Talking about graphs

Exercise 1
Look at the words below. Listen to your teacher pronounce them and mark the stress and sounds of the words. Then label the diagram and describe it to your partner.

<table>
<thead>
<tr>
<th>x-axis</th>
<th>horizontal</th>
<th>vertical</th>
<th>linear graph</th>
<th>above the x-axis</th>
</tr>
</thead>
<tbody>
<tr>
<td>y-axis</td>
<td>parabola</td>
<td>to cross</td>
<td>quadratic graph</td>
<td>below the x-axis</td>
</tr>
<tr>
<td>axes</td>
<td>secant</td>
<td>tangent</td>
<td>point of intersection</td>
<td>shaded area</td>
</tr>
<tr>
<td>vertex</td>
<td>linear equation</td>
<td>x-intercept</td>
<td>point of inflection</td>
<td>origin</td>
</tr>
<tr>
<td>point</td>
<td>straight line</td>
<td>y-intercept</td>
<td>is perpendicular to</td>
<td>turning point</td>
</tr>
<tr>
<td>curve</td>
<td>axis of symmetry</td>
<td>curved line</td>
<td>inverted parabola</td>
<td>to intersect</td>
</tr>
<tr>
<td>Cartesian coordinates (x,y)</td>
<td>the parabola opens upwards/downwards/sideways</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>positive/negative gradient (slope)</td>
<td>the steepness of the slope</td>
<td>1st, 2nd, 3rd, 4th quadrant</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Exercise 2 What is the difference between to plot a graph and to sketch a graph?

Exercise 3 What are the missing words?
1 Look at this point ________ the line.
2 The lines intersect ________ this point.
3 By looking at the graph we can see that the speed increases ________ time.
4 This line passes ________ the origin.
5 Plot the graph of voltage (y-axis) ________ current (x-axis).
6 The y-intercept can be read ________ the graph.

Create your own graphs and look at mind maps for maths revision
You can create your own graphs at: www.createagraph.com
Mind maps for maths revision are at: http://www.mathsrevision.com
Lines

Exercise 1
Match the lines above with the words below and mark where the word is stressed.

- horizontal line
- vertical line
- straight line
- wavy line
- perpendicular lines
- curved line
- zigzag line
- diagonal line
- dotted line
- parallel lines
- line segment
- ray

Exercise 2
1. If you make a mistake, you can rub it out with a ____________.

2. If you want to draw and measure straight lines you need a ____________.

3. If an object moves in a straight line, it has ____________ motion.

4. orthogonal = ____________.

5. A piece of straight line between two points is a ________________.

6. A straight line which has a starting point but no endpoint is a ________________.
Describing change

to fall, to decrease, to drop, to decline, to go down

to show a gradual decrease in, to show a gradual decline in

*Adverbs:* gradually / slowly / slightly / steadily


to fall, to decrease, to drop, to decline, to go down,
to show a rapid decrease in, to show a sudden decline in

*Adverbs:* sharply / steeply / rapidly / suddenly / quickly / dramatically


to rise, to increase, to go up, to show a gradual increase in

*Adverbs:* gradually / slowly / slightly / steadily


to rise, to increase, to go up, to shoot up, to show a rapid increase in

*Adverbs:* sharply / steeply / rapidly / suddenly / quickly / dramatically


to peak, to reach a peak/maximum/high point


to reach a minimum, to reach a low point


to dip


to remain stable, to remain constant, to stay at the same level, to stay the same
to flatten out, to reach a plateau, to level off,

A \^A / \A / v \\, V

V

V

to fluctuate, to vary

V

V

to stabilise

a steady rise, a continuous rise, a monotone increase (i.e. it never falls or dips)

\( \begin{array}{c}
\text{to expand, to grow} \\
\text{to decline, to shrink}
\end{array} \)

Pie charts are often used in statistics and business.

Note: we talk about the \textit{segment} of a pie chart.

**Talking about figures and results**

The result/figure is | under ... | just under ... | well under ...
--- | --- | --- | ---
above ... | just above ... | well above ...
roughly ... | approximately ... | more or less ...
approximately ... | more or less ...
in the region of ...

Note: \textit{just under} = a little under, \textit{well under} = a lot under
\textit{just above} = a little above, \textit{well above} = a lot above

\[ \text{e.g. Her IQ is well above the national average.} \]

**Prepositions**

to increase/rise/fall/drop by 10\%
an increase/rise/fall/drop of 10\% (a numerical amount)
an increase/rise/fall/drop in pressure (a noun)
Travel graphs: worksheet

1. A travel graph is always ____________________________.

2. The ______________ of a line on the graph represents the __________ of an object, i.e. how fast it is moving, e.g. 70km/h (kilometres per hour).

3. The speed of an object = ____________________________.

4. The ___________ the graph, the greater the ___________.

5. The horizontal lines on the graph are where the object is ________________, i.e. it is ________________.

6. The line representing the return journey ____________________________.

7. When an object is moving at a ______________ speed, the line on the graph is straight, but sloped.

NB: The speed of an object is how fast it is moving, e.g. 40km/h, and is a __________ quantity, whereas the velocity of an object is its speed in a ________________, and is a __________ quantity, e.g. 40km/h east.

Question
Now work with your partner. What is the speed of the return journey?

Answer
Speed = gradient = ______________ = _______ metres/minute = ____ km/h.