Maths Points

Junior and Leaving Cert

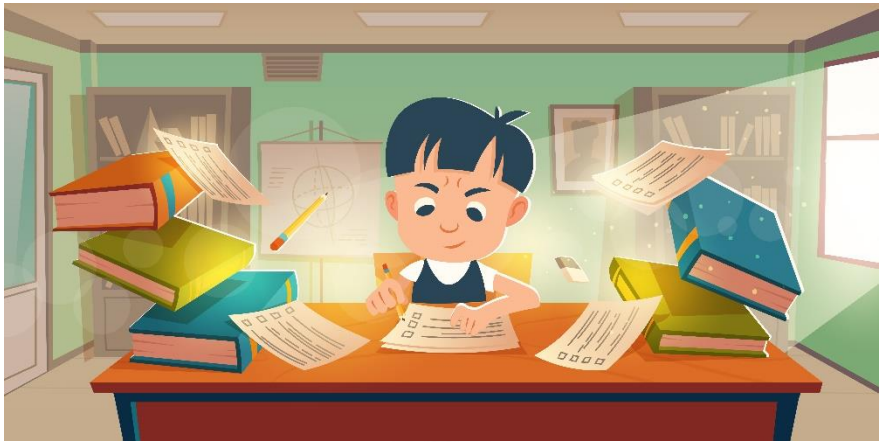
JCOL BASIC SKILLS

PACK 1

Junior Cert Ordinary level

JCOL Basic Skills: Pack 1 – Table of Contents

Contents



Maths Points

Junior and Leaving Cert

Solve the inequality

$-7 + 2x \leq 1$, where $x \in \mathbb{Z}$.

Collect the x terms on the left and the number terms on the right.

$-7 + 2x \leq 1$

$2x \leq 1 + 7$

$2x \leq 8$

$x \leq \frac{8}{2}$

$x \leq 4$

The solution is every integer value less than or equal to 4.

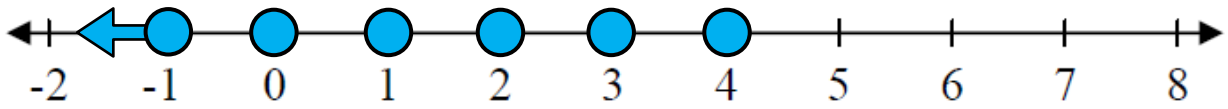
(ii)

Graph your solution to (b)(i) on the number line given below.

$x \in \mathbb{Z}$

$\mathbb{Z}$ are the integers. They are positive and negative whole numbers and are represented by full dots.

An arrow on a dot signifies that every integer in that direction is also included in the solution.



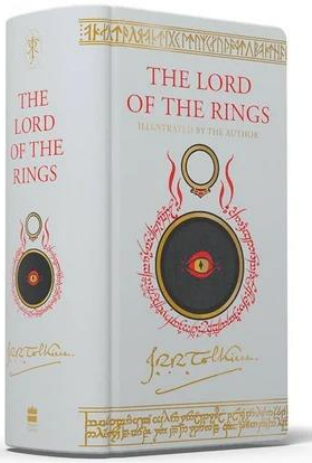
$\mathbb{Z}$

The term "integer" originates from the Latin word "integer," meaning "whole" or "untouched."

The symbol "Z" comes from the German word "Zahlen," which translates to "numbers."

A book online cost £28.00, plus a delivery charge of £5.00.

What is the total cost of the book in euro, if the exchange rate is £1 = €1.25?



Add the cost of the book to the delivery charge to find the total cost of the book in pounds (£).

$$\begin{array}{r} 28.00 \\ 5.00 \\ \hline 33.00 \end{array} \quad +$$

The total cost of the book in pounds was £33.00.

£1 = €1.25

£33.00 = x

For currency questions we either multiply or divide by the exchange rate. Cross multiplying is a good way to figure out which one if you are not sure!

$1x = 1.25(33)$

$x = €41.25$

Multiply the amount of euros you get for each pound (1.25) by the number of pounds (33).

The total cost of the book in euro is €41.25.

Using a calculator, or otherwise, multiply 450 000 × 7.8.

Then express your answer in the form $a \times 10^n$, where $1 \leq a < 10$ and $n \in \mathbb{N}$.

We need to first multiply 450 000 by 7.8.

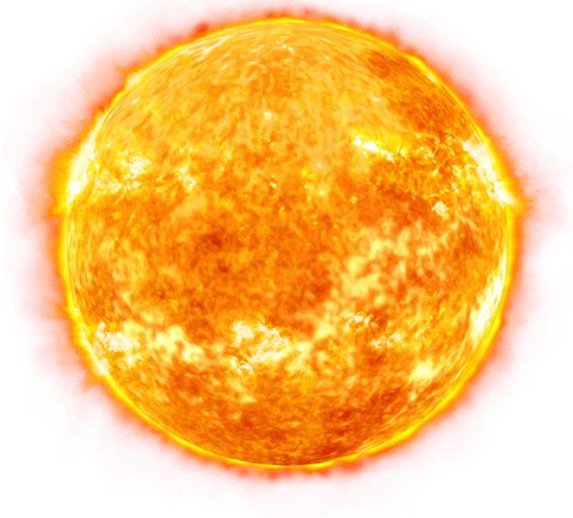
$450\,000 \times 7.8$

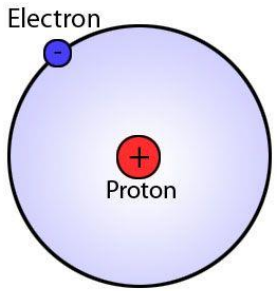
$= 3{,}510{,}000$

6

The size of the power is found by counting the number of digits after the 1st digit.

$= 3.51 \times 10^6$



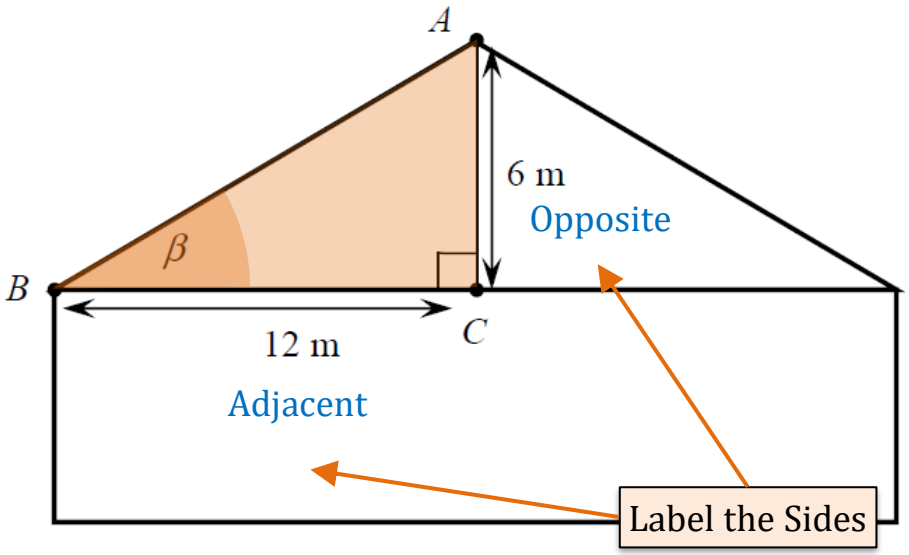


Scientific notation is a way of writing very large or very small numbers in a more compact and convenient form.
For example, the average distance from the Earth to the Sun is about 150 million km. This can be written in scientific notation as 1.5×10^8 km.
The mass of a proton is 1.67×10^{-27} kilograms.
That's 0.00000000000000000000000000167 kg!

Ella is building a house in Montreal.

Calculate the measure of the angle β. Give your answer correct to the nearest degree.

The formulae for **Pythagoras** and the **Trig Ratios** are on **page 16** of the Maths Formulae Book.



Trigonometry Ratio

$$\tan = \frac{\text{opposite}}{\text{adjacent}}$$

$$\tan\beta = \frac{6}{12}$$

$$\beta = \tan^{-1}\left(\frac{6}{12}\right)$$

$$\beta = 26.57°$$

$$\beta \approx 27°$$

(ii)

Find the length of the roof from A to B. Give your answer correct to two decimal places.

Pythagoras

$$c^2 = a^2 + b^2$$

$$c^2 = a^2 + b^2$$

$$|AB|^2 = 12^2 + 6^2$$

$$|AB|^2 = 144 + 36$$

$$|AB|^2 = 180$$

$$|AB| = \sqrt{180}$$

$$|AB| = 13.42 \text{ m}$$

R is the point $(-1, 2)$ and S is the point $(5, 6)$.

Find the length of $[RS]$.

The formula for **Length** (**Distance**) can be found on **page 18** of the Maths Formulae Book.

We can use the distance formula in the tables to find, $|RS|$ the distance from R to S.

Distance Formula

$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$

$R\ (-1, 2) \rightarrow (x_1, y_1)$
$S\ (5, 6) \rightarrow (x_2, y_2)$

$$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

$$|RS| = \sqrt{\big(5 - (-1)\big)^2 + (6 - 2)^2}$$

$$|RS| = \sqrt{(6)^2 + (4)^2}$$

$$|RS| = \sqrt{36 + 16}$$

$$|RS| = \sqrt{52}$$

$$|RS| \approx 7.21$$

Maths Points

Junior and Leaving Cert