Bands 4 – 6 Problem Solving – Test 3 Answers

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| 1. | 5 cm : 25 m1 cm : 5 m2 cm : 10 m10 m wide | 1 mark for 5 : 25 seen1 mark for scale factor 5 or x5 seen1 mark for correct answer | 3 |
| 2. | Radius = 5 cmArea = 10² - $\left(\frac{π x 5^{2}}{4} x 4\right)$ = 100 - $(π x 5^{2})$ = 100 – 78.5398… = 21.46 cm² | 1 mark for radius calculated1 mark for $π x 5^{2}$ seen1 mark for 78 seen1 mark for 100 seen1 mark for correct answer | 5 |
| 3. | $25^{^{-1}/\_{2}}$ x $64^{^{2}/\_{3}}$= $\frac{1}{\sqrt{25}}$ x $\sqrt[3]{64}^{2}$= $\frac{1}{5}$ x 8= $\frac{8}{5}$ | 1 mark for $\frac{1}{\sqrt{25}}$1 mark for simplifying1 mark for $\sqrt[3]{64}^{2}$1 mark for simplifying1 mark for correct answer | 5 |
| 4. | $\sqrt{6^{2}+4^{2}}= \sqrt{52}$ = 7.2111…2 x 7.2111… + 12 + 4 = 30.4 m | 1 mark for 6² or 4² seen1 mark for √52 or 7.2111… seen1 mark for adding lengths together1 mark for correct answer | 4 |
| 5. | 2m + w = 36w = m + 32m + (m + 3) = 36 3m = 33 m = 11w = m + 3 = 11 + 3 = 14A meal costs £11 and wine costs £14 | 1 mark for each equation from question1 mark for substituting w into equation1 mark for m calculated1 mark for substituting w into equation1 mark for w calculated | 6 |
| 6. | Gradient A = 8 ÷ 4 = 2Gradient A = Gradient By = 2x + c0 = 2 x 10 + cC = -20y = 2x - 20 | 1 mark for gradient of A calculated1 mark for gradient of B calculated1 mark for substituting m into equation of line with coordinate (10, 0)1 mark for y-intercept calculated1 mark for correct answer | 5 |
| 7. | tan-1 $\left(\frac{5}{3}\right)$ = 59°90 – 59 = 31°031° | 1 mark for tan used1 mark for 59 seen1 mark for 90 – 591 mark for 31 seen1 mark for correct answer | 5 |
| 8. | R $α \frac{1}{I}$12 = $\frac{k}{8}$k = 96R = $\frac{96}{I}$6.4 = $\frac{96}{I}$I = $\frac{96}{6.4}$ = 15 amps | 1 mark for proportion sentence1 mark for substituting R and I1 mark for finding k1 mark for substituting 6.41 mark for correct answer | 5 |
| 9. | Area = 24 x 3 = 72 cm²0.6 x 24 = 14.4 cm (new length)1.3 x 3 = 3.9 cm (new width)New area = 14.4 x 3.9 = 56.16 cm²72 – 56.16 = 15.84 cm² (actual change)$\frac{15.84}{72}$ x 100 = 22% decrease | 1 mark for original area1 mark for new length1 mark for new width1 mark for new area1 mark for actual change1 mark for $\frac{15.84}{72}$ x 1001 mark for 22%1 mark for decrease | 8 |