

1. Simplify each of the following expressions.
 - (a) $\sqrt{125} - 3\sqrt{80} + \sqrt{45} =$
 - (b) $(\sqrt{7} - 2)^2 =$
 - (c) $(\sqrt{3} - 1)^3 =$
2. Rationalize the denominator in each of the following expressions.
 - (a) $\frac{3}{\sqrt{5}} =$
 - (b) $\frac{1}{\sqrt{10} - 3} =$
 - (c) $\frac{2}{\sqrt{7} + 1} =$
3. Find the exact value of $x^2 - 4x + 6$ if $x = 2 - \sqrt{3}$.
4. Factor $13x + 2x^2 - 24$ by completing the square.
5. Solve each of the following equations. Make sure to check your solution(s).
 - (a) $2x^3 = 20x^2 + 1750x$
 - (b) $\frac{3x + 17}{2} = x - 1 + \frac{x + 19}{2}$
 - (c) $|3 - 2x| + 2 = 5$
 - (d) $\frac{2}{3}(x - 7) = \frac{4}{5}(x + 1)$
 - (e) $7x^2 + (x + 3)(2x - 1) = (3x + 1)^2$
6. Graph the straight lines $3x + 5y = -1$ and $y = -x - 1$ in the same coordinate system. Use your graph to find the coordinates of the point where the lines intersect.
7. Graph the parabola $y = -8x + x^2 + 15$. Clearly label the coordinates of five points on the parabola, including vertex and intercepts.
8. There is an animal farm where chickens and cows live. All together, there are 53 heads and 174 legs. How many chickens, how many cows?
9. One side of a rectangle is 4 in shorter than 3 times the other side. Find the sides of the rectangle if its perimeter is 48 in.
10. One side of a rectangle is 4 in shorter than 3 times the other side. Find the sides of the rectangle if its area is 319 in².
11. The population of a town has decreased from 80000 to 68000. What percent of a decrease does this represent?

12. We have invested \$15000 into two accounts. One account earns 6% interest every year, the other account earns 7% every year. How much did we invest into each account if the combined interest was \$1008 after the first year?
13. The hypotenuse of a right triangle is 68 cm. The difference between the other two sides is 28. cm. Find the sides of the triangle.
14. Find the distance between $(3, 8)$ and $(8, -4)$.