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| **S3 Mathematics Homework Exercise 5** | C:\Users\Ian\Pictures\CHS.jpg |
|  |
| **Arcs and Sectors** |
|  |
| Issued by: |  | Return by: |  |
|  |
| **Working MUST be shown in every question.** |
|  |
| **Unless specified, give answers to 1 decimal place.** |
|  |
| **1.** | In each diagram below, find: | (i)  | the length of arc AB |
|  |  |  |  |
|  |  | (ii) | the area of the sector ABO |
|  |  |
|  | a) | A15mm130°O | b)B | 58°OBA3.5m | c) | 12cmBAO50° |
|  |  |  |  |  |  |  |
| **2.** | a) | Arc PQ is 11.5cm long. | b) | This sector has area 94cm2. | c) | Arc AB is 73cm long. |
|  |  |  |  |  |  |  |
|  |  | Find the size of angle *x*. |  | Find the size of angle *y* . |  | Find the radius of the circle. |
|  |  | P |  |  |  |  |
|  |  | *x* °9 cmOQ |  | 6 cm*y* ° |  | 245°BA |
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| **3.** | A party hat in the shape of a cone is made from the sector of a circle. | 18cm20cm*x*  |
|  |  |
|  | The circumference of the base of the cone is the length of the arc of the sector, and the sloping length of the cone is the radius of the sector. |
|  |  |
|  | The **cone** has a diameter of 18cm and a height of 20cm. |
|  |  |
|  | a) | Find the sloping length of the cone (marked *x* ) |
|  |  |  |
|  | b) | Hence, find the angle at the centre of the sector. |
|  |  |  |
|  | c) | Find the area of card used to make the hat,. |
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| **Q.** | **Award 1 Mark for each ●:** |
|  |  |
| **1.** | a) | (i) | ●  x π x 30 | b) | (i) | ●  x π x 7 | c) | (i) | ●  x π x 24 |
|  |  |  | ● 34.03392… |  |  | ● 3.54….… |  |  | ● 64.9262481… |
|  |  |  | ● 34.0 mm |  |  | ● 3.5 m |  |  | ● 64.9 cm |
|  |  |  |  |  |  |  |  |  |  |
|  |  | (ii) | ●  x π x 152 |  | (ii) | ●  x π x 3.52 |  | (ii) | ●  x π x 122 |
|  |  |  | ● 255.254403… |  |  | ● 6.200…. |  |  | ● 389.557489…. |
|  |  |  | ● 255.3 mm2 |  |  | ● 6.2 m2 |  |  | ● 389.6 cm2 |
|  |  |  |  |  |
| **2.** | a) | ●   | b) | ●  | c) | ● Arc = x π x D |
|  |  | ●  x 360° |  | ●  x 360° |  | ● 73 = 2.138028…. x D |
|  |  | ● 73.21127… |  | ● 299.21193… |  | ● D = 34.14360738… |
|  |  | ● 73.2° |  | ● 299.2° |  | ● radius = 17.07180369… |
|  |  |  |  | ● 360 - 299.2° = 60.8° |  | ● radius = 17.1 cm |
|  |  |  |  |  |  |  |
| **3.** | a) | ● x2 = 202 + 92 | b) | ● Arc = π x 18 | c) | ●  x π x 21.92 |
|  |  | ● x2 = 481 |  | ● Arc = 56.54866….. |  | ● 197.1cm2 |
|  |  | ● x = 21.9317122…. |  | ● radius of sector = 21.9cm |  |  |
|  |  | ● x = 21.9cm |  | ● C = π x 43.8 |  |  |
|  |  |  |  | ● C = 137.60175…. |  |  |
|  |  |  |  | ●  x 360° |  |  |
|  |  |  |  | ● 147.945205… |  |  |
|  |  |  |  | ● 147.9° |  |  |
|  |  |
|  | **Total = 45 marks** |