Aoife Watters  
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**Definition:**
The Internal rate of return (IRR) is a rate of return on an investment. The IRR of an investment is the interest rate that will give it a net present value of zero. You can think of IRR as the rate of growth a project is expected to generate. Generally speaking, the higher a project's internal rate of return, the more desirable it is to undertake the project. As such, the IRR can be used to rank several prospective projects a firm is considering. Assuming all other factors are equal among the various projects, the project with the highest IRR would probably be considered the best and undertaken first.

Ref: [http://moneyterms.co.uk/irr/](http://moneyterms.co.uk/irr/)  
Ref: [http://www.investopedia.com/terms/i/irr.asp](http://www.investopedia.com/terms/i/irr.asp)

**Example:**

<table>
<thead>
<tr>
<th>Year</th>
<th>Cash Flow</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>-100</td>
</tr>
<tr>
<td>1</td>
<td>+30</td>
</tr>
<tr>
<td>2</td>
<td>+35</td>
</tr>
<tr>
<td>3</td>
<td>+40</td>
</tr>
<tr>
<td>4</td>
<td>+45</td>
</tr>
</tbody>
</table>

To find the internal rate of return of the above investment we find the value(s) of \( r \) that satisfies the following equation:

\[
NPV = C_0 + \sum_{t=1}^{N} \frac{C_t}{(1 + r)^t} = 0
\]

**Solution:**

\[
NPV = -100 + \frac{30}{(1 + r)^1} + \frac{35}{(1 + r)^2} + \frac{40}{(1 + r)^3} + \frac{45}{(1 + r)^4} = 0 \Rightarrow r \approx 17.09
\]

IRR = \( r \),  
IRR = 17.09%  
Thus using \( r = \text{IRR} = 17.09\% \),

\[
NPV = -100 + \frac{30}{(1 + (17.09\%))^1} + \frac{35}{(1 + (17.09\%))^2} + \frac{40}{(1 + (17.09\%))^3} + \frac{45}{(1 + (17.09\%))^4} = 0.00
\]