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| S4 NAT5 Prelim 2014 Paper 2 Marking Scheme | Mark |
| $$3 × 10^{5} ×60 ×60$$Answer = $1.08 × 10^{9}$ | 11 |
| 60% =£631% = £1.05100% = £105 | 111 |
| 1. $\overline{x}$ = 42.6

$x- \overline{x}$ = -11.6, 41.4, 13.4, -12.6, -13.6, -15.6, -1.6$$\sum\_{}^{}\sqrt{\frac{2617.7}{6}}$$SD = 20.91. Comment on mean - **On average** Edinburgh Rugby team scored more points last season.

Comment on Standard Deviation – Glasgow’s team points are **more variable** (more spread) over the course of the season compared to Edinburgh’s.*Remarks**Lose mark if rounded to 43 but still correctly followed …….. award 3/4* | 111111 |
| **ANS: 6190000 or 6.19 Million**Multiplier 1.04Power of 3Answer before giving to 3 sig fig. = 6186752Answer 6.19 million*Remarks**Year by year approach 1st mark for increase = 220000, 2nd mark for end year 1 = 5720000* | 1111 |
| 1. Area of Semi Circle = $π ×(1.32)^{2} ÷2$

 = 2.74$m^{2}$ Area of rectangle = 2.64 x 1.5 = 3.96  Total Area = 3.96 + 2.74 = 6.7$m^{2}$1. **ANS: 20.1m3**

  = A x 3m  = 20.1m3*Remarks**Award 1 mark if used 300cm,instead of 3m, correctly to get 2009.08.*  | 11111 |
| Correctly rearranging $\cos(x°= -\frac{5}{7})$Principal Value $x°=44.4$Correctly identifying 2 values $x°=135.6, 224.4$ | 111 |
| 1. ANS: *x*= 2.19 or -1.52

 Substituting correctly into formula $\frac{-(-2)\mp \sqrt{(-2)^{2}-4 ×3 × -10}}{2 ×3}$ Correct root $\sqrt{124}$ *X* = 2.19 to 2 decimal places *X* = -1.52 to 2 decimal places | 1111 |
| Missing angle B (180° – 53° - 68°) = 59°For knowing to use the Sine Rule $\frac{a}{sin53°}=\frac{130}{sin59°}$ (or equivalent)Missing side A or C a = 121.12mKnowing to use trigonometry (SOH CAH TOA) $sin68°=\frac{h}{121.12}$X = 112.3m | 11111 |
| 1. Correct sketch

 Correct sketch of a sin wave Label 4 and -4 on the y axis 2 waves in 360 or 1 wave in 180 | 111 |
| 1. Identifying the area of the whole shape and area of the lawn

Area of whole shape = $A=3x^{2}+5x+2$, Area of lawn = $3x^{2}$Solving for the area of path = $3x^{2}+5x+2-3x^{2}$ = $5x+2$Area of lawn = Area of path$$3x^{2}=5x+2$$ $3x^{2}-5x-2=0$ therefore shown1. Correctly identifying factors $(3x+1)(x-2)$

Solving for roots $x=-\frac{1}{3}$ , 2Selecting the appropriate value $x=2$ and length 6cm | 111211 |
| Identifying the angle fraction and substituting into formula for arc length $\frac{284}{360}× π ×18$Correctly working out arc length = 44.61cmKnowing to ÷ 2 and × 100Final Answer = 2230.5 grams | 1111 |
| 1. ANS: 27cm

 Identify the need to use Pythagoras and quote formula Know to divide the length of the chord by 2 to get 9cm Correctly calculate the length of the short side as 12cm Add together the radius and length of the short side to get the width as 27cm | 1111 |