

AQA AS-Level Mathematics Warmup - Paper 2 2022

<p>In a histogram how do you work out the frequency density?</p>	<p>How many solutions has the equation $\cos(3\theta) = \frac{1}{2}$ got in the range $0^\circ \leq \theta \leq 360^\circ$</p>	<p>For $X \sim B(12,0.4)$ find $P(X \leq 2)$</p>	<p>State the cosine rule for the triangle ABC</p>	<p>Rationalise the denominator for $\frac{5}{\sqrt{3} + \sqrt{2}}$</p>
<p>Find the area between the curve $y = (x - 1)(x + 1)(x + 3)$ and the x-axis.</p>	<p>What is the null hypothesis in an hypothesis test?</p>	<p>Find $\frac{d^2y}{dx^2}$ for $y = 3x^3 + 4x^2 + 2x$</p>	<p>Given that $(x + 2)$ is a factor of $p(x) = 6x^3 + 23x^2 + 25x + 6$ fully factorise $p(x)$.</p>	<p>The decay in temperature of a cup of tea is modelled by a function of the form $Ae^{-0.02t}$. Given that the initial temperature of the tea (after adding milk) is 83°C, what is the value of A?</p>
<p>Find $\int_2^5 3x^2 + 5x + 4 \, dx$</p>	<p>Find the values of k for which the quadratic $x^2 + (k + 1)x + 3k$ has a repeated root.</p>	<p>Using your calculator find the mean of the following list of numbers: 4,7,12,20,13,15,2,3,1</p>	<p>State the Pythagorean trigonometric identity.</p>	<p>Find the solutions of $3 \sin^2(x) + \cos^2(x) + 3 \sin(x) - 3 = 0$ in the range $0^\circ \leq x \leq 360^\circ$</p>
<p>Let X be a random variable such that" $P(X = x) = \frac{x}{15}, \quad x = 1,2,3,4,5$ Find $P(X > 3)$</p>	<p>Define opportunity sampling.</p>	<p>Given that $P = nA^b$, express $\ln(P)$ in terms of $\ln(A)$</p>	<p>What are the conditions for the binomial distribution to be a suitable model?</p>	<p>Simplify $\log_{10}(x^2) + 3 \log_{10}(x) - 2 \log_{10}(x)$</p>

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Divide the frequency by the width of the class interval.	6	0.0834	$a^2 = b^2 + c^2 - 2bc \cos(A)$ where a is the side opposite A .	$5\sqrt{3} - 5\sqrt{2}$
$A = 4 + -4 = 8$	The null hypothesis is the hypothesis you must believe to be true in the absence of any data from a sample.	$18x + 8$	$(x + 2)(2x + 3)(3x + 1)$	83
$\frac{363}{2}$	$5 - 2\sqrt{6}$ and $5 + 2\sqrt{6}$	$\bar{x} = \frac{77}{9}$	$\sin^2(x) + \cos^2(x) = 1$	Use the identity $\sin^2(x) + \cos^2(x) = 1$ to find $(2 \sin(x) - 1)(\sin(x) + 2) = 0$. Hence $x = 30^\circ$ or 150°
$\frac{9}{15}$	In opportunity sampling individuals are chosen to be part of a sample as opportunity arises. Interviewing passers by on a street is one example.	$\ln(P) = \ln(n) + b \ln(A)$	<ul style="list-style-type: none"> - There are a fixed number, n, of trials. - Each trial is independent. - Two possible outcomes to each trial - success or failure - Fixed probability of success 	$3 \log_{10}(x)$