Absolute Value Functions and Graphs Guided Notes

1. What is meant by absolute value?

‘Absolute value’ means to remove any negative sign in front of a number, and to think of all numbers as positives (or zero).

2. How is absolute value represented?

We put “| |” marks either side called bars e.g. |−5| = 5 and |7| = 7.

3. What is the shape of the graph of absolute value function?

Absolute value function has a V-shaped graph.

4. What does |x| mean?

It will give the value of x as $|x| = \begin{cases} x, & x \geq 0 \\ -x, & x < 0 \end{cases}$.

5. How to sketch the graph of $y = f(x)$

**Step 1:** Sketch the graph for $y = f(x)$

**Step 2:** Reflect in the x-axis that part of the graph below the x-axis.

**PROBLEM 01**

Solve the equation $|x + 1| = 2x$.

Once $|\text{signs are removed} \pm \text{is added}$

\[
x + 1 = \pm(2x - 5)
\]
**PROBLEM 02**

Sketch the graph using following equation

\[ |x| + 2 \]

**PROBLEM 03**

If \( f(x) = |x - 2| \) find \( f(-5) \)

Now to find the value of \( f(-5) \), we need to put the value of \( x \) as -5.

\[
\begin{align*}
f(-5) &= |-5 - 2| \\
&= |-7| \\
&= 7
\end{align*}
\]