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| **S3 Mathematics Homework Exercise 1** | C:\Users\Ian\Pictures\CHS.jpg |
|  |
| **Trigonometry** |
|  |
| Issued by: |  | Return by: |  |
|  |
| **Working MUST be shown in every answer.** |
|  |
| **1.** | Find *x* in each triangle below, accurate to 1 d.p. |
|  |  |  |
|  | a) | 50cm*x* 35° | b) | 17°8cm*x* cm | c) | 53mm67 mm*x* ° |
|  | d) | *x* 22°4.75m | e) | *x* cm63.5°8cm |  |  |
|  |  |
| **2.** | An engineer calculates the height of a building by measuring the angle of elevation to the top of the roof from a distance of 20 metres. | 20m34° |
|  |  |
|  | She finds that the angle of elevation is 34°. |
|  |  |
|  | Find the height of the building accurate to 3 s.f. |
|  |  |  |
| **3.** | A window cleaner has a 4.5m long ladder. Health & Safety regulations state that the maximum angle the ladder can make with the ground is 65°. What is the maximum safe height the window cleaner can reach from the ground? (**HINT:** draw a diagram!) |
|  |  |  |
| **4.** | 16 cm12 cm*x* ° | The diagonals of this rhombus are 16cm and 12cm long.Find the size of angle *x*.HINT: the diagonals of a rhombus bisect each other at 90° |
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| **5.** | A car port is constructed from sections like those in the diagram.To the nearest degree, find the angle the roof makes with the ground.  | 4.5m10m2.5m |

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| **Q.** | **Award 1 Mark for each ●:** |
|  |  |
| 1. | a) | ● cosine | b) | ● sine | c) | ● sine |
|  |  | ● x = 50 cos 35° |  | ● x = 8/sin 17° |  | ● sin x = 53/67 |
|  |  | ● x = 40.9576……. |  | ● x = 27.3624…… |  | ● x = sin-1 (53/67) |
|  |  | ● x = 41.0 (m) |  | ● 27.4 (cm) |  | ● x = 52.2832….. |
|  |  |  |  |  |  | ● x = 52.3° |
|  |  |  |  |  |  |  |
|  | d) | ● cosine | e) | ● tangent |  |  |
|  |  | ● x = 4.75/cos 22° |  | ● x = 8/ tan 63.5° |  |  |
|  |  | ● x = 5.1230…… |  | ● x = 3.9886….. |  |  |
|  |  | ● x = 5.1 (m) |  | ● x = 4.0 (cm) |  |  |
|  |  |
| 2. | ● tangent |
|  | ● x = 20tan 34° |
|  | ● x = 13.4901….. |
|  | ● x = 13.5m (to 3 sf) |
|  |  | 65°x4.5m |
| 3. | ● diagram shown (see opposite) |
|  | ● sine |
|  | ● x = 4.5 sin 65° |
|  | ● 4.1m |
|  |  |
|  |  |
| 4. | ● right-angled triangle generated (see opposite) | 8cm6cm |
|  | ● tangent |
|  | ● y = tan -1 (6/8) (treat x = tan -1 (6/8) as bad form) |
|  | ● y = 36.8698…. |
|  | ● x = 2 x 36.8698…. (stated or implied) |
|  | ● x = 73.7°  | (accept 74° ONLY if rounding has not already happened prior to this stage) |
|  |  |
| 5. | ● right-angled triangle generated (see opposite) | 10m2m |
|  | ● tangent |
|  | ● x = tan-1 (2/10) |
|  | ● x = 11.3099….. |
|  | ● x = 11° |
|  |  |
|  |  |  |
| Total: 40 marks |