Concept summary

Fleet, J., Goodchild, F. and Zajchowski, R., "Learning for Success," 2006

Why create a concept summary?

Creating a concept summary provides a structure for organizing fundamental, general ideas. The mental work involved in constructing the summary helps you clarify the basic ideas and shift the information from your working memory to your long-term memory. Once you've created the summary, it also becomes an excellent study tool.

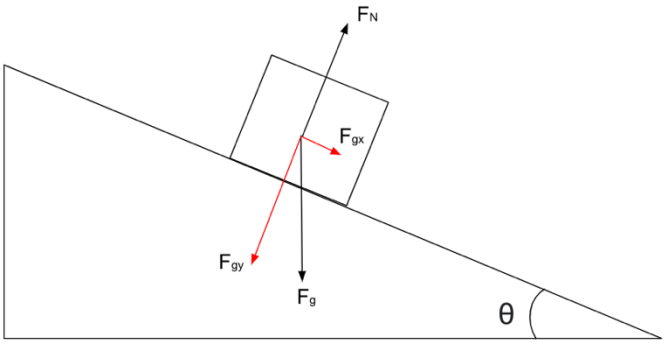
How to create a concept summary

- **Concept title**

  Identify key concepts by referring to the course outline, chapter headings in the text, and the lecture outline. You can name individual concepts, or group related concepts for better recall (e.g., depreciation, capital cost allowance, and half-year rule; acid, base and PH).

- **Use general categories to organize your material** and add details as appropriate. For example, general categories may include:
  - Key formulae: check the textbook summary page or ask your professor.
  - Definitions: define every term, unit and symbol.
  - Additional important information: sign conventions, reference values, meaning of zero values, situations in which concepts do not work, etc.
  - Simple examples or explanations: use your own words, diagrams, or analogies to deepen your thinking and check your understanding.
  - List of relevant knowns and unknowns: to help you know which concepts are associated with which problems, use crucial knowns to help distinguish among problems.

Concept summary example: PHYS 117

<table>
<tr><td>Concept title</td><td>Incline plane</td></tr>
<tr><td>Key formulae</td><td>Key equations:
$F = ma$ $F_g = mg$ $F_f = \mu F_N$</td></tr>
<tr><td>Definitions of each symbol,
and its units</td><td>
<table>
<tr><th>Variable</th><th>Definition</th><th>Units</th></tr>
<tr><td>F</td><td>Force</td><td>N</td></tr>
<tr><td>m</td><td>Mass</td><td>kg</td></tr>
<tr><td>a</td><td>Acceleration</td><td>m/s^2</td></tr>
<tr><td>F_g</td><td>Force of gravity</td><td>N</td></tr>
<tr><td>g</td><td>Gravity</td><td>9.81 m/s^2</td></tr>
<tr><td>F_f</td><td>Force of friction</td><td>N</td></tr>
<tr><td>μ</td><td>Coefficient of friction</td><td>n/a</td></tr>
<tr><td>F_N</td><td>Normal force</td><td>N</td></tr>
</table>
</td></tr>
<tr><td>Additional information</td><td>If the object is at rest, there is no acceleration in the x and y direction.</td></tr>
<tr><td>Simple examples, explanations, cases</td><td>
A 25kg box is on a frictionless incline plane at an angle of 25°. What is the acceleration of the box down the slope?


1. Find Fg
$$F_g = mg$$
$$F_g = (25kg)(9.81m/s^2)$$
$$F_g = 245.25N$$
2. Find Fgx
$$F_{gx} = F_g sin\theta$$
$$F_{gx} = (245.25N)(sin25)$$
$$F_g = 103.65N$$
3. Find Fnet in the x direction
$$F_{net} = ma$$
$$F_{gx} = ma$$
$$a = \frac{F_{gx}}{m}$$
$$a = \frac{103.65N}{25kg} = 4.2\ m/s^2$$
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</table>

Concept title	
Key formulae	
Definition of each term, symbol and **unit**	
Additional important information (e.g., sign conventions, special characteristics, when concept doesn't work, special cases, etc.)	
Simple examples, explanations, cases	
Relevant knowns and unknowns (and words/phrases from word problems that signal these)	