

Structured Revision for the Grade 10 Integrated Mathematics Exam

We have covered a lot of material this year. To help you concentrate your revision, we have compiled the following list of topics. If you work hard and make sure you have a good grasp of everything on this list, you will do well.

Financial calculations

You will need to be able to calculate

- Cost equations, given a description of how payment works.
E.g. A plumber charges \$300 for the first hour and then \$80 per hour after that. What is the equation of the total cost paid against time? Plot this on a graph.
- Compound interest, which may be compounded annually, semi-annually, monthly, etc.
E.g. If I invest \$125 at 6% interest. What is my investment worth after 5 years if the interest is compounded annually? How much more is it worth if the interest is compounded monthly?

Linear systems

You will be expected to solve a simple system of two equations.

Quadratics

You will need to find the

- factors
- axis of symmetry
- zeroes
- vertex

of a range of quadratic functions, in standard, vertex or intercept (factored) form, understanding the characteristics of each form and how each can be used to find various features on the graph.

You will also get a word problem based on the trajectory of a projectile (i.e. something thrown through the air!).

Exponential Functions

- You must be able to interpret a graph of a function in the form $f(x) = ab^x + c$.
- You will need to be able to read and label values and features on a graph of an exponential function.

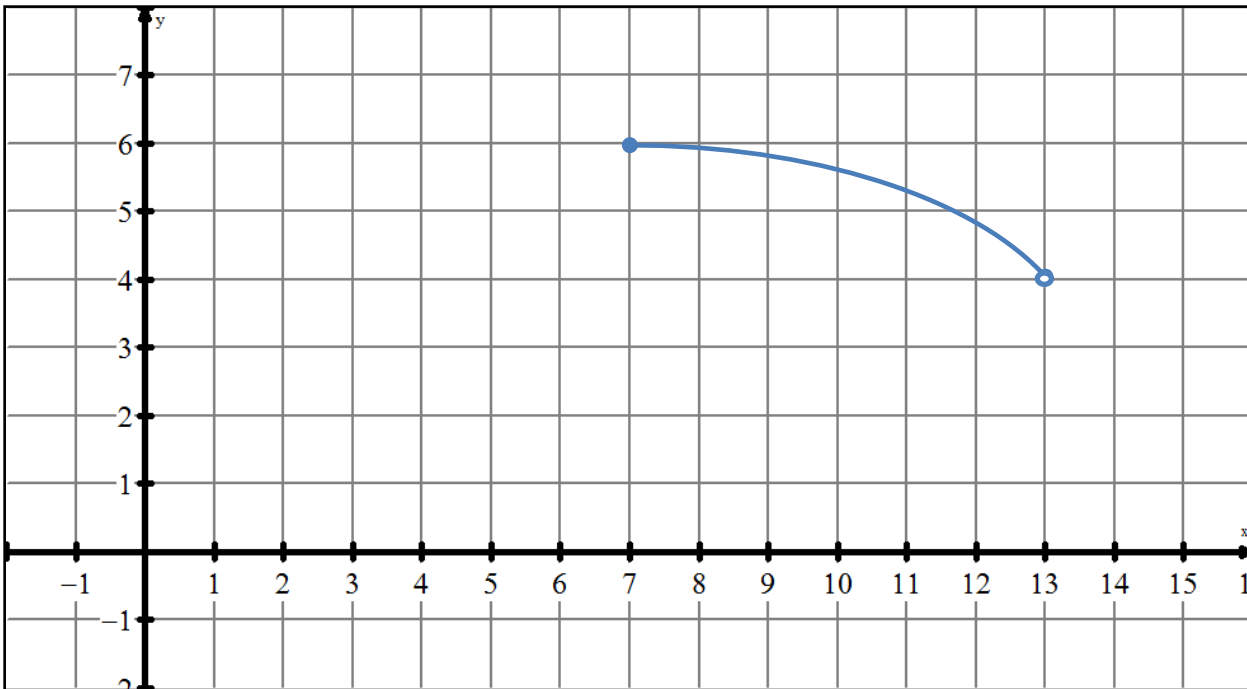
Statistics

- You will need to be able to calculate mean, median and mode for a variety of different types of data.
- You will need to have a good grasp of cumulative frequency graphs and be able to interpret them fully.

Functions

You will be expected to find:

- $f(x)$ given x
E.g. $f(x) = 2^x - 3$. Find $f(4)$.
- x given $f(x)$
E.g. $f(x) = 3 - 7x$. Solve $f(x) = -\frac{1}{2}$
- Composite functions (with necessary simplification)
 $f(x) = 2x+4$, $g(x) = -\frac{1}{2}x$. Write an expression for $(g \circ f)(x)$.



From a graphical representation of a function, like the one above, you will need to be able to find the domain and range.

You will also need to be able to read the graph to find, $f(x)$ or $f^{-1}(x)$. E.g. Find $f(9)$. Find $f^{-1}(5)$.

Finally, you will need to be able to graph the transformation of a function, such as $f(x) \rightarrow af(x+c)+d$.

Trigonometry

- You will be expected to solve triangles using the sine rule and the cosine rule.
- You will also be expected to use SOHCAHTOA together with your knowledge of Pythagoras to solve word problems.
- You must be able to graph a given trig function, either using your calculator or using your knowledge of $A \sin(k(x-C)) + D$.
- You will also need to be able to find trig ratios (e.g. Find $\cos 150^\circ$) or an unknown value of θ (e.g. Solve $\sin \theta = \frac{1}{2}$) using your knowledge of special angles on the unit circle.

That's not too much is it! GOOD LUCK