# How can I get my money back?

Students explore how tax payable is calculated using online calculators, a graph and using the tax rates tables. Students investigate pay as you go (PAYG) tax and net pay.

Students will need at least one digital device per pair to interact with online tax calculators during this lesson. Alternatively, students can be shown how to calculate tax using the current Australian Taxation Office – individual income tax rates tables.

## Visible learning

### Learning intentions

* To understand how tax is calculated in Australia.
* To be able to calculate net earnings.

### Success criteria

* I can describe the taxation system in Australia.
* I can calculate the tax payable using an online calculator.
* I can calculate the tax payable using the tax rates tables.
* I can evaluate an individual’s net earnings.

### Syllabus outcomes

A student:

* develops understanding and fluency in mathematics through exploring and connecting mathematical concepts, choosing and applying mathematical techniques to solve problems, and communicating their thinking and reasoning coherently and clearly **MAO-WM-01**
* solves financial problems involving simple interest, earning money and spending money **MA5-FIN-C-01**

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## Activity structure

### Launch

1. Start the lesson by asking students who have part time jobs:
2. Do you get tax taken out of your pay?
3. How much is taken out?
4. Does the amount change pay to pay?
5. Display the Desmos graph ‘Calculating income tax’ ([bit.ly/desmoscalculatingtaxgraph](https://bit.ly/desmoscalculatingtaxgraph)). Students have examined this graph in previous learning episodes, so this activity should be a quick review.
6. Slowly drag the orange point along the graph and ask students some prompting questions:
7. What do you notice?
8. What do you wonder?
9. What happens in section 1?
10. How do the other sections of the graph compare?
11. Conclude that all workers who earn an income above the tax-free threshold of $18 200 pay tax on the amount they earn.
12. Pose the question to students:

‘You earn $50 000 in a year, so you need to pay tax.

Would you rather:

* Pay your required annual tax as one payment, or
* Get paid less throughout the year and have your employer pay your required tax?
1. Students are to Think-Pair-Share ([bit.ly/thinkpairsharestrategy](https://bit.ly/thinkpairsharestrategy)) to discuss the above ‘Would you rather?’ scenario, considering the pros and cons of each option.

The aim of this question is for students to consider the pay as you go taxation system. This system is formally defined later in this learning episode.

### Explore

#### Calculating tax payable

1. Assign students into visibly random groups of 3 ([bit.ly/visiblegroups](https://bit.ly/visiblegroups)) and issue each student with Appendix A ‘Calculating tax payable’. Students are given a range of taxable incomes and they will use the Moneysmart online tax calculator ([bit.ly/Moneysmarttaxcalculator](https://bit.ly/Moneysmarttaxcalculator)) to find each individual’s tax payable.
2. Students are then asked what they notice and wonder about their answers before exploring how much an individual needs to earn to pay more than $50 000 in tax.

**Note:** that the online calculator shows students the breakdown of each of the tax brackets, as well as mentioning the Medicare levy. It will depend on the class and individual students as to how much detail is provided on the Medicare levy.

1. Remind students that in Australia, we have a progressive tax system by referring to the different gradients of the lines in each section of the Desmos graph ‘Calculating income tax’ ([bit.ly/desmoscalculatingtaxgraph](https://bit.ly/desmoscalculatingtaxgraph)). Explain to students that this means that as your taxable income increases, so does the amount of tax that you pay.
2. Display the current Australian Taxation Office (ATO) – individual income tax rates ([bit.ly/ATOincometaxrates](https://bit.ly/ATOincometaxrates)) alongside the Desmos graph ‘Calculating income tax’ using slide 3 from the ‘*How can I get my money back?*’ PowerPoint. Ask students what they notice and what they wonder ([bit.ly/noticewonderstrategy](https://bit.ly/noticewonderstrategy)) about the tax rates table and its connection with the graphical display. Some prompting discussion questions may include:
3. What connections can you see between the table and the graph?
4. What do you notice about the fixed amounts as the rows progress?
5. Why might the cents amount be different for each row?
6. Ask students to recall how taxable income is calculated from the previous lesson, that is:

*Taxable income = Total earnings − allowable tax deductions*

1. Show students the video ‘How tax works in Australia (5:49)’ ([bit.ly/TaxinAustralia](https://bit.ly/TaxinAustralia)). This video explains how the calculations within the ATO tax tables are calculated using a tiered cake analogy.

Please note that this video references the 2016–17 individual income tax rates.

1. Discuss further, how the tax table is used. It may be beneficial to discuss the fixed amount in each row and how this is calculated. Use slides 4 to 7 from the PowerPoint *How can I get my money back?* to outline this.

#### Pay as you go (PAYG) taxation system

1. Explain to students that in Australia, most employers take money out of workers’ pay and give it to the ATO. This is called pay as you go.
2. Allow students time to explore an online published table such as ATO weekly tax tables ([bit.ly/ATOweeklytaxtable [PDF 1054 KB]](https://bit.ly/ATOweeklytaxtable) ) or other options found under the ‘Regular payments’ headings on the ATO ([bit.ly/ATOtaxtables](https://bit.ly/ATOtaxtables)).

It will depend on the readiness of the class and individual students as to how much exploration they do with PAYG tax. One option is to have them find the weekly income of some of the scenarios from Appendix A ‘Calculating tax payable’ and have them compare the PAYG tax with the tax payable. Alternatively, if students in the class have part time jobs, their average weekly pay could be used as a stimulus to find their PAYG tax. If students aren’t earning enough in a week to be taxed, this could be used as an extension to consider how many more hours they would need to work to begin paying tax.

### Summarise

1. Use slides 9 to 26 from the PowerPoint *How can I get my money back?* for explicit teaching of tax calculations using the tax tables and net earnings.

The explicit teaching technique used in the PowerPoint is ‘Your turn’. The first slide is a worked example which should be displayed for the students before using the following steps.

1. Reveal the question to students and its solution.
2. Students read in silence.
3. Students individually explain to themselves what is happening in each step.
4. Students hold a thumbs up to the teacher when they have finished reading and have some sort of understanding.
5. Think-Pair-Share. Students explain the solution to their partner.
6. In pairs, students then answer the self-explanation questions.
7. Finally, randomly select students to share their answers with the whole class.
8. Students should re-do the questions from Appendix A by hand, using the tax tables, to consolidate their understanding.

### Apply

#### Comparing PAYG to tax payable

1. Ask students to Think-Pair-Share to discuss the following:
2. What might happen if an individual’s PAYG tax is higher than their tax payable?
3. What might happen if an individual’s PAYG tax is lower than their tax payable?
4. Why might individuals want a taxable income that is as low as possible?
5. How might individuals get more money back from the ATO?
6. What other payments might employers deduct from worker’s pay?
7. Show students the video ‘Tax returns’ on TikTok (1:25) ([bit.ly/tiktoktaxreturns](https://bit.ly/tiktoktaxreturns)). This video briefly explains how a tax refund would be obtained by comparing an individual’s tax payable with their PAYG tax.
8. Following the video, ask students to reconsider their previous answers to the Think-Pair-Share activity.

#### Tax rates over the years

1. Explain to students that the ATO – individual income tax rates are not always the same year to year.
2. In students’ previous groups of 3, allow time for them to explore the ATO – individual income tax rates of the last 5–10 years ([bit.ly/ATOincometaxprioryears](https://bit.ly/ATOincometaxprioryears)) to see what has changed.
3. Students are encouraged to investigate:
4. Why the rates changed?
5. The change from 2019–20 to 2020–21 and its impact. For example, compare the tax payable of an individual who has a taxable income of $40 000, in
2020–21 to 2019–20.
6. The impact these changes may have on individuals.

#### Australian’s contribution to tax

1. Show students the video ‘How much of the overall income tax does each bracket pay’ on TikTok (1:09) ([bit.ly/tiktoktaxpercentage](https://bit.ly/tiktoktaxpercentage)).
2. In their groups of 3, ask students to consider what they noticed and what they wondered ([bit.ly/noticewonderstrategy](https://bit.ly/noticewonderstrategy)) from viewing the video.
3. As a class, use the Pause-Pose-Pounce-Bounce question strategy [PDF 200KB] [bit.ly/pausepouncebounce](https://bit.ly/pausepouncebounce)) to ask students to share their notice or wonders with the class. Within this class, have students consider if Australia has a fair tax system. This question has been analysed in previous lessons.

## Assessment and Differentiation

### Suggested opportunities for differentiation

**Explore**

* Students may need to revise how taxable income is calculated.
* Medicare levy is shown on the online tax calculator. It will depend on the class and individual students as to how much detail is given.
* Students could begin comparing the PAYG tax to an individual’s tax payable using their taxable income.
* Students could be encouraged to manually perform the calculations done on the online tax calculator.

**Apply**

* There are 3 different activities listed in the apply section. All activities are suggestions and not all activities need to be completed by students.

### Suggested opportunities for assessment

* Monitor student discussions to address any misconceptions and check for student understanding.
* Collect Appendix A ‘Calculating tax payable’ to use as formative assessment.

## Appendix A

### Calculating tax payable

1. Use the Moneysmart online tax calculator ([bit.ly/Moneysmarttaxcalculator](https://bit.ly/Moneysmarttaxcalculator)) to find the tax payable on each of the taxable incomes.

|  |  |
| --- | --- |
| Taxable income | Tax payable |
| $9000 |  |
| $18 100 |  |
| $18 300 |  |
| $44 900 |  |
| $45 400 |  |
| $54 500 |  |
| $83 600 |  |
| $179 900 |  |
| $181 000 |  |
| $230 900 |  |

1. What do you notice and what do you wonder?
2. Using the Moneysmart online tax calculator ([bit.ly/Moneysmarttaxcalculator](https://bit.ly/Moneysmarttaxcalculator)), determine how much an individual would need to earn to be taxed more than $50 000.

## Sample solutions

### Appendix A – calculating tax payable

1. Tax payable solutions for Appendix A – calculating tax payable.

|  |  |
| --- | --- |
| Taxable income | Tax payable |
| $9000 | $0 |
| $18 100 | $0 |
| $18 300 | $19 |
| $44 900 | $5073 |
| $45 400 | $5222 |
| $54 500 | $8179 |
| $83 600 | $17 637 |
| $179 900 | $51 630 |
| $181 000 | $52 177 |
| $230 900 | $74 572 |

1. Students should notice that a higher taxable income relates to a higher tax payable. Students may wonder about the calculations that they can see using the online calculator, such as ‘19c for every dollar between $18 201 to $45 000’.
2. Approximately $175 500. A taxable income of $175 500 has an estimated tax of $50 002.

## References

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