frequency table** displays the percent of each option in a data set. These relative frequencies are calculated by dividing the frequencies for each option by the total number of frequencies for all options.

A **frequency table** only lists the frequencies belonging to each group. Frequency tables are harder to generate comparisons between options in a data set.

Questions the tables. Is the table a frequency table or relative frequency table?

PREVIEW

1) Nu Of Drink ed Per Order			
Options	**Fr e**	**ecim**	**%**
0	34		
1-2	99		
2-3	56		
4+	11		
Total			

Relative Frequency Table Frequency Table

2) How Many Trees On Your Property	
Options	**Frequency**
0	754
1-5	3145
10	6485
	9616
Total	

Relati cy Tabl equency Table

3) Musical Instrument You Play	
Options	**Frequency**
None	154
Guitar	125
Piano	110
Other	111
Total	

Relative Frequency Table Frequency Table

4) Type of Ve			
Options	**Frequency**	**mal**	**%**
Car	26714		
Van	8485		
Truck	11452		
Motorbike	3349		
Total			

Relative Frequency Table Frequency Table

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D1.2

Collecting Data - 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 and 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 versus asking everyone within that population. For example, if we wanted to know if the stude in Ontario preferred Geography or Science, we could ask 10% of the population instead of udent in Ontario. We can assume that the remaining 90% of the population would hav the same way.

Sa ion saves us a lot of time and money. It works well if we samp tly. If we went to a Science and Technology school in Ontario asked liked Geography or Science better, they would likely all say Science a b mple of the population.

PREVIEW

Questions Write a samp th ld not be a good representation of the population

	Population	ey	Bad Sample
1)	Pet Owners in Canada	What is t pet?	Dog owners in Quebec
2)	Drivers in Ontario	Which is the best ty vehicle – truck or ca	
3)	Adults in Ontario	Which genre of music is the best?	
4)	Adults in Ontario	Which is better - a hot tub or a pool?	
5)	Teens in Ontario	Which fast food restaurant is the best?	
6)	Kids in Canada	Which food is better – burgers or pizza?	
7)	Grade 7 Students in Ontario	Which school is the best in Ontario?	
8)	Athletes in Ontario	Which sport is the best?	
9)	Teachers in Ontario	Which grade is the best to teach?	
10)	Parents in Canada	Which vehicle is better – SUV or Van?	

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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 about 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, a sample could be chosen from an alphabetized list of names, using a starting name and then every fourth name to be randomly chosen.

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

Example of a Sampling Technique	Sampling Technique
1) Deciding randomly to choose every 5th person who will walk by	
2) Having a computer call 1% of the customers of your business	
3) Handing out surveys to every 10th person who enters your store	
4) Using a computer to randomly email 5% of the customers on your business	
5) Asking every other grade 1 and every other grade 2 in Mr. Wilson's class	

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

Situation	Sampling Technique
1) You want to know if more adults or kids in your city like your pizza	
2) You want to find out what 1% of Ontario adults think about your business	
3) You are interested in which subject your classmates like the best	
4) You want to know which teacher is most popular at your school	
5) You are interested in polling 5% of your customer base, asking what their favourite product is.	

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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.

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

1) Length [illegible]t's feet	Quantitative	Qualitative
2) Po[illegible] in North and South America	Quantitative	Qualitative
3) Anim[illegible]that hi[illegible]	Quantitative	Qualitative
4) Number of [illegible] by c[illegible] in the Olympics	Quantitative	Qualitative
5) How many movi[illegible] wat[illegible]	Quantitative	Qualitative
6) Brand of shoes you're [illegible]	Quantitative	Qualitative
7) Favourite drink at a café	Quantitative	Qualitative
8) How many steps you get a day	Quantitative	Qualitative
9) Favourite type of exercise	[illegible]itative	Qualitative
10) How many hours of sleep you get a night	[illegible]	Qualitative

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Part 2 Write a quantitative and qualitative descri[illegible]or e[illegible]ic below

1) Topic - Sports	
Quantitative	
Qualitative	

2) Topic - School	
Quantitative	
Qualitative	

3) Topic – Social Media	
Quantitative	
Qualitative	

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Quantitative vs Qualitative Observations

Image #1



Image #2



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

Observations	Quantitative	Qualitative
1) The volcano [illegible] tonnes [illegible] year	x	
2) The volcano relea[illegible]ava		
3) The volcano released 1[illegible]k la[illegible]		
4) They poured 2 million litres o[illegible]d w[illegible]		
5) The lava cooled and became igneous		
6) The heated water provided heat for 5,000 hom[illegible]		
7) The mountain was brown		
8) 200,000 litres of magma went back underground		
9) The air quality was poor in the surrounding area		
10) Airplanes could not fly in the area as vision was poor		

Part 2 Write quantitative and qualitative observations about image #2

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

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Primary vs Secondary Data

Primary Data	**Secondary Data**
Data that you have collected yourself **Example** - asking your classmates their favourite food	Data that has been collected by someone else **Example** - finding data on the internet

Part 1 Read the description of the data and circle if it is primary or secondary data

1) You ask your classmates what their favourite pizza topping is	Primary	Secondary
2) You measure the height of the teachers in your school	Primary	Secondary
3) You record the calories in different types of drinks	Primary	Secondary
4) You look up the land area in your city	Primary	Secondary
5) You research how many goals they scored per game in his first 10 seasons	Primary	Secondary
6) You record how many sit-ups your classmates can do in 1 minute	Primary	Secondary
7) You weigh 5 different cookies you buy from a store	Primary	Secondary
8) You research how many kids in Canada do gymnastics	Primary	Secondary
9) You look up the speeds of 5 different computers for sale	Primary	Secondary
10) You measure the heights of the kids in your class	Primary	Secondary

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Part 2 Write your own primary and secondary data descriptions that you are interested in

1) Primary	
2) Secondary	
3) Primary	
4) Secondary	

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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.

PREVIEW

Question: Will the data from the research question be discrete or continuous?

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

Research 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?	

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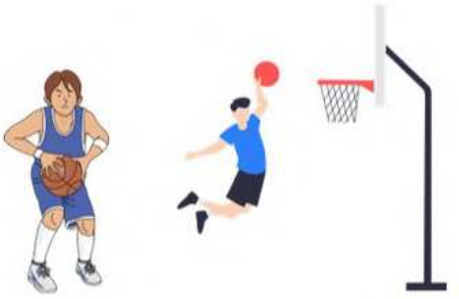
Data – Qualitative, Discrete, or Continuous?

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 are on the team?	
2) How tall are their players?	
3) How many points do they score per game?	
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?	

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Part 2 Write one example of each type of data

Type of Data	Example
Qualitative	
Discrete	
Continuous	

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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 'trick or treating' on Halloween. Josh got 13 candies, Cameron got 11, and Morgan got 9. At the end of the night, their mother told them to split the candy equally. So, they decided to put all the candy in the middle and then divide them equally amongst themselves.

- They had 13 + 11 + 9 = 33 candies and divided 33 ÷ 3 kids = 11 candies each.

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

Mean = 11

PREVIEW

Questions

...en ...l up the candy and then fair share it

Claire	Katie	Ashley		Total		Claire	Katie	Ashley
12 Candy Bag	25 Candy Bag	Candy B...	=		=	_____ Candy Bag	_____ Candy Bag	_____ Candy Bag

Mean = _____

Emma	Olivia	Ava		Total				Ava
67 Candy Bag	58 Candy Bag	25 Candy Bag	=	_____ Candy Bag	=	Ca...	...ia	_____ ...dy Bag

Mean = _____

Mia	Harper	Charlotte		Total		Mia	Harper	Charlotte
91 Candy Bag	68 Candy Bag	66 Candy Bag	=	_____ Candy Bag	=	_____ Candy Bag	_____ Candy Bag	_____ Candy Bag

Mean = _____

Liam	Noah	William		Total		Liam	Noah	William
42 Candy Bag	98 Candy Bag	106 Candy Bag	=	_____ Candy Bag	=	_____ Candy Bag	_____ Candy Bag	_____ Candy Bag

Mean = _____

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MEAN

Mean = the average in a set of data
Step 1: Add up the numbers in the data set
Step 2: Divide the sum by the amount of numbers in the set.
Example:
Data set: 5, 6, 8, 5
Step 1: 5 + 6 + 8 + 5 = 24
Step 2: 24 ÷ 4 = (6)



Part 1

an for each data set below

	Data	Total – Add Numbers	Mean
1)	13, 18, 23,		
2)	49, 75, 35		
3)	17, 26, 13, 44		
4)	3.5, 4.8, 5.2		
5)	15, 84, 53, 48, 40, 48		
6)	53, 67, 45, 19		
7)	71, 84, 98, 103		
8)	117, 125, 132, 154		
9)	35, 45, 27, 33		
10)	11.6, 18.2, 23.8, 44.4		

PREVIEW

Part 2

Answer the word problems below

1) Jason has completed 5 math tests this year. His marks as percents are: 81%, 72%, 93%, 68%, and 86%. What was his average mark?

2) Logan bought 6 hockey cards for the following prices: $13, $18, $32, $9, $44 and $52. What was the average price for one hockey card?

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D1.5

Exit Cards

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

Name: _____

Find the mean of the data sets below.

Data Set	Add Numbers	Mean
192.5, 204.3, 218.7, 210.8		
221, 234, 248, 239, 255, 261		

Answer the word problem below.

Ben's scores in his favourite video game over 5 sessions were: 1250, 1375, 1100, 1450, and 1325. What is his average score per session?

Name: _____

Find the mean of the data sets below.

Data Set	Add Numbers	Mean
192.5, 204.3, 218.7, 210.8		
221, 234, 248, 239, 255, 261		

Answer the word problem below.

Ben's scores in his favourite video game over 5 sessions were: 1250, 1375, 1100, 1450, and 1325. What is his average score per session?

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Data Set	Add Numbers	Mean
192.5, 204.3, 218.7, 210.8		
221, 234, 248, 239, 255, 261		

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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.

Part 1 1 ...ate the mean by circling one of the options ...r answer by calculating the mean

	Da...t	Options			
		1	2	3	4
1)	5, 5, 7, 7, 6	4	5	6	7
2)	22, 25, 24, 23, 26	22	23	24	25
3)	13, 18, 16, 14, 19	14	16	18	19
4)	22, 19, 25, 15, 14	16	25	23	19
5)	64, 68, 57, 59, 62		66	67	62
6)	74, 88, 65, 81, 62			82	64
7)	83, 99, 72, 76, 85			78	89
8)	93, 95, 85, 105, 87				93
9)	121, 102, 133, 125, 144	108			134
10)	152, 168, 158, 148, 134	152	16	145	139

PREVIEW

Part 2 Answer the word problems below by estimating

1) Meredith bought lunch every day from Monday to Friday last week. She spent: $9, $5, $11, $12, and $8. Approximately how much did lunch cost her per day?



2) Michelle sells popcorn at a festival. She worked for 6 hours, selling the following dollar amounts each hour: $22, $32, $45, $27, $38, and $46. Approximately how much did she earn each hour?



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Finding Missing Data Point Using Mean

We can determine the missing number in a series if we know the mean by using the following formula:

$$Mean = \frac{Sum\ of\ given\ numbers + x\ (unknown\ number)}{total\ numbers}$$

Example: 25, 27, ?, 30 Mean = 26

Steps

1) Multi… number of total numbers you have by the mean (26 x 4 = 104)
2) Add … bers you know (25 + 27 + 30 = 82)
3) Fin… …(subtract) between 104 and 82 (104 – 82 = 22) – Answer = 22

PREVIEW

Questions … abl… low to find the missing data point

	Data Set		Calculations	Missing Data Point
Ex)	9, 16, ?, 22, 12, 19	15	1) …0 2) …6 + 2… + 19 = 78 3) …0 – 78	12
1)	12, 18, 6, ?, 15	17		
2)	48, ?, 32, 45, 30, 21	32		
3)	61, 35, 51, 23, ?	45		
4)	72, 41, 32, ?, 68, 65	57		
5)	91, 85, 60, 57, ?, 52	75		

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Finding Missing Data Point Using Mean

Questions | Answer the word problems below

1) Leah has completed 5 assignments in math this year. She has the following marks (written as percentages) – 79%, 89%, 68%, 77%, and 78%.

In order to get an A- on her report card, she needs an 80 average or more. She has one more assignment left. What mark does she need to achieve an 80% average?



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2) Tyler slept an average [illegible] hours a [illegible] week. He slept for 5.5 hours on both Monday and Tuesday. He slept for [illegible] Thursday and 8.5 hours on Friday and Saturday. On Sunday, he [illegible] hours! How long did he sleep on Wednesday?



3) Andre De Grasse was practicing his 100m race. He ran 10 full speed races last week. His average time was 10.2 seconds. His times have been presented in the table, but he is missing his time for race 7.

Race	1	2	3	4	5	6	7	8	9	10
Time	10.1	9.7	9.8	10.3	10.9	9.8		9.9	10.8	10.9

What was his time for race number 7?



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D1.5

Task Cards: Mean Detective

Objective

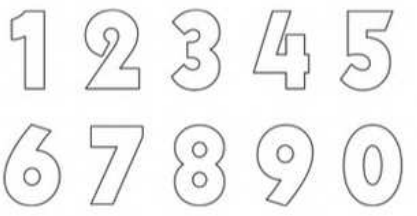
What are we learning about?

To help students understand and solve for a missing data point in a set by using the mean (average).

Materials

What you will need for the activity.

- 2
- Se e shee for answers
- Pencils



Instructions

How o activity

1. Introduce the concepts cov d in
2. Organize the students into pairs an ovide ea their sets of task cards.
3. Give each pair an answer recording sheet dow ses.
4. Encourage teamwork by having students collabora eir p on finding solutions.
5. Allow students to select any task card to begin with, emphasiz n complete the cards in any order they prefer.
6. Instruct students to record the letter of their chosen answer (A, B, or C) on their answer sheet beside the task card's number.
7. Consider using a timer to create a dynamic challenge, adjusting the duration to fit the lesson's objectives and complexity.
8. After the activity, review the answers collectively, discussing any challenging questions and strategies used to solve them.
9. Have students reflect on the activity, sharing the methods they applied and obstacles they overcame.

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Task Cards | Cut out the task cards below

Card 1:
Determine the missing number in the series: 72, ?, 68, 75, 70, 69, if the mean is 71.

a) 73
b) 67
c) 72

Card 2:
The following test scores are missing one score: 85, 92, ?, 77, 81. If the mean is 84, what is the missing score?

a) 86
b) 82
c) 85

Card 3:
[illegible] following in bas[illegible] ball: 1[illegible], 16. If his average s[illegible] wha[illegible] he score in [illegible] sing [illegible]

a) [illegible]
b) 18
c) 15

Card 4:
A group of students spent the following hours studying: 4.5, 5, 6, 7, ?, 5.5. The average time is 5.8 hours. What is the missing time?

a) 6
b) 5
c) 7

Card 5:
A bakery sold 45, 38, 30, 41, ?, 50 pastries over six days, and the mean number of pastries sold was 42. Find the missing sales.

a) 48
b) 40
c) 43

Card 6:
A[illegible] dent[illegible] es in percentiles [illegible]e: 89[illegible] ?, 88%. If the me[illegible], wha[illegible] he missing cor[illegible]

a) 8[illegible]
b) [illegible]
c) 92%

Card 7:
A factory produces an average of 8.4 tonnes of steel per day. On Monday, it produced 8.9 tonnes, on Tuesday 8.3 tonnes, on Wednesday 8.5 tonnes, and on Thursday 7.9 tonnes. How much steel was produced on Friday?

a) 8.6 tonnes
b) 9.0 tonnes
c) 8.4 tonnes

Card 8:
Find the missing number in the series: 4.5, ?, 6.0, 7.2, 4.8, 5.6, if the mean is 5.5.

a) 4.7
b) 6.3
c) 4.9

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D1.5

Task Cards | Cut out the task cards below

Card 9:

The average weight of a group of objects is 3.6 kg. Their weights are 3.1 kg, 4.0 kg, 2.9 kg, ?, and 4.4 kg. What is the missing weight?

a) 4.3 kg
b) 3.8 kg
3.6 kg

Card 10:

Rachel scored 67%, 71%, ?, 85%, and 79% on her tests. If her mean score was 75%, what was her missing score?

a) 73%
b) 74%
c) 76%

Ca

The age d ll in a week was 2.8 m 2.0 3.5 mm, 3.0 mm, m, 2 d 3.1 mm. What th rainfal

a) 3.0 mm
b) 2.5 mm
c) 2.6 mm

Card 12:

Alex needs a 90% average on five quizzes to get an A. He scored 88%, 92%, 85%, and 94%. What is the minimum score he needs on his final quiz to get the A?

a) 91%
b) 89%
) 90%

Card 13:

The mean height of 6 plants is 24.5 cm. The heights of 5 plants are 23 cm, 26 cm, 22 cm, 27 cm, and 25 cm. What is the height of the missing plant?

a) 24 cm
b) 26 cm
c) 22 cm

The av o 7 nu is 13.2. The numbers 15 2, and 12. What is the

a) 12
b) 14
c) 11

Card 15:

The mean of these values is 55: 53, 54, ?, 57, 55, 56. What is the missing number?

a) 55
b) 54
c) 53

Card 16:

Find the missing decimal: 3.1, 3.7, ?, 2.9, 3.5, 3.3, with a mean of 3.4.

a) 3.9
b) 3.6
c) 3.3

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Task Cards | Cut out the task cards below

Card 17:
77%, 80%, 84%, 82%, ?, 75%. If the average is 80%, what is the missing percentage?

a) 78%
b) 79%
c) 82%

Card 18:
A student studied for 6.5, 5, 7, ?, and 6 hours in a week. If the average time studied was 6 hours, how many hours did the student study on the missing day?

a) 5.5
b) 7
c) 6.5

5.5, 6.8, 7.4, [illegible] a m[illegible] 6.5. Find the [illegible]g nu[illegible]

a) 6.7
b) 5.7
c) 6.2

Card 20:
The mean age of a group of 6 people is 25 years. Their ages are 22, 28, 23, 27, ?, and 24. What is the missing age?

a) 26
b) 25
c) 24

Card 21:
A family spent $350, $420, $410, and $? on groceries over four weeks. If the average weekly spending was $400, how much did they spend on the missing week?

a) $370
b) $380
c) $420

[illegible]22:
[illegible]h p[illegible]ge of 78% to pass. [illegible]as score[illegible], 79%, 80%, 77%, and [illegible]r a[illegible]is [illegible]actly 78%, what was h[illegible]?

a) [illegible]
b) 76%
c) 77%

Card 23:
A soccer team won their games by 3, 5, ?, 2, and 4 points. If their average points won is 3.5, how many points did they win by in the missing game?

a) 4 points
b) 3.5 points
c) 5 points

Card 24:
In a race, 5 runners had the following times in minutes: 12.5, 11.8, ?, 12.9, 11.5, with an average time of 12.1 minutes. What was the missing time?

a) 12.0 min
b) 11.8 min
c) 12.4 min

PREVIEW

Name: _____ 29

Curriculum Connection
D1.5

Task Cards: Mystery Number Detectives

Answers | Record your answers below

1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	

13	
14	
15	
16	
17	
18	
19	
20	
21	
22	
23	
24	

PREVIEW

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Name: _____ 31

Curriculum Connection
D1.5

Outliers in Data Sets

An **outlier** in a data set are values that are significantly different from other measures. They may mean that something has gone wrong in the data collection, or they may represent a valid measure that needs further explanation.

Part 1 — Circle any outliers in the data sets below

1)	7, 8, 9, 5, 10, 42, 9	5)	1524, 1531, 1585, 1563, 1284
2)	12, 1, 9, 84, 25, 72	6)	102.2, 10.5, 103.9, 104.6, 102.5, 62.1
3)	105	7)	2751, 2853, 2623, 3547, 2345, 1258
4)	5.0, 6	8)	421, 521, 605, 2021, 4452, 506, 572

PREVIEW

Part 2 — r the below

1) Jonah practiced his 40 day. to the stop watches that automatically record his times on a comput me were: 55, 49, 51, 52, 132, and 48.

a) Which of his scores was an outlier?

b) What might have caused the outlier ore?



2) Alex looked at how many steps he took last wee h of st took over the last 7 days is recorded below:

10425, 12325, 8542, 9875, 2012, 192 20

a) Which of the values are outliers?

b) Explain why he may have an outlier of 2012 steps?

c) Why might Alex have an outlier of 19252 steps?



3) Kylie has a business where she sells cakes. She recorded her last 15 days of cake sales.

8, 7, 9, 12, 6, 25, 7, 9, 8, 6, 10, 0, 11, 12, 8

a) Which of the values are outliers?

b) Explain what could have led to her selling 25 cakes on day 6.

c) Explain what could have led to her selling 0 cakes on day 11.



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D1.5

Calculating Mean - Outliers

Outliers have a big impact on the mean of a data set. For example, if John records his last 5 long jumps and jumps the following distances:

6.5m, 6.8m, 1.5m, 6.2m, 6.1m

John explains after that on his third jump, he slipped and didn't perform a full jump. The data set has an outlier that doesn't reflect John's ability to jump. We can see th[illegible]fference when we use an outlier in our calculation of the mean



Mean Wi[illegible] [illegible]m
Mean[illegible]

PREVIEW

Part 1

[illegible]using the outlier and without the outlier

	Data Se[illegible]	[illegible]h Outlier(s)	Mean Without Outlier(s)
1)	9, 7, 5, 25, 8, 6		
2)	21, 48, 24, 20, 26, 22		
3)	12.2, 15.6, 14.3, 28.4, 16.1		
4)	53, 105, 61, 11, 65, 58, 59		
5)	51, 81, 84, 83, 82, 84, 113		

Part 2

Answer the word problem below

1) Explain what happened in questions 4 and 5. Why was the mean simila[illegible]n with the outliers?

2) Marla's teacher is deciding between an A- and B+. An A- is between 80-84 and a B+ is between 77-79. Marla received the following marks:

78, 85, 81, 82, 77, 88, 52, 84

Should the teacher give Marla an A- or B+? Explain using outliers – do calculations!

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Name: _____ 33

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

PREVIEW

	Ordered List	Mode
1) 13, 15, 11		
2) 22, 25, 23, 22, 38		
3) 37, 49, 35, 37, 49, 35, 4		
4) 65, 54, 58, 58, 54, 65, 54, 58		
5) 79, 72, 75, 76, 72, 79, 75, 79		
6) 91, 95, 94, 90, 91, 94, 95, 97		
7) 121, 102, 112, 114, 104, 117		

1) Justin tracks what time he goes to bed at for 15 days. His bedtimes are written below:

7, 11, 8, 8, 7, 9, 10, 10, 7, 8, 9, 9, 8, 11, 9

What time did Justin go to bed at most often in the 15 days? _____



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

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

1	Fish
2	Chicken
3	Steak
4	Vegetables

Which food choice was most popular? _____

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Name: _____ 34

Curriculum Connection
D1.5

MEDIAN

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

Step 1: put 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.

Part 1 — the median of the data sets below

	Data	Ordered List	Median
1)	, 8	4, 7, (8, 8), 12, 15	8 + 8 = 16 16 ÷ 2 = 8
2)	15, 17, 1 18		
3)	27, 20, 24, 28, 26,		
4)	58, 64, 42, 57, 68, 48		
5)	84, 95, 54, 68, 92, 75, 86, 95		
6)	105, 125, 108, 152, 128, 135, 133		
7)	10.2, 10.8, 12.3, 11.8, 12.5		

PREVIEW

Part 2 — Answer the word problems below

1) The average temperatures across all 13 provinces and territories are listed below:
11°C, 9°C, 8°C, 9°C, 5°C, 7°C, 2°C, 3°C, 9°C, 10°C, 8°C, 8°C, 6°C

What is the median temperature in Canada? _____

2) Ten students are asked how many hours a day they spend on their phones. The results are as follows: 4, 6, 5, 3, 1, 7, 5, 4, 6, 8

What is the median number of hours the students spend on their phones? _____

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Name: _____ 35

Curriculum Connection
D1.5

Calculating Mode and Median - Outliers

Part 1 Calculate the mode using the outlier(s) and without the outlier(s)

	Data Set	Mode With Outlier(s)	Mode Without Outlier(s)
1)	11, 15, 12, 16, 45, 15, 12, 15, 12, 15		
2)	45, [illegible], 21, 45, 46, 88, 47, 46		
3)	[illegible]32, 42, 81, 77		
4)	10[illegible]11, 10[illegible]208, 48, 112		
5)	254, 26[illegible], 575, [illegible]		

Do the outliers influ[illegible] th[illegible] [illegible] why or why not.

Part 2 Calculate the median using the o[illegible](s) [illegible] outlier(s)

	Data Set	Median With Outlier(s)	Med[illegible]ier(s)
1)	15, 19, 16, 2, 47, 18, 17		
2)	45, 40, 99, 48, 43, 46, 45		
3)	75, 79, 125, 21, 72, 76, 75, 81		
4)	94, 88, 156, 92, 95, 96, 97, 41		
5)	8.5, 8.4, 8.8, 7.9, 8.3, 2.5, 21.5		

Do the outliers influence the median? Explain why or why not.

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D1.5

When To Use – Mean, Median, Mode

In general, we can use the following rules when deciding which measure of central tendency to use.

Mean

- Data without outliers or data sets with many data points to "wash out" outliers
- Provides accurate average of a data set and works well with all sizes of data sets

Mode

- Working with qualitative or nominal data
- Very ea[illegible]o determine the mode and is not impacted by outliers
- Does n[illegible]s give an accurate average of a data set

Median

- Wor[illegible]hat has outliers and with large data sets
- [illegible]accurate average than mode, but less than mean

PREVIEW

Questions

[illegible]easur[illegible]tral tendency will you choose to use? Explain

1) The average points [illegible] each a[illegible]n your team. You have a large data set with no outliers.

2) People vote on their favourite number from 1[illegible], 7, 5, 6, 4, 2, 5, 7, 5

3) The average salaries for Canadians. Your data set has many outlier[illegible]

4) The average amount of medicine that is effective. The data set is small with no outliers.

5) People choose which meal number (1-6) they order from a fast-food restaurant.

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Name: _____ 37

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D1.5

Mean, Median, Mode – Hourly Rate



Questions | Answer the questions below

You are deciding between 3 jobs to take based on their hourly rates. You have the following data, which shows how much 5 of the employees at each business earn per hour.

	Employee 1	Employee 2	Employee 3	Employee 4	Employee 5
Busine	$45	$16	$17	$45	$15
Busi	85	$30	$112	$24	$25
B s 3		$20	$21	$54	$56

PREVIEW

a) Rank the by t ean hourly rate. Which one would you choose?

b) Instead of using the m ra ode. Which business would you join?

c) You want to make sure you select the best ss, so e median hourly rate. Which business would you choose?

d) You notice an outlier in business 2's data. What could be an expl utlier?

e) If you omit the outlier, what is the mean rate of business 2? Does this change your choice? Explain.

f) If you were the business owner, would you include the outliers in your data? Explain.

Name: _____ 38

Curriculum Connection
D1.5

Mean, Median, Mode – Dinner Out



Questions Answer the questions below

You and your friends are comparing how many times you have been out for dinner in the past year. The following table shows how many dinners each friend has gone out for by month.

		Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Ben		2	2	1	4	3	2	4	1	2	1	1
Ji		1		3	2	5	4	3	1	2	2	1
Ava	1				3	2	3	2	2	1	1	2
Max	2		3			4	2	1	4	8	2	3

PREVIEW

a) Calculate the mean f[illegible]iend's [illegible]r of times out for dinner. Who went out for dinner the most pe[illegible]

b) Compare the medians of each friend. Who [illegible]ut for [illegible]most per month?

c) Compare the mode of each friend. Who went out for dinner the[illegible]



d) Using the mean, which month was most popular for going out for dinner?

e) What is the mean of the medians for each friend's number of visits out for dinner?

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Exit Cards

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

Name: _____

The table below shows the number of hours you and your friends have studied each week.

	Week 1	Week 2	Week 3	Week 4
	10	8	12	9
	7	11	10	13
Leo		15	11	14
Av		6	7	8

1) Calculate the [illegible] for e[illegible] [illegible]mber of study hours. Who studied the most on average per week?

2) Identify which week was the [illegible]st p[illegible] [illegible]g among all friends? On average, how much did the friends study tha[illegible]

PREVIEW

Name: _____

The table below shows the number of hours you and your fri[illegible] hav[illegible] [illegible]ek.

	Week 1	Week 2	Week 3	[illegible]
Bob	10	8	12	
Jack	7	11	10	13
Leo	12	15	11	14
Ava	9	6	7	8

1) Calculate the mean for each friend's number of study hours. Who studied the most on average per week?

2) Identify which week was the most popular for studying among all friends? On average, how much did the friends study that week?

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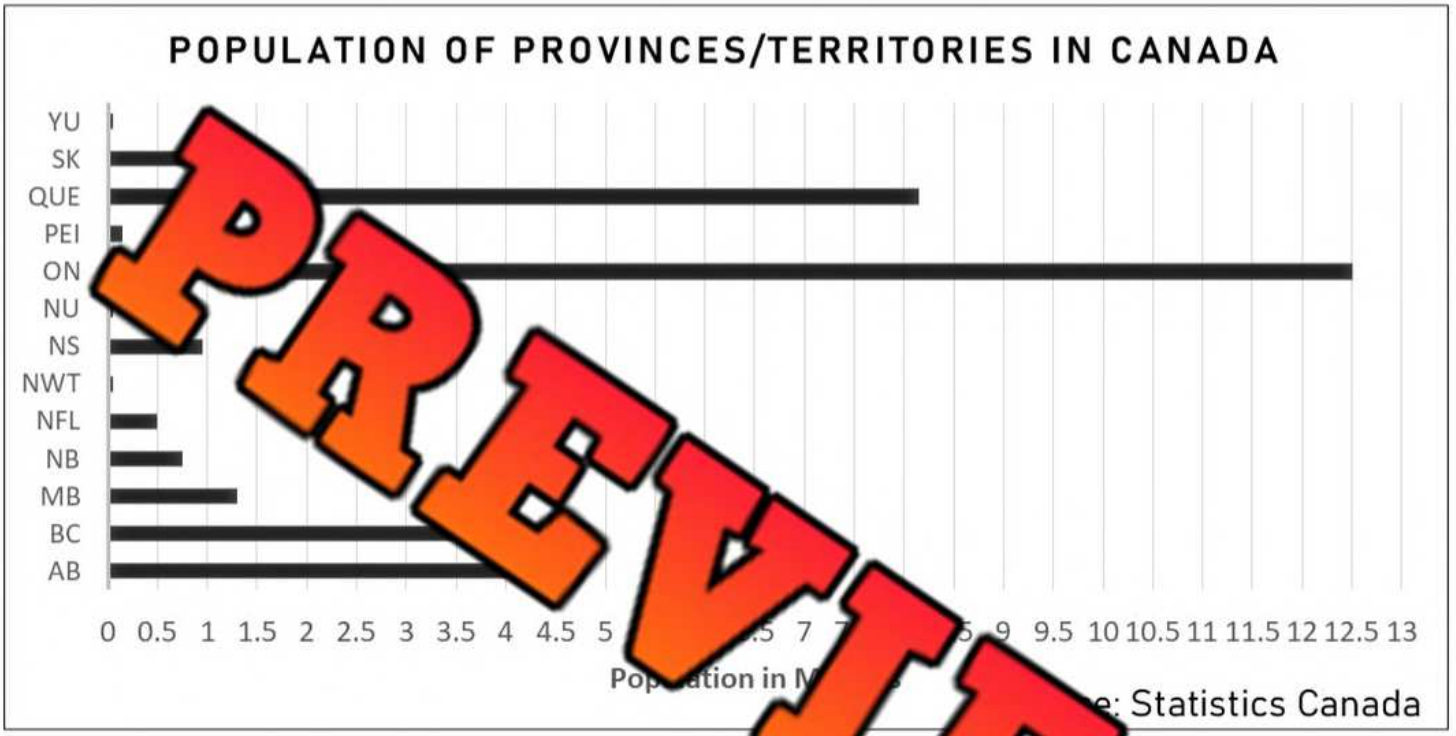
Name: _____ 43

Curriculum Connection
D1.6

Horizontal Bar Graph - Population

Joel displayed the population of the 13 provinces/territories in Canada in a horizontal bar graph.



PREVIEW

a) Which province/territory has the greatest populatio	
b) Which provinces/territories have the lowest populations?	
c) Did Joel collect primary or secondary data?	
d) Is the data quantitative or qualitative?	
e) Approximately how many more people live in Ontario than New Brunswick?	
f) Approximately how many more people live in Quebec than Newfoundland and Labrador?	
g) Do more or less people live in Ontario than Manitoba, Saskatchewan, BC, and Alberta put together?	

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Name: _____ 44

Curriculum Connection
D1.6

Vertical Bar Graph – Population Growth

The population growth rates for each province/territory between the 2011 and 2016 census has been displayed in the bar graph.

Frequency Table	
A	
B	
NFL	
NWT	
NS	
NU	
ON	
PEI	
QUE	
SK	
YU	
Mean of Canada	
Mode of Canada	
Median of Canada	



PREVIEW

a) Which province/territory grew the fastest?	
b) Which province/territory did not grow?	
c) What was the mean growth rate of the provinces and territories?	Provinces =
	Territories =
d) Who had a higher growth rate – the provinces or territories? What could explain the results?	_____ _____ _____

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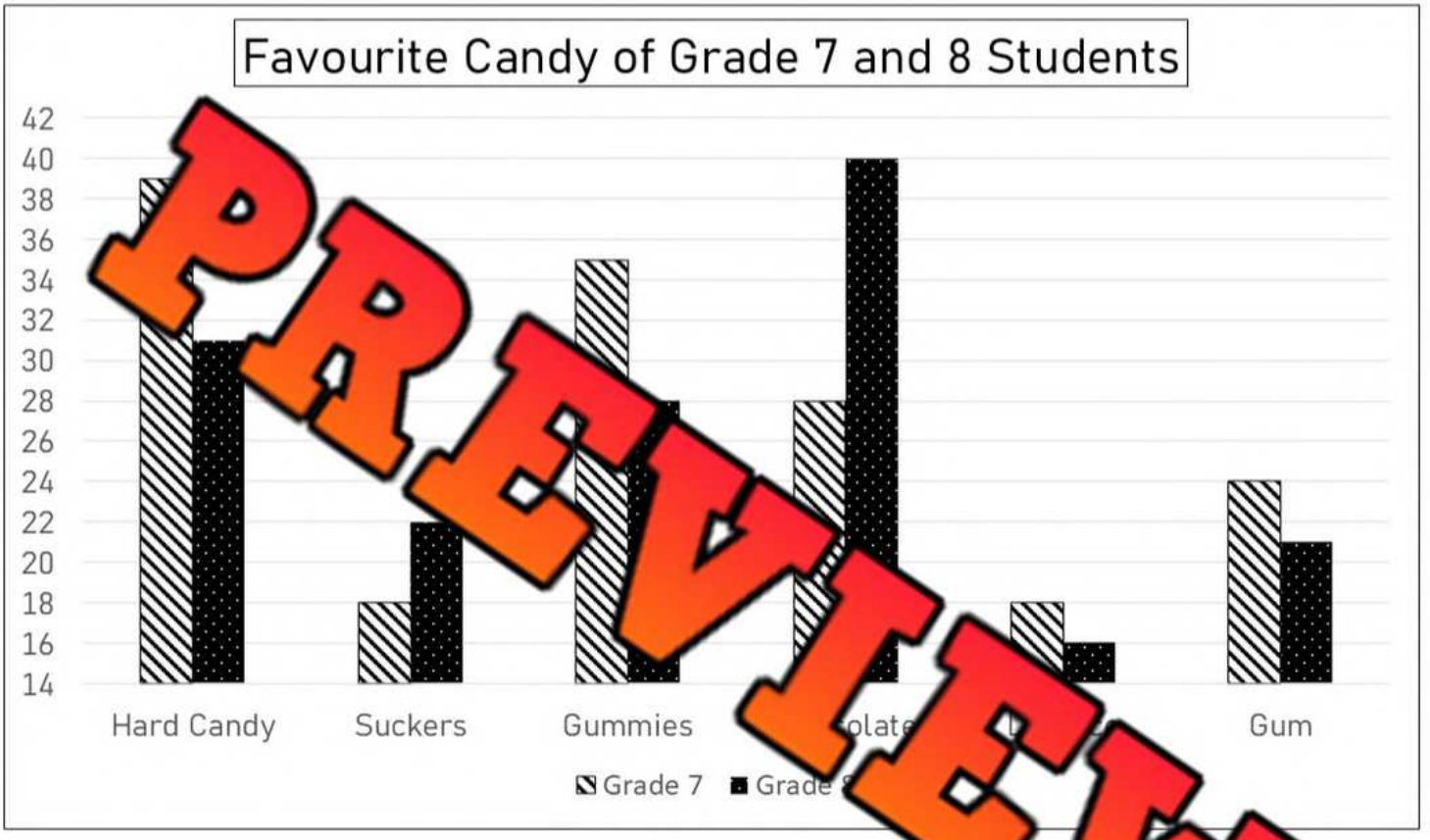
Name: _____ 57

Curriculum Connection
D1.6

Interpreting a Double Bar Graph

The students in grades 7 and 8 were asked which candy was their favourite. The results have been sorted by grade in the double bar graph below.





PREVIEW

a) Which candy did the grade 7's like the most?			
b) Which candy did the grade 8's like the most?			
c) Which candy got the most votes combined?			
d) How many more votes did gummies get in total over licorice?			
e) How many students participated in the survey?	Gr 7	Gr 8	Total
f) What percentage of students chose gum as their favourite?			
g) What percentage of grade 7s chose hard candy?			
h) What percentage of grade 8s chose chocolate?			

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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 material showed the greatest increase in the amount collected from Week 1 to Week 2?

_____

2) What is the total amount of paper recycled over both weeks combined?

_____

Name: _____



1) Which material showed the greatest increase in the amount collected from Week 1 to Week 2?

_____

2) What is the total amount of paper recycled over both weeks combined?

_____

Name: _____



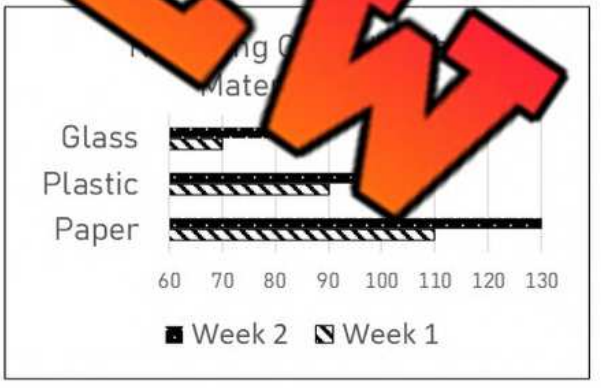
1) Which material showed the greatest increase in the amount collected from Week 1 to Week 2?

_____

2) What is the total amount of paper recycled over both weeks combined?

_____

Name: _____



1) Which material showed the greatest increase in the amount collected from Week 1 to Week 2?

_____

2) What is the total amount of paper recycled over both weeks combined?

_____

PREVIEW

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Name: _____ 59

Curriculum Connection
D1.6

Activity Title: Flip the Data

Objective

What are we learning about?

Students will engage in a fun and active game where they read data from a bar graph and answer questions to earn the opportunity to flip a bottle or cup. This activity combines data interpretation skills with a physical challenge, adding excitement and a competitive element to learning.

Materials

What you will need for the activity.

- B or cups g
- A sm tboard r t display bar graphs
- Timer (sto h martp pp)
- Question card on th data
- Scoreboard to ke





Instructions

How you wi mpl

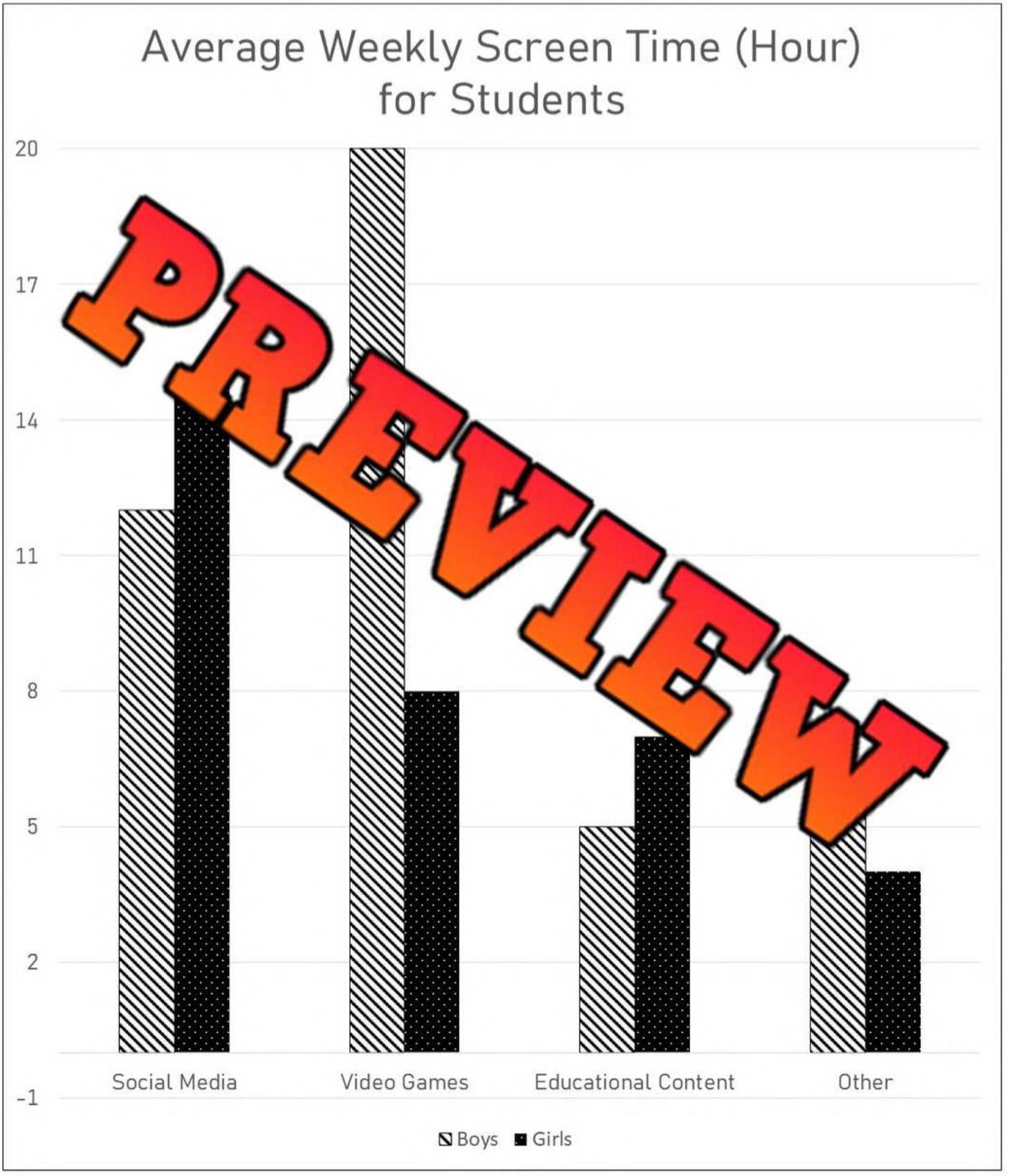
1. Divide the class into small teams, ideally of 5 tude ch.
2. Prepare a series of bar graphs to display c smart d, with corresponding question cards that ask about t gr
3. One team at a time comes to the front where the gr play
4. Display the first bar graph on the smartboard.
5. The first student from the active team reads the graph and sel card. Start the timer when the question is first shown.
6. The student answers the question based on the data presented in the graph. The teacher checks the answer.
7. If the student answers correctly, they flip their bottle or cup repeatedly until they land it upright. When they do, the next teammate can take their turn.
8. If the student's answer is incorrect, they must try another question card before they can attempt to flip.
9. The team's turn ends either when all members have successfully flipped their bottle/cup or when the timer reaches a set limit (e.g., 3 minutes).
10. Record the team's time or number of successful flips on the scoreboard.
11. Repeat steps 4-10 for each team. The team with the fastest time wins.

PREVIEW

Name: _____ 60

Curriculum Connection
D1.6

Graph 1 What did you learn from the graph?



PREVIEW

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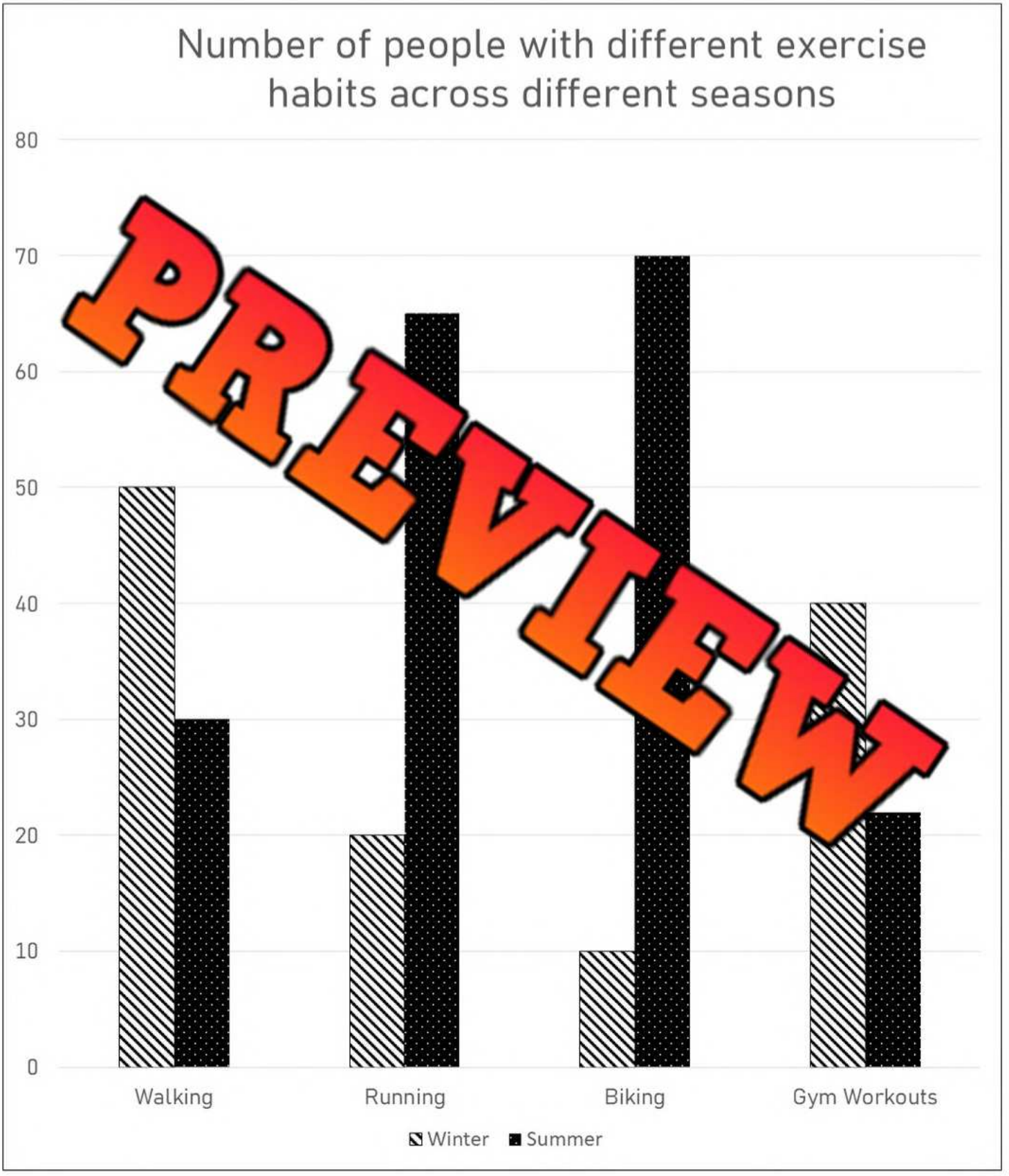
D1.6

Graph 4 | What did you learn from the graph?



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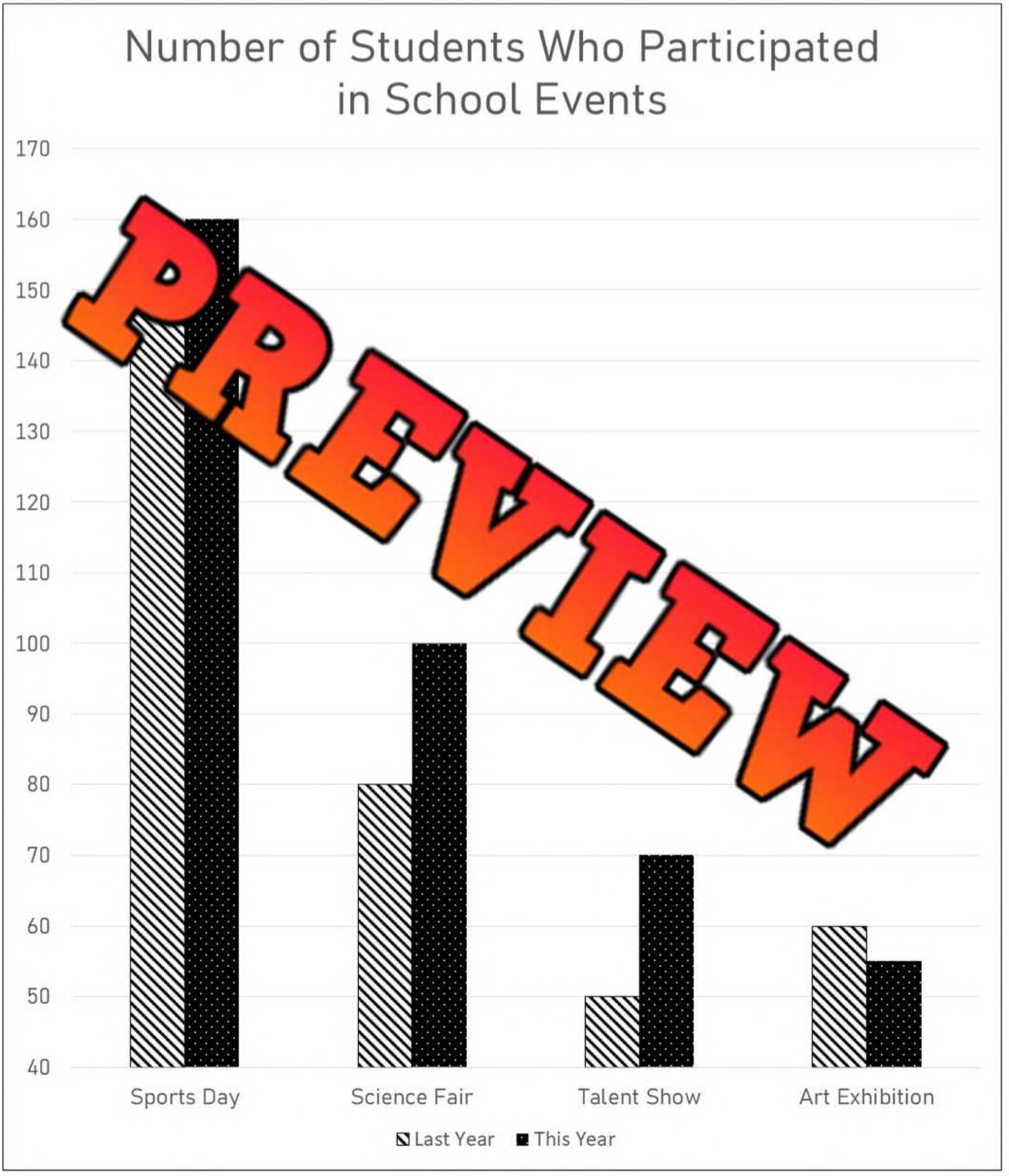
D1.6

Graph 6 What did you learn from the graph?



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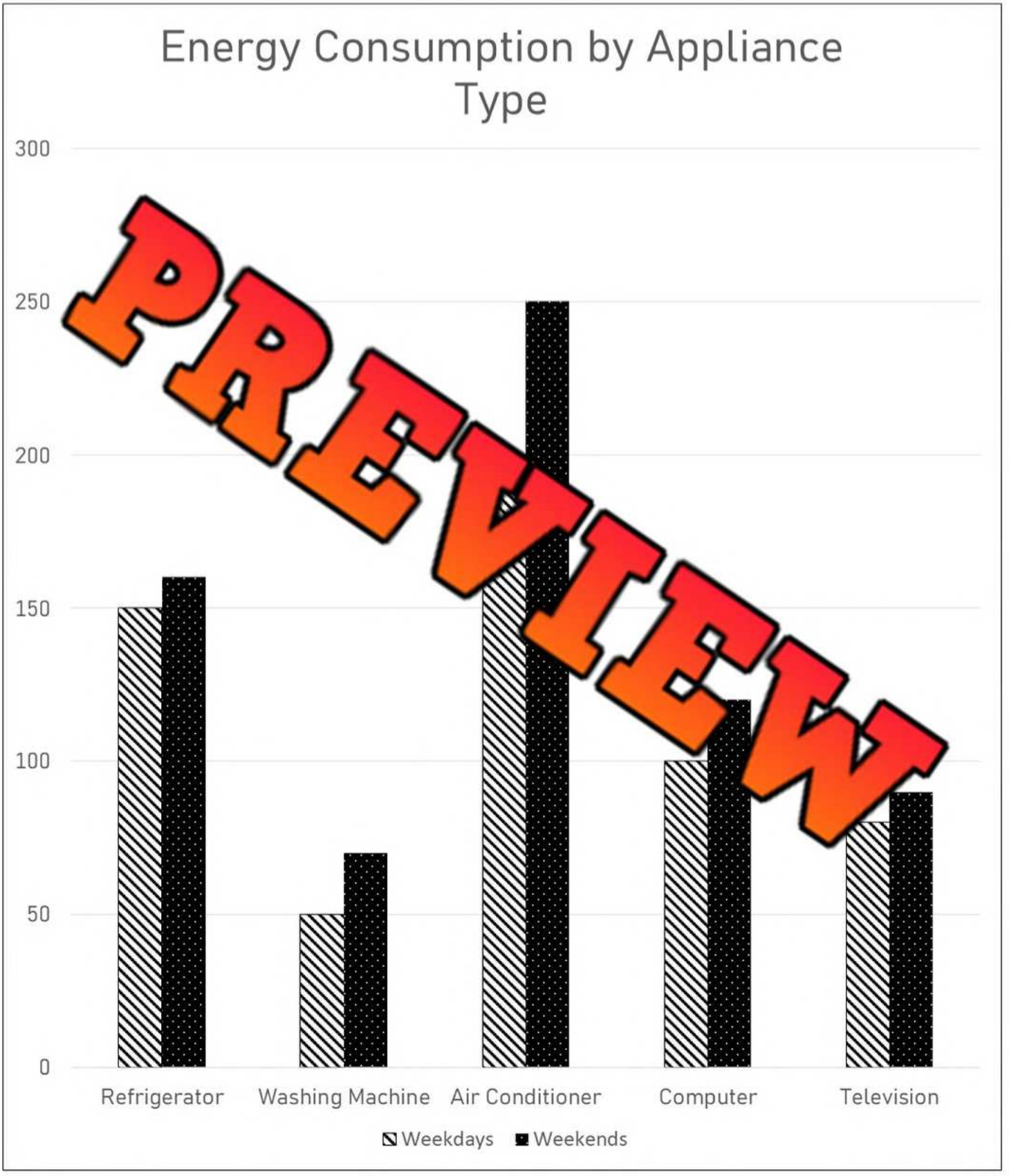
D1.6

Graph 7 | What did you learn from the graph?



PREVIEW

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Name: _____ 67

Curriculum Connection
D1.6

Questions Choose a question to ask the student who is about to flip their bottle

What is the title of the graph?
What is the title of the Y-axis?
What is the title of the X-axis?
What does each bar on the graph represent?
Which ca[illegible]ory shows the highest values for both bars?
Which c[illegible] shows the lowest values for both bars?
How [illegible]are displayed on the graph?
What is [illegible]shown on the Y-axis?
What is the t[illegible]represented by all bars?
What is the differe[illegible]n the highest and lowest categories for both ba[illegible]
Are there any categories that ha[illegible]s? Which ones?
How does the value of one specific categ[illegible]to others?
What could be a possible reason for th[illegible]
What could be a possible reason for the low[illegible]?
What trends can you observe from the graph?
How might this data be useful?
If you could add another category to this graph, what would [illegible]be?
How would you describe the overall distribution of data?
What insights or conclusions can you draw from this graph?
How might the information on the graph impact decisions or opinions?
If you used a line break for this graph, what would it be?
How does the line break in this graph help show the data?
What is the scale of the graph?
What other scale do you think would work?

PREVIEW

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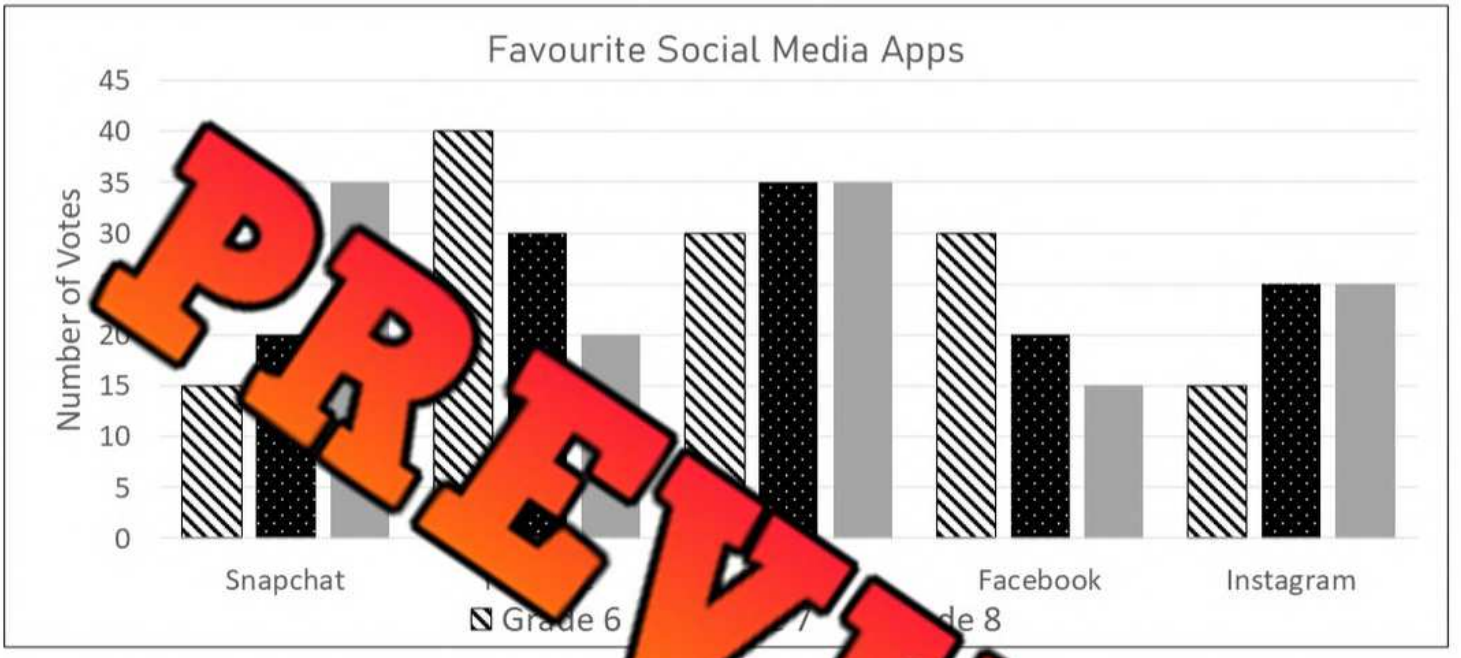
Curriculum Connection
D1.6

Multiple-Bar Graph – Favourite Social Media

The students in grade 6, 7, and 8s were asked which social media app was their favourite. The results have been sorted by grade in the multiple-bar graph below.



PREVIEW

Part 1 Fill in the frequency table by re[illegible]he m[illegible]ar graph above

	Grade 6		Grad[illegible]		[illegible]ade 8	
	#	%	#	%	#	%
Snapchat	15/130	12				
YouTube						
Tik Tok						
Facebook	30/130	23				
Instagram						
Total	/130					

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?	

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Name: _____

Curriculum Connection
D1.2

Creating a Multiple-Bar Graph - 3 Groups

Assignment Create a multiple-bar graph using data you have col

1. Choose a population that you can segment into 3 groups.
Example – Kids with no siblings, kids with 1 sibling, kids with more

Groups within Population: _____

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

Survey Question: _____

Option 1			Option 2						Option 4			Option 5		
Group 1	Group 2	Group 3												
Tally	Tally	Tally												

PREVIEW

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D1.3

Creating a Multiple-Bar Graph – 3 Groups

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

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



Legend

☐

☐

Fill in the frequency table below with your 5 categories and 3 different groups

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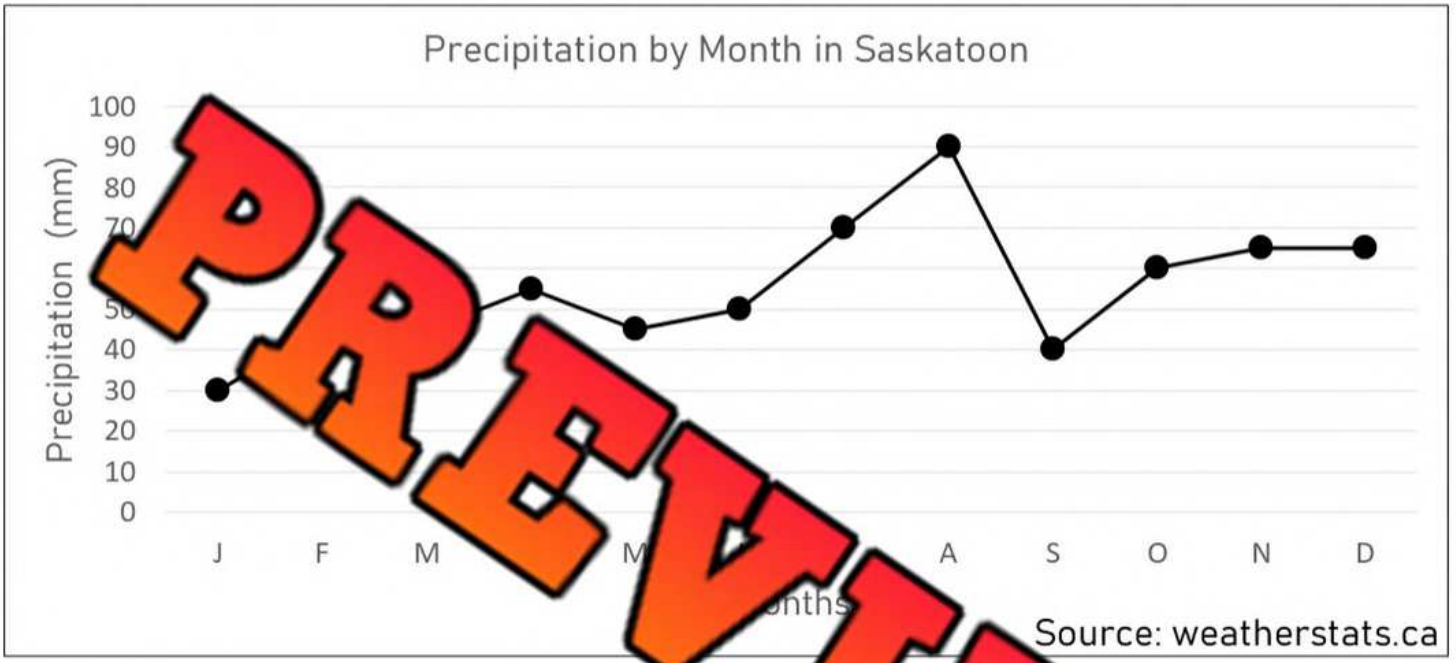
Curriculum Connection
D1.6

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.



Source: weatherstats.ca

PREVIEW

Part 1

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

	J	F	M	A	M	J	J		S		D
mm											
%											

Part 2

Solve an argument

1) What percentage of precipitation falls in July and August?	
2) What 4 months of the year are the driest?	
3) Carlos thinks more precipitation falls in August, July, April and November than all the other months put together. Is he correct? Explain.	

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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: _____

Weekly Sales of a Bookstore

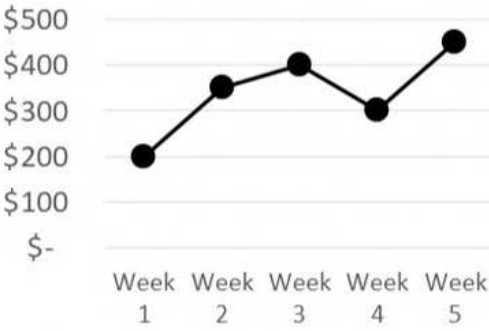


1) How much did sales decrease from Week 3 to Week 4?

2) What is the average weekly sales over the 5 weeks?

Name: _____

Weekly Sales of a Bookstore

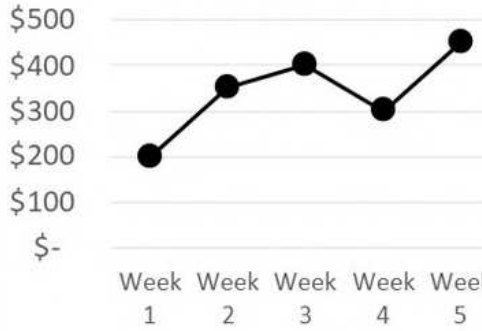


1) How much did sales decrease from Week 3 to Week 4?

2) What is the average weekly sales over the 5 weeks?

Name: _____

Weekly Sales of a Bookstore

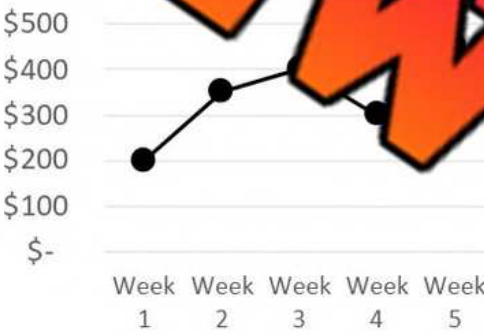


1) How much did sales decrease from Week 3 to Week 4?

2) What is the average weekly sales over the 5 weeks?

Name: _____

Weekly Sales of a Bookstore



1) How much did sales decrease from Week 3 to Week 4?

2) What is the average weekly sales over the 5 weeks?

PREVIEW

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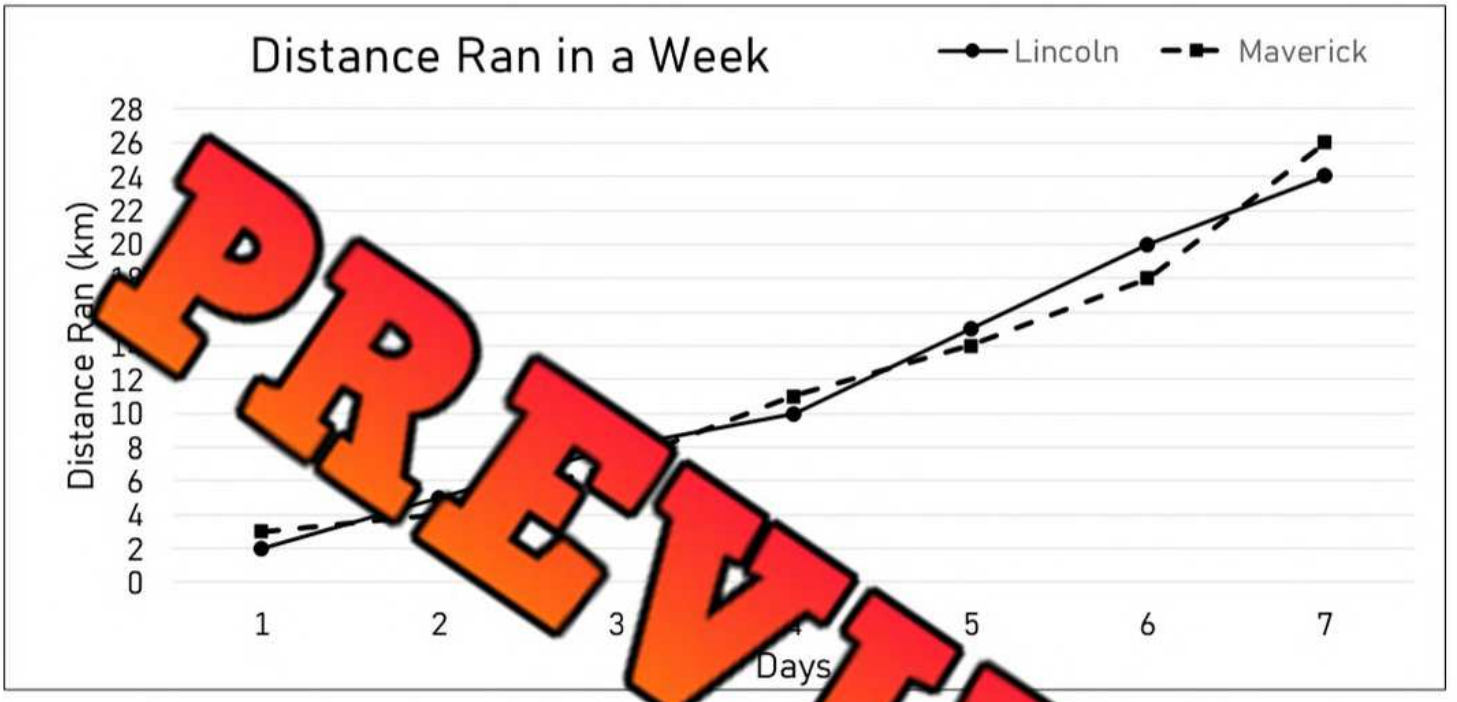
Name: _____ 75

Curriculum Connection
D1.6

Interpreting Double Broken-Line Graph

Lincoln and Maverick had a contest to see who could run the most kilometres in a week. Their results are displayed in the broken-line graph below.



PREVIEW

Part 1 Fill in the frequency table b ing t line graph

	Day 1	Day 2	Day 3	Day	5	6	Day 7
Lincoln's KM							
Maverick's KM							

Part 2 Answer the questions below

1) Who ran more km in the week?				
2) Is the data continuous or discrete?				
3) Which day did Maverick run the most? What percent of his total distance did he run on this day?				
4) Who was winning the contest after the fifth day?				
5) Which day did Lincoln run the most? What percent of his total distance did he run on this day?	Day		%	

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Name: _____ 76

Curriculum Connection
D1.2

Collecting Quantitative Continuous Data

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

Examples – height of someone over time, or time it took to run a lap.



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

Questi[illegible]e[illegible]	_____
Use the box be[illegible]ize [illegible]r data.	

PREVIEW

Interpreting The Data

1) Was your data collected from a primary or secondar[illegible]

2) Fill in the table below by calculating the measures of centr[illegible]tend[illegible]

Mean	Median	[illegible]ge

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.

_____

_____

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Name: _____ 77

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 ☐



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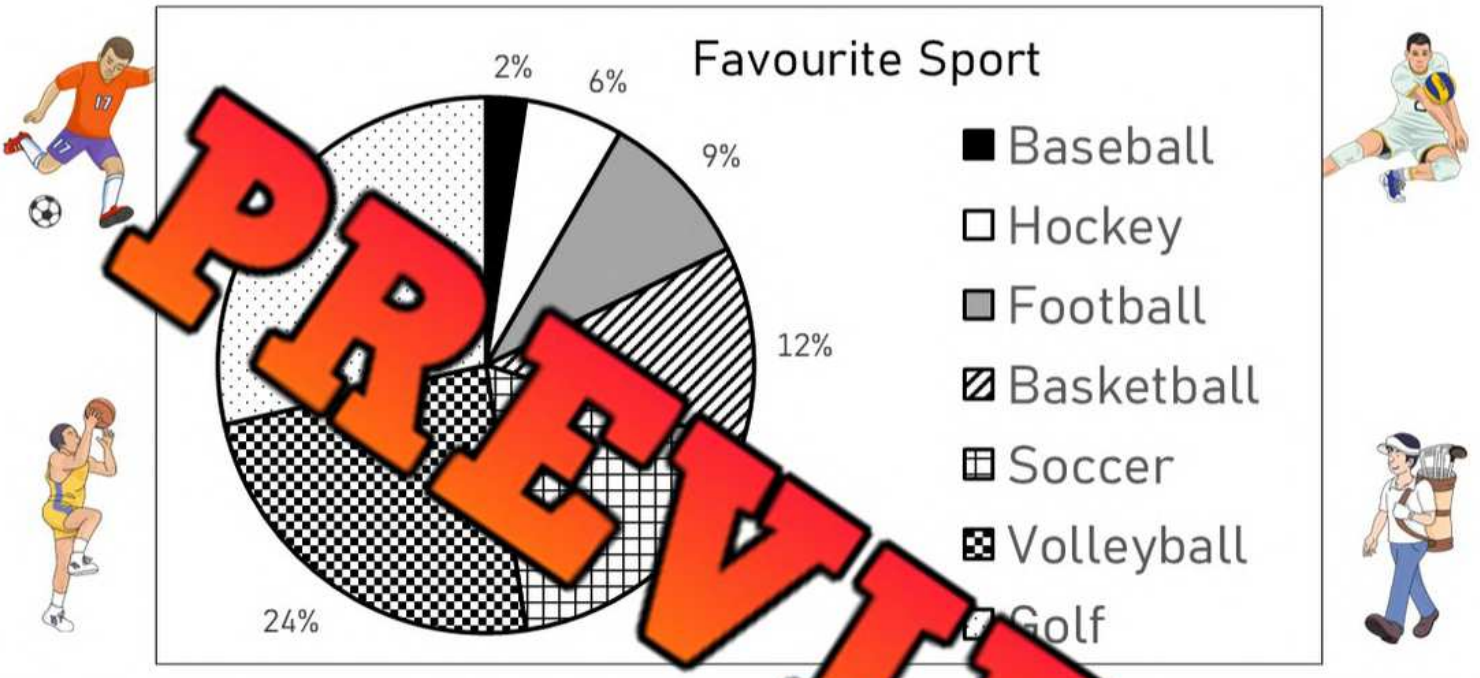
Curriculum Connection
D1.6

Interpreting a Circle Graph – Favourite Sport

Ken completed a random sample of the students in his school. He randomly asked 10 students from 10 different classes what their favourite sport is. He used a circle graph to represent his data.



PREVIEW

Part 1

Fill in the frequency table [illegible] graph

	Baseball	Hockey	Football	Basketball	[illegible]	[illegible]	Golf
Votes							
%							

Part 2

Answer the questions below

1) Which sport is the most popular out of the 100 people surveyed?	
2) Which two sports received over 50% of the votes?	
3) How many people chose baseball as their favourite sport?	
4) What percentage do all 7 sports add up to?	
5) Is golf more popular than baseball, hockey, football, and basketball combined?	

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Curriculum Connection
D1.6

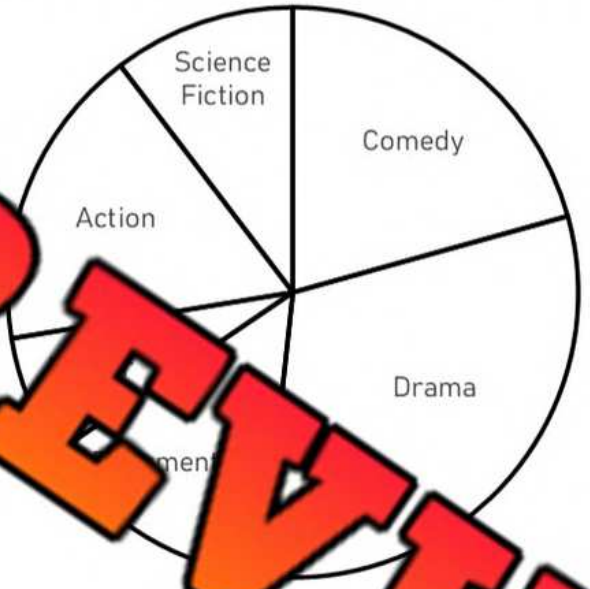
Interpreting a Circle Graph – Oscar Awards

The winning movies from the Oscar awards have been displayed by genre in the circle graph below.





2021 Oscar Winning Movies By Genres







PREVIEW

Part 1 Fill in the frequency table [illegible] the i[illegible] provided

	Drama	Documentary	Horror	Acti[illegible]	[illegible]ence [illegible]n	Comedy
Votes	9/29	4/29				[illegible]9
%			7%	17%		

Source: Movie Database

Part 2 Answer the questions below

1) Which movie genre won the most awards?	
2) Which two genres received over half of the awards?	
3) Did comedy, horror, and action get over half of the awards?	
4) Which movie genre scored 14% of the Oscar awards?	
5) What percentage of awards went to movies other than dramas?	

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Curriculum Connection
D1.6

Interpreting a Circle Graph - Shopping

Jordyn went shopping today. How much she spent at each store has been represented in the circle graph below.



PREVIEW

Part 1 Fill in the frequency table by w the p each segment

	Jewelry	Shoes	Clothing	Spor	ry	Total
$ Spent						
%						

Part 2 Answer the questions below

1) Which store did Jordyn spend most of her money?	
2) Which 2 stores did she spend over half of her money?	
3) How much did she spend in total on groceries, jewelry and shoes?	
4) What percent of her money did she spend on everything except jewelry?	
5) If she went back for more groceries and spent $100 more dollars, what percent of the money on that day would she have spent on groceries?	

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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: _____

Michael allocates his monthly budget across different categories.

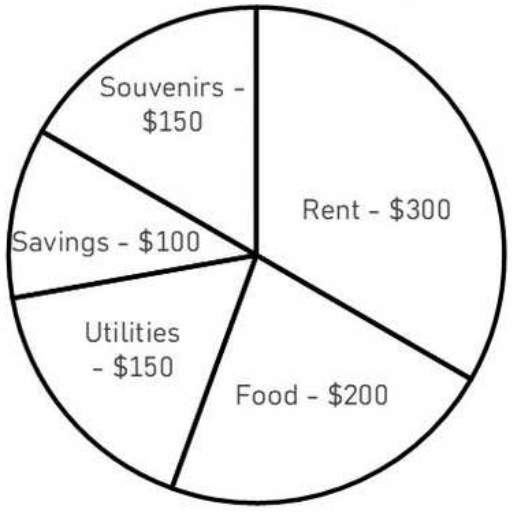


1) How much less does Michael spend on rent than on groceries and utilities combined?	
2) What percentage of his budget does Michael spend on souvenirs and rent combined?	
3) If Michael decides to spend an additional $50 on entertainment, what will be the new total, and what percent of his budget would that represent?	

PREVIEW

Name: _____

Michael allocates his monthly budget across different categories.



1) How much less does Michael spend on rent than on groceries and utilities combined?	
2) What percentage of his budget does Michael spend on souvenirs and rent combined?	
3) If Michael decides to spend an additional $50 on entertainment, what will be the new total, and what percent of his budget would that represent?	

Name: _____ 82

Curriculum Connection
D1.3

Drawing a Circle Graph - Sales

Selena has a business selling her artwork. She kept track of her sales each day last week.



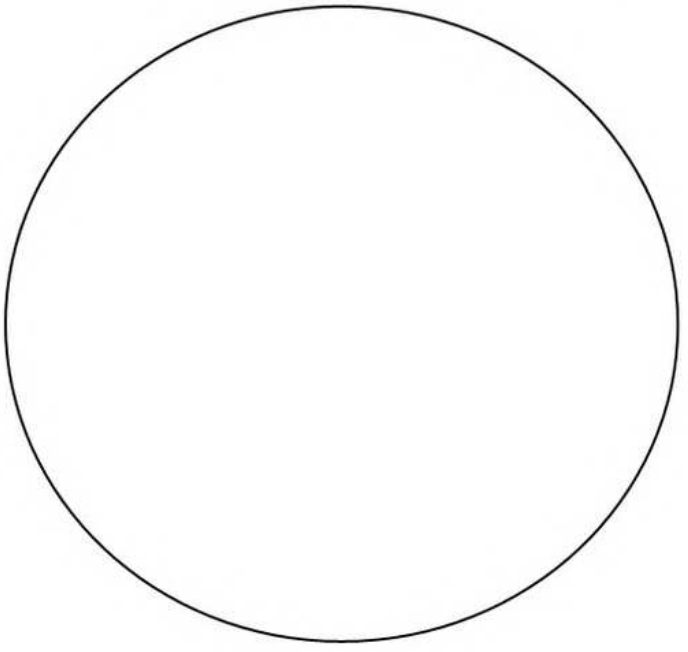
Part 1 Fill in the table below to determine the angle measurements for the circle graph

	Number of Sales	Fraction	Decimal	Relative Frequency (as a percentage)	Angle Measure
Monday	4	4/50	0.08	8%	0.08 x 360 = 29°
Tuesday	6	/50	0.12	12%	0.12 x 360 = 43°
Wednesday					
Thursday					
Friday	6				
Saturday	11				
Sunday	10				
Total	50				

PREVIEW

Part 2 Use a protractor to draw the angle you

_____



1) W da
were Se na's
best-selling

2) Why do you think na sold more on those days?

_____

_____

_____

3) What conclusions can you draw from this data?

_____

_____

_____

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Name: _____ 83

Curriculum Connection
D1.3

Drawing a Circle Graph - Languages

The top 7 most popular languages have been recorded in the table below. The data shows what percentage of the world speaks each language. Use the percent to find the angle measurement so you can represent the data in a circle graph.



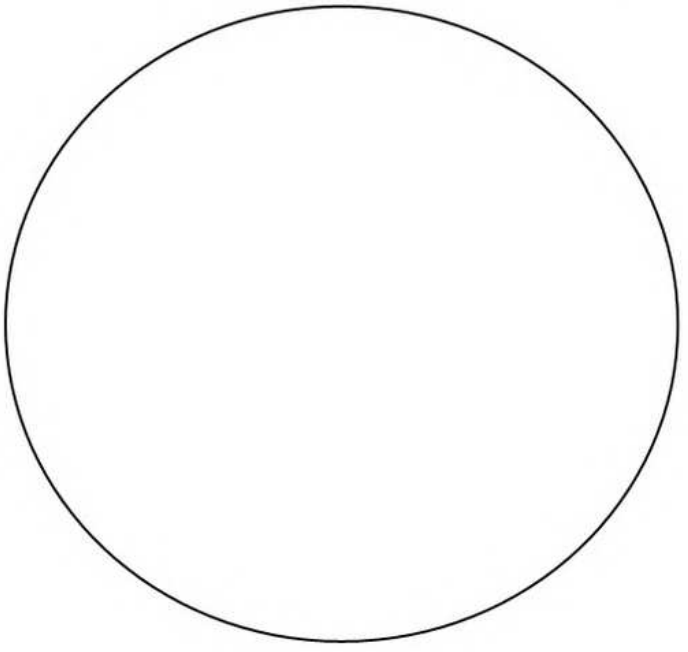
Part 1 Fill in the table below to determine the angle measurements for the circle graph

	Relative Frequency (as a percentage)	Fraction	Decimal	Angle Measure
E	14%	14/100	0.14	0.14 x 360 = 50°
Man n	%	13/100	0.13	0.13 x 360 = 47°
Hindi	8%			
Spanish	7%			
French				
Russian	4%			
Other	50%			
Total	100%			

PREVIEW

Part 2 Use a protractor to draw the angle f circle g

_____



1) Which two l are the most the world?	
2) What percentage the world speaks languages other than English and Mandarin?	
3) What conclusions can you draw from this data?	
_____ _____ _____ _____	

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Name: _____ 84

Curriculum Connection
D1.3

Drawing a Circle Graph - Basketball



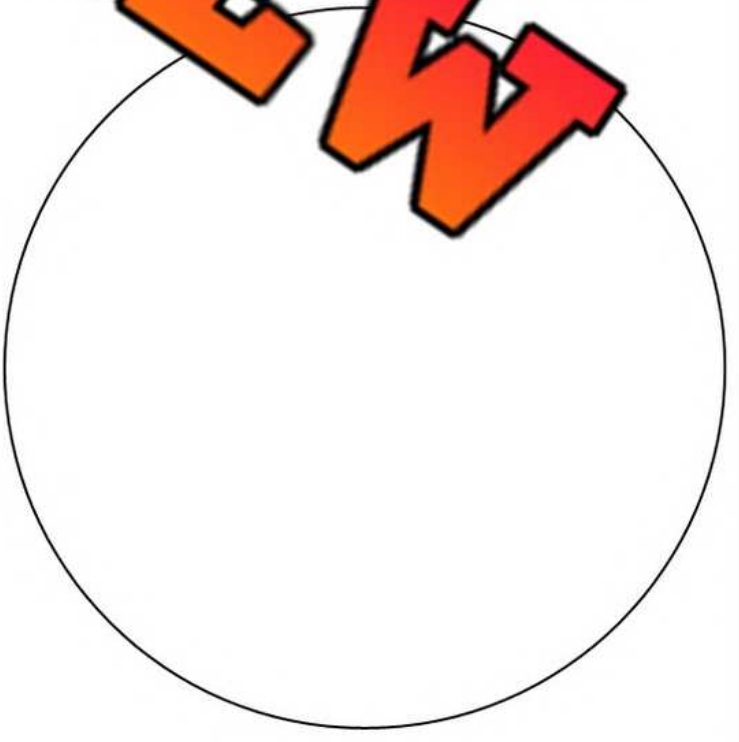
Nick has been keeping track of his basketball playoff scoring for the last 5 seasons. He played 5 playoff games in each of the last 5 seasons. How many points he scored has been recorded in the table below.

Part 1 Fill in the table below to determine Nick's average playoff scoring each season

	Game 1	Game 2	Game 3	Game 4	Game 5	Mean Scores
Season 1	6	4	5	4	6	
Season 2		4	6	7	10	
Season 3			12	9	12	
Season 4			11	13	16	
Season 5	22			25	22	

Part 2 Use the mean scores above to find the angle measures of each season

	Angle Measure
Season 1	
Season 2	
Season 3	
Season 4	
Season 5	



PREVIEW

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Curriculum Connection
D1.2

Collecting Qualitative Data – Circle Graph

Data Collection	Collect categorical data that you can plot using a circle graph

Question of Interest (Ex. Favourite _____ or which app you use most)	_____ _____

Draw a table that will help you collect and organize your data.

PREVIEW

Interpreting The Data

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

2) What conclusions can you draw from your data? List findings.

_____

_____

_____

_____

_____

3) How will graphing this data as a circle graph help readers understand the data?

_____

_____

_____

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Curriculum Connection
D1.3

Creating a Circle Graph

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

☐ **Title** ☐ **Labels for each section** ☐ **Percentages/totals**



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Curriculum Connection
D1.2

Collecting Quantitative Data – Circle Graph

Data Collection	Collect **secondary quantitative** data for a circle graph

Question of Interest - Top 5 home run leaders - Average house prices last 5 yea[illegible] Canada	_____ _____

Draw a ta[illegible] will help you collect and organize your data.

PREVIEW

Interpreting The Data

1) What source did you find your data from? _____

2) Why is it important to provide a source when you use [illegible]eo[illegible]

_____

_____

_____

3) What conclusions can you draw from your data? List 3 things you learned.

_____

_____

_____

_____

_____

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Curriculum Connection
D1.3

Creating a Circle Graph

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

☐ **Title** ☐ **Labels for each section** ☐ **Source** ☐ **Percentages/totals**

_____



Source: _____

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Population Growth in Canada

2016 CENSUS

National Picture

Population of Canada in 2016

35,151,728

Growth (2011 to 2016)

+5.0



Provi… …ories

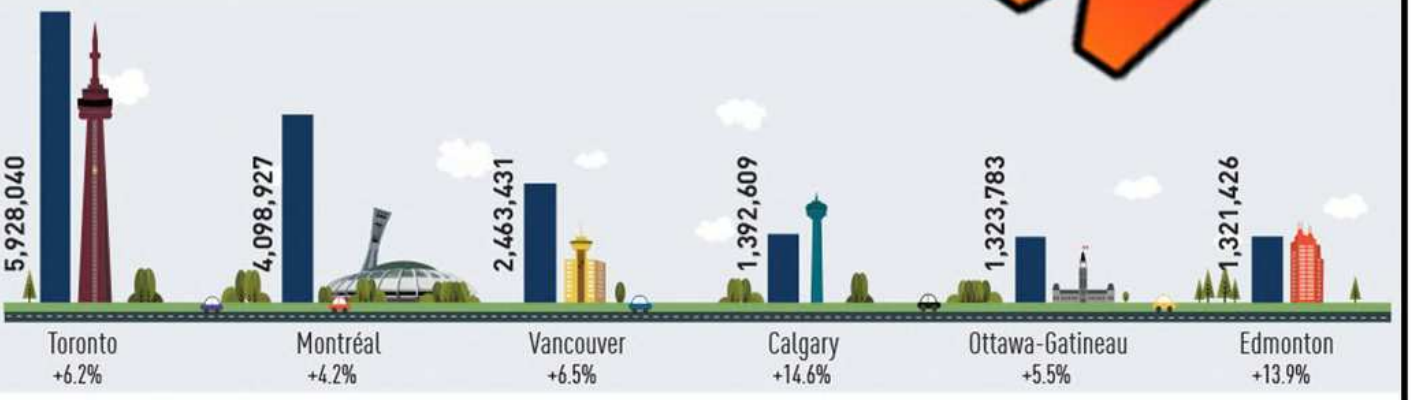
PREVIEW

Population growth (2011 to 2016)

(Numbers in brackets represent population size in 2016)



Census Metropolitan Areas



Source: Statistics Canada, 2016 Census of Population, Population and dwelling counts

www.statcan.gc.ca

Statistics Canada Statistique Canada

Canada

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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 ...es



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

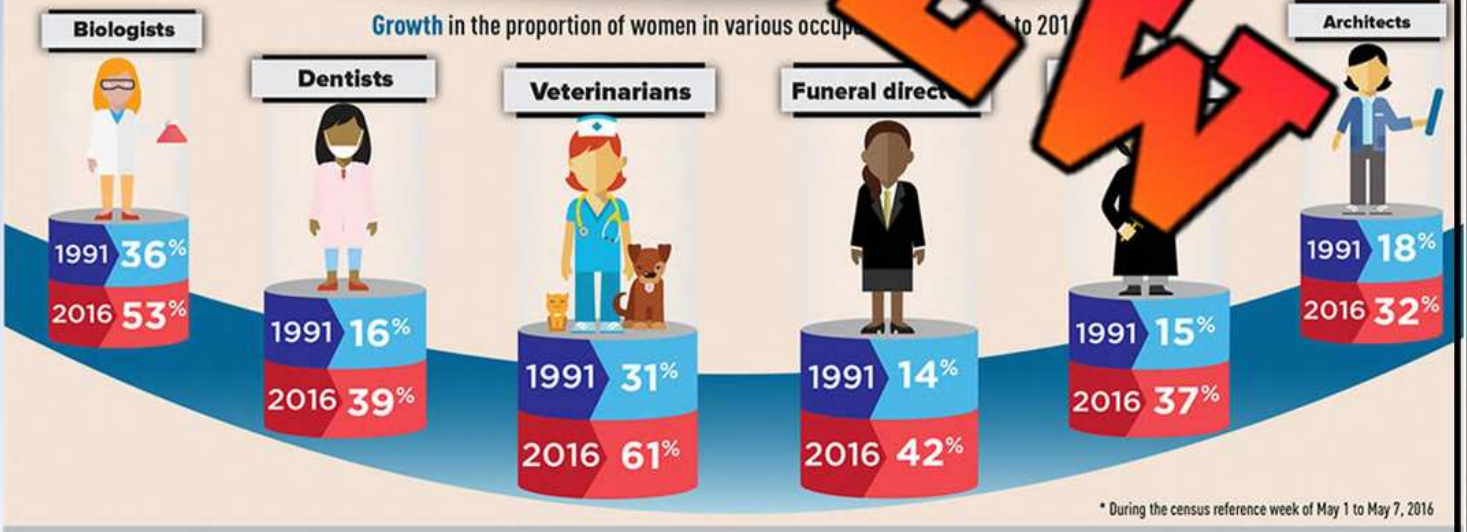


PREVIEW

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

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

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

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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?

2) What d you the infographic? List at least 3 things.

3) What did you like about the infographic?

4) What did you not like about this infographic?

5) Why do you think this infographic was made?

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Curriculum Connection
D1.4

Infographic # 2	Title: _____

1) What is the topic of the infographic?

2) What did you learn from the infographic? List at least 3 things.

3) What did y e t th graphic?

4) What did you not like about this in phic?

5) Why do you think this infographic was made?

6) Which infographic did you like better? Explain your choice.

PREVIEW

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Curriculum Connection
D1.4

Creating an Infographics

Directions Display the data set in different ways. 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!

A	10	11	12	13	14	15	Total
Screen	12	15	21	24	27	31	
							100%

PREVIEW



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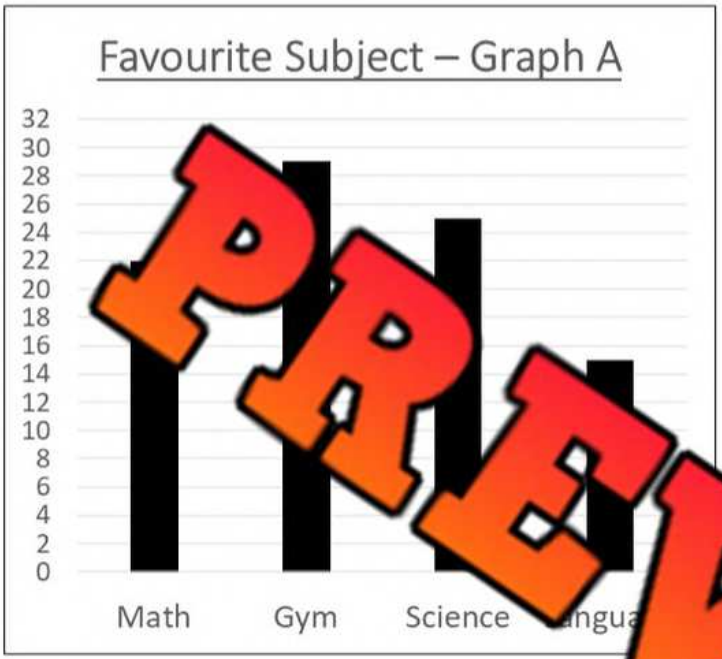
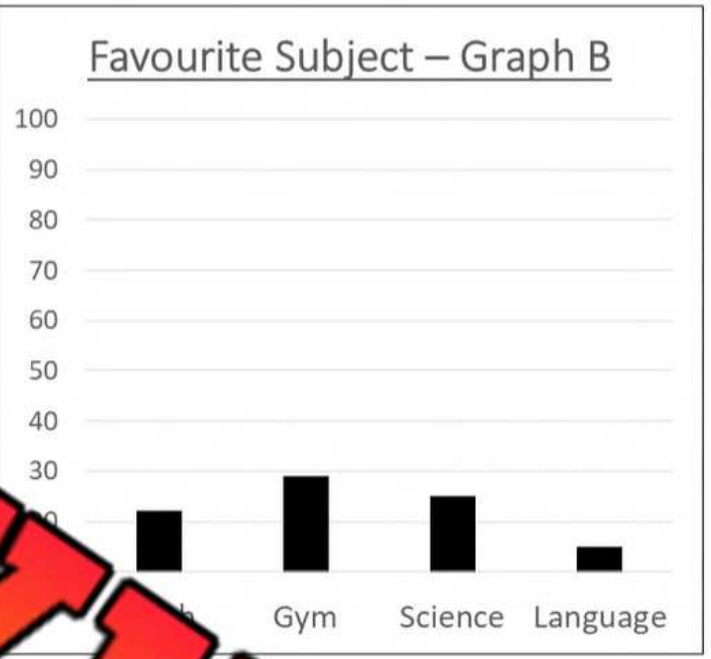
Name: _____ 101

Curriculum Connection
D1.6

Favourite Subject – Examining Scale

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





PREVIEW

Questions What do you notice abou wo gr

a) What is the scale in Graph A?

b) What is the scale in Graph B?

c) Which graph is easier to read and interpret? Why is that graph be

d) If you were a gym teacher, which graph would you show your students to demonstrate that gym is much more popular than the other subjects? Explain your choice.

e) Why is Graph B misleading? What did the author do to make it misleading?

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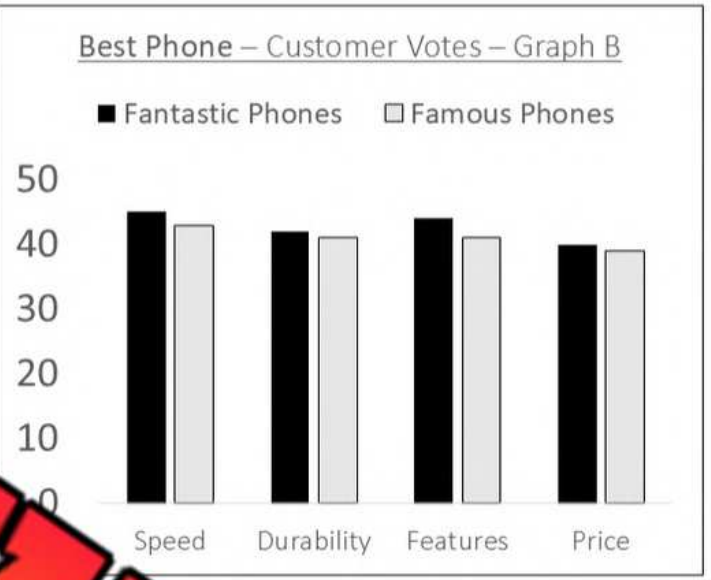
Curriculum Connection
D1.6

Misleading Graph – Multiple-Bar Graph

Fantastic Phones is running an advertisement campaign to show how much better their phones are than their competitor, Famous Phones.





PREVIEW

Questions What do you not[illegible]out the[illegible]hs?

a) Which graph would you use if you were Fa[illegible]ic P[illegible]?

b) How many more votes in total did Fantastic Phones get over Fam[illegible]Phones?

c) Are Fantastic Phones a lot better than Famous Phones? Explain.

d) Do you think it is fair that businesses create misleading graphs like this one?

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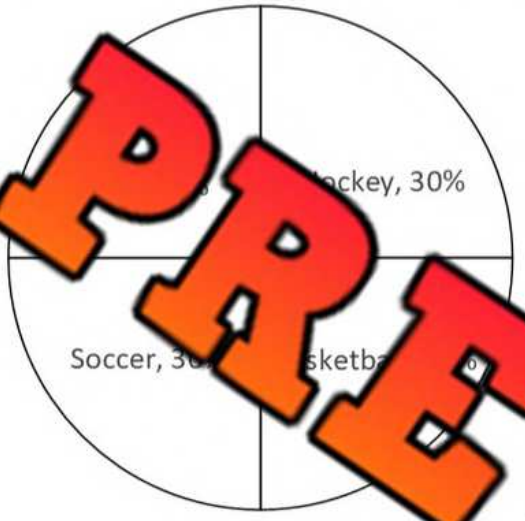
Curriculum Connection
D1.6

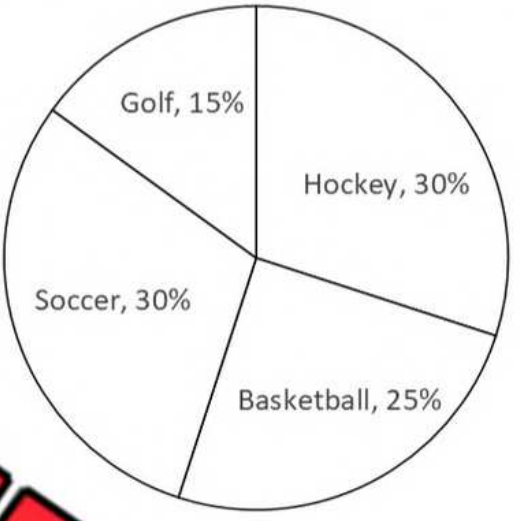
Misleading Graph – Circle Graph

A local golf course wants to advertise golf to the people in its community. They want to show that golf is just as popular to kids as hockey, soccer, and basketball.

Graph A - Most Popular Sports



Graph B - Most Popular Sports



PREVIEW

Questions What do you notice about t vo gr

a) Which of the two graphs is misleading? Explain

b) Which graph would you use if you were the local golf course? Explain.

c) Do you think people would fall for this misleading graph? Explain your opinion.

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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.

PREVIEW

Materials

What you will need for the activity.

- A se print graphs (some accurate, some misleadin
- Smartboard ctor t he graphs
- Classroom spac stu view the graphs



Instructions

How you wi mpl

1. Begin by explaining the concept of misleadin hs t dents, highlighting common ways graphs can be manipulated hangi mitting data, exaggerating differences).
2. Show each graph one at a time on the smartboard tor. M re all students can see the graph clearly.
3. After showing each graph, ask the students to use finger signal decision. They show one finger if they believe the graph is true (cu not misleading) and they show two fingers if they believe the graph is a isleading 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.

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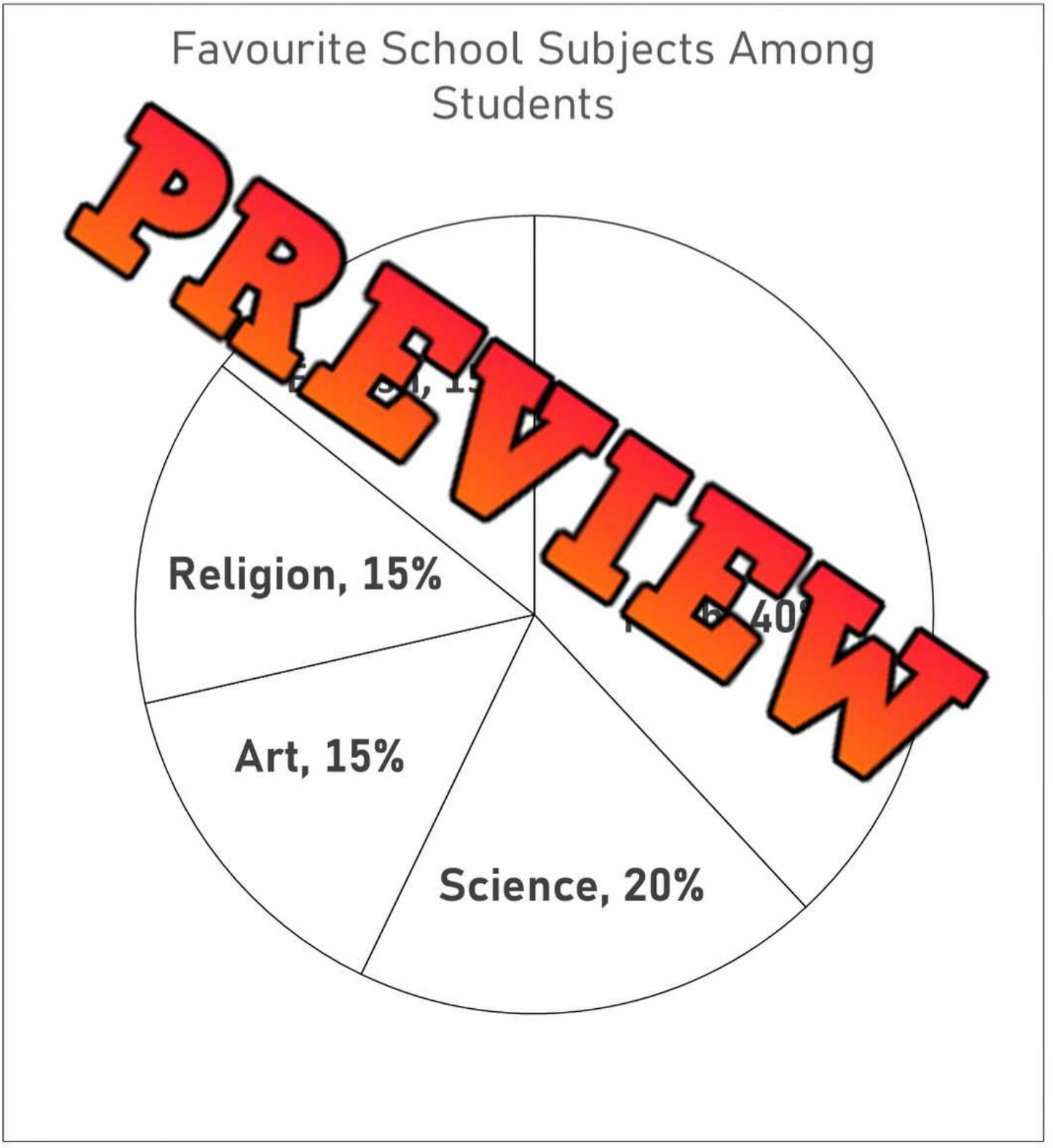
Curriculum Connection
D1.6

Graph | What do you notice about the graph?

A student is conducting a survey among his classmates for their favourite subjects: Math, Science, Religion, English, and Art.



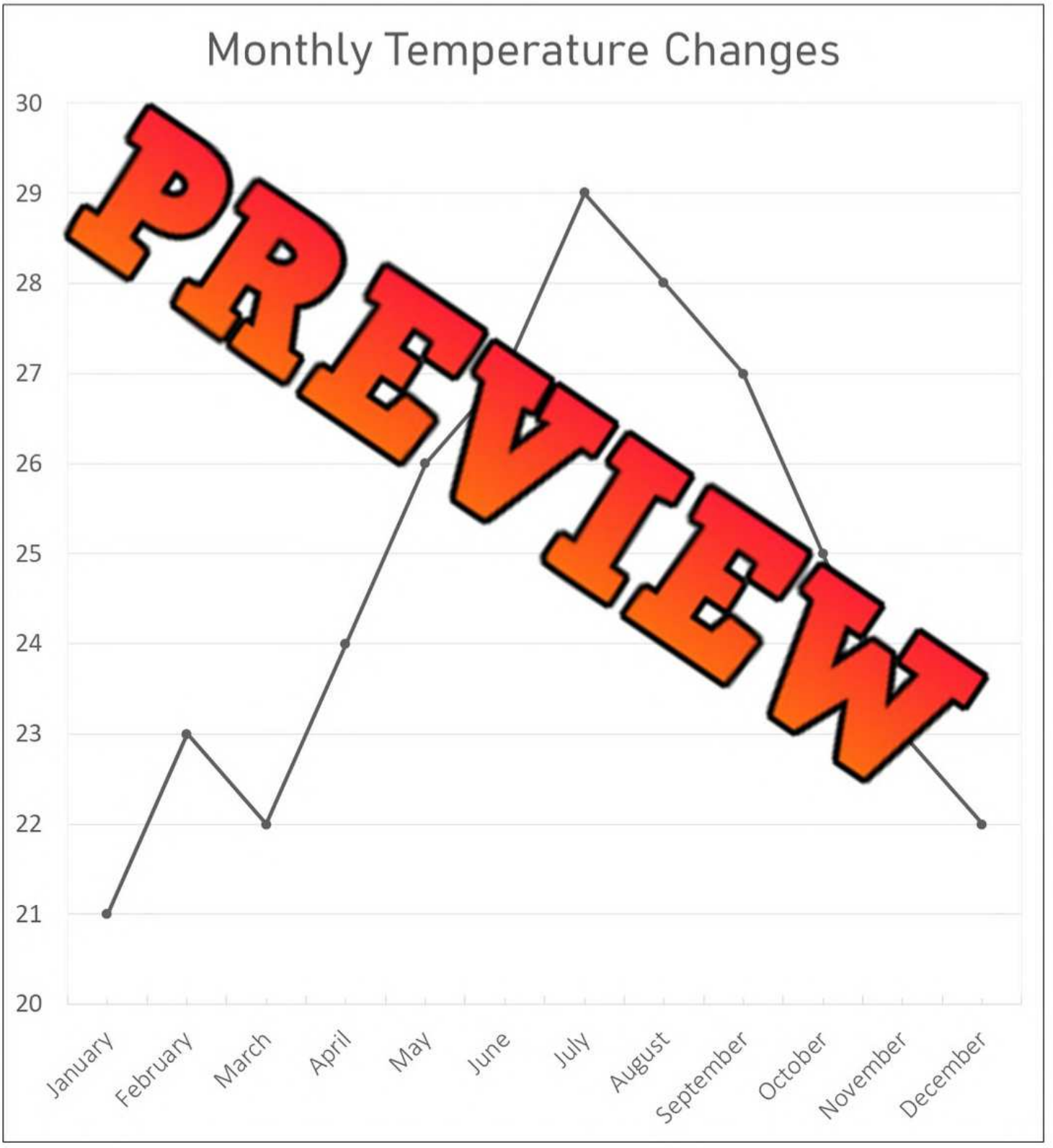
PREVIEW

Name: _____ 109

Curriculum Connection
D1.6

Graph What do you notice about the graph?

Brian is arguing that the climate he lives in is extreme, moving quickly from cold to warm temperatures. The graph shows temperature fluctuations from January to December.



PREVIEW

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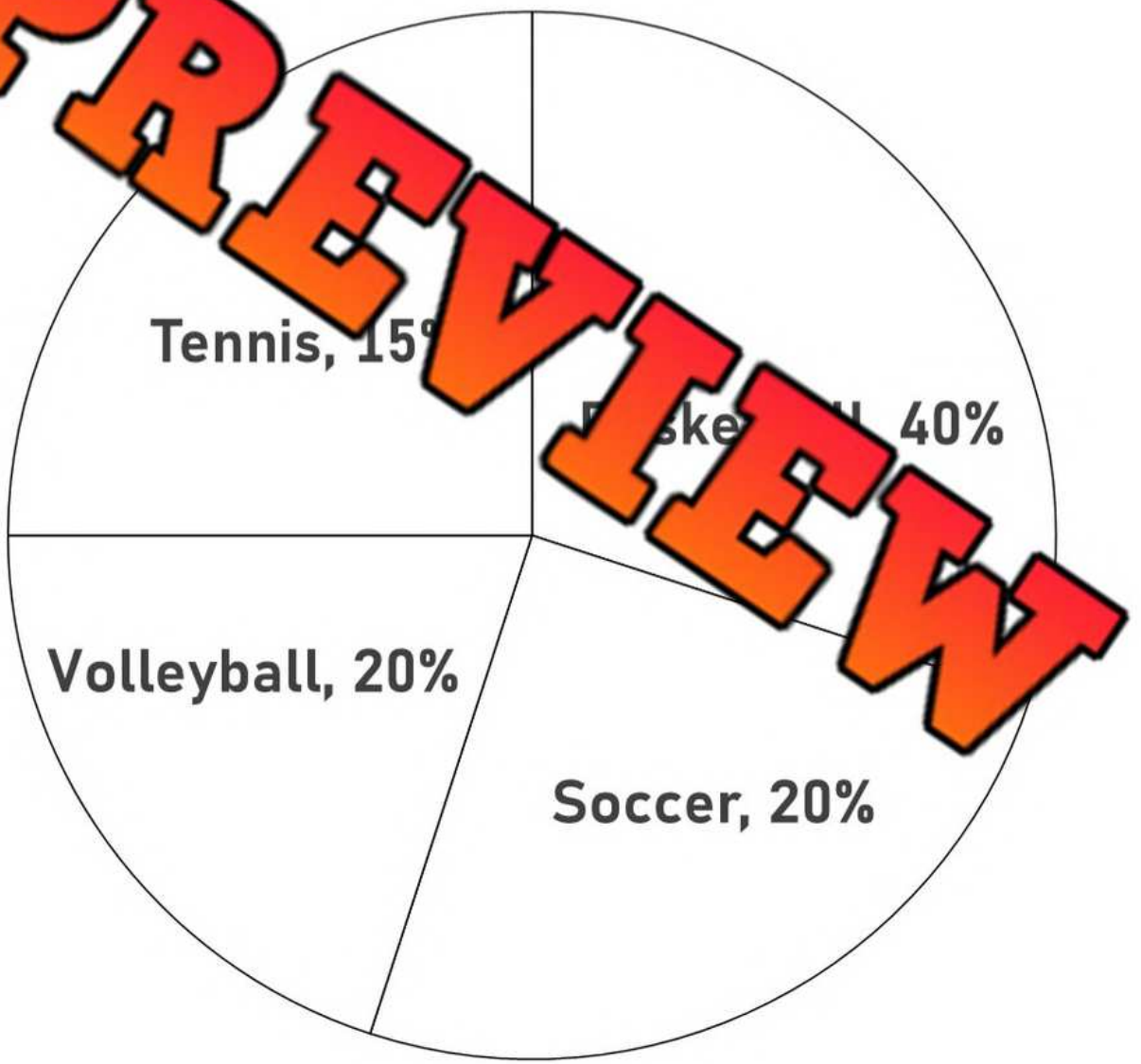
Name: _____ 110

Curriculum Connection
D1.6

Graph | What do you notice about the graph?

Let us analyze the number of students participating in Basketball, Soccer, Volleyball, and Tennis.

Participation in School Sports



PREVIEW

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D1.6

Graph What do you notice about the graph?

A teacher is comparing test scores between two classes (Class A and Class B) in Math, Science, English, and History.



PREVIEW

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Name: _____ 112

Curriculum Connection
D1.6

Graph What do you notice about the graph?

Students like fast foods. We have 4 fast food chains in our local town. We did a survey and the graph below shows the percentage of students preferring McDonald's, Burger King, Subway, and KFC.



PREVIEW

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Name: _____ 113

Curriculum Connection
D1.6

Graph | What do you notice about the graph?

A company is comparing monthly sales figures for a new product in units.



PREVIEW

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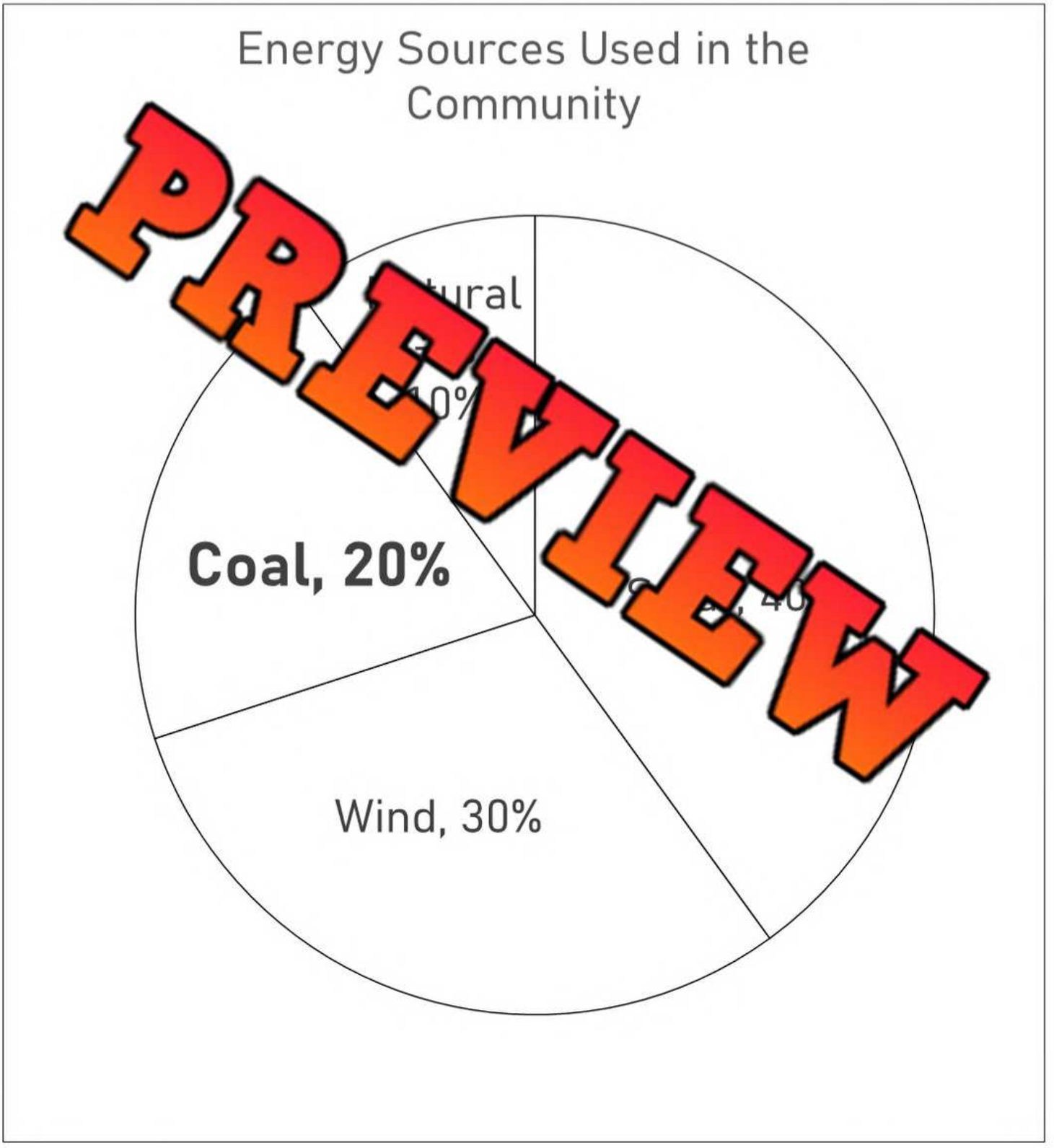
Curriculum Connection
D1.6

Graph | What do you notice about the graph?

Electricity Utility Company is reviewing the energy that is sourced from different sources such as: Solar, Wind, Coal, and Natural Gas.



PREVIEW

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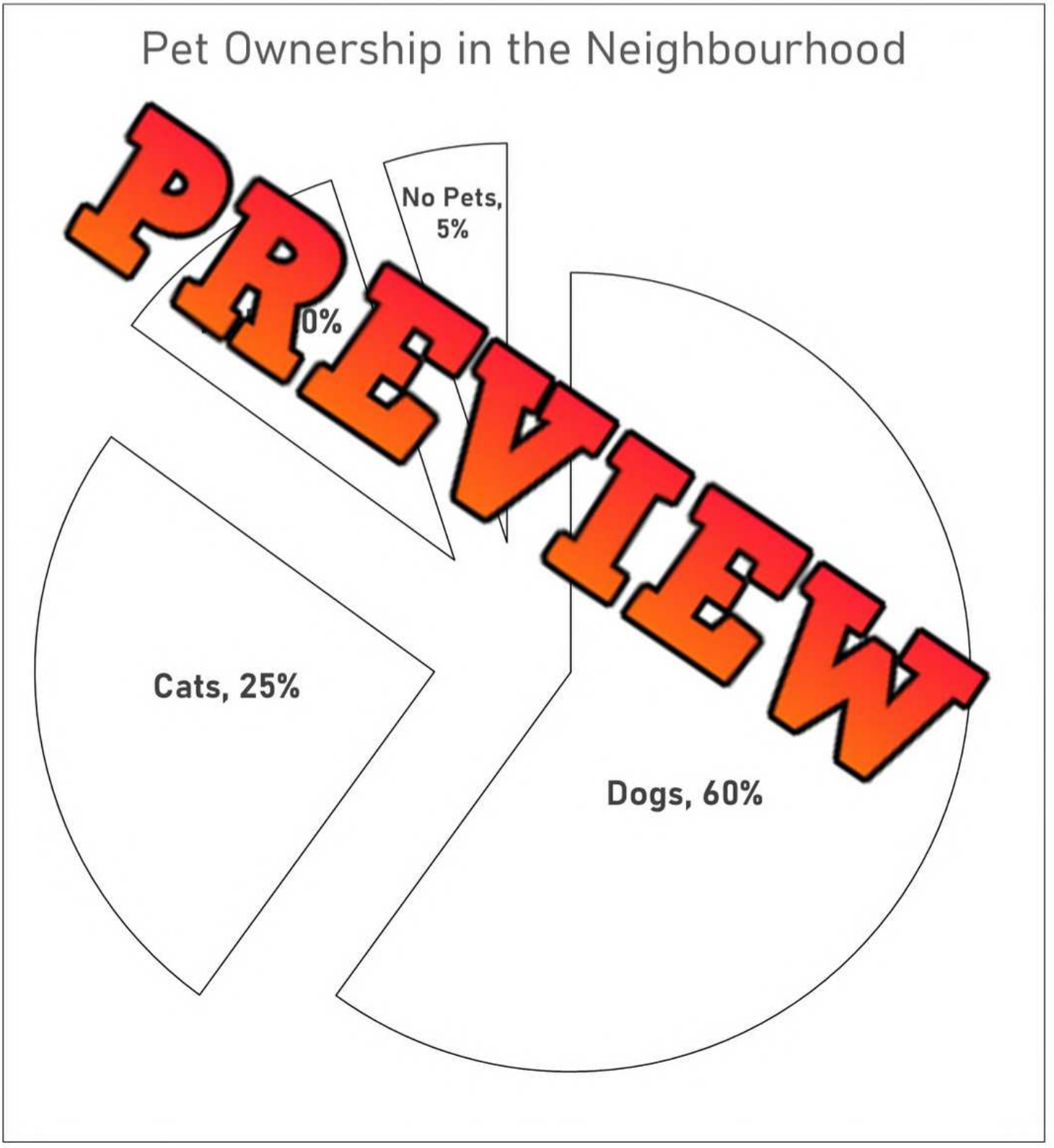
Curriculum Connection
D1.6

Graph What do you notice about the graph?

A condominium community is conducting a survey to households with different types of pets: Dogs, Cats, Fish, and No Pets.



PREVIEW

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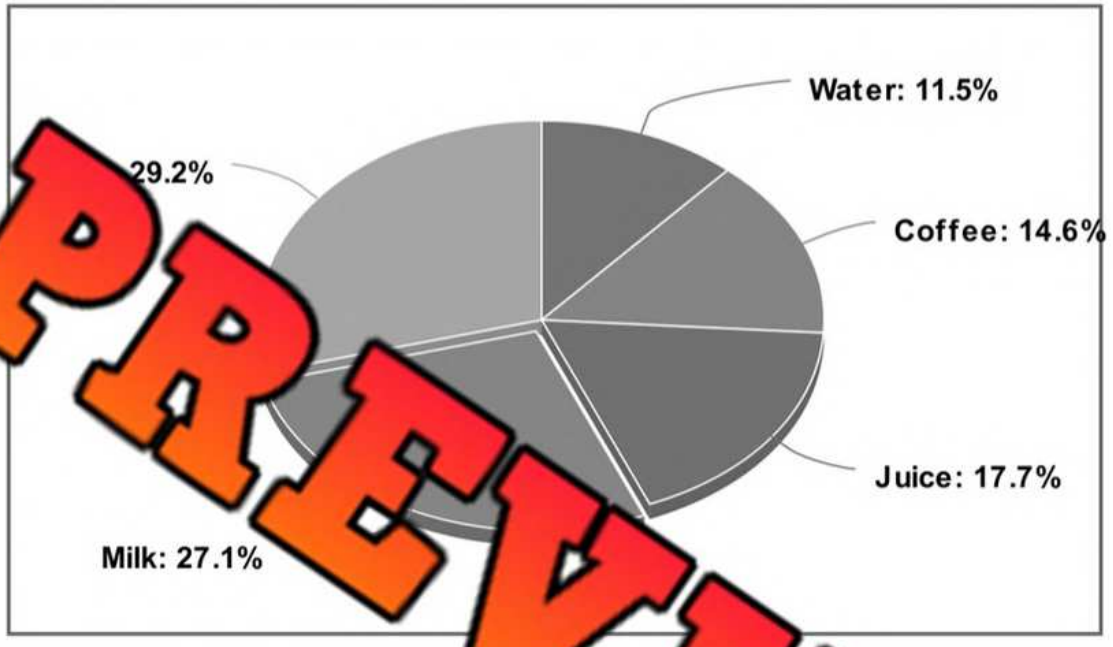
Curriculum Connection
D1.6

Misleading Graph – Circle Graph

The dairy industry performed a study to find out which beverage was the most popular. They asked 100 people aged 8-64. The results are below.



PREVIEW

Questions Answer the questions b

a) Why is this circle graph misleading?

b) Why is it important to look at who completed a study before you trust their data?

c) Can you trust all data? What kinds of things can businesses do to create data that is misleading?

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Name: _____ 118

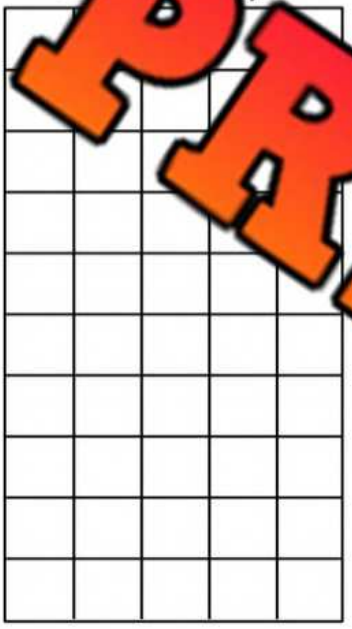
Curriculum Connection
D1.6

Creating a Misleading Graph

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

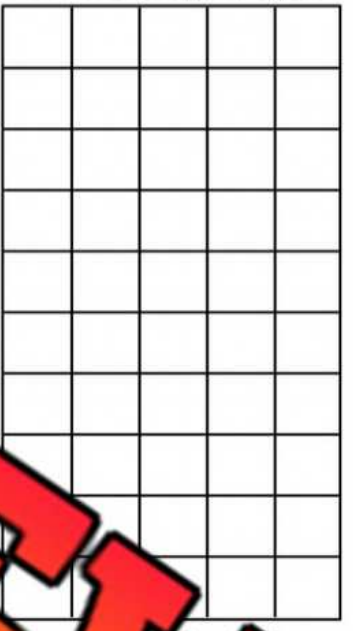
Imagine you are selling donuts as a business. Draw an honest graph and a misleading graph that you could use to show your customers that donuts are the most popular dessert.

Ho…aph



Desserts	# of votes
…	24
…	26
…	25
Cupcak…	2…
Ice Cre…	

Misleading Graph



PREVIEW

Part 2 — What do you notice about the two graphs?

a) How did you make the graphs different?

_____

_____

b) Why is it important that we understand how to read graphs carefully?

_____

_____

_____

_____

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Name: _____ 119

Unit Test – Data Literacy

Part 1 Fill in the tables by adding percentages and decimals

1) Average number of litres per 100km			
Options	**Frequency**	**Decimal**	**%**
Truck			
Car			
Va			
Hybrid			
Total			

2) Points per game scored this season			
Options	**Frequency**	**Decimal**	**%**
Arlo	21		
Zane	14		
Kyrie	19		
Rest of Team	17		
Total			

PREVIEW

Part 2 Find the m d m an ch data set below

Data Set	an	Median
1) 22, 28, 35, 11		
2) 36, 41, 55, 22, 37, 43		
3) 84, 35, 48, 77, 65, 58, 62, 91		

Part 3 Fill in the table below to find the missing data point

	Data Set	Mean	Calculations	Missing Data Point
1)	18, 24, 27, 33, ?	30		
2)	48, 55, ?, 62, 68, 74	59		

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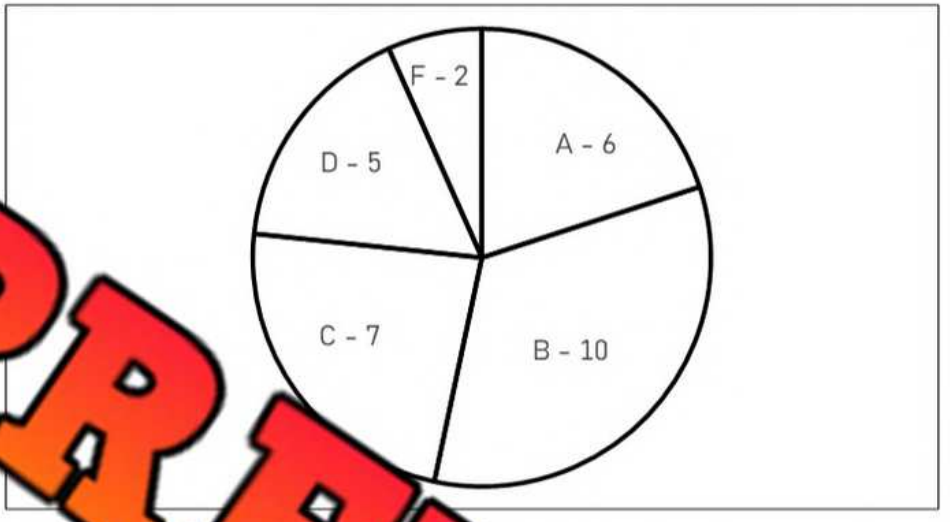
Part 4 Read the graph and answer the questions below

Mr. Douglas posted the results of his math test as a circle graph. He didn't post names, but posted how many A's, B's, C's, D's and F's he gave out.



PREVIEW

Answer the following que bout above

1. Fill in the frequency table

Grades	A			D	F
Frequency					
Percentage					

2. How many students wrote the math test? _____

3. Did half of the class get either an A or B? _____

4. Did more students get a B than a D or F combined? _____

5. How many people passed the test?_____ What percent of the class passed? ___

6. Mr. Douglas posted the specific marks below. What was the average mark? _____

92	8	51	62	68	49	58	87	67	55
61	88	72	75	56	85	78	65	79	93
75	78	72	71	78	73	70	99	63	57

7. There is one outlier in the data set. What is it? _____

8. What is the mean of the data set without the outlier? _____

9. What is the mode of the data set? _____

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Part 5 Fill in the table with the percentage and represent the data in a circle graph

Roger is a pitcher for his baseball team. He can throw 5 different pitches. The amount he threw each pitch last game has been represented in the table below.

Pitches	Fastball	Changeup	Slider	Curveball	Cutter
Number of Pitches	32	18	15	12	17
Percentage					
Angle Measurement					

PREVIEW



1) Does he throw a fastball or curveball at least half of the time? _____

2) Is this data discrete or continuous? _____

3) How does using a circle graph help the reader understand the data better?

_____

_____

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Grade 7
D2. Probability

	Curriculum Expectations	Pages That Cover the Expectations
D2.1	describe the difference between independent and dependent events, and explain how their probabilities differ, providing examples	132, 148 – 149, 151 - 152
D2.2	determine and compare the theoretical and experimental probabilities of two independent events happening and of two dependent events happening	123 - 157

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Name: _____ 123

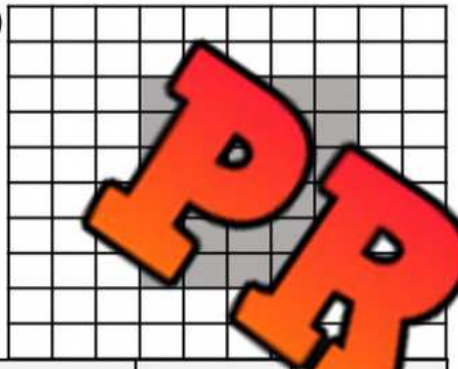
Curriculum Connection
D2.2

Dart Probabilities – Fraction, Decimal, Percent

Imagine below, that the shaded in area is a target and the white part is the wall. What is the probability of you hitting the target?

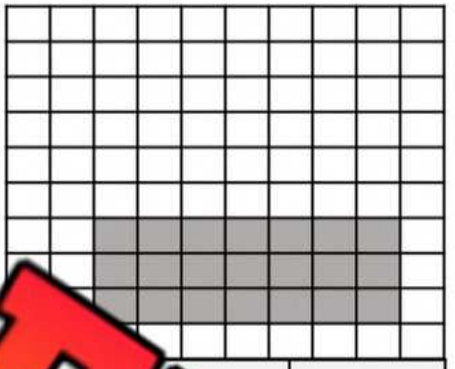
Questions Represent the probability of hitting the target using a fraction, decimal and percent

1)



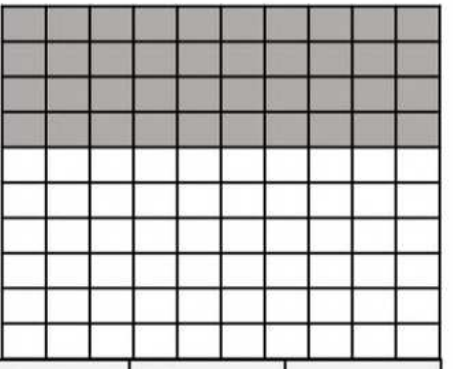
Fraction	Decimal	Percent

2)



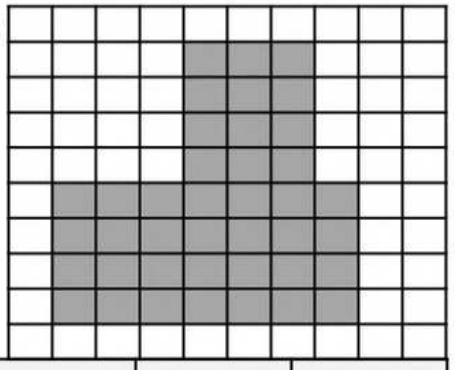
Fraction	Decimal	Percent

3)



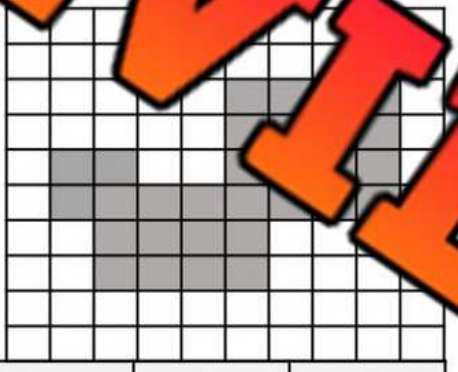
Fraction	Decimal	Percent

4)



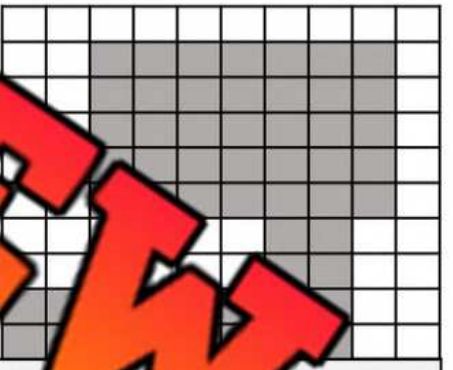
Fraction	Decimal	Percent

5)



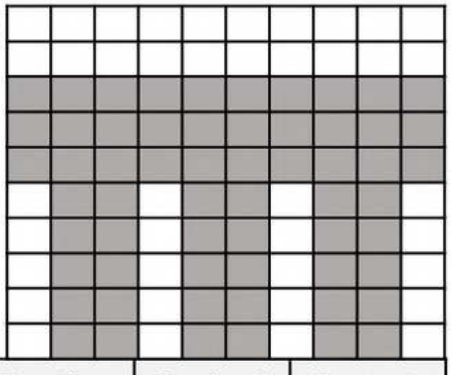
Fraction	Decimal	Percent

6)



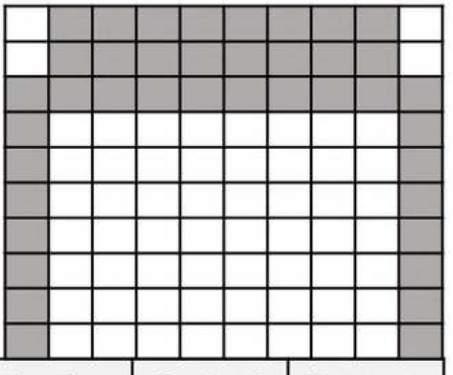
Fraction	Decimal	Percent

7)



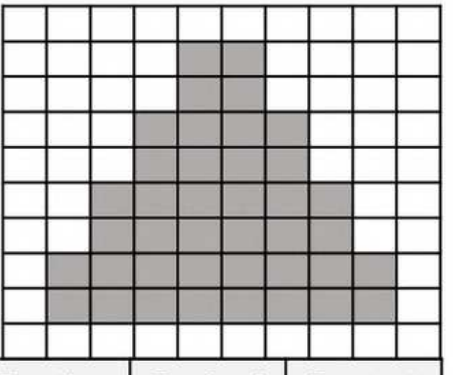
Fraction	Decimal	Percent

8)



Fraction	Decimal	Percent

9)



Fraction	Decimal	Percent

PREVIEW

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Name: _____ 125

Curriculum Connection
D2.2

Independent Events Versus Dependent Events

In probability, **independent events** don't affect each other. What happens in one event doesn't change the chances of the next.

Example: Flipping a coin and rolling a die – the coin doesn't affect the die.

Dependent events do affect each other. The outcome of the first event changes the chances of the next.

Example: Drawing two cards without putting the first one back – the first card changes what's left in the deck.

Question Is this scenario an independent or dependent event?

#	Scenario	Independent	Dependent
1	Rolling a die and flipping a coin	Independent	Dependent
2	Drawing one card from a deck, then rolling a die	Independent	Dependent
3	Raining today and tomorrow	Independent	Dependent
4	Performing 2 spins on a wheel and getting 5 points both times	Independent	Dependent
5	Tossing a coin and choosing a number between 1 and 10	Independent	Dependent
6	Choosing teams without putting students back in the pool	Independent	Dependent
7	You and your friend pick prizes from a prize bin of different prizes.	Independent	Dependent
8	Drawing names for prizes where each name is only drawn once	Independent	Dependent
9	Getting five fastballs thrown to you in a row	Independent	Dependent
10	Winning the lottery today and next month	Independent	Dependent

Write Write your own example of an independent and dependent event

Independent	
Dependent	

PREVIEW

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Name: _____ 126

Curriculum Connection
D2.2

Independent Events Versus Dependent Events

Scenario:
During a class carnival, there's a mystery bag filled with marbles: 3 red, 2 blue, and 1 green. You get to draw marbles as part of a prize game.

Independent Event Example:
What is the probability that Alex pulls out a red marble, puts it back, and then Jamie pulls out a blue one?

Dependent Event Example:
What is the probability that Alex pulls out a red marble, hands it to Jamie to keep, and then Jamie pulls out a blue one?

PREVIEW

Instructions: Classify independent and dependent scenarios like in the example above

	You have six marbles. Two are red, two are black, and two are yellow.
Independent	
Dependent	

	You have a jar of 15 marbles: 5 green, 5 blue, 5 red.
Independent	
Dependent	

	You are picking two names from a class list of 25 students.
Independent	
Dependent	

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Name: _____ 127

Curriculum Connection
D2.2

Instructions	Create independent and dependent scenarios like in the example above

	You roll one number cube and spin a spinner with five equal sections.
Independent	
Dependent	

	You [illegible] books from a shelf of 10 fiction and 5 non-fiction books.
Independent	
Dependent	

	You roll a die twice.
Independent	
Dependent	

	You randomly draw two pencils from a container with 3 blue, 2 red, and 1 green pencil.
Independent	
Dependent	

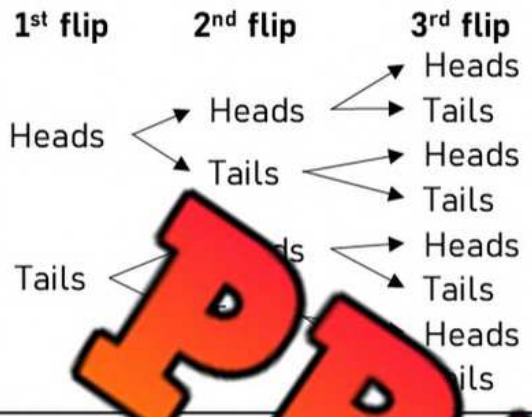
PREVIEW

Name: _____ 128

Curriculum Connection
D2.2

Tree Diagrams – Probability of Multiple Events

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.

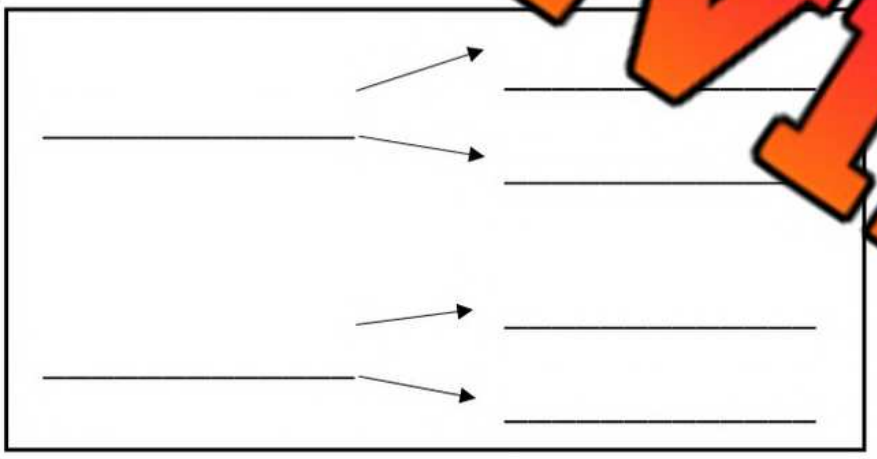
HHH, HHT, HTH, HTT, THH, THT, TTH, TTT

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

PREVIEW

Questions Dra agram how many different combinations you could have

An ice cream shop sells t rs of i m and two different cones. Show the combinations of ice cream y hav diagram below.



mbinations

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:			

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Name: _____ 129

Curriculum Connection
D2.2

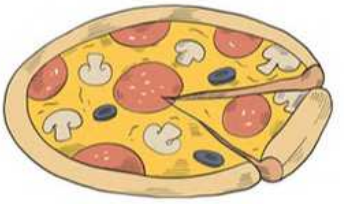
Tree Diagrams – Probability of Multiple Events

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

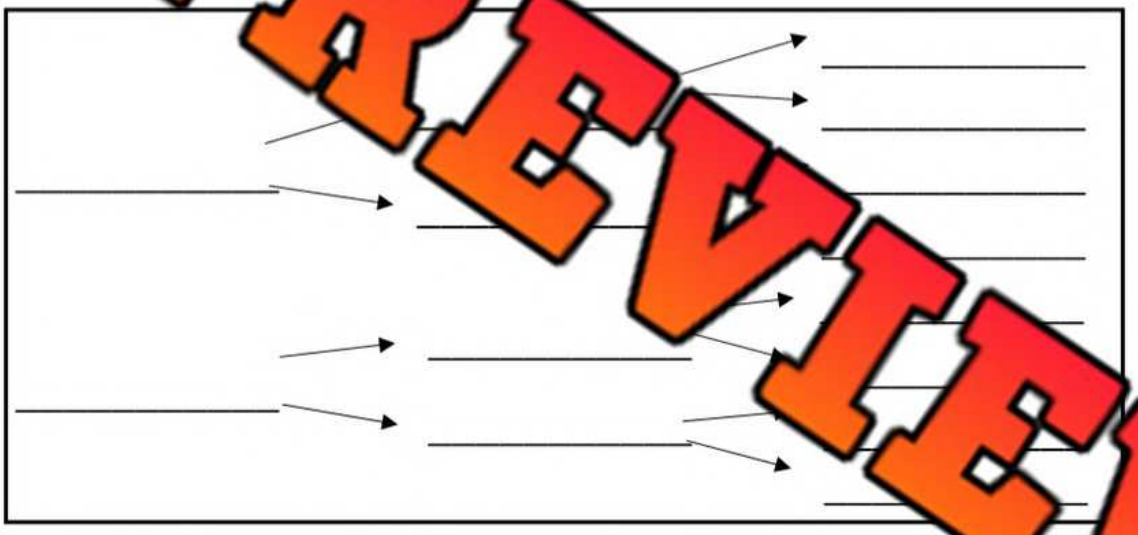
A pizza shop sells regular and gluten-free crust pizza. They have 2 types of cheese and 2 types of toppings. Check out their menu and draw a tree diagram to show all the combinations of pizza.



Menu
- Regular crust (R)
- Gluten-Free crust (G)
- Mozza cheese (M)
- Cheddar cheese (C)
- Pepperoni (P)
- Onion (O)



PREVIEW



Combinations

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

What is the probability of a customer ordering a...	Fraction	Decimal	Percent
2) Regular crust with mozza cheese and pepperoni			
3) Gluten-free crust with cheddar cheese and onions			
4) Gluten-free or regular crust with mozza and pepperoni			
5) Gluten-free crust with mozza or cheddar cheese and onions			
6) Regular crust with cheddar or mozza cheese and onions or pepperoni.			
7) Gluten-free or regular crust with cheddar or mozza cheese and pepperoni			

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Curriculum Connection
D2.2

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 smoothie shop allows customers to create the[illegible] smoothies by choosing one optio[illegible]ch category: base, fruit, and top[illegible] types of bases, 3 typ[illegible] of toppings.

Bases	Fruits	Toppings
Yogurt (Y)	Banana (B)	Granola (G)
Almond Milk (A)	Strawberry (S)	Chia Seeds (C)
	Blueberry (BB)	

Name: _____

Draw a tree diagram to help you find the probability of diffe[illegible]com

A smoothie shop allows customers to create their own smoothies by choosing one option from each category: base, fruit, and topping. They have 2 types of bases, 3 types of fruits, and 2 types of toppings.

Bases	Fru[illegible]	[illegible]gs
Yogurt (Y)	Banana (B)	[illegible]nola (G)
Almond Milk (A)	Strawberry (S)	Chia Seeds (C)
	Blueberry (BB)	

PREVIEW

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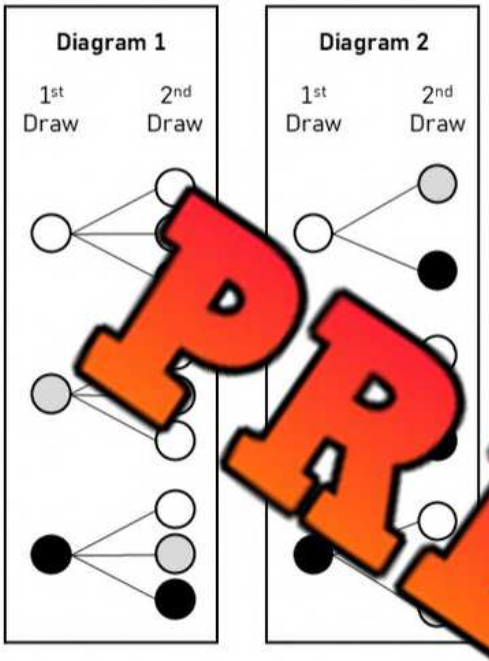
Name: _____ 131

Curriculum Connection
D2.2

Independent Events Versus Dependent Events

Instructions Read the two diagrams and answer the questions



Questions

1) Which diagram shows that the first draw does **not** affect the second draw? How can you tell?

2) In which diagram does the total number of choices ...y the same for the second draw? What does that tell

3) Which diagram models **independent** ... Expla... reasoning.

4) Which diagram models **dependent events**? Explain y... ...ning.

5) In which diagram does the number of outcomes change after the first ... Why does this happen?

6) What is the probability of drawing two white marbles in the independent event scenario? How does this differ from the probability of drawing two white marbles in the dependent event scenario?

PREVIEW

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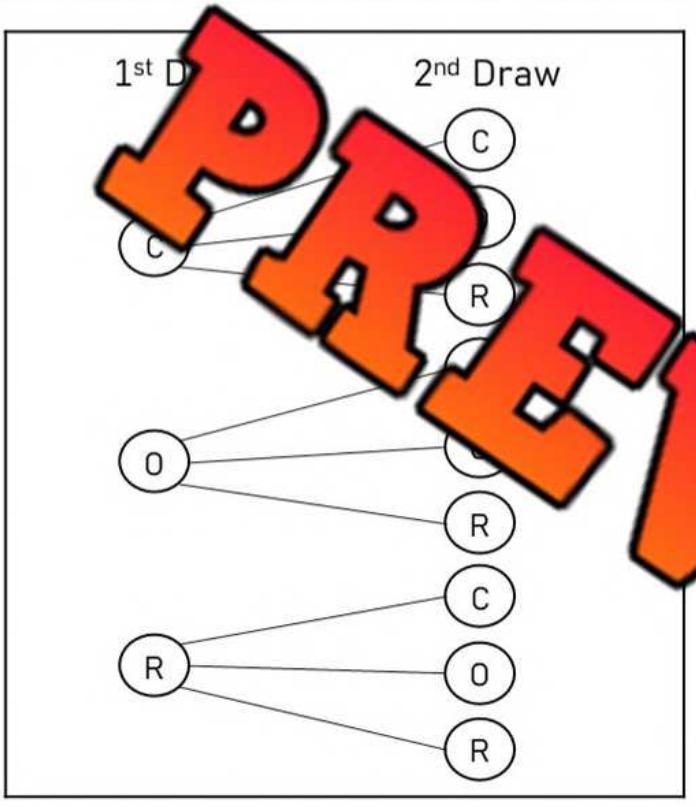
Name: _____ 132

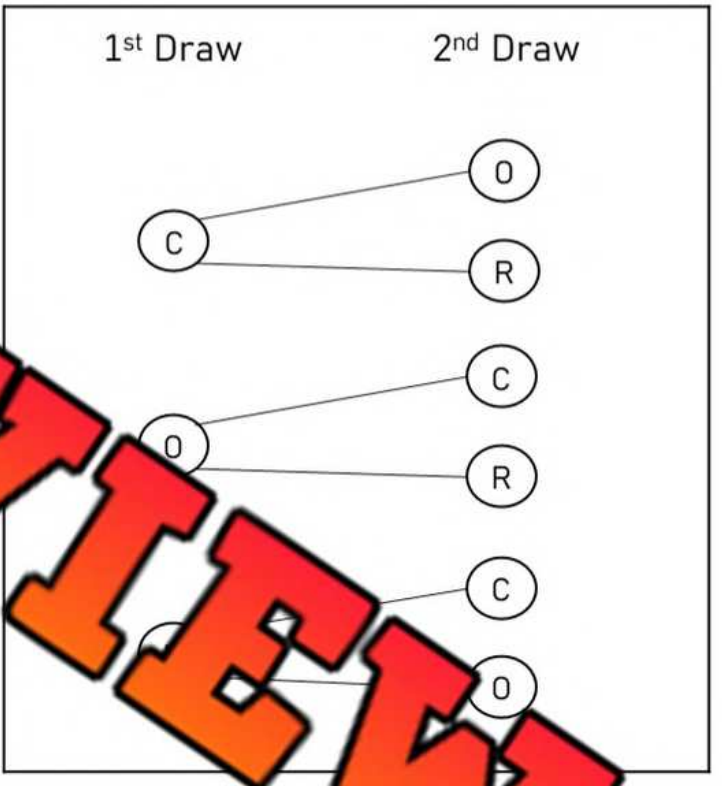
Curriculum Connection
D1.1, D2.2

Tree Diagrams – Dependent & Independent Events

Questions | Answer the questions below

Below are two tree diagrams that represent chocolate (c), oatmeal (o), and raisin (r) cookies being taken out of a cookie jar. One of the diagrams represents independent events, with the cookies being returned to the cookie jar. The other diagram represents dependent events, with the cookies being eaten after they are pulled from the jar.





PREVIEW

1) How are the tree diagrams the same?

2) How are the tree diagrams the different?

3) Which tree diagram represents independent events, and which represents dependent events? Explain how you know.

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Name: _____ 133

Curriculum Connection
D2.2

Independent Events Versus Dependent Events

Questions | Read the scenarios below and draw the tree diagrams

1) You have **two marbles** in a bag: **one white and one black**. You draw **two times**.

Draw **two tree diagrams**:

- One to represent the **independent** event (with replacement).
- One to represent the **dependent** event (without replacement).

Independent Event

1st Draw | 2nd Draw

Dependent Event

1st Draw | 2nd Draw

2) You have **four marbles** in a bag:
- **2 white**,
- **1 black**,
- **1 grey**.

Draw **two tree diagrams**:

- One to represent the **independent** event (with replacement).
- One to represent the **dependent** event (without replacement).

Independent Event

1st Draw | 2nd Draw

Dependent Event

1st Draw | 2nd Draw

PREVIEW

Name: _____ 134

Curriculum Connection
D2.2

Independent Events Versus Dependent Events

Instructions Read the scenario below and draw two tree diagrams

You have five marbles in a bag:

- **2 red,**
- **2 blue,**
- **1 green**



You will d e marbles, one after the other.

Draw the open space below:

- show th **dent** event (with replacement).
- One shows **ent** ent (without replacement).

Indepe Eve	Dependent Event

PREVIEW

Name: _____ 135

Curriculum Connection
D2.2

Solving Independent Events

How to Solve Independent Events
Independent events are events where the outcome of one event **does not affect** the outcome of the other.

To find the probability of two independe[illegible] events both happenin[illegible] **[illegible]ultiply** the probabili[illegible] [illegible]irst event by the prob[illegible] [illegible] event.

Example:
You flip a coin and roll a die. What is the probability of getting heads and rolling a 4?

Probability of getting heads = 1 out of 2 $\left(\frac{1}{2}\right)$

Probability of rolling a 4 = 1 out of 6 $\left(\frac{1}{6}\right)$

P(Heads and 4) = $\frac{1}{2} \times \frac{1}{6} = \frac{1}{12}$

So, there is a 1 in 12 chance of flipping heads and rolling a 4.

PREVIEW

Questions [illegible] the [illegible]bilities below

#	Word Prob[illegible]
1	Maya rolls two d[illegible] is th[illegible]ity both dice land on even numbers?
2	A student flips a coin two times. Wha[illegible] prob[illegible]ty [illegible]etting tails both times?
3	Sarah draws one marble, replaces it, and draws again fr[illegible] [illegible]red and 2 blue marbles. What's the chance of getting two reds?
4	A quiz has 2 multiple choice questions with 4 choices each. What is the probability of guessing both correctly?
5	Jack pulls a sock from his drawer (2 black, 2 white), then flips a coin. What is the probability he gets a black sock and tails?

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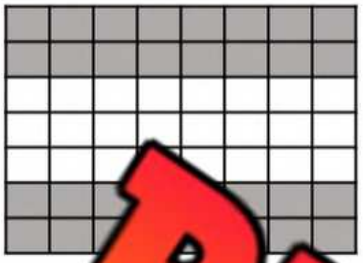
Name: _____ 136

Curriculum Connection
D2.2

Independent Events – Darts

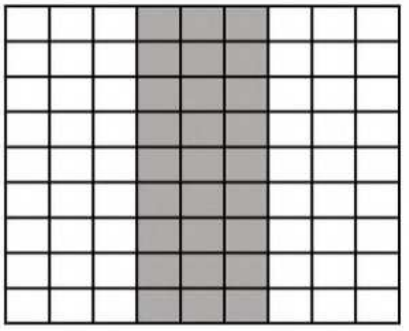
Questions If you get two throws, what is the probability of hitting the target on both throws?

1)



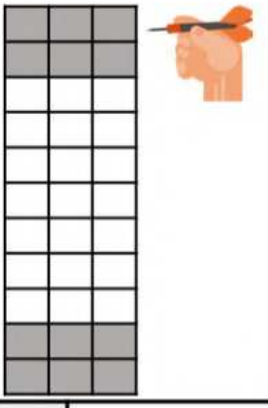
Fraction	
Decimal	
Percent	

2)



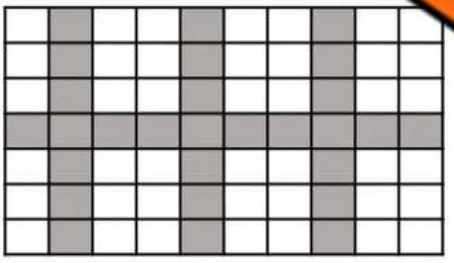
Fraction	
Decimal	
Percent	

3)



Fraction	
Decimal	
Percent	

4)



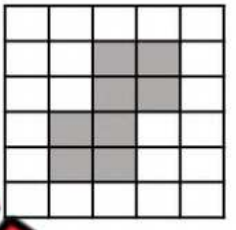
Fraction	
Decimal	
Percent	

5)



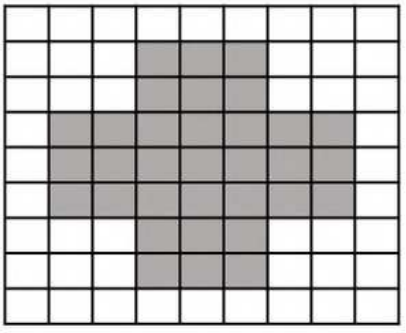
Fraction	
Decimal	
Percent	

6)



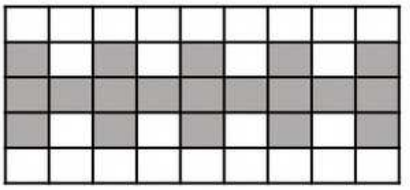
Fraction	
Decimal	
Percent	

7)



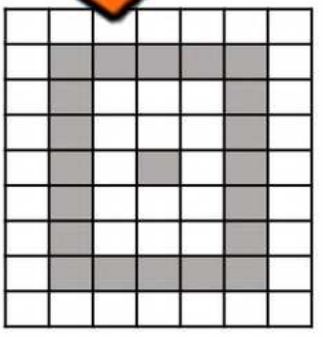
Fraction	
Decimal	
Percent	

8)



Fraction	
Decimal	
Percent	

9)



Fraction	
Decimal	
Percent	

PREVIEW

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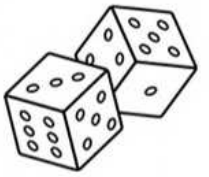
Curriculum Connection
D2.2

Independent 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	What is the probability of...

1) Rolling

Fraction	Decimal	Percent

2) Rolling a 5

Fraction	Decimal	Percent

3) Rolling an odd number?

Fraction	Decimal	Percent

4) When rolling 2 dice, what is the probability of rolling

Fraction	Decimal	Percent

5) When rolling 2 dice, what is the probability of rolling a 5 or

Fraction	Decimal	Percent

6) What is the probability of rolling an odd number on two dice?

Fraction	Decimal	Percent

7) When rolling 2 dice, what is the probability of rolling a 1, 2, 3, or 4 on each roll?

Fraction	Decimal	Percent

PREVIEW

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Curriculum Connection
D2.2

Independent Events – Dice Challenge

Part 1 Find the probability of each sum when two dice are rolled

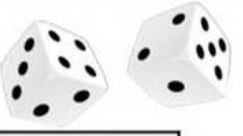


1) What is the probability of you rolling two six-sided dice and getting a sum of the two dice greater than 8?

2) What is the probability of you rolling two six-sided dice and getting a sum of the two dice greater than 11?

3) What is the probability of you rolling two six-sided dice and getting a sum of the two dice less than 3?

+	1	2	3	4	5	6
1						
2						
3						
4						
5						



PREVIEW

Part 2 Find the probability of each product when two dice are rolled

x	1	2	3	4	5	6
1						
2						
3						
4						
5						
6						

1) What is the probability of you rolling two six-sided dice and getting a product of the two dice greater than 20?

2) What is the probability of you rolling two six-sided dice and getting a product of the two dice less than or equal to 9?

3) What is the probability of you rolling two six-sided dice and getting a product of the two dice greater than or equal to 25?

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Curriculum Connection
D2.2

Dependent Events – Money Bag

A bag has one of each Canadian coins - 5¢, 10¢, 25¢, $1, $2.

What is the probability you will select a dime and then a quarter?



Solution

Probability to pick a Dime is 1/5

Probability [illegible] pick a Quarter is 1/4 (no dime in the bag)

Desired pr[illegible] $= \frac{1}{5} \times \frac{1}{4} = \frac{1}{20}$

Questio[illegible] W[illegible] probability of the following scenarios

	Scenario [illegible]ability	Answer – Show Your Work
1)	Selecting a Nickel?	
2)	Selecting a Loonie and then a Toonie?	
3)	Selecting a Quarter and then a Toonie, and then a Loonie?	
4)	Selecting a Dime, Loonie, and then a Nickel?	
5)	Selecting a Dime, Quarter, Nickel, and then a Loonie?	
6)	Selecting a Quarter, Dime, Nickel, Toonie, and then a Loonie?	

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Curriculum Connection
D2.2

Dependent Events – Prize Box



Question the probability of the following scenarios

	Scenario	Answer – Show Your Work
1)	You get one pick. What is the probability of picking a phone?	
2)	You get two picks. What is the probability of picking the basketball first, and the hairbrush second?	
3)	You get three picks. What is the probability of picking the headphones first, a pencil second, and a book third?	
4)	You get four picks. What is the probability of picking the phone first, the baseball second, the headphones third, and the book fourth?	
5)	You are picking from the prize box third. One phone and one book are already gone. What is the probability of you picking a phone?	
6)	You are picking from the prize box fifth. One phone, one baseball, two books are already gone. You get two picks. What is the probability of you picking a phone first and then the headphones second?	

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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) Wh… …robability of flipping a heads?			
2) What …ne the… …bability of flipping a tails?			
3) What is the… …proba… …f flipping a heads if you flipped the co… …mes?			
4) What is the theoretic… …y of f… …a heads and then rolling a dice and … …2?			
5) What is the theoretical probab… …y of … … getting an odd number and then flippin… …s?			

PREVIEW

Part 2 Experimental Probability - Flip a… …0 tim… …ord your results

1) How many heads and tails do you think you will flip …

	Tails
2…	20

2) Perform the experiment by flipping a coin 20 times. Record how many he… …and tails you get.

	Tallies	Frequency	Fraction	Decimal	Percent
Heads					
Tails					

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

_____

_____

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Exit Cards

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

Name: _____

Answer the following questions.

1. Your friend rolls a die 50 times and records that it lands on 2 more often than any other number.
   Circle Answer: Theoretical or Experimental

2) Based on the genetic traits of your parents, there is a 50% chance you will have blue eyes.
   Circle Answer: Theoretical or Experimental

3) Fill the table

Example	Theoretical or Experimental	Fraction	Decimal	Percent
In a class survey, 12 out of 25 students say their favourite fruit is apple.				

Name: _____

Answer the following questions.

1. Your friend rolls a die 50 times and records that it lands on 2 more often than any other number.
   Circle Answer: Theoretical or Experimental

2) Based on the genetic traits of your parents, there is a 50% chance you will have blue eyes.
   Circle Answer: Theoretical or Experimental

3) Fill the table

Example	Theoretical or Experimental	Fraction	Decimal	Percent
In a class survey, 12 out of 25 students say their favourite fruit is apple.				

Name: _____

Answer the following questions.

1. Your friend rolls a die 50 times and records that it lands on 2 more often than any other number.
   Circle Answer: Theoretical or Experimental

2) Based on the genetic traits of your parents, there is a 50% chance you will have blue eyes.
   Circle Answer: Theoretical or Experimental

3) Fill the table

Example	Theoretical or Experimental	Fraction	Decimal	Percent
In a class survey, 12 out of 25 students say their favourite fruit is apple.				

Name: _____

Answer the following questions.

1. Your friend rolls a die 50 times and records that it lands on 2 more often than any other number.
   Circle Answer: Theoretical or Experimental

2) Based on the genetic traits of your parents, there is a 50% chance you will have blue eyes.
   Circle Answer: Theoretical or Experimental

3) Fill the table

Example	Theoretical or Experimental	Fraction	Decimal	Percent
In a class survey, 12 out of 25 students say their favourite fruit is apple.				

PREVIEW

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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	14	4	22	6	4

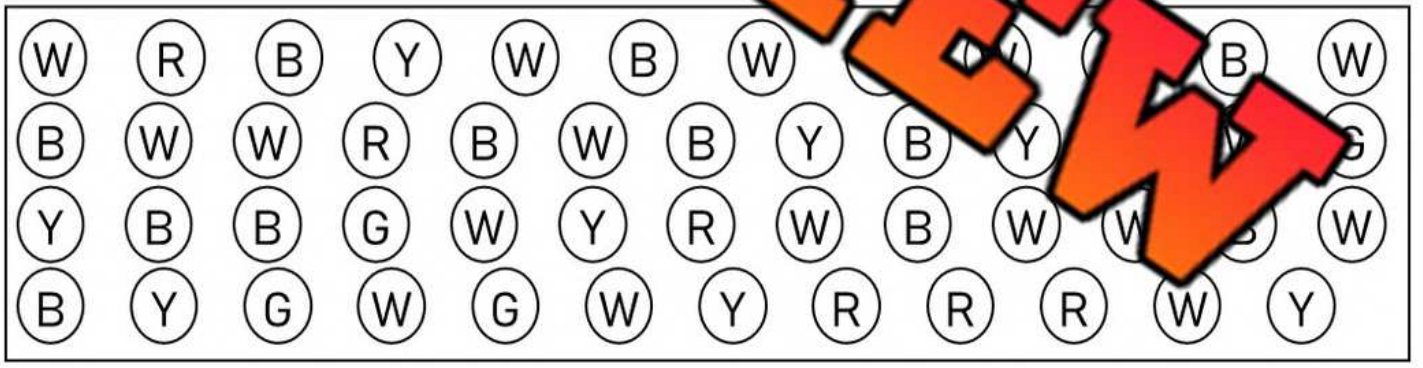
1) If you reached into the drawer 50 times without looking, what is the theoretical probability that you will pull each of the colours below.

	White	Yellow	Black	Green	Red
Fraction					
Decimal					
Percent					

PREVIEW

Part 2 — Complete the experiment and find the experimental probability

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



Colour of Sock	White	Yellow	Black	Green	Red
Tally					
Percent					

How did the experimental probability compare with the theoretical probability? Explain.

_____

_____

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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

How many times should you get a 1, 2, 3, 4, 5, or 6 when performing the number of rolls below?

	1	2	3	4	5	6	Probability
6 rolls							
12 rolls							
60 rolls							
600 rolls							
1200 rolls							

Part 2

Follow the instructions below to complete the experiments

1) Roll the dice 6 times. Tally your results

1	2			5	6

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

	1	2	3	4	5	6
Tallies						
Total						

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

_____

_____

_____

PREVIEW

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Curriculum Connection
D2.2

Theoretical vs Experimental - Dice

Part 1 What is the theoretical probability of the dependent events below?

	Scenario – What is the probability of...	Probability (Fraction)	Probability (Percent)
1)	Rolling a 1 and then a 2 using a 6-sided dice		
2)	Rolling a 3 and then a 4 using a 6-sided dice		
3)	Rolling a 1, 2, and then a 3 using a 6-sided dice		
4)	Rolling a [illegible] using a 6-sided dice		
5)	Rolling a 1 three times in a row using a 6-sided dice		

PREVIEW

Part 2 Follow the instructions below to complete the experiments

1) The theoretical probability of rolling two 6's in a row is 1/36 or 2.7 percent. Try this experiment for yourself by filling in the table below.

Steps:

1) Get 2 dice or roll one dice twice
2) Every time you roll, mark 1 tally
3) If you get two sixes in a row, mark a tally under the 6/6 column
4) Complete 36 trials. How many times should you roll double 6?

Number of Rolls - Tally	6/6

2) The theoretical probability of rolling a 1 and then a 2 is 1/36 or 2.7 percent. Complete the same steps as above for the numbers 1 and 2. Can you get more than 1 favourable outcome in 36 rolls?

Number of Rolls - Tally	1/2

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Curriculum Connection
D2.2

Rolling Doubles



Part 1 What is the theoretical probability of rolling doubles when rolling 2 dice

1) What is the theoretical probability of rolling doubles when rolling 2 six-sided dice?

Tip: $\frac{\text{favourable outcomes}}{\text{total possible outcomes}}$

2) How many times would you expect to roll doubles if you performed 24 trials?

Part 2 What is the experimental probability of rolling doubles when rolling 2 dice

1) Roll 2 six-sided dice 24 times. Keep track of how many rolls you complete using the table below. Put a tally every time you roll doubles.

Number of Rolls	Doubles

2) Was your experimental probability the same as the theoretical probability? Explain.

3) Was your experimental probability the same as the other students in your class? Explain why or why not.

4) If you performed 1000 rolls, do you think your experimental probability would be closer or further from the theoretical probability? Explain.

PREVIEW

Name: _____ 148

Curriculum Connection
D1.1, D2.2

Tree Diagrams – Independent Events

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

There is a bag full of the following different colour marbles:

- 2 red marbles (R)
- 2 blue marbles (B)
- 2 green marbles (G)



Draw a tree diagram for the following scenario:
You pull a marble and then put it back in the bag before pulling another marble

Tree Diagram	Combinations
1st Draw 2nd Draw	

PREVIEW

1) How many combinations of colours could you draw? _____

What is the probability of drawing...	Fraction	Decimal	Percent
2) A red marble and then a green marble?			
3) A green marble and then a blue marble?			
4) A blue marble and then another blue marble?			
5) A red marble and then a blue marble?			

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Curriculum Connection
D1.1, D2.2

Tree Diagrams – Dependent Events

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

There is a bag full of the following different colour marbles:

- 2 red marbles (R)
- 2 blue marbles (B)
- 2 green marbles (G)



Draw a tree diagram for the following scenario:
You pull a marble from the bag, and then another without putting the first one back.

PREVIEW

Tree Diagram	Combinations
1st Draw 2nd Draw	

1) How many combinations of colours could you draw? _____

What is the probability of drawing...	Fraction	Decimal	Percent
2) A red marble and then a green marble?			
3) A green marble and then a blue marble?			
4) A blue marble and then another blue marble?			
5) A red marble and then a blue marble?			

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Curriculum Connection
D2.2

Tree Diagrams – Dependent Events

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

Jeremy has 8 socks in his drawer.

- 2 of the socks are white
- 2 of th ks are black
- 2 of blue
- socks

Jeremy takes out cks a random, one after th

Draw a tree diagram to represe the scenario above



PREVIEW

1) How many combinations of colours could you draw? _____

What is the probability of taking out...	Fraction	Percent
2) A red sock and then a blue sock?		
3) Two black socks?		
4) A white sock and then a black sock?		

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Curriculum Connection
D1.1, D2.2

Number Simulation – Independent Events

Part 1 Theoretical Probability – Answer the questions below

Pretend you are drawing two numbers from 1-10. Since these are independent events, you can select the same number more than once.

If you picked two numbers, what is the theoretical probability of...	
1) Picking [illegible] then a 2?	
2) Picki[illegible]	
3) P[illegible] a 2 and [illegible]?	

If you comple[illegible] draw[illegible]umbers)	
4) 10 trials, how m[illegible]mes[illegible]ct to get a 3 and then a 6?	
5) 30 trials, how many tim[illegible] you [illegible]et a 3 and then a 6?	
6) 100 trials, how many times w[illegible]d yo[illegible]3 and then a 6?	

Part 2 Experimental Probability – Pe[illegible]n the [illegible]riment below

Set up the experiment by cutting out the numbers b[illegible]o[illegible]cing t[illegible]n a bag. Perform the number of trials below by selecting 2 num[illegible]the l[illegible]ter you select a number, you put the number back in the bag befor[illegible]tin[illegible]ber.

Complete...	
1) 10 trials - how many times did you get a 3 and then a 6?	
2) 30 trials - how many times did you get a 3 and then a 6?	
3) 100 trials - how many times did you get a 3 and then a 6?	

1	2	3	4	5
6	7	8	9	10

PREVIEW

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Curriculum Connection
D1.1, D2.2

Number Simulation – Dependent Events

Part 1 Theoretical Probability – Answer the questions below

Pretend you have the numbers 1-10 on slips of paper in a bag. When you draw a number, you cannot get that number again for that trial. Each trial is selecting 2 numbers. Once you have completed a trial (selected 2 numbers), the numbers go back in the bag.

If you pick two numbers, what is the theoretical probability of...	
1) Picking then a 2?	
2) Pi ?	
3) Pic a 2 and	

If you complete = draw bers)	
4) 10 trials, what is t or 3 and then a 6?	
5) 30 trials, what is the pro f ge d then a 6?	
6) 100 trials, what is the probability of a 6?	

Part 2 Experimental Probability – Pe m the iment below

Set up the experiment by cutting out the numbers bel acing t a bag. Perform the number of trials below by selecting 2 numb the fter you select two numbers, you put the numbers back in the bag.

Complete...	
1) 10 trials - how many times did you get a 3 and then a 6?	
2) 30 trials - how many times did you get a 3 and then a 6?	
3) 100 trials - how many times did you get a 3 and then a 6?	

1	2	3	4	5
6	7	8	9	10

PREVIEW

Name: _____ 153

Curriculum Connection
D2.2

Class List – Random Selections

Challenge Write your answers as a fraction and a percent

1) Antonio is in a class with 22 total students. His teacher uses a random name generator to decide who gets to choose what movie they will watch for their end of year party.

a) What is the probability that Antonio will be chosen?



b) Antonio and Diego will both choose the same movie, so neither minds who is chosen. What are the chances one of Diego or Antonio will be chosen?

2) Antonio's teacher is selecting students to help the principal with a job. The teacher uses a random name generator.

a) What is the probability that Antonio and Diego will be chosen?



3) Antonio's teacher has already drawn 14 names from the random generator. Antonio, Diego, and their friend Lukas are still waiting for their names.

a) What is the probability that Antonio, Diego, and Lukas have their names called next in a row in that order?

b) Lukas had his name drawn and now there are only 8 names left. What is the probability that Antonio and Diego will have their names called next back-to-back in that order?



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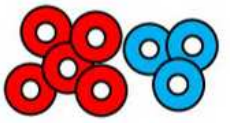
Name: _____ 154

Curriculum Connection
D2.2

Tree Diagrams – Dependent Events

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

There is a bag full of the following different colour coloured beads:

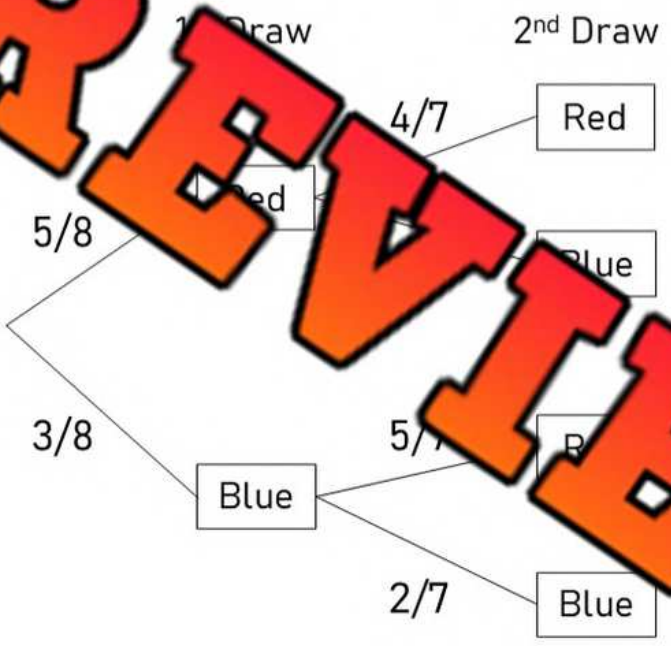


- 5 red beads
- 3 blue beads

Brad select[illegible] 2 beads from the box. He does not replace any of the beads before the next bead was [illegible]d.

Use the [illegible] tree diagram to solve the questions below. **Hint**: you can multiply the fracti[illegible] calculate the total probability.

PREVIEW



What is the probability that Brad will select...	Fraction	Percent
1) 2 red beads?		
2) 1 red bead and then 1 blue bead?		
3) 2 blue beads?		
4) 1 blue bead and then 1 red bead?		
5) Why are these trials dependent events?		

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Curriculum Connection
D2.2

Tree Diagrams – Dependent Events

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

There is a box of multi-coloured candy with the following candies inside:

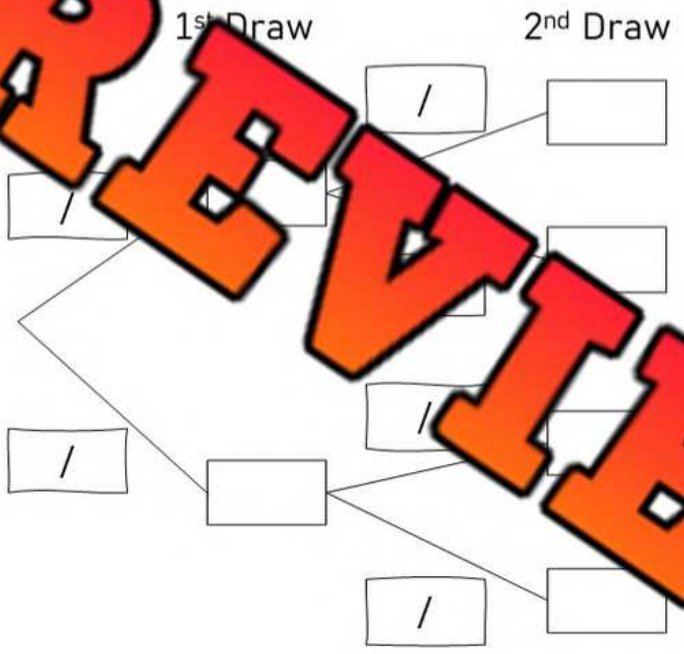


- 7 green candies
- 4 orange candies

Sage will select 2 candies from the box. She will not replace any of the candies before she takes the next candy.

Fill in the probabilities on the tree diagrams below.

PREVIEW



What is the probability that Sage will select...	Fraction	Percent
1) 2 green candies?		
2) 2 orange candies?		
3) 1 green candy and then 1 orange candy?		
4) 1 orange candy and then 1 green candy?		

5) If you had to bet on which 2 candies you would choose from the box, which combination of 2 candies would you choose? Explain.

_____

_____

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Curriculum Connection
D2.2

Odds In Favour

Understanding Odds in Favour
Odds in favour compare the number of ways an event can happen to the number of ways it cannot happen. These are called **complementary** events because they cover all possible outcomes together.

While pro[illegible]ty tells us the chance of an event ou[illegible]tal, odds are written as a ratio of [illegible]omes to unfavourable one[illegible]

Example:
If you roll two dice, there is 1 way to get a sum of 2 and 35 ways not to.

The odds in favour of rolling a sum of 2 are 1:35 (read as "1 to 35").

This means for every 1 way to roll a 2, there are 35 ways to roll something else.

PREVIEW

Questions [illegible]e th[illegible]s in favour and display it as a ratio

#	[illegible]o[illegible]	Odds in Favour - Ratio
1	A basketball player [illegible]t of[illegible]ee throws. What are the odds in favo[illegible] the[illegible] free throw?	
2	A spinner has 8 equal sections: 2 are red, [illegible]re blu[illegible] What are the odds in favour of landing on	
3	A hockey goalie stops 18 out of 20 shots. What are the odds in favour of stopping the next shot?	
4	A jar has 5 purple candies and 15 green candies. What are the odds in favour of picking a green candy?	
5	A student flips a coin 10 times and gets heads 4 times. What are the odds in favour of flipping heads?	
6	A board game die has 6 sides. What are the odds in favour of rolling a 4 and then a 3 when rolling it twice?	

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Curriculum Connection
D2.2

Odds In Favour

Questions | Determine the odds in favour and display it as a ratio

#	Word Problem	Odds in Favour - Ratio
1	A student rolls a die twice. What are the odds in favour of getting a 2 and then a 5?	
2	[illegible] has 3 r[illegible] and 3 yellow marbles. Without pu[illegible]g the [illegible]ck, what are the odds in favour of pulling a [illegible] yell[illegible]	
3	A batter hits safely 1 o[illegible]ry 4 [illegible]t are the odds in favour of hitting tw[illegible]afe [illegible]?	
4	A class has 10 girls and 15 boys. What are the od[illegible] favour of randomly picking a girl first and then a b[illegible] second (students can't be selected twice).	
5	A game spinner has 5 equal sections: 2 green, 2 blue, and 1 red. What are the odds in favour of spinning green twice in a row?	
6	A card is drawn from a deck, then a second is drawn after putting back the first card. What are the odds in favour of drawing two kings?	

PREVIEW

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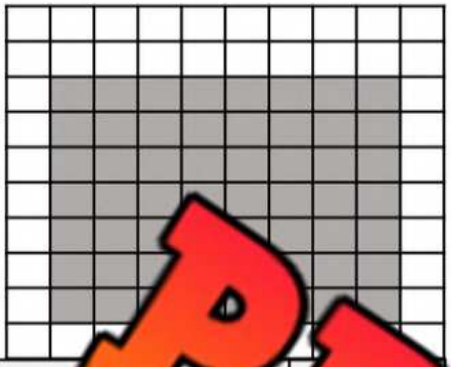
Name: _____ 158

Unit Quiz - Probability

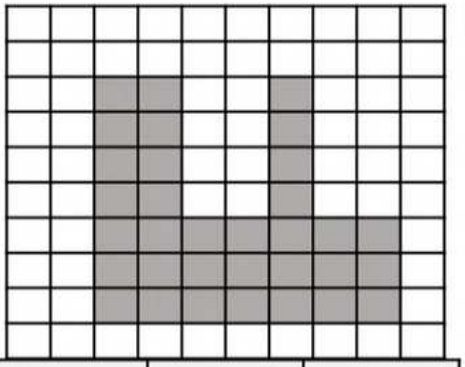
Part 1 Represent the probability of hitting the target using a fraction, decimal and percent

1)



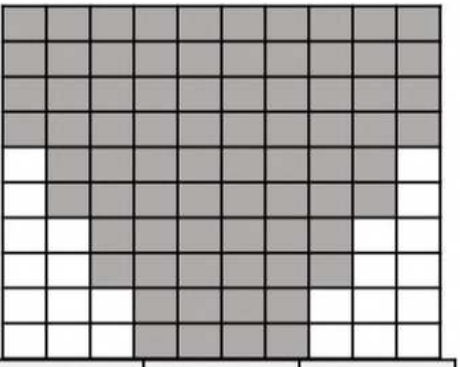
Fraction	Decimal	Percent

2)



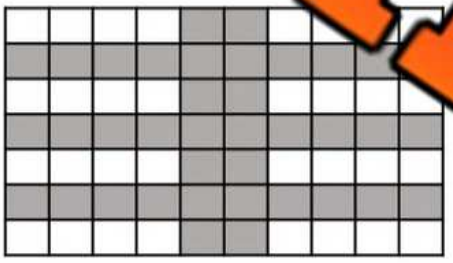
Fraction	Decimal	Percent

3)



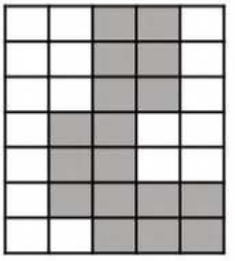
Fraction	Decimal	Percent

4)



Fraction	
Decimal	
Percent	

6)

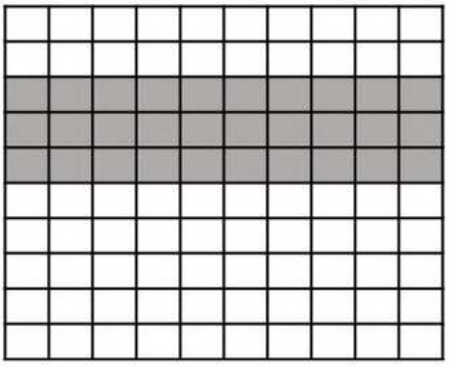


Fraction	
Decimal	
Percent	

PREVIEW

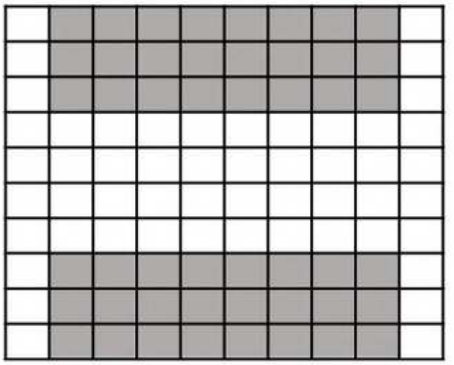
Part 2 What is the probability of hitting the target twice if you get [illegible] rows?

7)



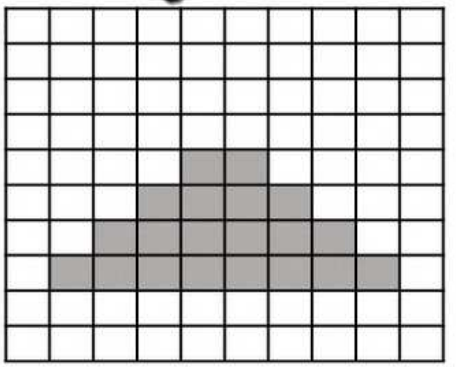
Fraction	Decimal	Percent

8)



Fraction	Decimal	Percent

9)



Fraction	Decimal	Percent

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Part 3 What is the probability of...

1) Rolling a 2 or 5?

Fraction	Decimal	Percent

2) Rolling two six-sided dice and getting an even number both times?

Fraction	Decimal	Percent

3) Rolling ... sided dice and getting a 6 both times?

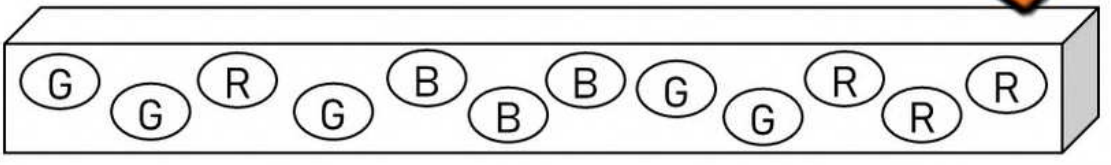
	Decimal	Percent

PREVIEW

Part 4 Ar... ev... ...nt or dependent?

1)	Snowing today and then ...ing ...	Dependent	Independent
2)	Pulling out a blue candy from a b... ...ulti-coloured candies three times in a ...w witho... ...ting any back.	...endent	Independent
3)	Drawing a spade from a standard deck of 52 ... twice in a row without putting them back.	...epend...	Independent

Part 5 What is the probability of the following scenarios when selec... ...a box and not putting them back before selecting the next candy.



	Scenario – Probability of...	Answer – Show Your Work
1)	Picking a green and then a blue candy?	
2)	Picking 2 green candies?	
3)	Picking a blue candy and then a red candy?	

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Part 6 Draw a tree diagram to help you find the probability of different combinations

Mitchell has 6 socks in his drawer.

- 2 of the socks are white
- 2 of the socks are black
- 2 of the socks are grey



Mitchell takes out two socks at random at the same time.
What colour socks might he wear today?

1) Draw a tree diagram to represent the scenario above.

PREVIEW

2) How many combinations of coloured socks could he draw? _____

What is the probability taking out...	Fraction	Percent
3) a white sock and then grey sock?		
4) two black socks?		
5) a white and then black sock?		

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