|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **S3 Mathematics Homework Exercise 3** | | | | | | | C:\Users\Ian\Pictures\CHS.jpg | | |
|  | | | | | | |
| **Surface Area** | | | | | | |
|  | | | | | | | | | |
| Issued by: | | |  | Return by: | |  | | | |
|  | | | | | | | | | |
| **Working MUST be shown in every answer.** | | | | | | | | | |
|  | | | | | | | | | |
| **1.** | Find the total surface area of each shape below. All lengths are in centimetres. | | | | | | | | |
|  |  | | | | | | | | |
|  | a) |  | | | b) | |  | | |
|  |  |  | | |  | |  | | |
|  | c) | **9**  **10**  **11** | | | d) | |  | | |
|  |  | | | | | | | | |
| **2.** | A Toblerone box is a triangular prism 30 cm long, with 6cm equilateral triangles for its faces. | | | | | | | Toblerone | |
|  |
|  |  |  | | | | | |
|  | a) | Use Pythagoras’ Theorem to find the height of the triangular face. | | | | | |
|  |  |  | | | | | |
|  | b) | Use your answer to find the total surface area of the box. | | | | | |
|  |  |  | | | | | |
| **3.** | a) | A cylindrical soup can has a label attached to its curved surface. | | | | | | | |
|  |  |  | | | | | | | |
|  |  | Find the area of the label if the can has a height of 12cm and a diameter of 10cm. | | | | | | | |
|  |  |  | | | | | | | |
|  |  | Give your answer accurate to 3 s.f. | | | | | | | |
|  |  |  | | | | | | | |
|  | b) | The label on a different sized can of soup has an area of 346.36cm2. | | | | | | | |
|  |  |  | | | | | | | |
|  |  | Find the radius of the can if its height is 9cm. | | | | | | | |
|  |  |  | | | | | | | |
| **4.** | A fish tank is an **open** cuboid with sides 1.5m, 0.9m and 0.7m as shown in the diagram. | | | | | | | | 0.7m  0.9m  1.5m |
|  |  | | | | | | | |
|  | The inside of the tank is coated with a special resin to help make it water proof. | | | | | | | |
|  |  | | | | | | | |
|  | Find the cost of coating the fish tank if the resin costs £16.50 per square metre. | | | | | | | |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Q.** | **Award 1 Mark for each ●:** | | | |
|  |  | | | |
| **1.** | a) | ● 1 side = 16cm2 | b) | ● 7 x 5 = 35cm2 |
|  |  | ● 16 x 6 |  | ● 7 x 4 = 28cm2 |
|  |  | ● 96cm2 |  | ● 4 x 5 = 20cm2 |
|  |  |  |  | ● (35 x 2) + (28 x 2) + (20 x 2) |
|  |  |  |  | ● 166cm2 |
|  |  |  |  |  |
|  | c) | ● ½ x 4 x 9 | d) | ● Circle area = π x 42 |
|  |  | ● 18cm2 |  | ● 50.2654….. cm2 |
|  |  | ● **one** from 56cm2, 140cm2, 154cm2 |  | ● Circumference = 8 x π |
|  |  | ● all rectangles correct |  | ● 25.1327…. cm2 |
|  |  | ● 56 + 140 + 154 + (2 x 18) |  | ● 25.1327… x 14 = 351.8583….. |
|  |  | ● 386cm2 |  | ● 351.8583… + (50.2654… x 2) |
|  |  |  |  | ● 452cm2 |
|  |  |  |  |  |
| **2.** | a) | ● right angled triangle generated | b) | ● ½ x 6 x 5.19 = 15.57cm2 |
|  |  | ● h2 = 62 - 32 |  | ● 6 x 30 = 180cm2 |
|  |  | ● 5.19cm |  | ● (15.57 x 2) x (180 x 3) |
|  |  |  |  | ● 571.14cm2 |
|  |  |  |  |  |
| **3.** | a) | ● C = π x 10 = 31.4159… cm | b) | ● C = 346.36 ÷ 9 = 38.48444…. cm |
|  |  | ● 31.4159… x 12 = 376.9911184…. |  | ● D = 38.48444… ÷ π |
|  |  | ● 377cm2 (to 3 s.f.) |  | ● D = 12.2499… |
|  |  |  |  | ● radius = 6.12cm |
|  |  |  |  |  |
| **4.** | ● 0.7 x 0.9 = 0.63m2 | | | |
|  | ● 1.5 x 0.9 = 1.35m2 | | | |
|  | ● 1.5 x 0.7 = 1.05m2 | | | |
|  | ● 1.35 + (0.63 x 2) + (1.05 x 2) | | | |
|  | ● 4.71 x 16.50 = £77.72 | | | |
|  |  | | | |
|  | **Total = 40 marks** | | | |