# F Summer Trials Practice 2

1. Write down the value of the following:
   (a) $7^{-2}$. $\boxed{\frac{1}{49}}$
   (b) $9^0$. $\boxed{1}$
   (c) $\left(\frac{3}{2}\right)^{-1}$. $\boxed{\frac{2}{3}}$
   (d) $\left(\frac{1}{4}\right)^{-3}$. $\boxed{64}$
2. Solve the simultaneous equations $\begin{matrix} 3x + 5y = 1 \\ 4x - 2y = 3 \end{matrix}$. $\boxed{(x, y) = (\frac{17}{26}, -\frac{5}{26})}$
3. Expand and simplify $(2x - y)(x - 3y) - (4x - y)^2$. $\boxed{2y^2 + xy - 14x^2}$
4. Solve $\dfrac{5}{7 - 2x} = 3$. $\boxed{x = \frac{8}{3}}$
5. Simplify $\dfrac{3x^2y(3x^2y)^4}{27x^2y^{10}}$. $\boxed{\frac{9x^8}{y^5}}$
6. A triangle $ABC$ is such that $AB = 7$, $AC = 10$ and $BAC = 40°$. Find the area of the triangle to three significant figures. $\boxed{22.5}$
7. Factorise fully $16x^4 - 100x^2$. $\boxed{4x^2(2x + 5)(2x - 5)}$
8. Make $x$ the subject of $y = \dfrac{2x}{x - 7}$. $\boxed{x = \frac{7y}{y-2}}$
9. The price of a t-shirt is reduced in a sale by 19%. Its sale price is £11.34. Find the original price of the t-shirt. $\boxed{£14.00}$
10. Sasha travels at a constant speed of 20 m/s for 1 minute. She then travels at a speed of 40 m/s for 2 minutes. Calculate her overall average speed. $\boxed{33\frac{1}{3} \text{ m/s}}$
11. Find the distance between the points $(-1, 3)$ and $(4, -3)$. $\boxed{\sqrt{61}}$
12. A map has scale 1 : 50000. Two points are 4.2 cm apart on the map. How far apart are they in real life? Give your answer in km. $\boxed{2.1 \text{ km}}$
13. £30000 is invested in a bank account that pays 5.2% compound interest. How much is in the account after 7 years? $\boxed{£42779.08}$
14. A regular hexagon has perimeter 120 cm. Find its area to 1 decimal place. $\boxed{1039.2 \text{ cm}^2}$
15. A coin is bias such that the probability of getting one head and one tail (in any order) from two flicks is $\frac{8}{25}$. Find the probability of flicking two heads. $\boxed{\frac{1}{25} \text{ or } \frac{16}{25}}$
16. The price of an antique goes up by 20% in one year. It then falls by 20% the next year. What is the overall percentage change over the two years? $\boxed{4\% \text{ reduction}}$
17. Solve the simultaneous equations $\begin{matrix} ax + y + 1 = 0 \\ x - y = 2 \end{matrix}$. $\boxed{(x, y) = \left(\frac{1}{a+1}, -\frac{2a+1}{a+1}\right)}$