PRACTICE PAPER SOLUTIONS

Rewarding Learning

General Certificate of Secondary Education

Mathematics

Unit **M8** Paper **1**

(Non-calculator)

Higher Tier

PRACTICE

MARK SCHEME

1 **(a)** correct reflection A2

(b) correct translation A1

2 9 A1

18 so Paul is correct A1

3 $1200 \div 4 = 300$ or $1.2 \div 4 = 0.3$

Lime = 300 : 900 Lime = 0.3 : 0.9 MA1

Mint = 1 : 2 = 450 : 900 Mint = 1 : 2 = 0.45 : 0.9 MA1

Extra 150ml =0.15 litres Extra 0.15 litres A1

4 (a) $\frac{1}{8}$ A1

(b) 1 A1

5 (a) A1 for each correct line and side identified by R A3

(b) 16 (allow A1 for (2, 4) chosen MA2
Follow through for candidate's region in (a)

6 $3y - x = 3x + y$ MA1

$3y - x + 3y + 3x + y + 2x = 360$ MA1

$2y - 4x = 0$ A1

$7y + 4x = 360$ A1

$9y = 360$

$y = 40$; $x = 20$ MA1MA1

Smallest angle is $2x = 40^o$ A1

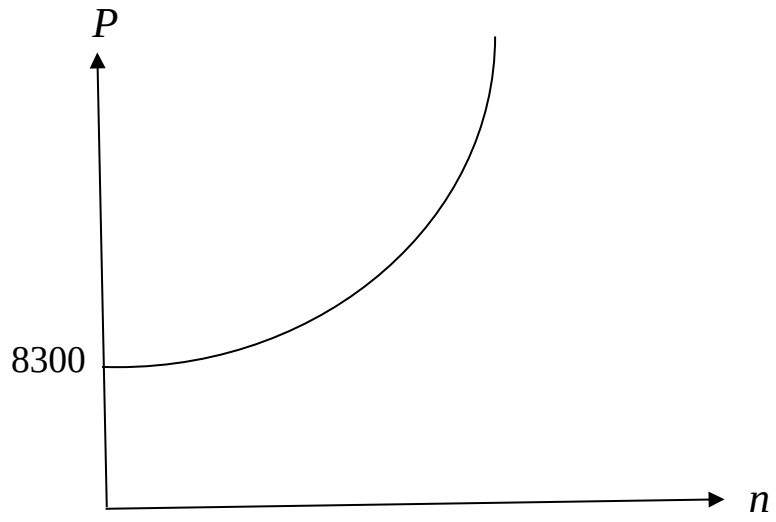
7 $ax - cx = -b$ or $b = cx - ax$ MA1

$x(a - c) = -b$ or $b = x(c - a)$ MA1

$x = \frac{-b}{(a - c)}$ *or* $x = \frac{b}{(c - a)}$ MA1

8 (a) 8300 A1

(b) 8300 on vertical axis, correct shape A1, A1



(c) 8300×0.93^n A1

9 Ratio of areas 1 : 4 MA1
Ratio of volumes 1 : 8 MA1

$580 \times 8 = 4640$ A1

10 $h^2 = (3\sqrt{5})^2 - (2\sqrt{5})^2$ A1
$= 45 - 20$ A1
$= 25$ A1

Area = ½ x $2\sqrt{5}$ x 5 $= 5\sqrt{5}$ M1A1

11 (a) 8 x ⅓ A1A1

$= 2\frac{2}{3}$ (or 8/3) A1

(b) $9(3^x) + 3^x = 270$ MA1

$10(3^x) = 270$
$3^x = 27$ A1
$x = 3$ A1

12 $\frac{1}{x} - \frac{1}{1-2x} = 2$

$(1-2x) - x = 2x(1-2x)$ MA1MA1

$1 - 3x = 2x - 4x^2$ A1

$4x^2 - 5x + 1 = 0$ A1

$(4x-1)(x-1) = 0$ A1

$x = ¼ \quad x = 1$

$x = ¼ \quad y = ½$ A1

$x = 1 \quad y = -1$ A1