

16 a)  $(2(n-1)-4)90 : (2n-4)90 = 2:3$  M1

$(2n-6) : (2n-4) = 2:3$

$\frac{2n-6}{2n-4} = \frac{2}{3}$  M1

$6n-18 = 4n-8$

$2n = 10$

$n = 5$  A1

b)  $ex = \frac{360}{5} = 72$   $ex = \frac{360}{4} = 90$

interior angles

$\Rightarrow 108$  B1

$\Rightarrow 90$  B1

SECTION II Paper 5 4

17. a)  $R.S = 12 \cdot 9 = 3$  B1

$\frac{240}{3}$  M1

$= 80 \text{ sec.}$  A1

b)  $\frac{10}{x} - \frac{10}{x+15} = \frac{1}{6}$  M1

$90 = x^2 + 15x$

$x^2 + 3x - 180 = 0$

$x^2 + 15x - 12x - 180 = 0$

$x(x+15) - 12(x+15) = 0$  M1

$(x+15)(x-12) = 0$

$x = -15$  or  $x = 12$

$\Rightarrow x = 12$

Y - 12 km/hr

X - 13.5 km/hr. A1

(c)  $T_1 = 48 \times \frac{3}{4} = 36$  B1

$T_2 = 52 \times \frac{3}{4} = 39$  B1

$D = 500 - (36 + 39)$  B1 for both

$= 425$  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

$$= \frac{1}{2} (169 + 2 \times 45)$$

A1

$$= 535.5$$

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

M1

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

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

A1

$$\frac{534\frac{1}{3}}{534\frac{1}{3}} \times 100\%$$

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

$$A = 1 (30.25 + 42.25 + 56.25 + 72.25 + 90.25 + 110.25 + 132.25) = 533.75$$

M1

A1

23 a)  $P = \frac{k\phi^2}{NR}$

B1

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

M1

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

M1

$$= 1.6$$

A1

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

M1

$$= 9.8$$

A1

c) New  $P = \frac{k(1.21)\phi^2}{0.9NR}$

M1

$$= \frac{1.3444k\phi^2}{NR}$$

M1

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

M1

$$\% \text{ Chag} = \frac{0.3444k\phi^2}{NR} \times 100\% = 34.44$$

M1

A1

22

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

M1  
M1  
M1  
A1

b)  $600,000 - 316,620$   
 $= 283,380$

M1  
A1

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

M1  
M1  
M1  
A1

23 a)  $AC = -a + 2b$   
 $BE = -\frac{1}{2}a + \frac{5}{3}b$

B1  
B1

b)  $DC = k(-a + 2b)$   
 $= -ka + 2kb$   
 $BD = h\left(-\frac{1}{2}a + \frac{5}{3}b\right)$   
 $= -\frac{h}{2}a + \frac{5h}{3}b$

B1  
M1

$DC = DB + BC$   
 $= h\frac{b}{2} - \frac{5}{3}h\frac{a}{2} + b$   
 $= \frac{1}{2}(h+1)a - \frac{5}{3}h\frac{a}{2}$

M1

with  $k = k$   $1+h = 2k$   
 $1+h = 2\left(\frac{5}{3}k\right)$   
 $10k = 3+3h$   
 $7k = 3$

M1

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

A1 - for value of h  
 B1 - for the value of k

$DC = \frac{5}{7}AC \Rightarrow DC:AC = 5:7$   
 $AD:DC = 2:5$

B1  
B1

N/S

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)

$$\begin{array}{r} \text{let } x \text{ be } 0.\dot{3}33 \\ 10x = 3.333 \\ - \quad x = 0.333 \\ \hline 9x = 3.0 \end{array} \quad \begin{array}{l} x = \frac{3}{9} \\ a-b \\ 3-9 \\ = \underline{\underline{-6}} \end{array}$$

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

$$y = 3 - 6x + 4.5x^2 - 1x^3$$

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

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

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

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

Co-ordinates of A (1, 0.5)

B (2, 1)

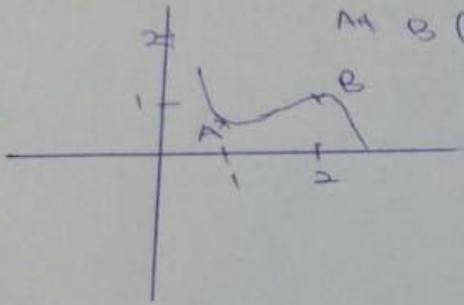
b)  $\frac{d^2y}{dx^2} = 9 - 6x$ , when  $x = 1$   $\frac{d^2y}{dx^2} = 3$

At A (1, 0.5) minimum B1

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

At B (2, 1) Maximum B1

c)



B1 - minimum turning point A.  
B1 - maximum at B

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)  $42700$

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

$= 3558.30$

$12261.00$

$2332.30$

(c)  $15000 - 2332.30$

$= 12767.70$

M1

M1

A for both values

B1

B1

B1

B1

B1

10

M1

M1

A1

M1

M1

A1

M1

A1

M1

A1

10

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

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

$$AB = 5.2915 \times 2 \\ = 10.58$$

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

$$\theta = 41.41$$

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

$$360 - 82.82$$

$$= 277.18^\circ$$

$$\text{c) } \frac{32.82}{360} \times 3.142 \times 64 - \frac{1}{2} \times 64 \times 82.82 \\ = 46.26 - 31.75 \\ = 14.51$$

Area shaded

$$= 31.75 \times 2 - 14.51 \times 2 \\ = 63.5 - 29.02 \\ = 34.48$$

M

M

M

M

M

M

M

M

M

M

M

M

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

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

$$\text{ii) } P(WW) = \frac{6}{9} \times \frac{5}{8} \\ = \frac{30}{72}$$

$$\text{b) } P(Wb \text{ or } bW)$$

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

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

$$\text{ii) } P(Wb \text{ or } bW)$$

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

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

M

M

M

M

M

M

M

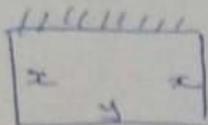
M

M

for each.

MATHEMATICS PAPER 2  
MARKING SCHEME  
PAPER 2.

SECTION I



$$2x + y = 40$$

$$y = 40 - 2x$$

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

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

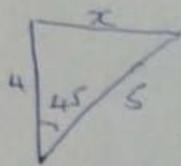
$$\frac{dA}{dx} = 40 - 4x = 0 \quad M1$$

$$x = 5$$

$$y = 30$$

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

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.

$$P \left(1 + \frac{r}{100}\right)^1 = P \left(1 + \frac{r}{100}\right)^4 \quad M1$$

$$1 + \frac{r}{100} = 1.024 \quad M1$$

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

$$r = 4.04 \quad A1$$

4

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

$$x = 3.464 \quad M1$$

M1

A1

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

$$x = 2 \quad M1$$

M1

A1

5

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

M1

$$= 75k \quad A1$$

A1

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

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

$= \sqrt{14}$   
 $= 3.742$

b)  $\tan \theta = \frac{3.742}{5}$   
 $\theta = 36.81$

(ii)  $\sin \theta = \frac{3.742}{8}$   
 $\theta = 27.89^\circ$

(iii)  $\tan \theta = \frac{5}{3.742}$   
 $\theta = 53.19$   
Angle =  $53.19 \times 2$   
 $= 106.38$

B<sub>1</sub>  
M<sub>1</sub>  
A  
M<sub>1</sub>  
M  
M<sub>1</sub>  
A<sub>1</sub>  
B<sub>1</sub>  
M<sub>1</sub>  
A<sub>1</sub>

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) B'(-4, 2) C'(-3, 4)  
D'(-1, 5)

B<sub>1</sub> For ABCD drawing  
B<sub>1</sub> " A'B'C'D'  
B<sub>1</sub> co-ordinates.

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

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) B''(-4, -2) C''(-3, -4) D''(-1, -5)

B<sub>1</sub>  
B<sub>1</sub> for drawing  
B<sub>1</sub>

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

det = -1

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

Reflection on the line  
 $y = -x$

M<sub>1</sub>  
A  
B

MATHS PAPER 1  
MARKING SCHEME  
PAPER 1

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

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

$$= \frac{-9}{14}$$

M<sub>1</sub>

M<sub>1</sub>

A<sub>1</sub>

3

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

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

M<sub>1</sub>

M<sub>1</sub>

A<sub>1</sub>

Numerator

Denominator

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

3

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

$$= 235350$$

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

$$= \text{KSh } 117850$$

M<sub>1</sub>

M<sub>1</sub>

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

M<sub>1</sub>

$$= \text{KSh } 974$$

A<sub>1</sub>

4

4

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

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

$$7y = 7$$

$$y = 1$$

M<sub>1</sub>

M<sub>1</sub>

A<sub>1</sub>

3

5

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

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

M<sub>1</sub>

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

M<sub>1</sub>

$$x = 0 \text{ or } x = -\frac{2}{5}$$

A<sub>1</sub>

for both values

11

$$\frac{dy}{dx} = 2ax + b$$

at  $x = 2$   $2a(2) + b = 4$

at  $x = 1$   $4a + b = 4$

$2a + b = 0$

$a = 2$

$b = -4$

$-3 = 2 - 4 + c$

$c = -1$

M1

M1

A1

12

$$\cos^2 x + 2 \cos x \sin x + \sin^2 x + \cos^2 x - 2 \cos x \sin x + \sin^2 x$$

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

$$= 2 (\cos^2 x + \sin^2 x)$$

$$= 2(1)$$

$$= 2$$

M1

A1

14

$$\text{Error } 20.66 - 20.6 = 0.06$$

Fractional error

$$= \frac{0.06}{20.6} = \frac{6}{2060}$$

$$= \frac{3}{1030}$$

B1

M1

A1

13

$$\left(3 + \frac{1}{8}x\right)^4$$

$$= 1 \cdot 3^4 + 4 \cdot 3^3 \left(\frac{1}{8}x\right) + 6 \cdot 3^2 \left(\frac{1}{8}x\right)^2 + 4 \cdot 3 \left(\frac{1}{8}x\right)^3 + \left(\frac{1}{8}x\right)^4$$

$$= 81 + \frac{27}{2}x + \frac{27}{32}x^2 + \frac{3}{128}x^3 + \frac{x^4}{4096}$$

$$(3.025)^4 \quad x = 0.2$$

$$3 \cdot 0.25^4 = 81 + \frac{27(0.2)}{2} + \frac{27(0.2)^2}{32} + \frac{3(0.2)^3}{128} + \frac{(0.2)^4}{4096}$$

$$= 83.72$$

M1

A1

M1

A1

15

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

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

$$= \frac{1}{4}$$

M1

A1

16

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

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

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

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

$$x = 2$$

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

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

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

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

$$y = 4x + 2$$

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)

$$180 \times 60 \cos 50$$

$$= 6942.106185 \text{ m}$$

b) The shortest distance

$$= 80 \times 60$$

$$= 4800 \text{ m}$$

c)

$$\frac{4800}{54}$$

$$= 88.888$$

$$\approx 89 \text{ knots}$$

B1

M1

A1

M1

A1

B1

M1

A1

M1

A1

Longitude difference of  $180^\circ$

~~cos 50~~

Angle difference  $50^\circ$

20

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

Plotting  $P_2$   
Scale - 5:1  
Curve -  $C_1$

(i) From the graph,  
The median = 46.5

(ii)

$$Q_1 = 31$$

$$Q_3 = 59.5$$

quartile deviation

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

$$= 14.25$$

B1

B1

B1

Line drawn of the graph.

B1

B1

B1

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

Angles subtended by the same chord at the circumference

$$(ii) \angle KLM = 90^\circ$$

Diameter subtends an angle of  $90^\circ$  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  $90^\circ$

y)

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

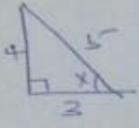
Sum of interior angles in a triangle

B1

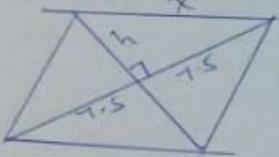
11  $16800 : 18800$   
 $168 : 188$   
 $41 : 47$  ----- B<sub>1</sub>

% change =  $\frac{18800 - 16800}{16800}$  M<sub>1</sub>  
 $= 11.90\%$  A<sub>1</sub>

3

12   $\sin x = \frac{4}{5}$  M<sub>1</sub>  
 $\cos x = \frac{3}{5}$  M<sub>1</sub>  
 $\sin^2 x + \cos^2 x = \left(\frac{4}{5}\right)^2 + \left(\frac{3}{5}\right)^2$  M<sub>1</sub>  
 $= \frac{31}{25}$  A<sub>1</sub>  
 $= 1\frac{6}{25}$

3

13   $\frac{1}{2} \times 15 \times h \times 2 = 60$  M<sub>1</sub>  
 $h = 4$   
 $x^2 = 4^2 + 7.5^2$  M<sub>1</sub> — side of rhombus  
 $x = 8.5$   
 $D = 8.5 \times 4$   
 $= 34$  A<sub>1</sub>

3

14  $-3 < 2x + 4 < -3x + 9$   
 $-7 < 2x$   
 $-3.5 < x$  ----- B<sub>1</sub>  
 $2x + 4 < -3x + 9$   
 $5x < 5$   
 $x < 1$  ----- B<sub>1</sub>  
 Integral values  $-3, -2, -1, 0$  B<sub>1</sub>

15  $\log_3 \frac{(4+3x)(27)}{x+6} = 2$  M<sub>1</sub>  
 $9(x+6) = 27(4+3x)$  M<sub>1</sub>  
 $x+6 = 12+9x$   
 $8x = -6$   
 $x = -\frac{3}{4}$  A<sub>1</sub>

3

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

$$39 = 4 + 7d$$

$$7d = 35$$

$$d = 5$$

M1

A1

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

$$5n^2 - n - 332 = 0$$

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

$$n = 13$$

M1

A1

8)

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

$$89d - 9ad = -2d^2$$

$$1ad = 2d^2$$

$$a = 2d$$

$$a = 2 \times 3$$

$$= 6$$

$$1^{st} \rightarrow 6 + 6 = 12$$

M1

M1

A1

B1

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

$$s = 12 \left( \frac{1.5^9 - 1}{0.5} \right)$$

$$= 898.6$$

M1

A1

24

a)  $x + y \leq 250$   
 $x \leq 200$   
 $x \geq 50$   
 $y \leq 2x$   
 $y > 0$

(5) (b)

(b)

(b) From the graph,  
 ordinary 84  
 special 166

d maximum profit  
 $= 84 \times 100 + 166 \times 160$   
 $= 34960$

B1  
 B1  
 B1  
 B1

B1  
 B1  
 B1  
 B1

B1  
 B1

M7  
 A7

plotting  $x + y \leq 250$   
 "  $x \leq 200$   
 "  $x \geq 50$   
 "  $y \leq 2x$

6

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

$$M_1 = 12 - 4 = 8$$

$$M_2 = -\frac{1}{8}$$

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

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

$$8y = -x + 42$$

M1

M1

M1

3

7

$$Em = 15$$

$$m = 3$$

$$q = k - 1$$

$$k = 10$$

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

B1

B1

B1

3

8

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

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

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

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

M1

M1

A1

3

9

Mid-point (4, 2)

$$M_1 = \frac{1-3}{6-2} = -\frac{1}{2}$$

$$M_2 = 2$$

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

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

B1

M1

A1

10

LCM of 48 and 72

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

3rd No =  $\frac{3 \times 1008}{144}$

$$= 21$$

Follow any other method.

B1

M1

A1

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 A	for both the Centre and Radius
7	$V = \frac{66 \times 35 + 45}{18 \times 60} = 96.25$ $\frac{22}{7} \times 1.75^2 \times V = 96.25$ $V = \frac{96.25}{9.625}$ $= 10 \text{ cm}^3$	M1 M1 A	
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 A <del>A</del> B1	for both equations Solve 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 A	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 A	

4. Express each of the following as a single fraction

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

LCM 6

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

(3mks)

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

$$\frac{2m - 3 + 4x}{6}$$

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

LCM rs

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

(2mks)

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

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

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

LCM 12

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

(2mks)

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

$$\frac{6s - 1 - 4r}{12}$$

(3mks)

5. Evaluate

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

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

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

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