HAWKER COLLEGE
Engage | Inspire | Achieve

Goals

Weekly Goals: Reading and interpreting graphs

- interpret information presented in graphs, such as conversion graphs, line graphs, step graphs, column graphs and picture graphs (EMA36)
- interpret information presented in two-way tables (EMA37)
- discuss and interpret graphs found in the media and in factual texts (EMA38)

Theoretical Components

Resources:

PDF file - Week 15 Notes and Exercises and Mathspace.co

Knowledge Checklist

- Types of graphs
- Reading information from graphs
- Everyday graphs
- Filling in two-way tables
- Interpreting data in two-way tables.

Order

1. Work through the Week 15 notes and view any videos or solutions posted by your teacher
2. Complete the Exercises
3. Do any mathspace.co task by the due date
4. Complete the Portfolio Task and submit on Google Classroom by the due date
5. Do any Google Forms required by the due date
6. Email your teacher if you have any questions or specific concerns and join the Google Meets as invited

Practical Components

There are 2 Exercises in this week's booklet. Read any notes and worked examples before you begin.

A weekly Google form (Quiz) and mathspace.co task(s) **may** also both be used to check your engagement and progress each week.

Remember to check regularly Google Classrooms and mathspace.co

There is a mathspace task for this week called **Volume and Capacity:**

https://mathspace.co/student/tasks/SubtopicCustomTask-708573/

Portfolio Task

The Portfolio Task may be found at the end of the Notes and Exercises Google document

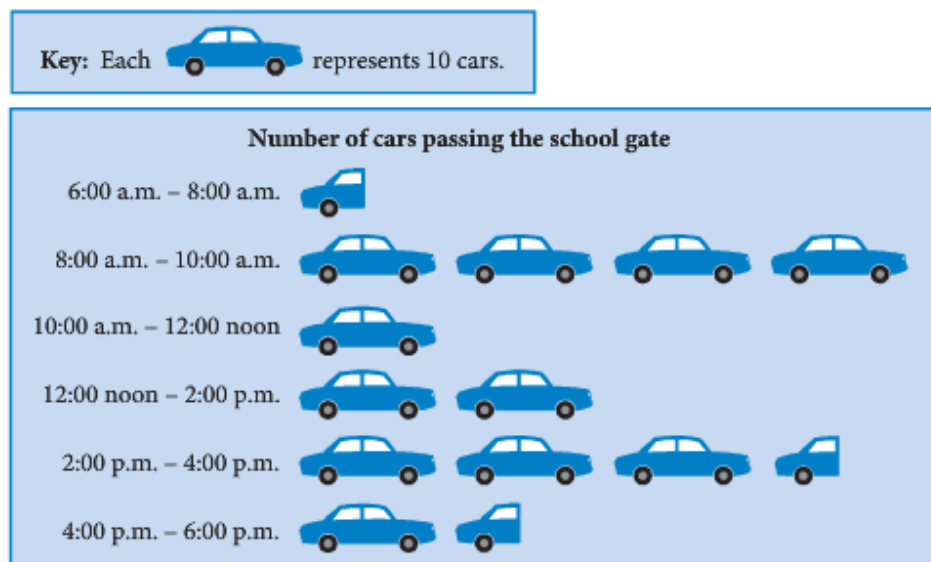|	Knowledge, Comprehension and Application				
CRITERIA	EXPECTATIONS	POSS	MULT	GIVEN	TOTAL
Practical	Student completes practical work of the brief to an acceptable standard set by the teacher.	**2**	**3**		**/6**
Portfolio Task	Student completes the portfolio task of the brief to an acceptable standard set by the teacher.	**2**	**2**		**/4**
	Analysis, Synthesis and Evaluation	**SUB TOTAL**			**/10**
Written Communication	Student responses clearly demonstrate evidence of logical and comprehensive processes and thought.	**4**	**-**		**/4**
Evidence of Working	Student submitted task effectively uses the material learned in class to describe and complete the assigned task.	**4**	**-**		**/4**
	Submission Guidelines	**SUB TOTAL**			**/8**
Timeliness	Student submits the assignment by the set deadline. See scoring guidelines for specific details.	**2**	**-**		**/2**
		SUB TOTAL			**/2**
				FINAL	**/20**

GRAPHS

Graphs are a common way of displaying information. If a graph is well drawn then the information should be easily interpreted. Also, a lot of information can be obtained very quickly.

A graph is a visual summary of information.

Exercise 1

Q1. Picture graphs use symbols to represent quantities. This picture graph shows the number of cars passing a local High School at different times of day.

Key: Each [car symbol] represents 10 cars.

Number of cars passing the school gate

6:00 a.m. – 8:00 a.m.	[half car]
8:00 a.m. – 10:00 a.m.	[4 cars]
10:00 a.m. – 12:00 noon	[1 car]
12:00 noon – 2:00 p.m.	[2 cars]
2:00 p.m. – 4:00 p.m.	[3½ cars]
4:00 p.m. – 6:00 p.m.	[1½ cars]

a) What does [half car symbol] represent?

b) How many cars passed the school gate between 2:00 pm and 4:00 pm?

c) What is the quietest time of day?

d) What percentage of cars passed the school between 10:00 am and 12:00 pm?

e) Write a sentence(s) describing the traffic flow during the day.

Q2. A column graph on its side is often called a **bar graph.**

**Times of the day that adults clean their teeth**
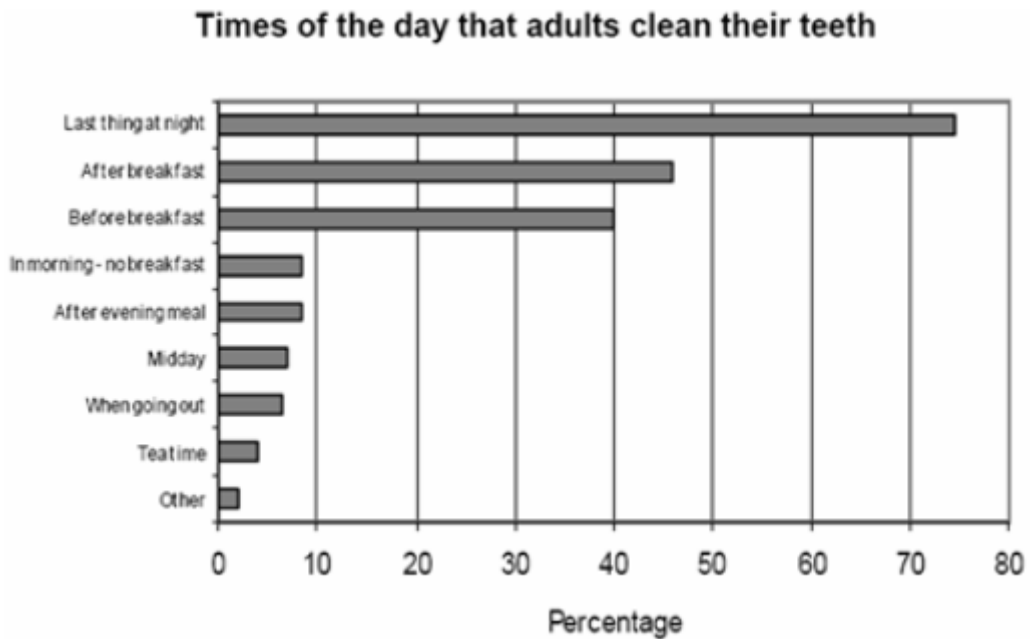
a) What is the most common time of day to clean teeth?

b) What percentage of people clean their teeth before breakfast?

c) What is the difference in the percentage of people that clean their teeth before breakfast and after breakfast?

d) If you add up all the percentages it comes to more than 100%. Explain this.

Q3. A line graph shows data that changes over time.

Reported tetanus cases in France by year, 1945-2003
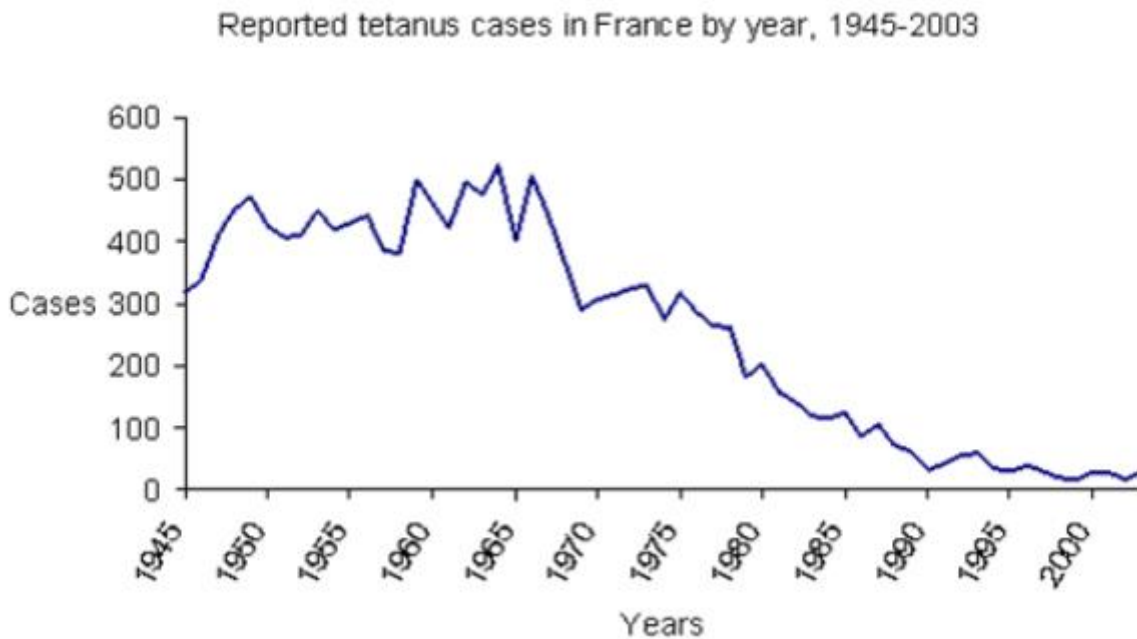
a) In what year was the maximum number of tetanus cases reported?

b) What is the difference between the maximum and minimum number of cases reported (approximately)?

c) In what year did the number of reported cases start to fall?

d) Between what two years was the greatest decline in the number of reported tetanus cases?

e) Why do you think that there were so few cases of tetanus from 1990 on?

Q4. A **conversion graph** is used to convert from one unit to another. This graph shows the conversion between miles per hour (mph) and kilometres per hour (kmph).
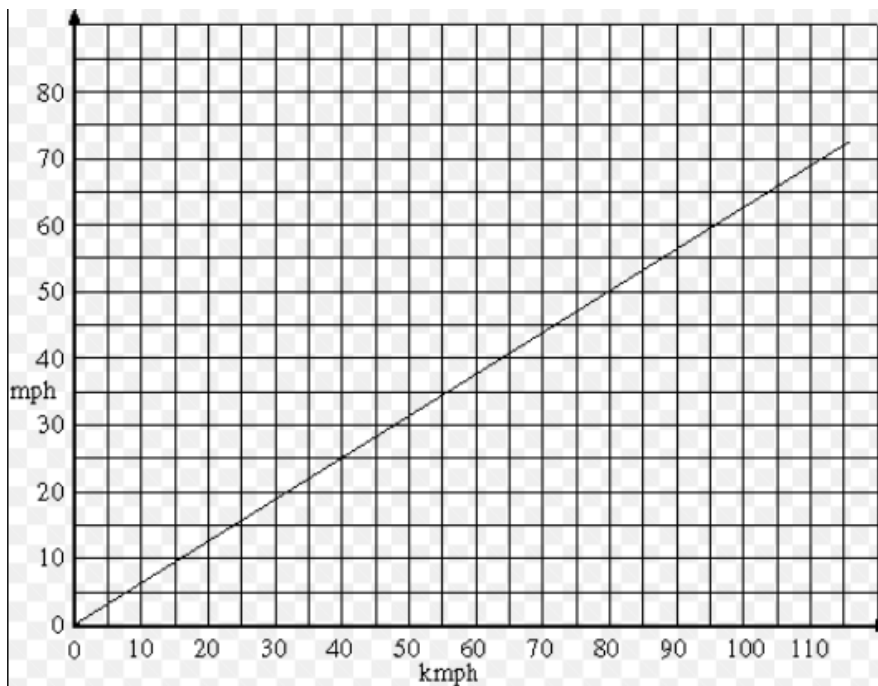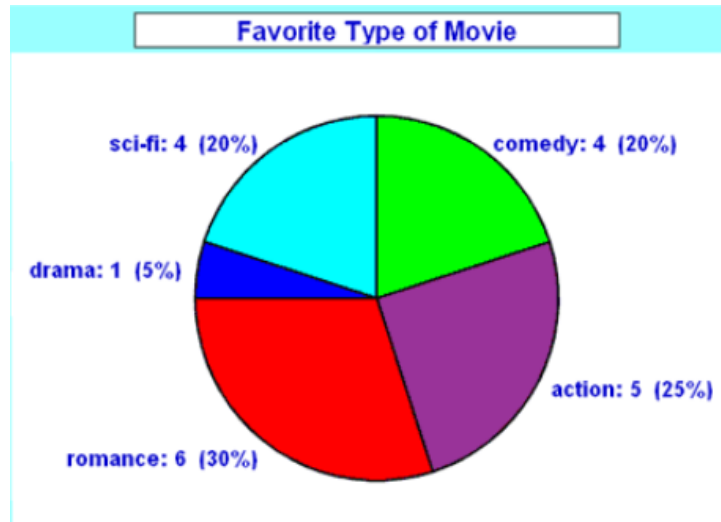

a) Which is faster: 80 mph or 80 kmph? Explain.

b) On our highways 110 kmph is the maximum speed allowed, whereas in the USA 75 mph is the maximum speed. How much faster are the Americans allowed to travel than us. Give your answer in both mph and kmph.

c) In school zones the speed limit is 40 kmph. What is this in mph?

d) Is there any point at which mph and kmph are the same? Expain.

Q5. This **pie chart** shows the results of a survey of favourite movies.

Favorite Type of Movie

sci-fi: 4 (20%)
comedy: 4 (20%)
drama: 1 (5%)
action: 5 (25%)
romance: 6 (30%)

a) What is the least favourite type of movie?

b) How many people were surveyed?

c) How many more times popular are romance movies compared to drama movies?

d) Do you think this survey would cater for everybody? Explain your response.

Everyday Graphs

Graphs can be used to present data that occurs in everyday situations. The graphs should be easy to interpret.

Q6.

Your Electricity Usage
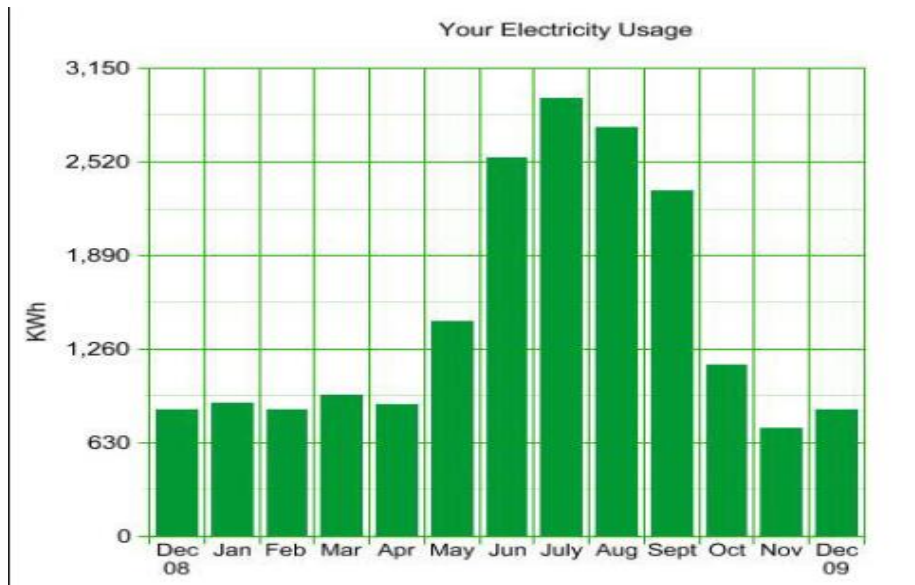
a) What is this graph 'about'?

b) Why do you think that the graphs are 'tallest' in July and August?

c) What is the difference in kilowatt hours (kWh) between the highest use month and the lowest use month?

d) Electricity is usually billed in quarters ie 3 monthly intervals. Quarter 1 is Jan, Feb, March, Quarter 2 is April, May, June etc. What was the total amount of electricity used in the Fourth Quarter?

Two-Way Frequency Tables

A survey asked: "If you could have a new vehicle, would you want a sport utility vehicle or a sports car?"

The results of this survey are shown below:

There is a lot of information we can gather from this table;
- the total number of people in the survey (240)
- the number of males and females
- the number of males and females who chose each type.

We can also use the table to answer a question such as: "In this survey, do more women or men prefer Sports Cars?"

39 males and 45 females chose a sports car, however, there were only 60 males in the survey compared to 180 females. So the ratio of males preferring sports cars in the whole group is $\frac{39}{240} = 0.16 \ or \ 16\%$ whereas the ratio of females to the whole group is $\frac{45}{240} = 0.19 \ or \ 19\%$. This information is misleading as it does not take into consideration how many men and how many women took the survey ie only 60 men compared to 180 women.

A better ratio is $\frac{39}{60} = 0.65 \ or \ 65\%$ of males prefer sports cars compared to $\frac{45}{180} = 0.25 \ or \ 25\%$ of females. So males overall prefer sports cars (65% to 25%) even if more females in the survey (45 to 39) chose sports cars.

Two-way tables provide a lot of information but you must be careful how you use the

Exercise 2

Q1. 56 children were asked to pick from three hobbies which they would prefer to do – fill in the missing values.

	Computer Games	Watch films	Read	Total
Girls	5			22
Boys		11		
Total	24		10	

Q2. Complete the following table.

	Biology	Chemistry	Physics	Total
Female	18			47
Male			19	
Total		21	33	80

Q3. Complete the table.

	Maths	English	Science	TOTAL
Girls	15		8	42
Boys			15	
TOTAL	19			85

a) What percentage of boys study English? What percentage of girls study English?

b) What percentage of the whole group study English?

PORTFOLIO TASK WEEK 15

A survey was carried out with a group of men and women to see how they preferred to spend their leisure time. A partial selection of the results is as follows.

- Out of 16 people who liked dancing, 2 were men
- 10 men and 6 women liked to play sport
- 8 women liked to watch TV.
- 42 people took part in the survey.

Q1. Draw up a two-way table. The horizontal headings should be; Dance, Sport, TV, Total.   The vertical headings should be; Men, Women, Total. Fill in the data given above.

Q2. Complete the table by filling in the blanks. Do this with a different colour pen or pencil if you want.

Q3. More women watch TV than men. Calculate the percentage of men and women who watch TV to determine which group *prefers* to watch TV. Show your calculations below.

Q4. What percentage of the whole group like to play sport?

Q5. What percentage of women like to dance?