Important Concepts...

Preview Review

Mathematics    Grade 6    TEACHER KEY

W3 - Lesson 2: Bar Graphs, Line Graphs, and Circle Graphs
Materials Required: A textbook is not needed. This is a stand-alone course.

Mathematics Grade 6
Version 5
Preview/Review W3 - Lesson 2 TEACHER KEY

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Preview/Review Concepts for Grade Six Mathematics

TEACHER KEY

W3 - Lesson 2: Bar Graphs, Line Graphs, and Circle Graphs
OBJECTIVES

By the end of this lesson, you should

- read and draw bar graphs
- read and draw line graphs
- read and draw circle graphs

GLOSSARY

**bar graph** - a graph consisting of parallel, usually vertical bars or rectangles with lengths proportional to the frequency with which specified quantities occur in a set of data

**double bar graph** - a bar graph comparing two sets of data

**circle graph** (pie chart) - a graph that shows parts of a whole circle

**line graph** - a graph formed by joining points on a grid
W3 - Lesson 2: Bar Graphs, Line Graphs, and Circle Graphs

Welcome to W3 - Lesson 2! In this lesson you will study bar graphs, line graphs, and circle graphs. You will start by reading graphs and answering questions. Later, you will draw graphs of your own.

Reading Graphs

1. Students were surveyed to determine their favourite after-school activities. This graph shows the results of the survey. Use the graph and chart to answer the questions below.

<table>
<thead>
<tr>
<th>Activities</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Visit with friends</td>
<td>175</td>
</tr>
<tr>
<td>Talk on phone</td>
<td>170</td>
</tr>
<tr>
<td>Play sports</td>
<td>120</td>
</tr>
<tr>
<td>Earn money</td>
<td>120</td>
</tr>
<tr>
<td>Use computers</td>
<td>65</td>
</tr>
</tbody>
</table>

![Bar Graph Example]

a. What is the title of the graph?

**Favourite After-School Activities of Students**

b. What is the heading of the vertical axis?

**Numbers**

c. What is the heading of the horizontal axis?

**Activities**
d. How many students were surveyed?

650 students

e. How many more students picked "Play sports" than "Use computers"?

55 students

f. How many more students picked "Talk on phone" than "Earn money"?

50 students

(Note: All answers are approximate because the scale uses large numbers.)
2. This graph shows the population of six Canadian provinces in January 2003. Use the graph to answer the following questions. Give your answer to the nearest half-million (e.g., ON = 12 million, QC = 7.5 million).

a. What is the title of this graph?

   **2003 Population of Some Provinces**

b. What is the heading of the vertical axis?

   **Population (in millions)**
c. Which province has the largest population? How many people?

   **Ontario - 12 million**


d. What two provinces have the smallest populations? Approximately how many people are in each province?

   **Saskatchewan and Manitoba have approximately 1 million people in each province.**


e. What is the total estimated population of the four western provinces (BC, AB, SK, and MB)? (Round your answer to the nearest million)

   **9 million**

f. How much larger is the population of Ontario than that of Quebec? Show how you calculated your answer.

   **Ontario 12 million - Quebec 7.5 million = 4.5 million**
3. Use the circle graph below to answer the following questions.

![Circle graph showing percentages of hours spent on various activities]

<table>
<thead>
<tr>
<th>Activity</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sleep</td>
<td>25%</td>
</tr>
<tr>
<td>School</td>
<td>25%</td>
</tr>
<tr>
<td>Job</td>
<td>17%</td>
</tr>
<tr>
<td>Homework</td>
<td>8%</td>
</tr>
<tr>
<td>Meals</td>
<td>8%</td>
</tr>
<tr>
<td>Entertainment</td>
<td>17%</td>
</tr>
</tbody>
</table>

a. What is the title of the graph?

**Percent of Hours of a Day Spent on Activities**

b. What is the total percent when you add the percentages of all six activities?

100 %

c. How many hours are spent each day sleeping?

6 hours

d. How many more hours are spent working each day than are spent doing homework? (Round your answer to the nearest hour.)

2 hours

e. How many hours are spent each day on entertainment? (Round your answer to the nearest hour.)

4 hours
Drawing Graphs

Below is a list of student marks and a double-bar graph. The graph shows the marks of Rashad and Lin. On the grid provided, draw a double-bar graph to show the marks of Sunna and Dave. Your graph should have a title, headings for the horizontal and vertical axes, and different coloured bars for different students.

<table>
<thead>
<tr>
<th>Name</th>
<th>Math</th>
<th>Soc St</th>
<th>Phy Ed</th>
<th>Sci</th>
<th>LA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rashad</td>
<td>65</td>
<td>85</td>
<td>95</td>
<td>65</td>
<td>75</td>
</tr>
<tr>
<td>Lin</td>
<td>85</td>
<td>70</td>
<td>60</td>
<td>70</td>
<td>70</td>
</tr>
<tr>
<td>Sunna</td>
<td>65</td>
<td>55</td>
<td>85</td>
<td>55</td>
<td>60</td>
</tr>
<tr>
<td>Dave</td>
<td>90</td>
<td>80</td>
<td>75</td>
<td>70</td>
<td>85</td>
</tr>
</tbody>
</table>

A Comparison of Marks for Rashad and Lin
A Comparison of Marks for Sunna and Dave

<table>
<thead>
<tr>
<th>Subject</th>
<th>Sunna (%)</th>
<th>Dave (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Math</td>
<td>80</td>
<td>70</td>
</tr>
<tr>
<td>Social Studies</td>
<td>70</td>
<td>60</td>
</tr>
<tr>
<td>Science</td>
<td>80</td>
<td>90</td>
</tr>
<tr>
<td>L/A</td>
<td>60</td>
<td>50</td>
</tr>
<tr>
<td>Phys. Ed.</td>
<td>70</td>
<td>80</td>
</tr>
</tbody>
</table>

Developed by Alberta Distance Learning Centre
Below is a chart with the marks of four students. A line graph shows Susie's marks. On the grid provided on the next page, draw a triple-line graph to display the marks of Ben, Carol, and Freddy. Your graph should have a title, headings for the horizontal and vertical axes, and different coloured lines for each student.

<table>
<thead>
<tr>
<th>Name</th>
<th>Math</th>
<th>Soc St</th>
<th>Phy Ed</th>
<th>Sci</th>
<th>LA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Susie</td>
<td>52</td>
<td>67</td>
<td>60</td>
<td>82</td>
<td>75</td>
</tr>
<tr>
<td>Ben</td>
<td>64</td>
<td>57</td>
<td>75</td>
<td>68</td>
<td>70</td>
</tr>
<tr>
<td>Carol</td>
<td>92</td>
<td>87</td>
<td>90</td>
<td>84</td>
<td>70</td>
</tr>
<tr>
<td>Freddy</td>
<td>83</td>
<td>73</td>
<td>85</td>
<td>69</td>
<td>85</td>
</tr>
</tbody>
</table>
A Comparison of Ben’s, Carol’s, and Freddy’s Marks

LEGEND

Carol

Freddy

Ben


Marks (%)
Draw a bar graph showing the information in the chart below. The title of the graph is "Students' Bank Accounts". Have the bars run **horizontally**. Your graph should have a title, headings for the horizontal and vertical axes, and different coloured bars for different students.

<table>
<thead>
<tr>
<th>Students</th>
<th>Bank Account Balances</th>
</tr>
</thead>
<tbody>
<tr>
<td>Roger</td>
<td>$ 525</td>
</tr>
<tr>
<td>Sally</td>
<td>$ 675</td>
</tr>
<tr>
<td>Charles</td>
<td>$ 1,050</td>
</tr>
<tr>
<td>Cherri</td>
<td>$ 475</td>
</tr>
<tr>
<td>George</td>
<td>$ 950</td>
</tr>
</tbody>
</table>

**Students' Bank Accounts**

**Bank Account Balances**

0 50 100 150 200 250 300 350 400 450 500 550 600 650 700 750 800 850 900 950 1000 1050 1100

- George
- Cherri
- Charles
- Sally
- Roger
Drawing Circle Graphs

In a circle graph, each segment of the graph is displayed as a triangular piece of pie. A percent is written in or beside each piece of pie.

![Circle Graph Example](image)

To draw a circle graph, calculate the number of degrees in each angle at the centre of the circle.

In this graph (Percent of Hours of a Day Spent on Activities), the sizes of the angles are as follows:

<table>
<thead>
<tr>
<th>Activities</th>
<th>Percent</th>
<th>Number of Degrees</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sleep</td>
<td>25%</td>
<td>25% \times 360 = 90°</td>
</tr>
<tr>
<td>School</td>
<td>25%</td>
<td>25% \times 360 = 90°</td>
</tr>
<tr>
<td>Entertainment</td>
<td>17%</td>
<td>17% \times 360 = 61°</td>
</tr>
<tr>
<td>Job</td>
<td>17%</td>
<td>17% \times 360 = 61°</td>
</tr>
<tr>
<td>Homework</td>
<td>8%</td>
<td>8% \times 360 = 29°</td>
</tr>
<tr>
<td>Meals</td>
<td>8%</td>
<td>8% \times 360 = 29°</td>
</tr>
<tr>
<td><strong>TOTALS:</strong></td>
<td>100%</td>
<td><strong>360°</strong></td>
</tr>
</tbody>
</table>
Using your protractor and the blank circle below, draw a circle graph similar to the circle graph on the previous page. Give your graph a title and name each piece of pie. Colour each pie piece a different colour.

* Colour coded to match. Check for accuracy

* Student copy has blank circle placed here.
Five students (Jan, Karen, Alex, Henry, and Michael) were playing a board game entitled *Get the Money*. The object of the game was to get as much money as possible from the other players. Each player started the game with $20 000. The chart below shows how the game ended. Using your protractor and the circle, draw a circle graph showing the amount of money each player had at the end of the game. Give your graph a title and name each piece of pie. Colour each pie piece a different colour.

% of the Total Money Won ($100 000)

<table>
<thead>
<tr>
<th>Name</th>
<th>$ at Start of Game</th>
<th>$ at End of Game</th>
<th>% of the Total Money at End of Game ($100 000)</th>
<th>Changing % Money Won to Degrees</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan</td>
<td>$ 20 000</td>
<td>$ 22 000</td>
<td>22%</td>
<td>79°</td>
</tr>
<tr>
<td>Karen</td>
<td>$ 20 000</td>
<td>$ 13 000</td>
<td>13%</td>
<td>47°</td>
</tr>
<tr>
<td>Alex</td>
<td>$ 20 000</td>
<td>$ 45 000</td>
<td>45%</td>
<td>162°</td>
</tr>
<tr>
<td>Henry</td>
<td>$ 20 000</td>
<td>$ 14 000</td>
<td>14%</td>
<td>50°</td>
</tr>
<tr>
<td>Michael</td>
<td>$ 20 000</td>
<td>$ 6 000</td>
<td>6%</td>
<td>22°</td>
</tr>
</tbody>
</table>

Who Made the Most Money in the Game

*Check for accuracy*
Homework Assignment

1. This circle graph shows the favourite Alberta tourist attractions as chosen by Grade 6 students. The number in brackets shows how many votes each location received.

![Favourite Alberta Tourist Attractions](image)

a. How many students were surveyed?

587 students were surveyed.

b. How many more students chose West Edmonton Mall than the Calgary Zoo?

58 students.
c. Altogether, how many students voted for the two smallest pies?

82 students.

d. How many more students chose Royal Tyrrell Museum than Jasper National Park?

47 students.

2. Draw a bar graph (with the bars horizontal) showing the same information as the circle graph shown on the previous page (Favourite Alberta Tourist Attractions). Give your graph a title and name both the horizontal and vertical axis.
3. Draw a line graph showing the same information as the circle graph (Favourite Alberta Tourist Attractions). Give your graph a title and name both the horizontal and vertical axis.

![Favourite Tourist Attractions](image)

**Tourist Attractions**
*(Check for accuracy with plotting)*
Self-Evaluation

Ask yourself some important questions. Write your answers in sentences for your teacher.

1. In this lesson, what part of your work was excellent?

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

2. In this lesson, what part of your work needs improvement?

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

3. If you want help for some of the work in this lesson, ask your teacher in this space.

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________