# Higher Order Thinking Questions
# Data Management Unit: Pictographs

We have been learning how to read, interpret and analyze graphs. The students are able to communicate how to use a tally chart, ask questions for a survey and use the information to graph their data results. The students were able to by identify how many students were surveyed in total, what the most popular results were and what the least popular results were.

## We Collect Data in order to Solve Problems

1. What would the pictograph look like if all of the Grade 2 students were surveyed?
2. What other information does the pictograph show/tell us?
3. What was the question for this pictograph?
4. How do you know? (Explain your thinking)
5. What is wrong with this pictograph?
6. How does the pictograph change if more students were added to one of the table groups? (i.e., types of chocolate bars)
7. How can you extend the pictograph to show the results/data if 3 new students were added to the survey? (using one-on-one correspondence)
8. What would happen to the pictograph if new data was entered? (i.e., 2 new students). Does it change the results of the pictograph? (Explain your thinking)
9. How does this new data change the results? (Explain your thinking)
10. The choices for the pictograph were: Kit Kat, Aero, Smarties and Coffee Crisp. What would the results look like if 3 students didn't like any of the choices? How would you represent the data on the pictograph?
11. If you did not have any tools to help you sort the chocolate bars, what strategy would you use to help you sort them?
12. If you did not survey a student in our classroom because the student was absent, how does this affect the data results?
13. What would the pictograph look like if we added another type of chocolate bar to the available choices?

| My Favorite Sport | |
| --- | --- |
| Baseball | 🌑🌑🌑🌑🌑 |
| Football | 🏈🏈🏈🏈🏈🏈🏈🏈 |
| Basketball | 🏀🏀🏀🏀🏀🏀🏀🏀 |
| Soccer | ⚽⚽⚽ |
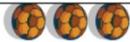
# Higher Order Thinking Questions
# Data Management Unit: Bar Graphs

Students have been learning how to read, interpret and analyze graphs. They are able to communicate about the survey and graph results by identifying how many students were surveyed, what the most popular results were and what the least popular results were.

1. How did you sort the gumballs?
2. If you didn't have any tools to help you sort, what strategy would you have used to help you sort the gumballs?
3. What did you do or use to record the data? What other tool could you have used?
4. How many students are in our class altogether? The answer is 23
   Oops, the manufacturers from Double Bubble forgot to ask 3 students what their favourite gumball flavour is. How do their responses change the graph and the results?
5. The most popular gumball flavour was cherry with 8 responses. Let's say that 3 new students all chose cherry as their favourite gumball flavour? How does this new data change the graph?
6. The problem says that 20 students were surveyed, but what if 3 students didn't respond because they didn't like the choices given, what would happen to the data on the graph? How will or how could their responses be represented on the graph?
7. What was the survey question asked?
8. What else does the graph tell you?
9. What would the graph look like if all of the grade 2 students were surveyed?
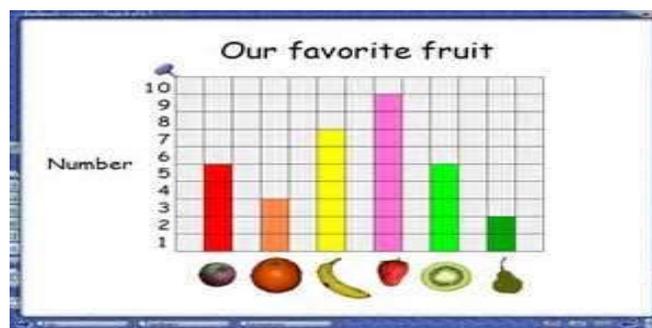
# Higher Order Thinking Questions
## Data Management Unit: Line Graphs

## Weather Line Graph

Why might it be more likely to snow on the weekend?

How would the graph look like if the weather got really cold on the weekend?

How would the line graph look like if the weather got really hot?

## Attendance Line Graph

What would next week's line graph look like if a lot of students got sick over the weekend?

What would happen to our line graph if we added data about Saturday?

What can you tell about the attendance if the line *slants* downward?

What can you tell about the attendance if the line *slants* upward?

What can you tell about the attendance if the line has no *slant?*

Why might there be 5 students absent on one day?

What would the line graph look like if our class got a new student the following week?