

Level 5 Test – Knowledge

Name

60 minutes Calculator allowed Scribbling paper allowed

Score: /25 × 3.12 = /78

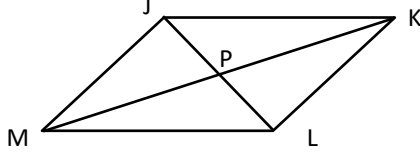
Number		
Q1	Simplify $\frac{\sqrt{80}\sqrt{15}}{\sqrt{27}}$	/1
Q2	If there are 4×10^{28} bacteria in the world and 1.6×10^{22} other organisms, how many bacteria are there for each other organism? Answer as a numeral.	/1
Q3	Write 14 000 199 060 000 in words.	/1

Algebra		
Q4	Solve $x^3 = x$.	/1
Q5	Write in index form $\sqrt[4]{s^3}$	/1
Q6	Simplify $\frac{(x^{-2}y^3)^{-3.5}}{(x^2y)^{0.5}}$	/1

Q7	Solve $3(x + 2)^5 - 4 = 20$. Show working.	/2
Q8	Solve $2^a = 12$	/1
Q9	Globbo put \$1000 in the bank getting 7.5% p.a. interest compounding monthly. How many months would it take for his balance to exceed \$1800? Show working.	/2

Q10	Solve $2a + 3b = 4$, $a^2 + b^2 + 12b - 4 = 1$. Show working.	/2
Q11	Find the formula for a quadratic function that passes through the points (1, 4), (-2, 13) and (3, 8)	/1
Q12	Take a two digit number with different digits. Then take another two digit number which has the same digits, but round the other way. Add them. Prove that the result will always be a multiple of 11.	/2

Measurement		
Q13	A conical pile of sugar has a base area of 20 m^2 and a height of 1.7 m . What is the gradient of its slope?	/1
Q14	Find the area of a regular octagon with 6 cm sides.	/1

Geometry		
Q15	<p>If JKLM is a parallelogram, prove that $\overline{MP} = \overline{PK}$.</p> 	/2

Statistics		
Q16	When Terry plotted the number of coffee shops against the number of people with hepatitis in 24 different towns in Australia, he found a correlation coefficient of 0.91 . Sketch the graph Terry's data might have produced.	/1

Q17	Give three possible explanation for this strong correlation Terry found in the last question.	/3
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Probability		
Q18	A bag contains 6 blue balls and 4 yellow balls. Hilda puts in her hand and takes out 2 balls. If she does this experiment 120 times, how many times would she expect to get two different coloured balls?	/1