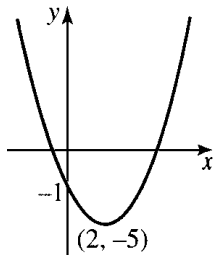


Q1 Sketch the following graphs, showing clearly the x -intercepts, y -intercept, coordinates of the turning point and write down the equation of the line of symmetry.

(a) $y = 2x^2 + 10x + 8$ [4]

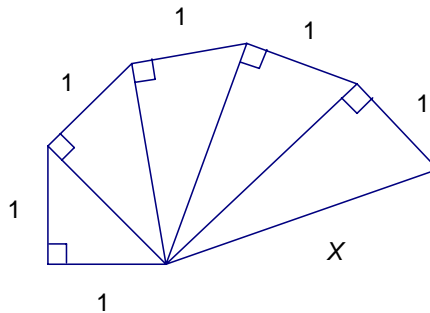
(b) $y = -x^2 + 8x - 12$. [4]

Q2 Find the equation of the following quadratic curve given the y -intercept and the coordinate of the turning point. Show your working clearly. [3]



Q3 John's house has a window which is 2.7 m from the ground. If John has a ladder which is 5.3 m long, how far must he place it from the base of his house in order for him to reach the window? [2]

Q4 Find the length of x . [3]



Q5 (i) Given the equation $y = -2 + 3x$, find the value of a . [1]

x	-1	0	2
y	a	-2	4

(ii) Draw the straight line that represents the equation $y = -2 + 3x$ and label the graph clearly. [2]

- (iii) On the *same axes* as (ii), draw the line $x = -1$ and write down the coordinate of the point where the line $y = -2 + 3x$ meets the line $x = -1$. [2]

Q6 The equation of the line L_1 is $2x - 5y = 35$. The line intersects the x -axis at A and the y -axis at B .

- (a) Find the coordinates of A and B . [2]
 (b) Find the area of the triangle OAB , where O is the origin. [1]
 (c) Find the length of the line AB . [2]

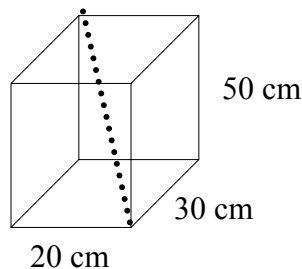
Q7 Simplify

(a) $\left(\frac{x^{3n}y^{n-2}}{x^{n+1}y}\right)^2$ [2]

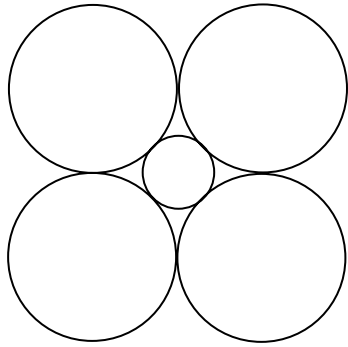
(b) $\frac{(p^2q^4)^{\frac{1}{2}} \times \sqrt[3]{q^6}}{pq^{-1}}$ [3]

Q8 Solve the equation $2^{2x+1} \times 16^x \div 4^{x-1} = 64$. [3]

Q9 The rectangular solid below has sides of length 20 cm, 30 cm and 50 cm. Find the length of the dotted line. [2]



Q10 Four identical coins and a smaller coin are arranged such that the centres of the four identical coins form the corners of a square. If the radius of each of the larger coins is 2 cm, find the radius of the smaller coin. [4]



Bonus

Q11 The diagram shows a square $ABCD$ with side length 2 cm and a semi-circle with centre G and diameter AB . E is a point on AD and CE touches a point F on the circumference of the semi-circle as shown. Given that angle CFG is 90° , find the length of CE .

