# Math Live – *Displaying Data*: Assessment Task

**Grade:** 6     **Strand**: Statistics and Probability (Data Analysis)     **Outcome:** 1, 3

| SPECIFIC LEARNER OUTCOMES – Statistics and Probability (Data Analysis) | |
|---|---|
| SP1 | Create, label and interpret line graphs to draw conclusions. |
| SP3 | Graph collected data, and analyze the graph to solve problems. |

| PROCESSES |
|---|
| **Communication (C), Connections (CN), Mental Mathematics and Estimation (ME), Problem Solving (PS), Reasoning (R), Technology (T), Visualization (V)** |
| C, CN, P, S, R, V, T |

## Task 1:

**EVIDENCE** the student has achieved the outcomes

Each student will:
- Complete a frequency diagram for given data about the change in height of a group of students over a school year.
- Transfer data from the frequency diagram to a line plot.
- Label the line plot appropriately.
- Generate a conclusion from the line plot.
- Identify the difference between the greatest increase in growth and the least increase in growth.

**TEACHER NOTE**
- In this assessment task, students will demonstrate their understanding of frequency diagrams and line plots. They will first create a frequency diagram from given data about the change in height of a Grade 6 class over the course of a school term. Then students will transfer this data onto a line plot and label their graph. Students will draw conclusions from the line plot and find the difference between the greatest and least values.
- Early finishers can estimate their height in centimeters and then verify their estimate with a tape measure.

# Math Live – *Displaying Data*: Assessment Task 1

As part of her health classes, Ms. Boyd had her Grade 6 students record their height in centimeters in September and June.  In June, they calculated the difference between these two heights to see how much they had grown.

Here is the data they collected.

| | | | |
|---|---|---|---|
| Sarah – 6 cm | Tom – 5 cm | Norm – 8 cm | Lori – 5 cm |
| Bill – 3 cm | Ira - 6 cm | Eric – 2 cm | Jerod – 4 cm |
| Corey – 2 cm | Bob – 4 cm | Diane – 5 cm | Marti – 7 cm |
| Chance – 4 cm | Alyson – 7 cm | Whitney – 5 cm | Vito – 3 cm |
| Benji – 6 cm | Rejean – 5 cm | Like – 2 cm | Toria – 6 cm |
| Susan – 5 cm | Mandy – 6 cm | Dana – 6 cm | Juan – 7 cm |

1. Use the chart below to create a frequency diagram to display the growth data from the Grade 6 students in Mrs. Boyd's class.  The first one is done for you.

| Growth in Centimeters | Tallies | Frequency |
|---|---|---|
| 2 | III | 3 |
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|  |  |  |
|  |  |  |
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|  |  |  |

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**Total:** _____

# Math Live – *Displaying Data*: Assessment Task 1

2. Create a line plot to display the growth data of the Grade 6 students in Mrs. Boyd's class.  Label your line plot.

   **Title:** _____

3. What conclusion could you make from the data displayed in the frequency diagram and the line plot?

   _____

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4. What is the difference between the <u>greatest</u> increase in growth and the <u>least</u> increase in growth in the class?

   _____

   _____

# Math Live – *Displaying Data*: Assessment Task 1

| Level / Criteria | Creates a frequency diagram<br><br>Question #1 | Represents data on a line plot<br><br>Question #2 | Interprets data from a line plot<br><br>Questions #3 and #4 |
|---|---|---|---|
| **Wow!** | Accurately tallies and records data on a frequency diagram | Accurately transfers data to a line plot that is fully labeled and easy to interpret | Draws multiple, detailed conclusions that communicate insightful interpretation of the data |
| **Yes** | | | Draws conclusions that communicate correct interpretation of the data |
| **Yes, but…** | Tallies and records data on a frequency diagram with minor errors | Transfers data to a partially-labeled line plot with minor errors, which may lead to misinterpretations | Draws conclusions that communicate limited interpretation of the data |
| **No, but…** | Partially or inaccurately records data on a frequency diagram | Incorrectly transfers data to an unlabeled line plot with major errors, which leads to misinterpretations | Draws conclusions that communicate a non-specific interpretation of the data |
| **Insufficient / Blank** | No score awarded due to insufficient evidence of student learning based on the requirements of the assessment task | No score awarded due to insufficient evidence of student learning based on the requirements of the assessment task | No score awarded due to insufficient evidence of student learning based on the requirements of the assessment task |

# Math Live – *Displaying Data*: Assessment Task 2

## Task 2:

**EVIDENCE** the student has achieved the outcomes:

Each student will:

- Complete a broken-line graph from given data about the length of a boy's shadow at one-hour intervals during a day.

- Label the broken-line graph appropriately.

- Describe the change in the length of the boy's shadow over the course of the day using the broken-line graph.

- Identify the time interval during which the graph shows the greatest change in shadow length.

- Explain the usefulness of using a broken-line graph to display this data in comparison with just using the data as it appears in an observation chart.

## TEACHER NOTE

- In this assessment task, students will demonstrate their understanding of broken-line graphs by plotting the change in length of a boy's shadow over a 6-hour period. They will transfer data from an observation chart onto a graph and label the graph appropriately. Then students will summarize the information shown in their graph and identify the time interval that shows the greatest change in shadow length.

- Early finishers can predict the change in length of the shadow over the next three time intervals and graph their estimates.

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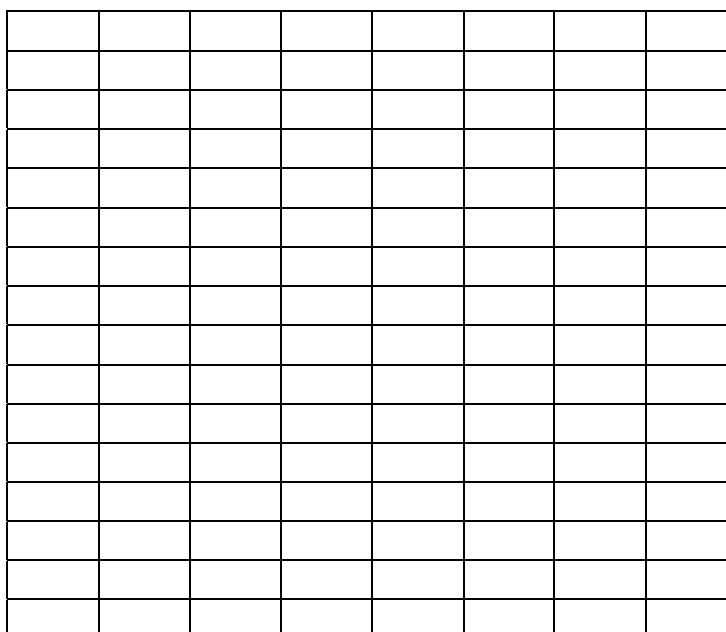## Math Live – *Displaying Data*: Assessment Task 2

Ismail and his friends were preparing a project on Light and Shadows for the school science fair. They recorded the length of their shadows every hour during the school day. Ismail recorded his observations in the chart below.

**Observation Chart**

| Time | Length |
|------|--------|
| 9:30 | 150 cm |
| 10:30 | 110 cm |
| 11:30 | 60 cm |
| 12:30 | 45 cm |
| 1:30 | 30 cm |
| 2:30 | 50 cm |
| 3:30 | 75 cm |

1. Create and label a broken-line graph from the data in Ismail's observation chart.

**Title**_____

2. Describe how the length of Ismail's shadow changed over the course of the day.

_____

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3. During which one-hour period did the length of Ismail's shadow change the most?

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4. In what way does the broken-line graph help you to answer the above questions easier than just looking the Observation Chart?

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# Math Live – *Displaying Data*: Assessment Task 2

| Level / Criteria | Creates a broken-line graph<br><br>Question #1 | Interprets data from a broken-line graph<br><br>Questions #2 and #3 | Explains the usefulness of a broken-line graph<br><br>Question #4 |
|---|---|---|---|
| **Wow!** | Creates and accurately labels a broken-line graph from given data that is easy to interpret | Provides a meaningful explanation that is logical and supported by the data | Communicates a thorough understanding of using a broken-line graph including identifying change over time |
| **Yes** | | | Communicates a basic understanding of using a broken-line graph including a comparison of data |
| **Yes, but…** | Creates and labels a broken-line graph from given data that contains minor errors but is interpretable | Provides an explanation that is reasonable and supported by the data | Communicates an incomplete understanding of using a broken-line graph based on a narrow example of its usefulness |
| **No, but…** | Creates and labels a broken-line graph with errors which make the graph uninterruptible or misrepresents the data | Provides an incomplete or confusing explanation that may not be supported by the data | Communicates little or simplistic understanding of using a broken-line graph |
| **Insufficient / Blank** | No score awarded due to insufficient evidence of student learning based on the requirements of the assessment task | No score awarded due to insufficient evidence of student learning based on the requirements of the assessment task | No score awarded due to insufficient evidence of student learning based on the requirements of the assessment task |