# How much will I earn?

Students will use part time jobs and shift allocations to calculate wage and overtime payments. Students will use their knowledge of wages and overtime to maximise their earnings. The final part of the lesson is using earnings and overtime to solve up to 3-step equations.

## Visible learning

### Learning intentions

* To know when overtime payments are paid and at what rates.
* To be able to calculate earnings from wages.

### Success criteria

* I can calculate wages given an hourly rate and the number of hours worked.
* I can find the hours worked or hourly rate when given the total wage.
* I can calculate wages including overtime.
* I can solve equations up to 3-step equations.

### Syllabus outcomes

A student:

* Solves financial problems involving simple interest, earning money and spending money MA5-FIN-C-01
* solves linear equations of up to 3 steps, limited to one algebraic fraction
MA5-EQU-C-01
* 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**

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## Activity structure

### Launch

1. Pose the following scenario to students:

You need a new mobile phone, so your parents are making you get a part time job to pay for it. Which part time job would allow you to earn the most?

1. Allow students to discuss this question as a Think-Pair-Share ([bit.ly/thinkpairsharestrategy](https://bit.ly/thinkpairsharestrategy)), before having a class discussion.

This question is aimed to start a class discussion about individual experiences if students already have part time jobs. If students are not working, allow some time for researching fast food restaurants, supermarkets, or other businesses in their local area. Students could also consider babysitting, mowing lawns and washing cars. As part of the discussion students should consider if it is just the hourly rate that determines how much they are paid.

### Explore

1. Ask students if they know of anyone who has been treated unfairly at work? How do you know you have been treated unfairly in the workplace?
2. Show students the video ‘Episode 2, Four Warning Signs (3:03)’ ([bit.ly/4jobwarningsigns](https://bit.ly/4jobwarningsigns))
3. Pose the next question: ‘How do I know if I am not getting paid enough?’ for students to discuss as a Think-Pair-Share ([bit.ly/thinkpairsharestrategy](https://bit.ly/thinkpairsharestrategy)).
4. Slides 2–4 of the PowerPoint How much can I earn? contain some information and definitions students may need to complete the next activity. Go through these with the students.
5. Appendix A ‘Award cards’ contains four sets of information cards from various awards. This activity aims to provide students with some understanding of workplace regulations as well as answer the overarching question of “Where would you prefer to work and why?”
6. Students are to form groups of 4, where each student has a different award information card from Appendix A. Allow students five minutes quiet reading time before discussion.
7. Distribute an A3 copy of Appendix C ‘Compare four different awards’ to each group. Put the A3 sheets on the wall or window and allow groups time to complete the table.
8. After students have completed or are working towards completing the table, allow time for a gallery walk. ([bit.ly/DLSgallerywalk](https://bit.ly/DLSgallerywalk))
9. Ask students to regroup in their group of 4 from step 6 above and decide which award they think is the best and why? Bring groups back to report to the whole class.

### Summarise

1. Use slides 5–12 from the How much can I earn? PowerPoint for explicit teaching of calculating wages.

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. Use slides 13–17 from the How much can I earn? PowerPoint for explicit teaching of calculating overtime.

### Apply

1. Have students complete Appendix B ‘Weekly staff roster’ to answer the overarching question ‘If you could choose any employee’s shifts, whose would you choose and why?’
2. Use slides 18–26 from the How much can I earn? PowerPoint for explicit teaching of substituting into a formula and solving equations up to 3 steps.

The aim of this section is to allow students the opportunity to solve equations up to three steps using overtime as the context. The first example involves substitution only, the second one-step equations, the third two-step equations and finally the last example is a three-step equation. Students can enter or exit at any stage.

1. Distribute Appendix D ‘An easier way to calculate’ to each student and allow students time to practice solving calculating total pay when employees receive overtime at time and a half and double time and working backwards to find hourly rate or number of hours when provided with the other variables.

## Assessment and differentiation

### Suggested opportunities for differentiation

**Explore**

* A table helping students to interpret the awards has been provided. Some students may not require this scaffold.
* Calculations have been completed on the award sheets in Appendix A ‘Award cards’. These could be deleted and students asked to complete the calculation before comparing.
* Students could research an award of an occupation of interest.

**Summarise**

* **Add or remove scaffolding as required.**
* **Students could create a table linking the language of time and a half, double time etcetera to the fraction, percentage and decimal equivalent.**

**Apply**

* **A scaffold for each employee has been provided. Some students may not require the scaffold.**
* **Provide students with the number of hours worked in each category to eliminate this barrier to calculating pay.**
* **Students can enter and exit the questions in Appendix D ‘An easier way to calculate’ at any level. Students could also work backwards by developing their own questions.**
* **Develop the formula presented in Appendix D ‘An easier way to calculate’.**

### Suggested opportunities for assessment

**Explore**

* Monitor students’ responses during the group work activity for working mathematically skills such as justification and reasoning.
* **The teacher could ask the students to explain and justify their thinking regarding which award they think is best.**

**Apply**

* **Appendix B could be collected and used as summative assessment for the unit of learning.**
* **An exit ticket could be created for another employee linked to Appendix B ‘Weekly staff roster’ or using a current employee with a different set of conditions or hourly rate.**

## Appendix A

### Award cards

#### Award 1 – General Retail Industry Award

|  |  |
| --- | --- |
| Award 1 | General Retail Industry Award |
| Date | 1 January 2010 |
| Who is covered | All retail shops including clothing, food, household goods, pharmacies, beauty, hair, butcher, warehouse workers, distribution workers |
| Normal working hours | 38 hours per week (full time employee)Monday to Friday – 7am – 9 pmSaturday – 7am – 6pmSunday – 9am – 6pm  |
| Break allowance | Less than 4 hours – no break4 to 5 hours = 10 minutes paid5 to 7 hours = 10 minutes paid + 1 unpaid meal break7 to 10 hours = 2 × 10 minute paid + 1 unpaid break10 + hours = 2 × 10 minute paid + 2 unpaid breaksUnpaid meal breaks are at least 30 minutes but no more than 1 hour.  |

##### Adult (minimum rates)

|  |  |  |
| --- | --- | --- |
| Employee classification | Minimum weekly rate ($) | Minimum hourly rate ($) |
| Retail Employee Level 1 | 888.50 | 23.38 |
| Retail Employee Level 2 | 908.80 | 23.92 |
| Retail Employee Level 3 | 922.90 | 24.29 |
| Retail Employee Level 4 | 940.90 | 24.76 |

This is not the complete list. There are 8 levels in total.

##### Junior rates (Level 1, 2 and 3 only)

Table based on Level 1

|  |  |  |
| --- | --- | --- |
| Age | % of minimum wage | Hourly rate |
| 15 years or under  | 45% | $10.52 |
| 16 years of age | 50% | $11.69 |
| 17 years of age  | 60% | $14.03 |
| 18 years of age | 70% | $16.37 |
| 19 years of age | 80% | $18.70 |
| 20 years of age (less than 6 months employment) | 90% | $21.04 |
| 20 years of age (more than 6 months employment) | 100% | $23.38 |

##### Overtime provisions and penalty rates

|  |  |  |
| --- | --- | --- |
| Day | Time | Penalty rate |
| Overtime (>38hours) |  | 125% |
| Saturday | Any time | 125% |
| Sunday  | Between 7am and 7pm | 150% |
| Sunday | Before 7am and after 7pm | 175% |
| Public Holidays |  | 250% |

##### Allowances

* Cold work: refilling refrigeration 0.32 per hour
* Cold work – below zero 0.50 per hour
* Working at Broken Hill $1.06 per hour

#### Award 2 – Contract Call Centres Award

|  |  |
| --- | --- |
| Award 2 | Contract Call Centres Award |
| Date | 1 January 2020 |
| Who is covered | All call centres and businesses who supply labour to the call centre industry. |
| Normal working hours | 38 hours per week (full time employee)Monday to Friday – 7am to 7 pmSaturday – all day |
| Break allowance | 5+ hours = one unpaid break. Unpaid meal breaks are at least 30 minutes but no more than 1 hour.  |

|  |  |
| --- | --- |
| Roster information: a week’s notice is given to all employees of shifts.  | **Payday information: a**n employer may pay wages 4 weekly or monthly subject to agreement by majority of employees. |

##### Adult (minimum rates)

|  |  |  |
| --- | --- | --- |
| Employee classification | Minimum weekly rate ($) | Minimum hourly rate ($) |
| Customer Contact Trainee | 865.20 | 22.77 |
| Customer Contact Officer Level 1 | 893.60 | 23.52 |
| Customer Contact Officer Level 2 | 940.90 | 24.76 |
| Principal Customer Contact Specialist | 1000.80 | 26.34 |

This is not the complete list. There are 12 pay levels in total.

##### Junior rates (Level 1, 2 and 3 only)

Table based on Customer Contact Officer Level 1

|  |  |  |
| --- | --- | --- |
| Age | % of minimum wage | Hourly rate |
| 15 years or under  | 50% | $11.39 |
| 16 years of age | 60% | $13.66 |
| 17 years of age  | 70% | $15.94 |
| 18 years and over | 100% | $22.77 |

##### Overtime provisions and penalty rates

|  |  |  |  |
| --- | --- | --- | --- |
| Day | Time | Full time or part time employees | Casual employees |
| Monday to Friday | Before 7amAfter 7pm | 125% | 150% |
| Saturday | Any time | 125% | 150% |
| Sunday | Before 7amAfter 7pm | 175% | 200% |
|  | Between 7am and 7pm | 150% | 175% |
| Afternoon shift | Finishing between 7pm and midnight | 115% | 115% |
| Night shift | Finishing after midnight and before 9am | 130% | 130% |
| Public holidays | Day work | 250% | 250% |

##### **Allowances**

* Motor Vehicle allowance 0.91/km
* Meal allowance – overtime $15.20 per occasion
* Meal allowance – travelling expenses $15.20 per meal.

#### Award 3 – Fast Food Industry

|  |  |
| --- | --- |
| Award 3 | Fast Food Industry |
| Date | 1 January 2010 |
| Who is covered | Employers and employees in the fast-food industry |
| Normal working hours | 38 hours per week (full time employee) |
| Break allowance | Less than 4 hours – no break4 to 5 hours – 10-minute paid rest break5+ hours = 1 unpaid break. Unpaid meal breaks are at least 30 minutes but no more than 1 hour.  |

##### Adult (minimum rates)

|  |  |  |
| --- | --- | --- |
| Employee classification | Minimum weekly rate ($) | Minimum hourly rate ($) |
| Fast food employee Level 1 | 939.60 | 24.73 |
| Fast food employee Level 2 | 995.00 | 26.18 |
| Fast food employee Level 3(in charge of one or no persons) | 1010.30 | 26.59 |
| Fast food employee level 3 (in charge of 2 or more people) | 1022.70 | 26.91 |

##### Junior rates

Table based on Customer Contact Officer Level 1

|  |  |  |
| --- | --- | --- |
| Age | % of minimum wage | Hourly rate |
| 15 years or under  | 40% | $9.89 |
| 16 years of age | 50% | $12.37 |
| 17 years of age  | 60% | $14.84 |
| 18 years of age | 70% | $17.31 |
| 19 years of age | 80% | $19.78 |
| 20 years of age | 90% | $22.26 |
| 21 years of age | 100% | $24.73 |

##### Overtime provisions and penalty rates

Overtime is paid if employees work more than 38 hours in one week or 11 hours in a day.

|  |  |  |  |
| --- | --- | --- | --- |
| Day | Time | Full time or part time employees | Casual employees |
| Monday to Saturday  | First 2 hours | 150% | 175% |
| Monday to Saturday | After 2 hours  | 200% | 225% |
| Public holidays | All hours | 250% | 275% |
| Monday to Friday | 10pm to midnight | 110% | 135% |
| Monday to Friday | Midnight to 6 am | 115% | 140% |
| Saturday | All hours | 125% | 150% |
| Sunday | All hours | 125% | 150% |

##### **Allowances**

* Broken Hill allowance $42.58 per week
* Cold work allowance (below 0oC) – $0.86 per hour
* Meal allowance – overtime $15.23 per occasion
* Laundry – $6.25 per week for full time and $1.25 per shift

#### Award 4 – Hospitality industry

|  |  |
| --- | --- |
| Award 4 | Hospitality Industry |
| Date | 1 January 2010 |
| Who is covered | Employers and employees in the hospitality industry |
| Normal working hours | 38 hours per week (full time employee) |
| Break allowance | 5 to 6 hours – may choose an unpaid 30-minute break6 to 8 hours – an unpaid meal break 8 to 10 hours – an unpaid meal break and 20 minutes paid More than 10 hours – an unpaid meal break and 2 × 20 minutes paid.Unpaid meal breaks are at least 30 minutes but no more than 1 hour.  |

##### Adult (minimum rates)

|  |  |  |
| --- | --- | --- |
| Employee classification | Minimum weekly rate ($) | Minimum hourly rate ($) |
| Introductory level | 859.30 | 22.61 |
| Level 1 | 882.80 | 23.23 |
| Level 2 | 914.90 | 24.08 |
| Level 3 | 945.00 | 24.83 |
| Level 4 | 995.00 | 26.18 |
| Level 5 | 1057.40 | 27.83 |
| Level 6 | 1085.60 | 28.57 |

##### Junior rates

Table based on Customer Contact Officer Level 1

|  |  |  |
| --- | --- | --- |
| Age | % of minimum wage | Hourly rate |
| 16 years of age and under | 50% | $11.62 |
| 17 years of age  | 60% | $13.94 |
| 18 years of age | 70% | $16.26 |
| 19 years of age | 85% | $19.75 |
| 20 years of age | 100% | $23.23 |

##### Overtime provisions and penalty rates

Overtime is paid if employees work more than 38 hours in one week or 11 hours in a day.

|  |  |  |  |
| --- | --- | --- | --- |
| Day | Time | Full time or part time employees | Casual employees |
| Rostered day off |  | 200% |  |
| Monday to Friday | 7am to 7pm | 100% | 125% |
| Monday to Friday | 7pm to midnight | 100% + $2.62 per hour | 125% +$2.62 per hour |
| Monday to Friday | Midnight to 7am | 100% + $3.93 per hour | 125% + $3.93 per hour |
| Saturday |  | 125% | 150% |
| Sunday |  | 150% | 175% |
| Public Holidays |  | 225% | 250% |

##### **Allowances**

* Forklift driver - $0.39 per hour
* Tool allowance - $1.98 per hour
* Meal allowance – overtime $15.30 per occasion
* Laundry - $6.00 per week for full time and $2.05 per shift

## **Appendix B**

### Weekly staff roster

Below is the roster for a busy café. All employees earn $15.80 an hour. Penalty rates are paid at time and a half on Saturdays and double time for any Sunday work or work after 8pm.

**If you could choose any employee’s shifts, who’s would you choose and why?**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Staff | Sun | Mon | Tue | Wed | Thur | Fri | Sat | Hours worked |
| Carl |  | 7:00am3:00pm | 7:00am3:00pm | 7:00am3:00pm | 7:00am3:00pm | 7:00am3:00pm |  | 40 |
| Betty | 7:00am3:00pm | 7:00am3:00pm |  |  | 7:00am3:00pm | 7:00am3:00pm | 7:00am3:00pm | 40 |
| Juan |  |  | 7:00am3:00pm | 7:00am3:00pm | 3:00pm10:00pm | 3:00pm10:00pm | 7:00am3:00pm | 38 |
| Jose | 7:00am3:00pm | 3:00pm10:00pm | 3:00pm10:00pm | 2:00pm10:00pm | 2:00pm10:00pm |  |  | 38 |
| Ted |  | 3:00pm10:00pm | 3:00pm10:00pm | 3:00pm10:00pm |  | 3:00pm10:00pm | 3:00pm10:00pm | 35 |
| Cindy | 3:00pm10:00pm | 4:00pm8:30pm |  | 4:00pm8:30pm |  | 4:00pm8:30pm | 4:00pm8:30pm | 25 |
| Lenny | 3:00pm10:00pm |  | 4:00pm8:30pm |  | 4:00pm8:30pm | 4:00pm8:30pm | 4:00pm8:30pm | 25 |

Completing the tables below to calculate each person’s earnings.

|  |  |  |
| --- | --- | --- |
| Carl | Hours | Earnings |
| Normal time |  |  |
| Time and a half |  |  |
| Double time |  |  |
| Total |  |  |

|  |  |  |
| --- | --- | --- |
| Betty | Hours | Earnings |
| Normal time |  |  |
| Time and a half |  |  |
| Double time |  |  |
| Total |  |  |

|  |  |  |
| --- | --- | --- |
| Juan | Hours | Earnings |
| Normal time |  |  |
| Time and a half |  |  |
| Double time |  |  |
| Total |  |  |

|  |  |  |
| --- | --- | --- |
| Jose | Hours | Earnings |
| Normal time |  |  |
| Time and a half |  |  |
| Double time |  |  |
| Total |  |  |

|  |  |  |
| --- | --- | --- |
| Ted | Hours | Earnings |
| Normal time |  |  |
| Time and a half |  |  |
| Double time |  |  |
| Total |  |  |

|  |  |  |
| --- | --- | --- |
| Cindy | Hours | Earnings |
| Normal time |  |  |
| Time and a half |  |  |
| Double time |  |  |
| Total |  |  |

|  |  |  |
| --- | --- | --- |
| Lenny | Hours | Earnings |
| Normal time |  |  |
| Time and a half |  |  |
| Double time |  |  |
| Total |  |  |

## ****Appendix C****

### ****Which award is better?****

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Retail Award | Fast food Award | Call Centre Award | Hospitality Award |
| 3 jobs/companies covered by the award |  |  |  |  |
| What breaks could you get? |  |  |  |  |
| Best award for Sunday work |  |  |  |  |
| Extra responsibilities that may come with extra pay |  |  |  |  |
| Benefits received |  |  |  |  |
| Penalty rates received |  |  |  |  |

## ****Appendix D****

### An easier way to calculate.

**Use the formula below to complete the table.**

$$P=h(a+1.5b+2c)$$

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Total weekly pay$$P$$ | Hourly rate$$h$$ | Normal time hours$$a$$ | Time and a half hours$$b$$ | Double time hours$$c$$ |
| a. |  | $14.65 | 24 | 8 | 5 |
| b |  | $23.40 | 15 | 3 | 7 |
| c. |  | $23.60 | 18 | 9 | 4 |
| d. | $829.90 |  | 25 | 4 | 6 |
| e. | $1108.80 |  | 31 | 12 | 7 |
| f. | $1376.48 | $24.58 |  | 8 | 5 |
| g. | $747.60 | $16.80 |  | 7 | 2 |
| h. | $205.00 | $10.25 | 8 | 4 |  |
| i. | $715.86 | $14.76 | 27 | 9 |  |
| j. | $959.40 | $15.99 | 36 |  | 6 |

## Sample solutions

### Appendix B – weekly staff roster

|  |  |  |
| --- | --- | --- |
| Carl | Hours | Earnings |
| Normal time | 40 | $$=40 ×15.8$$$$=\$632.00 $$ |
| Time and a half | 0 |  |
| Double time | 0 |  |
| Total | 40 | $632.00 |

|  |  |  |
| --- | --- | --- |
| Betty | Hours | Earnings |
| Normal time | 24 | $$=24 ×15.80$$$$=\$379.20$$ |
| Time and a half | 8 | $$=8 ×1\frac{1}{2} ×15.80$$$$=\$189.60$$ |
| Double time | 8 | $$=8 ×2×15.80$$$$=\$252.80$$ |
| Total | 40 | $$=379.20+189.60+252.80$$$=$$821.60 |

|  |  |  |
| --- | --- | --- |
| Jaun | Hours | Earnings |
| Normal time | 26 | $$=26 ×15.80$$$=\$$410.80 |
| Time and a half | 8 | $$=8 ×1\frac{1}{2} ×15.80$$$$=\$189.60$$ |
| Double time | 4 | $$=4 ×2×15.80$$$=\$$126.40 |
| Total | 38 | $$=410.80+189.60+126.40$$$=$$726.80 |

|  |  |  |
| --- | --- | --- |
| Jose | Hours | Earnings |
| Normal time | 22 | $$=22 ×15.80$$$=\$$347.60 |
| Time and a half | 0 |  |
| Double time | 16 | $$=16 ×2×15.80$$$=\$$505.60 |
| Total | 40 | $$=347.60+505.60$$$=$$853.20 |

|  |  |  |
| --- | --- | --- |
| Ted | Hours | Earnings |
| Normal time | 20 | $$=20×15.80$$$=\$$316 |
| Time and a half | 7 | $$=7×1\frac{1}{2} ×15.80$$$$=\$165.90$$ |
| Double time | 8 | $$=8 ×2×15.80$$$=\$$252.80 |
| Total | 35 | $$=316+165.90+252.80$$$=$$734.70 |

|  |  |  |
| --- | --- | --- |
| Cindy and Lenny | Hours | Earnings |
| Normal time | 12 | $$=12 ×15.80$$$$=\$189.60$$ |
| Time and a half | $$4\frac{1}{2}$$ | $$=4\frac{1}{2} ×1\frac{1}{2} ×15.80$$$=\$$106.65 |
| Double time | $$8\frac{1}{2}$$ | $$=8\frac{1}{2} ×2×15.80$$$=\$$268.60 |
| Total | 25 | $$=189.60+106.65+268.60$$$=$4564.85 |

### ****Appendix D – an easier way to calculate****

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Total weekly pay$$P$$ | Hourly rate$$h$$ | Normal time hours$$a$$ | Time and a half hours$$b$$ | Double time hours$$c$$ |
| a. | $673.90 | $14.65 | 24 | 8 | 5 |
| b | $783.90 | $23.40 | 15 | 3 | 7 |
| c. | $932.20 | $23.60 | 18 | 9 | 4 |
| d. | $829.90 | $19.30 | 25 | 4 | 6 |
| e. | $1108.80 | $17.60 | 31 | 12 | 7 |
| f. | $1376.48 | $24.58 | 28 | 8 | 5 |
| g. | $747.60 | $16.80 | 30 | 7 | 2 |
| h. | $205.00 | $10.25 | 8 | 4 | 3 |
| i. | $715.86 | $14.76 | 27 | 9 | 4 |
| j. | $959.40 | $15.99 | 36 | 8 | 6 |

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