Important Concepts . . .

Preview Review

Mathematics Grade 5 TEACHER KEY

W2 - Lesson 2: Collecting Data and Analyzing Patterns

V5-07

Important Concepts of Grade 5 Mathematics

W1 - Lesson 1 .....Number Sense Numbers 0 to 100 000
W1 - Lesson 2 ..... Exploring Proper Fractions
W1 - Lesson 3 ..... Exploring Decimals
W1 - Lesson 4 .....Numbers With Up to 2 Decimal Places
W1 - Lesson 5 ..... Multiplication
W1 - Quiz
W2 - Lesson 1 ..... Division
W2 - Lesson 2 ..... Collecting Data and Analyzing Patterns
W2 - Lesson 3 .....Estimating and Taking Measurements
W2 - Lesson 4 ..... Perimeter and Area Measurements
W2 - Lesson 5 ..... Metric Measurements
W2 - Quiz
W3 - Lesson 1 ..... Volume, Capacity, Mass, and Time
W3 - Lesson 2 ..... 2-D Shapes and 3-D Objects
W3 - Lesson 3 .....Transformations
W3 - Lesson 4 ..... Statistics and Probability
W3 - Lesson 5 .....Chance and Probability
W3 - Quiz

Materials Required

Protractor
Ruler
Calculator

A textbook is not needed.

This is a stand-alone course.

Mathematics Grade 5
Version 5
Preview/Review W2 - Lesson 2 TEACHER KEY

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Preview/Review Concepts for Grade Five Mathematics

TEACHER KEY

W2 - Lesson 2: Collecting Data and Analyzing Patterns

OBJECTIVES

By the end of this lesson, you should

- find patterns in charts or graphs
- construct charts and graphs to display data

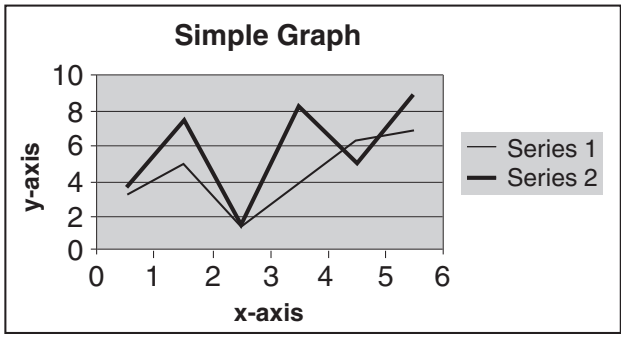
Glossary of Terms

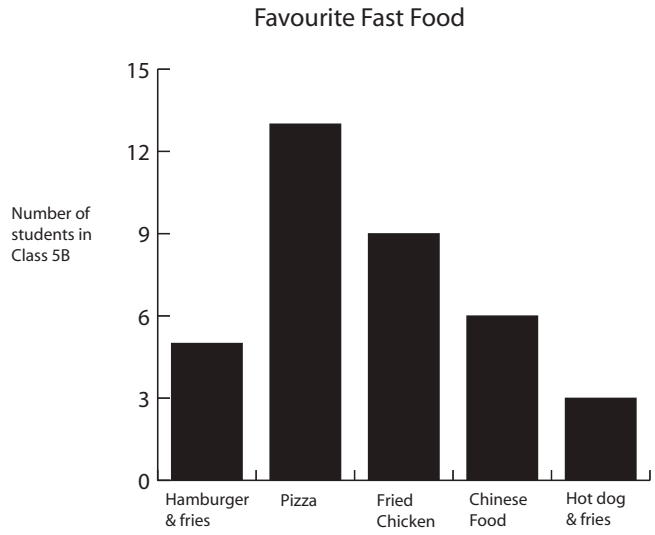
Chart/Graph: These are *pictures* of information. Charts and graphs use data to display information. The information can be displayed in a way that gives more meaning to the information. It makes the information easier to read; or it highlights data. The type of chart or graph used is dependent on the purpose for the chart or graph.

This lesson uses only the following charts and graphs.

SIMPLE CHARTS

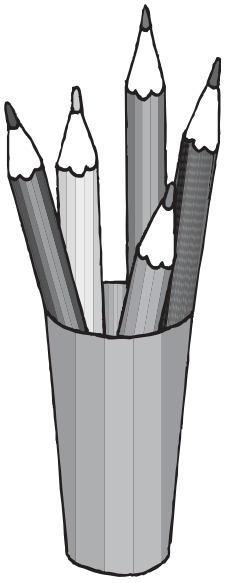
Information	2
Information	2
Information	2
Information	3
Information	4
Information	5
Information	6





Data: Data is the information used for analysis in a graph or chart.

SIMPLE CHARTS	
Information	2
Information	2
Information	2
Information	3
Information	4
Information	5
Information	6



W2 - Lesson 2: Collecting Data and Analyzing Patterns

Concepts:

- Finding Patterns
- Predicting Future Data from Charts and Graphs
- Constructing Charts and Graphs

Finding Patterns

When information is organized into a **chart** or **graph**, the information is easier to read and to interpret. The following chart was posted in a store to advertise a savings plan.

When you spend ...	you save
$10.00	$1.00
$20.00	$2.00
$30.00	$3.00
$40.00	$4.00
$50.00	$5.00
$60.00	$6.00
$70.00	$7.00

- Customers can see easily how much they have saved.
- Charts help us to recognize patterns in the information. What patterns can you identify? In this situation, you save $1 for every $10 you spend.

What is the pattern in each question below?

Day	High Temperature
Monday	21°C
Tuesday	20°C
Wednesday	21°C
Thursday	20°C
Friday	21°C

Pattern Seen In Numbers

The temperature changes by a degree each day.

SHAPES AND LINES

Number of Sides	Number of Diagonals
3	0
4	2
5	5
6	9
7	14

Pattern Seen In Numbers

The number of diagonal lines that can be drawn inside each object seems to have no pattern.

Predicting Future Data from Charts and Graphs

Predicting the next number on a chart or graph involves two steps.

Step 1: Identify the pattern.

Step 2: Apply the pattern to the next number on the chart or graph.

Input/Output	
2	9
4	11
6	13
8	15
?	?

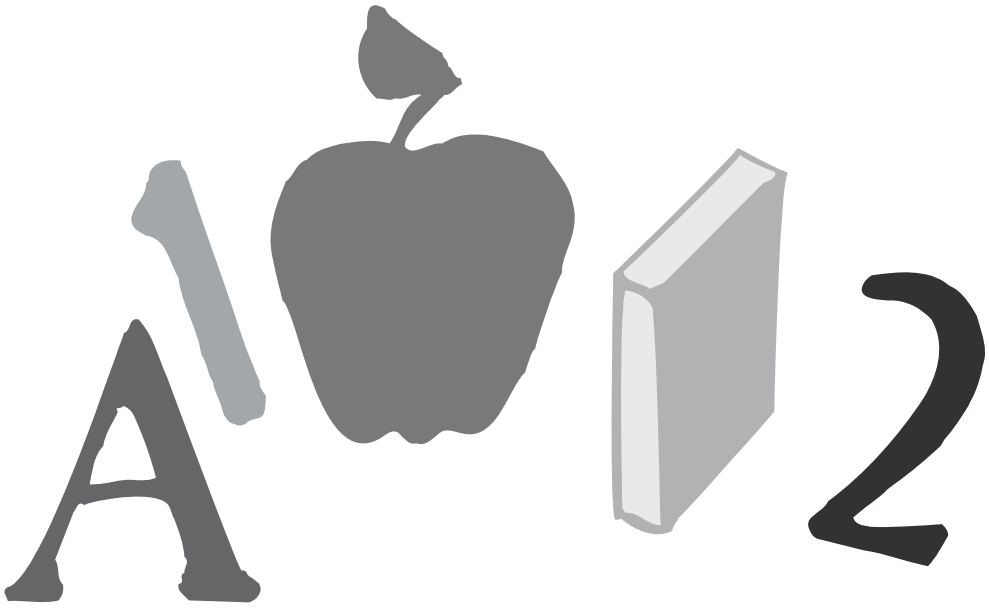
Step 1: 2, 4, 6, 8
All the input numbers increase by 2.

9, 11, 13, 15
All the output numbers increase by 2.

Therefore, the pattern is *as the input increases by two, the output also increases by two*.

Step 2: Add $8 + 2 = 10$ (for the next input number)
Add $15 + 2 = 17$ (for the next output number)

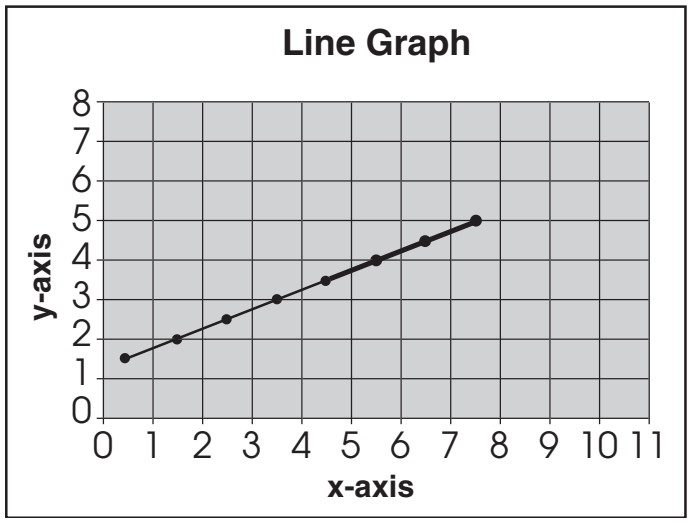
Therefore, the answer is input 10 and output 17.



Complete each of the graphs and charts by following the patterns.

- Draw the dots and lines needed in the graphs
- Provide the missing numbers in the charts.

a.



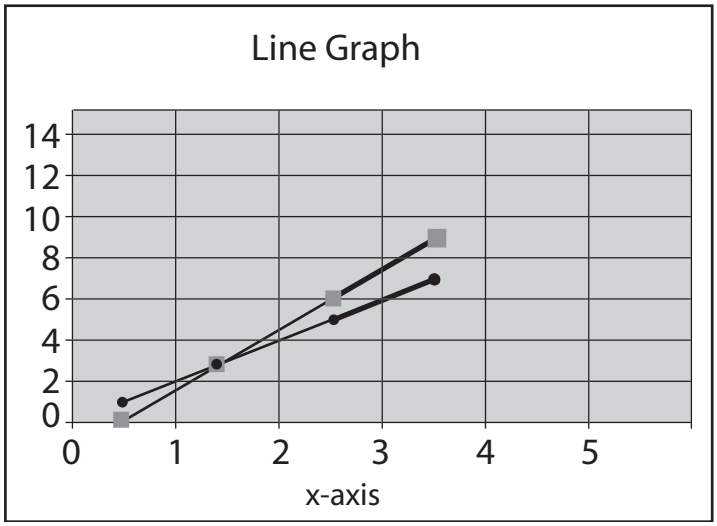
b.

Time	Number of People
9:00 A.M.	10
11:00 A.M.	20
12:00 A.M.	40
2:00 A.M.	80
4:00 A.M.	***160***

c.

John	$10.00	$12.00	$15.00	$19.00	***$24.00***	***$30.00***
Mary	$16.00	$17.00	$18.00	$19.00	***$20.00***	***$21.00***

d.



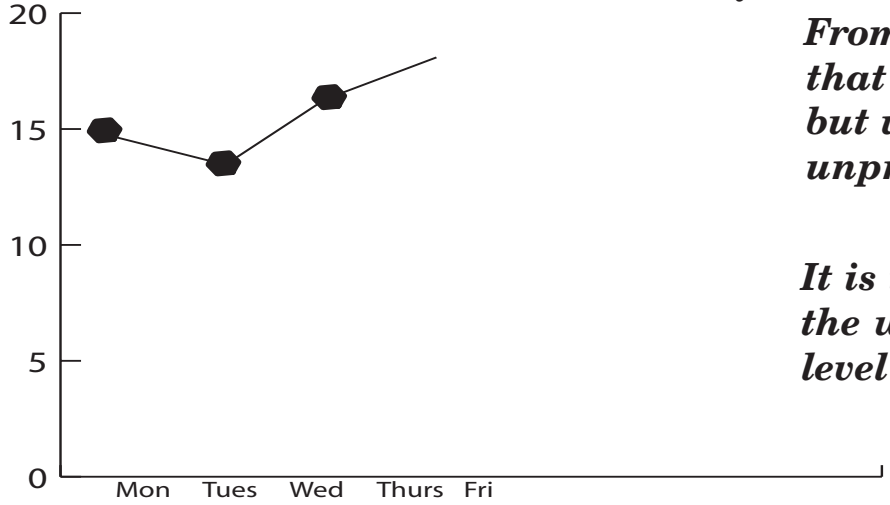
Constructing Charts and Graphs

Step 1: Look at your data. What do you want your data to show?

Step 2: Choose a chart or graph. What chart/graph will display your data well?

Step 3: Complete the graph by using your data.

1. Predict the weather trend. Monday was 15°C, Tuesday was 13°C, Wednesday was 16°C, and Thursday was 17°C. Do you think Friday will be warmer or cooler than Thursday?



From the graph it seems that it will be warmer, but weather is basically unpredictable.

It is impossible to predict the weather with this level of accuracy.

2. Find the area when given the perimeter. When the perimeter was 4 cm, the area was 1 cm^2; perimeter 8 cm, area 4 cm^2; perimeter 12 cm, area 9 cm^2; perimeter 16, area 16 cm^2. What will the area be if the perimeter is 20 cm?

Perimeter	Area
4 cm	1 cm^2
8 cm	4 cm^2
12 cm	9 cm^2
16 cm	16 cm^2
20 cm	***25 cm^2***

Hint:
Perimeter is the distance around the shape.

Area is the amount of surface a figure covers.

If the perimeter is 20 cm, then the area will be 25 cm^2

3. Predict the growth of a tree. If the tree grows 5 cm its first year, 10 cm its second year, 20 cm its third year. How many centimetres will the tree grow its fifth year?

The tree will grow 80 cm in the fifth year if the growth continues to double each year.

Year	Tree Growth
1st	5 cm
2nd	10 cm
3rd	20 cm
4th	40 cm
5th	80 cm

4. A pendulum makes 6 swings every 10 seconds. Predict the number of swings a pendulum has made in 30 seconds, 40 seconds, and 45 seconds.

The pendulum will make 18 swings after 30 seconds, 24 swings after 40 seconds, and 27 swings after 45 seconds, based on a rate of 6 swings every 10 seconds.

Seconds	Swings
10	6
20	12
30	18
40	24
45	27
50	30

5. Suppose you already have $80.00, and you are able to save another $5.00 a week. Predict how long you will take to save $100.00.

I will take another 4 weeks to save $100.00 if I start with $80.00 and save an additional $5.00 per week.

Week	Total Money
0	$80.00
1	$85.00
2	$90.00
3	$95.00
4	$100.00

6. Amanda is entered in a walkathon. Her sponsor will contribute $10.00 plus $2.00 for every kilometre she walks. How much money will she make if she walks 8 kilometres.

She will make $26.00 if she walks 8 km.

Km	*Total Contributions*
0	***$10.00***
1	***$12.00***
2	***$14.00***
3	***$16.00***
4	***$18.00***
5	***$20.00***
6	***$22.00***
7	***$24.00***
8	***$26.00***