

National 5 Homework

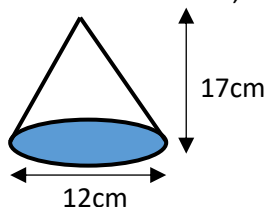
Mixed Homework

Exercise 6

1. Express $x^2 + 6x - 2$ in the form $(x + a)^2 + b$ and clearly state the values of a and b .
2. A new car is known to depreciate at a rate of 11% per year. If the car costs £24,500 new, work out its value after 3 years.
3. Find the equation of the line passing through the points A(-2,3) and B(1,7).
4. A function has equation $f(x) = x^3 - 3$. If $f(a) = 24$, find the value of a .
5. If $\sin 45^\circ = \frac{1}{\sqrt{2}}$, express $\sin 45^\circ$ with a rational denominator.
6. Expand and simplify $(x - 3)^3$.
7. Find the roots of the quadratic equation $f(x) = x^2 + 3x - 40 = 0$.
8. A function has equation $f(x) = x^{2/3}$. Evaluate $f(64)$.
9. Simplify $\sqrt{80} + 2\sqrt{5} - \sqrt{45}$.
10. Find the equation of the line passing through (3,-1) with gradient $\frac{2}{3}$.
11. Solve $13 - 5x > 18 - (2x - 3)$.
12. Evaluate $\frac{2}{3} \div (2\frac{1}{4} - 1\frac{5}{6})$
13. Alison buys a watch in a 30% OFF sale. If she paid £154, how much was the watch full price?
14. Change the subject of the formula below to R .

$$P = \frac{5R^2 - 8}{3}.$$

15. Fully factorise $5a^2 - 80$.
16. Express as a single fraction in its simplest form $\frac{a}{a+1} - \frac{5}{a-1}$.
17. Write down the turning point, equation of the axis of symmetry and the y -intercept of the function with equation $f(x) = (x - 2)^2 - 7$.
18. Calculate the volume of the cone shown here, rounding your answer to 3 significant figures.



19. Write down all the laws of indices and use one to express $(4t)^{-2}$ with positive indices.
20. The graph below has equation $y = ax^2$. Find the value of a .

