S3 Homework 7

Non-calculator section:

1. Evaluate $350 - 45\%$ of 420

2. Given $f(x) = x^3 - 3x^2 - 2x$, find the value of $f(-2)$

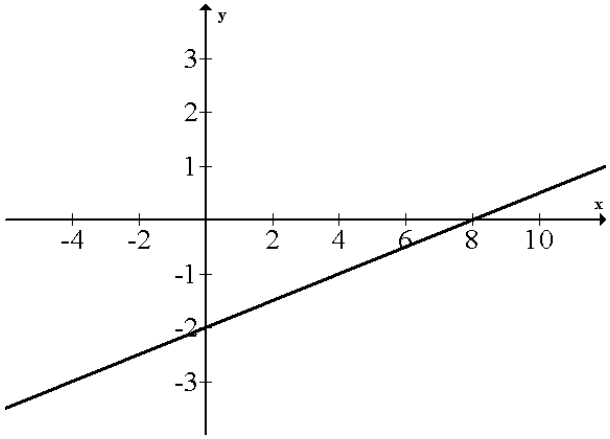
3. (a) Expand the brackets and simplify $(2m - n)^2$

   (b) Solve the inequation $4(x + 2) > 1 - (2 - x)$

   (c) Solve the equations $3p - 2q = 11$
   $4p - q = 8$

4. (a) Find the equation of the line shown opposite.

   (b) The point (-12,a) lies on this line. Find a.



5. P varies directly as the square of Q and as R.
   (a) Write down a formula connecting P, Q and R.
   (b) If Q is multiplied by 4 and R is halved, what effect does this have on P?

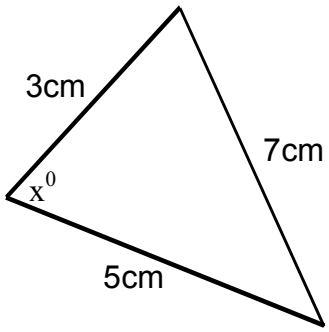
6. The marks of 24 pupils in a test are shown below.

1	0 3 9
2	1 4 5 7 9
3	2 3 3 5 6 7
4	0 0 1 1 2 2 2 4 8 9

3 | 4 represents 34
n = 24

   (a) Show this information in a boxplot.
   (b) Find the semi-interquartile range of these marks.

7. Show that in the triangle opposite $\cos x^0 = -\frac{1}{2}$

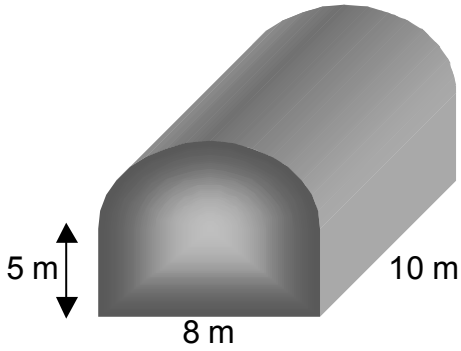


8. Solve the equation $5\sin x^0 + 3 = 2\sin x^0 + \tan 45^0 \quad 0^0 \leq x^0 \leq 360^0$

9. The roll of Hillside secondary school in the year 2001 was 1100. In each of the next three years the roll rose at a rate of 4% per annum and then for the next two years it fell by 6% per annum. Calculate the roll of the school in 2006.

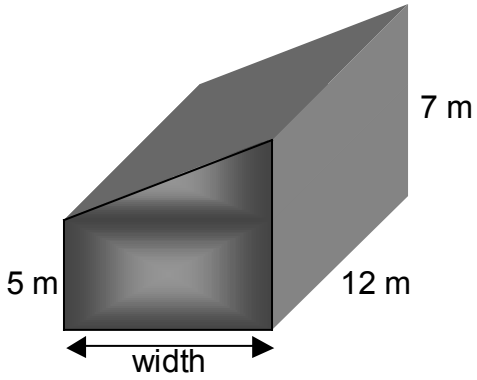
10. (a) The cross-sectional area of a storage barn is in the shape of a rectangle and a semi-circle with measurements as shown.

Calculate the volume of this barn.

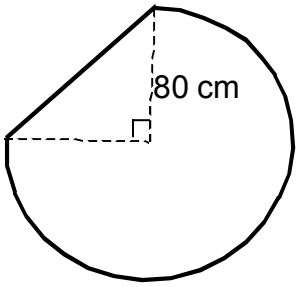


(b) Another storage barn with cross-sectional area in the shape of a rectangle and a right-angled triangle has volume 612 m^3.

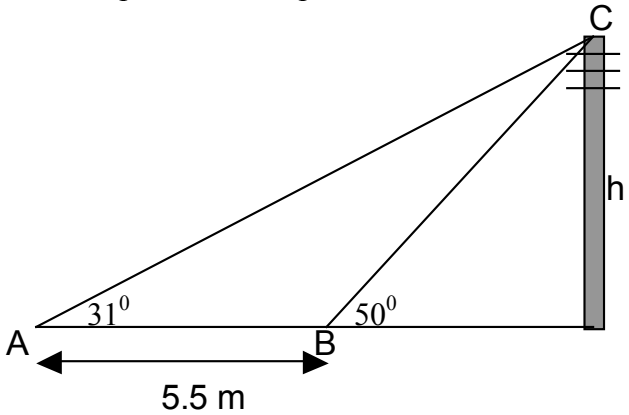
Calculate the width of this barn.



11. The diagram opposite shows a worktop in the shape of a circle with a straight edge. The radius of the circle is 80 cm. Calculate the distance round the worktop.



12. From A the angle of elevation to the top of a telegraph pole is 31°. From B the angle of elevation to the top of the same pole is 50°.



Calculate the height, h, of the telegraph pole. (Hint: calculate the length of BC first).