 Substitution

Part 1: Match a worded description to an equation

This activity could be implemented in a number of ways:

* A student may work through the task independently.
* Students could work in pairs, the worded descriptions could be given to one student and the equations to a second and work together to match solutions.

| Worded description | Equation |
| --- | --- |
| Emma paid for 4 chocolate bars with a $10 note and received $3 in change.($x$ is the cost of the chocolate bar) | $$\frac{3x}{4}=12$$ |
| John shared 3 chocolate bars equally among 4 friends (not including himself). Each friend received 12 squares of chocolate.($x$ is the number of squares of chocolate in each bar) | $$3x+3=45$$ |
| Ian currently has $12 and receives $3 pocket money per week. He wants to save $45 to buy a new game on his tablet.($x$ is the number of weeks required to save the money) | $$28-2x=16$$ |
| The sum of three consecutive whole numbers has a total of 45.($x$ is the value of the first number) | $$6x=42$$ |
| The length of a rectangular playing field is twice its width. The perimeter of the playing field is 42 metres.($x$ is the width of the playing field) | $$4x+3=10$$ |
| The outdoor temperature is currently $28°$ and it dropping by $2°$ per hour. After $x$ hours the temperature will be $16°$. | $$12+3x=45$$ |

Part 2: Match a worded description to an equation to a solution

This activity could be implemented in a number of ways:

* A student may work through the task independently.
* Three students could work together, with each student given one column of the questions.

| Worded description | Equation (and values to substitute) | Answer |
| --- | --- | --- |
| The cost of a taxi ride, $y$, is equal to an initial cost of $1.50 and $0.50 for every kilometre of the journey ($x$ is the length of the journey in kilometres). Calculate the length of a taxi ride costing $12. | $T=3x+y$, $T=102$ and $y=15$ | $$x=21 km$$ |
| Tannika is an estate agent. She receives a weekly income, $y$, of $210 plus 0.1% of any sales made during the week, where $x$ is the total sales. Last week, Tannika’s income was $470. Calculate the total sales during this week. | $y=12x+20$, $y=164$ | $$x=29$$ |
| The scoring system in AFL defines a goal equal to 3 points and a behind equal to 1 point. Calculate the number of goals, if a team scored 102 points with 15 behinds.($T$ is the total number of points, $x$ is the number of goals, $y$ is the number of behinds) | $y=210+0.001x$, $y=470$ | $$x=2 hours$$ |
| An international call costs an initial connection fee of 20c and 12c per minute for the duration of the call. Calculate the duration of a call costing $1.64.($y$ is the cost of the call, $x$ is the duration of the call in minutes) | $y=85x+50$, $y=220$ | $$x=12 minutes$$ |
| A plumber charges a call out fee of $50 and $85/hr for the duration of the job. A recent job cost $220. Calculate the duration of the job.($y$ is the total cost of the job, $x$ is the duration of the job in hours) | $y=1.5+0.5x$, $y=12$ | $$x=\$260 000$$ |