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| 1. Solve using any method:* 1. $x^{2}+ 5x+4=0$
	2. $3x^{2}+ 2x-8=0$
	3. $2x^{2}- 3x= x^{2}+ 7x$
	4. $2\left(x+3\right)\left( x-4\right)= 6x+6$
 | 2. Simplify.1. $\sqrt{12} x 2\sqrt{15}$
2. 2$\sqrt{6}( 2\sqrt{3}-5\sqrt{10)}$
3. $\left(3- \sqrt{2 }\right)(3\sqrt{5}+ 2) $
4. $\frac{2}{3\sqrt{5}}$
5. $\frac{2+ \sqrt{5}}{3-2\sqrt{3}}$
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| 3. Given the following equations, using completing the square, find:1. State whether it is a max or min
2. The value of the max or min
3. The x-value of the max or min
4. The axis of symmetry
5. If the parabola opens up or down
	* 1. $y=2x^{2}- 6x+5$
		2. $y=-3x^{2}+ 4x+20$
		3. $y=4x^{2}- 10x-1$
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| 4. Determine the equation of the quadratic function in the form *y = ax2 + bx + c* that passes through the point (2, 7) and has zeros of 3 and – 4. |
| 5. Solve the system of equations using an algebraic method.$$y=3x^{2}- 2x-1$$$y= -x-6$  |
| 6. For what values of *k*  will the function $y=kx^{2}- 4x+k$ have no zeros? |
| 7. A rectangle has an area of 330m2. One side is 7 metres longer than the other side. What are the dimensions of the rectangle? |
| 8. A daredevil jumps off the CN Tower and falls freely for several seconds before releasing his parachute. His height, *y*, in metres, *t* seconds after jumping can be modelled by $y\_{1}= -4.9t^{2}+ t+360$ $y\_{2}= -4t+142$How long after jumping did the daredevil release his parachute? |
| 9. The population of a region can be modelled by the function$ y=0.4t^{2}+ 10t+50$, where y is the population in thousands and t is the time in years since the year 1995.* 1. What was the population in 1995?
	2. What will be the population in 2010?
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| 10. The profit function for a new product is given by $y= -4x^{2}+ 28x-40$, where x is the number sold in thousands. How many items must be sold for the company to break even? |
| 11. It costs a bus company $225 to run a minibus on a ski trip, plus $30 per passenger. The bus has seating for 22 passengers, and the company charges $60 per fare if the bus is full. For each empty seat, the company has to increase the ticket price by $5. How many empty seats should the bus run with to maximize profit from this trip? |
| 12. Andrew mows a strip of uniform width around his 25m by 15m rectangular lawn that is 60% of the original area. What is the width of the strip? |
| 13. If $y= x^{2}- 6x+14 $and $ y= -x^{2}- 20x-k, $determine the value of k so that there is exactly one point of intersection between the two parabolas. |