National 5 Maths – Homework 21 – Questions from Past Papers

1

Write $\frac{3}{m} + \frac{4}{(m+1)}$ as a single fraction in its simplest form. 3

2

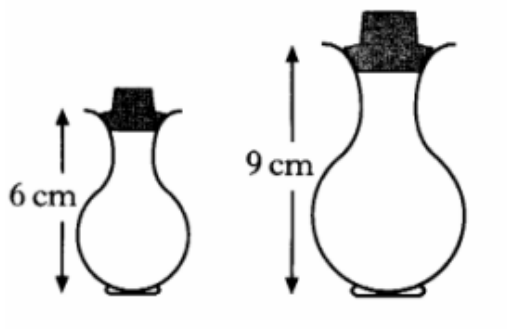
Find the roots of the equation

$$2x^2 + 4x - 9 = 0.$$

Give your answers correct to one decimal place. 4

3

Two perfume bottles are mathematically similar in shape.



The smaller one is 6 centimetres high and holds 30 millilitres of perfume.
The larger one is 9 centimetres high.

What volume of perfume will the larger one hold? 3

4

Marmalade is on special offer.
Each jar on special offer contains 12.5% more than the standard jar.

A jar on special offer contains 450 g of marmalade.

How much does the standard jar contain? 3

5 Evaluate $2^0 + 3^{-1}$. 2

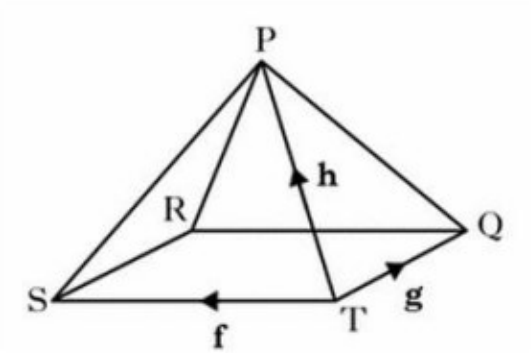
6 (a) Solve the equation

$$2\tan x^\circ + 7 = 0, \qquad 0 \le x \le 360.$$ 3

(b) Prove that

$$\sin^3 x + \sin x \cos^2 x = \sin x.$$ 2

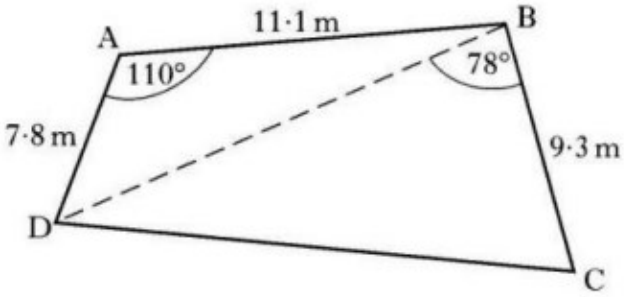
7 The diagram shows a square based pyramid PQRST.



Express $\overrightarrow{RP}$ in terms of $\boldsymbol{f}, \boldsymbol{g}$ and $\boldsymbol{h}$. 3

8 Express $\sqrt{12} + 5\sqrt{3} - \sqrt{27}$ as a surd in its simplest form. 3

9



Calculate:

(a) the length of the diagonal BD;
Do not use a scale drawing. 3

(b) the area of the garden.