



**Level 3 Certificate  
MATHEMATICAL STUDIES**

**Paper 1**

**June 2022**

**1350/1/PM**

**Preliminary Material**

**To be opened and issued to candidates on  
Tuesday 1 March 2022 or as soon as  
possible after that date.**

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# **Income Tax and National Insurance 2021–2022**

## **INCOME TAX 2021–2022**

**Everyone in the UK has a personal allowance. This is their annual amount of tax-free income. The standard personal allowance for 2021–2022 is £12 570**

**The rates of income tax you pay depend on how much income you have ABOVE your personal allowance.**

# INCOME TAX RATES AND TAXABLE BANDS 2021–2022

<b>Income after allowances</b>	<b>Income tax rate</b>
<b>up to £37 700</b>	<b>20%</b>
<b>over £37 700 and up to £150 000</b>	<b>40%</b>

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## **TO CALCULATE YOUR INCOME TAX**

**Find your taxable income by subtracting your personal allowance from your annual gross income.**

**You pay income tax at 20% on the first £37 700 of your taxable income.**

**You pay income tax at 40% on your taxable income over £37 700 and up to £150 000**

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**There is also a higher rate of tax for taxable income above £150 000**

# NATIONAL INSURANCE (NI) 2021–2022

Percentage NI due	Minimum monthly income	Maximum monthly income	Minimum yearly income	Maximum yearly income
0%		up to £797		£9568
12%	£797.01	£4189	£9568.01	£50 270
2%	above £4189		above £50 270	

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## EXAMPLES

**A person who had a monthly income of £1800 paid 12% of the amount above £797**

**A person who had a yearly income of £62 000 paid 12% of the amount between £9568 and £50 270 plus 2% of the amount above £50 270**



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# SWEET FACTORY

**A sweet factory produces several different types of sweets. Sweets can be various shapes, including cuboids and spheres.**



## **MAKING THE SWEETS**

**Each day a sweet-making machine is switched on and starts to make the first batch of sweets. It takes between 1 and 3 hours before the first sweets are produced and packaged, depending on the type of sweet being made.**

**Once this initial period is completed the machine can continually produce and package sweets at a rate of 12 000 to 16 000 sweets per minute, again depending on the type of sweet being made.**

**The machine is stopped overnight for maintenance and cleaning.**

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## PACKAGING THE SWEETS

**Sweets are packaged into boxes or cylindrical tubes.**

**Some cuboid-shaped sweets fit into their packaging with little empty space between them.**

**However, sweets that are spheres do not fit together without gaps, so often there is more empty space in the package.**

**The number of sweets that can fit in each box or tube is worked out.**

**Once the number of sweets per package is worked out, the machine is set to fill the chosen package type consistently.**

## END OF PRELIMINARY MATERIAL

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