62. The diagram below shows a sketch of the triangle ABC with $AB = 7\text{ cm}$, $AC = x\text{ cm}$, $BC = 9\text{ cm}$ and $\cos B\hat{A}C = \dfrac{2}{7}$.
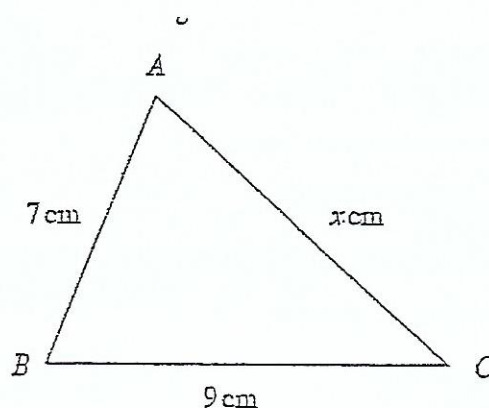
(a) Write down and simplify a quadratic equation satisfied by x. Hence evaluate x. [3]

(b) (i) Express $\sin B\hat{A}C$ in the form $\dfrac{\sqrt{m}}{n}$, where m, n are integers whose values are to be found.

(ii) Express $\sin A\hat{C}B$ in the form $\dfrac{\sqrt{p}}{3}$, where p is an integer whose value is to be found. [4]

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63. The triangle ABC is such that $AB = 16$ cm, $AC = 9$ cm and $A\hat{B}C = 23°$.

(a) Find the possible values of $A\hat{C}B$. Give your answers correct to the nearest degree. [2]

(b) Given that $B\hat{A}C$ is an acute angle, find

(i) the size of $B\hat{A}C$, giving your answer correct to the nearest degree,

(ii) the area of triangle ABC, giving your answer correct to one decimal place. [4]

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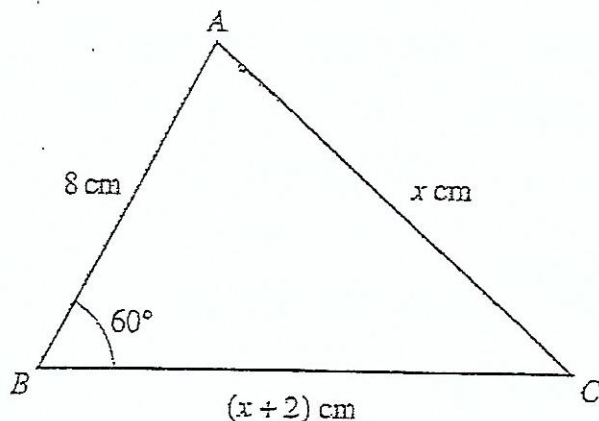
64. The diagram below shows a sketch of the triangle ABC with $AB = 8$ cm, $AC = x$ cm, $BC = (x + 2)$ cm and $A\hat{B}C = 60°$.


(a) Write down and simplify an equation satisfied by x. Hence evaluate x. [3]

(b) Find the size of $A\hat{C}B$. [2]

Jan 2010

65. (a) The triangle ABC is such that $AB = 11$ cm and $B\hat{A}C = 110°$. Given that the area of the triangle ABC is 31 cm², find the length of BC. [4]

(b) The triangle XYZ is such that $XY = 2$ cm, $YZ = (2\sqrt{3} - 1)$ cm and $Y\hat{X}Z = 60°$. Find an expression for $\sin X\hat{Z}Y$ in the form $\dfrac{m + \sqrt{3}}{n}$, where m, n are integers whose values are to be found. [5]

June 2010

66. The diagram below shows a sketch of the triangle ABC with $AB = x$ cm, $AC = (x + 1)$ cm, $BC = (x + 6)$ cm and $B\hat{A}C = 120°$.
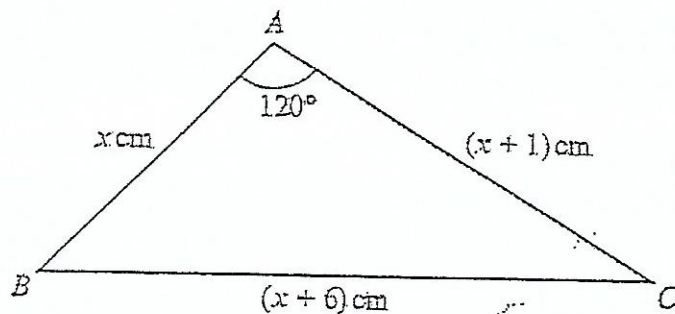
(a) Show that x satisfies the equation $2x^2 - 9x - 35 = 0$. Hence evaluate x. [4]

(b) Find the area of triangle ABC. Give your answer correct to two decimal places. [2]

Jan 2011