

16 a) $(2(n-1)-4)90 : (2n-4)90 = 2:3$
 $(2n-6) : (2n-4) = 2:3$
 $\frac{2n-6}{2n-4} = \frac{2}{3}$
 $6n-18 = 4n-8$
 $2n = 10$
 $n = 5$

b) $ex = \frac{360}{5} = 72$ $ex = \frac{360}{4} = 90$
 interior angles
 $\Rightarrow 108$
 $\Rightarrow 90^\circ$

~~A1~~

M1

A1

B1

B1

4

SECTION II Paper 5

17. a) $R.S = 12 \cdot 9 = 3$
 $\text{It} = \frac{240}{3}$
 $= 80 \text{ sec.}$

B1

M1

A1

b) $\frac{10}{x} - \frac{10}{x+15} = \frac{1}{6}$
 $90 = x^2 + 15x$
 $x^2 + 3x - 180 = 0$
 $x^2 + 15x - 12x - 180 = 0$
 $x(x+15) - 12(x+15) = 0$
 $(x+15)(x-12) = 0$
 $x = -15 \text{ or } x = 12$
 $\Rightarrow x = 12$

M1

M1

A

A1

B1

(c) $T_1 = 48 \times \frac{3}{4} = 36$

$T_2 = 52 \times \frac{3}{4} = 39$

$D = 500 - (36 + 39)$
 $= 425$

B1 for both

M1

A1

22 a)

x	5	6	7	8	9	10	11	12
y	25	36	49	64	81	100	121	144

B₁ values of y.

$$A = \frac{1}{2} \times 1 (25 + 144 + 2(36 + 49 + 64 + 81 + 100 + 121))$$

M₁

$$= \frac{1}{2} (169 + 2 \times 451)$$

A₁

$$(b) \int_5^{12} x^2 dx = \left[\frac{x^3}{3} \right]_5^{12}$$

M₁

$$= \frac{1728}{3} - \frac{125}{3}$$

(c)

$$= 535\frac{1}{2} - 534\frac{1}{3}$$

A₁

$$\frac{535\frac{1}{2} - 534\frac{1}{3}}{534\frac{1}{3}} \times 100\%$$

M₁

$$= 0.2183$$

A₁

d

x	5.5	6.5	7.5	8.5	9.5	10.5	11.5
y	30.25	42.25	56.25	72.25	90.25	110.25	132.25

$$A = 1 (30.25 + 42.25 + 56.25 + 72.25 + 90.25 + 110.25 + 132.25)$$

M₁

$$= 533.75$$

A₁

23

a)

$$P = \frac{KQ^2}{NR}$$

B₁

(b)

$$40 = \frac{K(10)^2}{N76}$$

M₁

$$K = \frac{40 \times 4}{100}$$

M₁A₁

$$= 1.6$$

$$P = \frac{1.6(7)^2}{N64}$$

M₁

$$= 9.8$$

A₁

c)

$$\text{New } P = \frac{K(1.21)Q^2}{0.9NR}$$

M₁

$$= \frac{1.3444 KQ^2}{NR}$$

M₁

$$\text{change} = \frac{1.3444 KQ^2}{NR} - \frac{KQ^2}{NR}$$

M₁

$$\% \text{ Chag} = \frac{0.3444 KQ^2}{NR} \times \frac{NR}{KQ^2} \times 100\%$$

M₁

$$= 34.44$$

A₁

22

$$\begin{aligned}
 a) \quad A &= 600,000 \left(1 - \frac{12}{100}\right)^5 \\
 &= 600,000 (0.88)^5 \\
 &= 600,000 \times 0.5277 \\
 &= 316,620
 \end{aligned}$$

M₁
M₁
M₁

A₁

$$\begin{aligned}
 b) \quad 600,000 - 316,620 \\
 = 283,380
 \end{aligned}$$

M₁
A₁

$$\begin{aligned}
 c) \quad 300,000 &= 600,000 \left(1 - \frac{12}{100}\right)^n \\
 0.88^n &= 0.5 \\
 n &= \frac{\log 0.5}{\log 0.88} \\
 n &= 5.422
 \end{aligned}$$

M₁

M₁
M₁
A₁

23

$$a) \quad AC = -a + 2b$$

$$BE = -\frac{b}{2} + \frac{5}{3}a$$

B₁B₁

$$\begin{aligned}
 b) \quad DC &= k(-a + 2b) \\
 &= -ka + 2kb
 \end{aligned}$$

B₁

$$\begin{aligned}
 BD &= n \left(-\frac{b}{2} + \frac{5}{3}a\right) \\
 &= -\frac{nb}{2} + \frac{5na}{3}
 \end{aligned}$$

M₁

$$\begin{aligned}
 DC &= DB + BC \\
 &= \frac{nb}{2} - \frac{5na}{3} + \frac{b}{2} \\
 &= \frac{b}{2}(n+1) - \frac{5na}{3}
 \end{aligned}$$

M₁

$$\frac{5}{3}k = k \quad 1+n = 2k$$

M₁

$$1+n = 2\left(\frac{5}{3}k\right)$$

$$10k = 3+3n$$

$$7k = 3$$

$$k = \frac{3}{7} \quad k = \frac{5}{3} \times \frac{3}{7} = \frac{5}{7}$$

A₁ - for value of nB₁ - for the value of k

$$\begin{aligned}
 DC &= \frac{5}{7}AC \Rightarrow DC:AC = 5:7 \\
 AD:DC &= 2:5
 \end{aligned}$$

B₁B₁

GIAKANJA BOY'S HIGH SCHOOL
FORM ONE TERM TWO 2021
MATHEMATICS DEPARTMENT

11/5

NAME

CAT 1

ADM NO

CLASS I

1. Simplify

(a) $12-4e+6e-10h+7k-3e-14$

(4mrks)

$$12-14-\underline{4e+6e-3e}-10h+7k$$

$$-2-e-10h+7k$$

(b) $(3-y)-3(y-x-2)$

$$3-y-3y+3x+6$$

$$3-4y+3x+6$$

$$3+6-4y+3x$$

$$9-4y+3x$$

2. Express $0.\dot{3}$ in the form $\frac{a}{b}$ hence determine the difference between a and b (3mrks)

$$\begin{array}{r} \text{let } x \text{ be } 0.\dot{3}33 \\ 10x = 3.\dot{3}3 \\ - \quad x \quad 0.\dot{3}3 \\ \hline 9x = 3.0 \end{array}$$

$$x = \frac{3}{9}$$

$$\begin{array}{r} a-b \\ 3-9 \\ \hline = -6 \end{array}$$

3. Paul is twice as old as his brother peter and their sister Mary is 5 years younger than peter. Find an expression for the sum of their ages (3mrks)

Peter be x .

Paul $2x$

Mary $x-5$

$$x+2x+(x-5)$$

$$\underline{\underline{x+2x+x-5}}$$

18

$$y = 3 - 6x + 4.5x^2 - x^3$$

$$\frac{dy}{dx} = -6 + 9x - 3x^2 = 0$$

$$3x^2 - 9x + 6 = 0$$

$$(x-1)(x-2) = 0$$

$$x = 1 \text{ or } x = 2$$

Co-ordinates of A(1, 0.5)

B(2, 1)

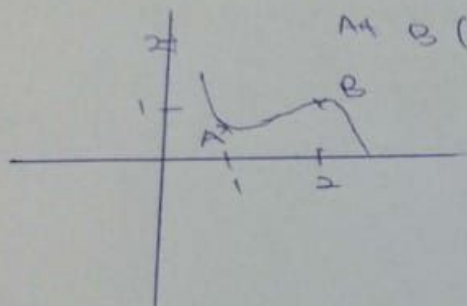
b) $\frac{d^2y}{dx^2} = 9 - 6x$, when $x = 1$ $\frac{d^2y}{dx^2} = 3$

At A(1, 0.5) minimum

When $x = 2$ $\frac{d^2y}{dx^2} = -3$ max.

At B(2, 1) Maximum

c)



M1

M1

A for both values

B1

B1

B1

B1

B1

B1 - minimum turning point A.

B1 - maximum at B

10

19 a)

$$\frac{115}{100} \times 15000 - 1250$$

$$= \frac{16000 \times 12}{20}$$

$$= \text{Kf } 9600$$

b)

1st slab = $2300 \times 2 = 4600$

2nd " = $2300 \times 3 = 6900$

3rd " = $2300 \times 5 = 11500$

4th " = $2300 \times 7 = 16100$

5th " = $400 \times 9 = 3600$

Total tax (b, a)

$$P. m = \frac{42700}{12}$$

$$= 3558.30$$

$$12261.00$$

$$2332.30$$

(c)

$$15000 - 2332.30$$

$$= 12767.70$$

M1

M1

A1

M1 - 1st four slabs

M1 - last slab

A1

M1

A1

M1

A1

10

$$20 \ a) \ \frac{AB}{2} = \sqrt{8^2 - 6^2}$$

$$\frac{AB}{2} = 5.2915$$

$$AB = 5.2915 \times 2$$

$$= 10.58$$

$$b) \ \cos \theta = \frac{3}{4} = 0.75$$

$$\theta = 41.41$$

$$\text{Reflex angle} = 41.41 \times 2 = 82.82$$

$$360 - 82.82$$

$$= 277.18^\circ$$

$$c) \ \frac{32.82}{360} \times 3.142 \times 64 - \frac{1}{2} \times 64 \times 32.82$$

$$= 46.26 - 31.75$$

$$= 14.51$$

Area shaded

$$= 31.75 \times 2 - 14.51 \times 2$$

$$= 63.5 - 29.02$$

$$= 34.48$$

$$21 \ a) \ P(w) = \frac{6 \times 6}{9}$$

$$= \frac{36}{81}$$

$$ii) \ P(w) = \frac{6}{9} \times \frac{5}{8}$$

$$= \frac{30}{72}$$

$$b) \ i) \ P(wb \text{ or } bw)$$

$$= \left(\frac{6}{9} \times \frac{3}{9} \right) + \left(\frac{3}{9} \times \frac{6}{9} \right)$$

$$= \frac{36}{81}$$

$$ii) \ P(wb \text{ or } bw)$$

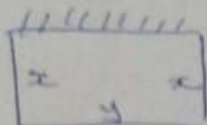
$$= \left(\frac{6}{9} \times \frac{3}{8} \right) + \left(\frac{3}{9} \times \frac{6}{8} \right)$$

$$= \frac{36}{72}$$

MATHEMATICS PAPER 2
MARKING SCHEME
PAPER 2.

SECTION I

1



$$2x + y = 40$$

$$y = 40 - 2x$$

$$A = x(40 - 2x) \quad M1$$

$$= 40x - 2x^2$$

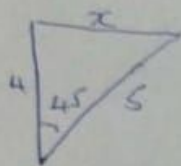
$$\frac{dA}{dx} = 40 - 4x = 0 \quad M1$$

$$x = 5$$

$$y = 30$$

$$A = 5 + 30 = 150 \quad A1$$

2.



$$x^2 = 4^2 + 5^2 - 2 \times 4 \times 5 \cos 45^\circ \quad M1$$

$$x^2 = 16 + 25 - 40 \cos 45^\circ$$

3.

$$P(1 + \frac{r}{100})^1 = P(1 + \frac{r}{100})^4$$

$$1 + \frac{r}{100} = 1.024$$

$$\frac{r}{100} = 1.024 - 1$$

$$r = 4.04$$

M1

M1

A1

4

i) $\cos 30^\circ = \frac{4}{x}$

$$x = 3.464$$

M1

A1

ii) $\sin 30^\circ = \frac{x}{4}$

$$x = 2$$

M1

A1

5

$$56 \times \frac{6}{5} \times \frac{2500}{2240}$$

$$= 75h$$

M1

A1

18 a) diagonal $= \sqrt{200} \approx 14.142$

$h = \sqrt{8^2 - 7.071^2}$

$= \sqrt{14}$

$= 3.742$

b. a) $\tan \theta = \frac{3.742}{5}$

$\theta = 36.81$

(ii) $\sin \theta = \frac{3.742}{8}$

$\theta = 27.89^\circ$

(c) $\tan \theta = \frac{5}{3.742}$

$\theta = 53.19$

Angle $= 53.19 \times 2$

$= 106.38$

B₁

M₁

M

M₁

M

M₁

A₁

B₁

M₁

A₁

19 a) $\begin{pmatrix} 0 & -1 \\ 1 & 0 \end{pmatrix} \begin{pmatrix} 3 & 2 & 4 & 5 \\ 1 & 4 & 3 & 1 \end{pmatrix} = \begin{pmatrix} -1 & -4 & -3 & -1 \\ 3 & 2 & 4 & 5 \end{pmatrix}$
 $A(-1, 3) \quad B'(-4, 2) \quad C'(-3, 4)$
 $D'(-1, 5)$

B₁

B₁

B₁

For ABCD drawing

" A'B'C'D'

co-ordinates.

(ii) $\frac{1}{4}$ turn about the origin

B₁

b) $\begin{pmatrix} 1 & 0 \\ 0 & -1 \end{pmatrix} \begin{pmatrix} -1 & -4 & -3 & -1 \\ 3 & 2 & 4 & 5 \end{pmatrix} = \begin{pmatrix} -1 & -4 & -3 & -1 \\ -3 & -2 & -4 & -5 \end{pmatrix}$
 $A''(-1, -3) \quad B'(-4, 2) \quad C''(-3, -4) \quad D''(-1, -5)$

B₁

B₁

B₁

for drawing

c) $\begin{pmatrix} 1 & 0 \\ 0 & -1 \end{pmatrix} \begin{pmatrix} 0 & -1 \\ 1 & 0 \end{pmatrix} = \begin{pmatrix} 0 & -1 \\ -1 & 0 \end{pmatrix}$

determinant $= -1$

Inverse $= -1 \begin{pmatrix} 0 & -1 \\ -1 & 0 \end{pmatrix}$

$= \begin{pmatrix} 0 & 1 \\ 1 & 0 \end{pmatrix}$

Reflection on the line

$y = -x$

M₁

M

B₁

B₁

MATHE PAPER 1
MARKING SCHEME
PAPER 1

$$\frac{4/7 + \frac{15}{4} \times \frac{8}{3} - \frac{9}{2} \times \frac{10}{3}}{\frac{14}{5} \times \frac{10}{7} - 4 \times \frac{3}{2} + 9}$$

$$= \frac{\frac{1}{2} + 10 - 15}{4 - 6 + 9} = \frac{-4\frac{1}{2}}{7} = -\frac{9}{14}$$

M₁

m₁

A₁

3

2

$$\frac{2(3x-1)(2x-1)}{3(3x-1)(4x-1)}$$

$$= \frac{2(2x-1)}{3(4x-1)} \text{ or } \frac{4x-2}{12x-3}$$

M₁

M₁

A₁

Numerator

Denominator

or $\frac{4x-2}{12x-3}$

3

$$3000 \text{ US\$} = \text{KSh } 3000 \times 76.45$$

$$= 235350$$

$$\text{Remainder} = 235350 - (75000 + 42000)$$

$$= \text{KSh } 117850$$

$$\Rightarrow \frac{117850}{121.04} = 973.65$$

$$= \text{KSh } 974$$

M₁

M₁

M₁

A₁

4

4

$$2^{3(2y-1)} \times 2^{5y} = 2^{4(y+1)}$$

$$6y-3+5y = 4y+4$$

$$7y = 7$$

$$y = 1$$

M₁

m₁

A₁

3

5

$$\frac{x+3+x}{x^2+3x} = \frac{11}{28x}$$

$$56x^2 + 84x = 11x^2 + 33x$$

$$x(45x + 51) = 0$$

$$x = 0 \text{ or } x = -\frac{11}{15}$$

M₁

M₁

A₁

for both values

11 $\frac{dy}{dx} = 2ax + 4$
 at $x = 2$ $2a(2) + b = 4$
 $4a + b = 4$
 at $x = 1$ $2a + b = 0$
 $a = 2$
 $b = -4$
 $-3 = 2 - 4 + c$
 $c = -1$

M₁

M₁

A₁

12 $\cos^2 x + 2 \cos x \sin x + \sin^2 x + \cos^2 x - 2 \cos x \sin x + \sin^2 x$ M₁
 $= 2 \cos^2 x + 2 \sin^2 x$
 $= 2 (\cos^2 x + \sin^2 x)$
 $= 2(1)$
 $= 2$

M₁

A₁

14 Error $20.66 - 20.6 = 0.06$
 Fractional error
 $= \frac{0.06}{20.6} = 6/2060$
 $= \frac{3}{1030}$

B₁

M₁

A₁

13 $(3 + \frac{1}{8}x)^4$
 $= 1 \cdot 3^4 + 4 \cdot 3^3 (\frac{1}{8}x) + 6 \cdot 3^2 (\frac{1}{8}x)^2 + 4 \cdot 3 (\frac{1}{8}x)^3 + (\frac{1}{8}x)^4$ M₁
 $= 81 + \frac{27}{2}x + \frac{27}{32}x^2 + \frac{3}{128}x^3 + \frac{x^4}{4096}$ A₁
 $(3.025)^4$ $x = 0.2$
 $3.025^4 = 81 + \frac{27(0.2)}{2} + \frac{27(0.2)^2}{32} + \frac{3(0.2)^3}{128} + \frac{(0.2)^4}{4096}$ M₁
 $= 83.72$ A₁

15 $P(B) + \frac{1}{5} = \frac{9}{20}$
 $P(B) = \frac{9}{20} - \frac{1}{5}$
 $= \frac{1}{4}$

M₁

A₁

16

$$x^2 + 2 = 4x - x^2$$

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

$$x^2 - 2x + 1 = 0$$

$$(x-2)(x-2) = 0$$

$$x = 2$$

$$y = 2^2 + 2 = 6$$

$$\frac{dy}{dx} = 2x$$

$$m = 2 \times 2 = 4$$

$$\text{Equation } \frac{y-6}{x-2} = 4$$

$$y = 4x + 2$$

m₁

A₁

m₁

A₁

SECTION II

17

a) i) $\frac{180}{360} \times 2 \times \frac{22}{7} \times 6370 \cos 50$
 $= 12868.6$

ii) $180 \times 60 \cos 50$
 $= 6942.106185 \text{ nm}$

b) The shortest distance
 $= 80 \times 60$
 $= 4800 \text{ nm}$

c) $\frac{4800}{54}$
 $= 88.888$
 $\approx 89 \text{ knots}$

B₁

m₁

A₁

— longitude difference of 180°

m₁

~~m₁~~

A₁

— ~~cos 50°~~

B₁

m₁

A₁

— Angle difference 50°

m₁

A₁

20

$$9) CF = 13, 27, 45, 65, 88, 105, 117$$

Plotting P₂

Scale - 51

Curve - C₁

(b) From the graph,

$$\text{The median} = 46.5$$

(ii)

$$Q_1 = 31$$

$$Q_3 = 59.5$$

quartile deviation,

$$= \frac{59.5 - 31}{2}$$

$$= 14.25$$

B₁B₁B₁

Line drawn at the graph.

B₁B₁B₁

$$21) (i) \angle MLN = 35^\circ$$

Angles subtended by the same chord at the circumference

$$(ii) \angle KLM$$

$$= 90^\circ$$

Diameter subtends an angle of 90° at the circumference

$$(iii) \text{Angle } OLM$$

$$= 30^\circ$$

- opposite angles of a cyclic quadrilateral

$$(iv) \angle LNP$$

$$= 60^\circ$$

- radius and tangent intersect at 90°

v)

$$\angle MPN = 60^\circ$$

Sum of interior angles in a triangle

B₁B₁B₁B₁B₁B₁B₁B₁B₁B₁

11 $16800 : 12800$

$168 : 128$

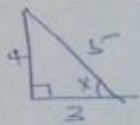
$41 : 47$ ----- B₁

% change = $\frac{12800 - 16800}{16800}$ M₁

= -16.63% A₁

3

12



$\sin x = \frac{4}{5}$
 $\cos x = \frac{3}{5}$

$\sin^2 x + \cos^2 x = \left(\frac{4}{5}\right)^2 + \left(\frac{3}{5}\right)^2$ M₁

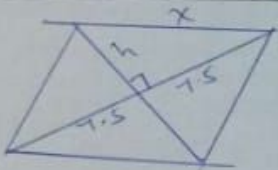
= $\frac{31}{25}$

= $1\frac{6}{25}$ A₁

A₁

3

13



$\frac{1}{2} \times 11.5 \times h \times 2 = 60$ M₁

$h = 4$

$x^2 = 4^2 + 7.5^2$ M₁

$x = 8.5$

$D = 8.5 \times 4$

= 34 A₁

side of rhombus

A₁

3

14

$-3 < 2x + 4 < -3x + 9$

$-7 < 2x$

$-3.5 < x$ ----- B₁

$2x + 4 < -3x + 9$

$5x < 5$

$x < 1$ ----- B₁

Integral values $-3, -2, -1, 0$ B₁

15

$\log_3 \frac{(4+3x)(27)}{x+6} = 2$ M₁

$9(x+6) = 27(4+3x)$ M₁

$x+6 = 12+9x$

$8x = -6$

$x = -\frac{3}{4}$ A₁

A₁

3

$$24 \cdot a) 156 = \frac{8}{2} (4 + 7d)$$

$$39 = 4 + 7d$$

$$7d = 35$$

$$d = 5$$

M1

A1

$$416 = \frac{n}{2} (4 + (n-1)5)$$

$$5n^2 - n - 832 = 0$$

$$(5n + 64)(n - 13) = 0$$

$$n = 13$$

M1

A1

(2)

$$b) \frac{a+4d}{a+2d} = \frac{a+7d}{a+4d}$$

$$8ad - 9ad = -2d^2$$

$$1ad = 2d^2$$

$$a = 2d$$

$$a = 2 \times 3$$

$$= 6$$

$$1st \rightarrow 6 + 6 = 12$$

M1

M1

A1

B1

$$b) 12 \cdot r = \frac{6+8}{6+6} = 1.5$$

$$S = 12 \left(\frac{1.59 - 1}{0.5} \right)$$

$$= 898.6$$

M1

A1

24

$$\begin{aligned}
 a) \quad & x+y \leq 250 \\
 & x \leq 200 \\
 & x \geq 50 \\
 & y \leq 2x \\
 & y \geq 0.
 \end{aligned}$$

(b)

(c)

From the graph,
 Ordinary 84
 Special 166

$$\begin{aligned}
 d \quad & \text{maximum profit} \\
 & = 84 \times 100 + 166 \times 160 \\
 & = 34960
 \end{aligned}$$

$$\begin{aligned}
 B_1 \\
 B_1 \\
 B_1 \\
 B_1
 \end{aligned}$$

$$\begin{aligned}
 B_1 \quad & \text{plotting } x+y \leq 250 \\
 B_1 \quad & \text{" } x \leq 200 \\
 B_1 \quad & \text{" } x \geq 50 \\
 B_1 \quad & \text{" } y \leq 2x
 \end{aligned}$$

$$\begin{aligned}
 B_1 \\
 B_1
 \end{aligned}$$

$$\begin{aligned}
 M \\
 A
 \end{aligned}$$

6

$$\frac{dy}{dx} = 6x - 4$$

$$m_1 = 12 - 4 = 8$$

$$m_2 = -\frac{1}{8}$$

$$\frac{y-5}{x-2} = -\frac{1}{8}$$

$$8y - 40 = -x + 2$$

$$8y = -x + 42$$

 m_1 m_1 A_1

3

7

$$Em = 15$$

$$m = 3$$

$$q = x - 1$$

$$x = 10$$

$$CA = \sqrt{q^2 + 15^2} = 17.49$$

 b_1 b_1 b_1

3

8

$$\sqrt{x^2 + q^2} = x - y$$

$$x^2 + q^2 = (x - y)^2$$

$$q^2 = (x - y)^2 - x^2$$

$$q = \pm \sqrt{(x - y)^2 - x^2}$$

 m_1 m_1 A_1

9

Mid-point (4, 2)

$$m_1 = \frac{1-3}{6-2} = -\frac{1}{2}$$

$$m_2 = 2$$

$$\frac{y-2}{x-4} = \frac{2}{1}$$

$$\frac{x-2}{3} + \frac{y}{6} = 1$$

 m_1 A_1

10

1 cm at 48 and 72

$$= 24 \times 3^2 = 144$$

$$\text{3rd } N_0 = \frac{3 \times 1008}{144}$$

$$= 21$$

Follow any other method.

 b_1 m_1 A_1

3

6	$x^2 - 4x + y^2 - 6y = -4$ $(x-2)^2 + (y-3)^2 = -4 + 4 + 9$ $= (x-2)^2 + (y-3)^2 = 9$ <p>Centre (2, 3) Radius = 3</p>	M1 M1 A1	for both the Centre and Radius
7	$V = \frac{66 \times 35 \times 45}{18 \times 60} = 96.25$ $\frac{22}{7} \times 1.75^2 \times V = 96.25$ $V = \frac{96.25}{9.625}$ $= 10 \text{ cm}^3$	M1 M1 A1	
9	$y = ax + bx^2$ $14 = 2a + 4b$ $44 = 4a + 16b$ $a = 3 \text{ and } b = 2$ $y = 3 \times 6 + 2 \times 6^2$ $= 80$	B1 M1 A1 A1 B1	for both equations Solving Simul. for both eqns
8	$x + 6 = 3x^2 - 4$ $3x^2 - x - 10 = 0$ $(3x + 5)(x - 2)$ $x = -\frac{5}{3} = -1\frac{2}{3}$ $x = 2$	M1 M1 A1	For both values,
10	$(6 + T_0) T_0 = 8 \times 5$ $(T_0)^2 + 6T_0 - 40 = 0$ $(T_0 + 10)(T_0 - 4) = 0$ $T_0 = 4$ $S_0 = 10$	M1 M1 A1	

4. Express each of the following as a single fraction

(a) $\frac{m}{3} + \frac{x-1}{2} + \frac{x}{6}$

LCM 6

$$\frac{2(m) + 3(x-1) + 1(x)}{6}$$

(3mrks)

$$\frac{2m + 3x - 3 + x}{6}$$

(b) $\frac{r+s}{r} - \frac{r-s}{s}$

LCM rs

$$\frac{s(r+s) - r(r-s)}{rs}$$

(2mrks)

$$\frac{sr - s^2 - r^2 + rs}{rs}$$

(c) $\frac{2s-3}{4} + \frac{2-r}{3}$

LCM 12

$$\frac{3(2s-3) + 4(2-r)}{12}$$

(2mks)

$$\frac{6s - 9 + 8 - 4r}{12}$$

5. Evaluate

$\frac{3}{8}$ of $(7\frac{3}{5} - \frac{1}{3}(1\frac{1}{4} + 3\frac{1}{3}) \times 2\frac{2}{5})$

(3mrks)

$$\frac{3}{8} \text{ of } \left(\frac{38}{5} + \frac{1}{3} \left(\frac{5}{4} + \frac{10}{3} \right) \times \frac{12}{5} \right)$$

$$\frac{3}{8} \text{ of } \left[\frac{38}{5} - \frac{5}{12} - \frac{10}{9} \times \frac{4}{5} \right]$$

$$\frac{3}{8} \text{ of } \left[\frac{38}{5} - \frac{5}{12} - \frac{8}{3} \right]$$