Credit Mathematics – Homework J

Non-calculator section:

1. Evaluate $\frac{2}{3}$ of $\left(2\frac{1}{2} - 1\frac{1}{5}\right)$

2. $P = \frac{x^2 + 2y^2}{xy}$. Find P when x = -4 and y = -2.

3. Solve the inequation $9 - 2(x - 3) > 3 - 4x$

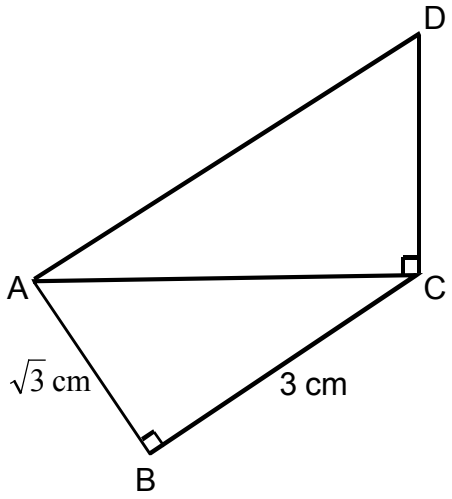
4. (a) Simplify $\frac{2x^2 - 18}{3x + 9}$

   (b) Express as a single fraction $\frac{1}{x} - \frac{3}{x^2}$ $x \neq 0$

5. In the diagram opposite, angles ABC and ACD are both right angles.
   AB = $\sqrt{3}$ cm and BC = 3 cm.

   (a) Show that AC = $2\sqrt{3}$ cm.

   (b) Given the area of triangle ACD is $3\sqrt{2}$ cm, calculate the length of DC.



6. $f(x) = 3x^2 - x - 2$ and $g(x) = 2x + 5$

   Find x given $f(x) = 2g(x)$.

7. (a) Simplify $2x^{-\frac{3}{2}}(x^{\frac{3}{2}} + x^2)$

   (b) Evaluate $4^0 + 8^{\frac{2}{3}}$

Calculator section:

8. The price of the same microwave oven in 6 different stores is

   £48 £55 £41 £45 £49 £50

   (a) Calculate the mean and standard deviation of these prices.
   (b) Each shop reduces the price of the microwave oven by £5.
   Write down the mean and standard deviation of the prices now.

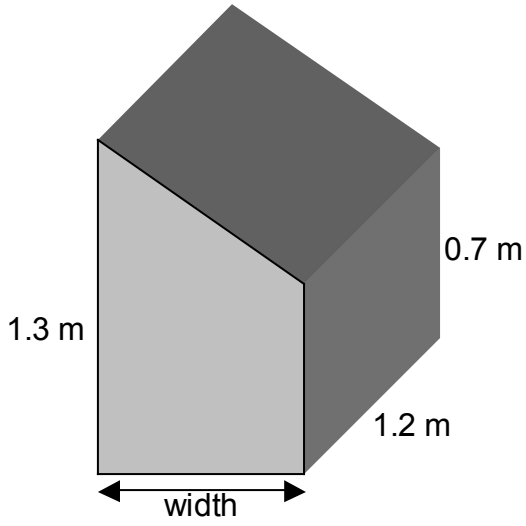
9. The area of triangle PQR is 56 cm^2. Given PQ = 12 cm and PR = 14 cm, find **two** possible sizes for angle QPR.

10. Solve the equation $\frac{x^2 - 2}{4} = x$

giving your answers correct to 3 significant figures.

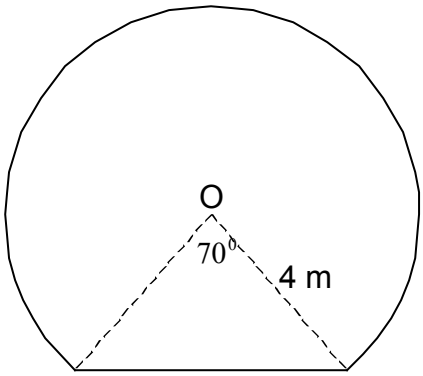
11. The diagram shows a storage bunker.
The cross-section of the bunker is in the shape of a rectangle and a triangle.

The volume of the bunker is 0.6 m^3.
Calculate the width of the bunker.



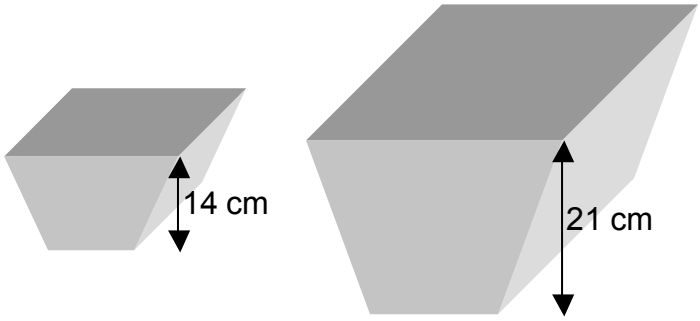
12. The diagram opposite shows a flower bed in the shape of part of a circle, centre O, with a straight edge.

A small wooden fence is to be put round the outside of the flower bed.
How long will the fence be?



13. The diagram shows two containers which are similar in shape. The smaller container is 14 cm high and has a volume of 1540 cm^2. The larger container is 21 cm high.

Calculate the volume of the larger container.



14. The diagram shows a sign outside a bank with its supporting frame.

Calculate, h, the height of the support connected to the wall of the bank.