Start here for Question Number: 4

a, i, $a = 1\text{km}$ ; $d = 750$

$T_n = 1 + (9-1).750$

$= 1 + 6$

$= 7\text{km}$

ii, $\frac{n}{2}(2a + (n-1)d)$

$= \frac{10}{2}[2(1) + (10-1).750]$

$= 5[2 + 6750]$

$= \frac{n}{2}[2(1) + (n-1)10]$

$= \frac{n}{2}[2 + 10n - 10]$

$= n$

$7\text{km} + 4(0.750) = 11.$

$= 11\text{th}$ week runs exactly 10 km.

iii, $\frac{26}{2}\left[2(1)+(26-1)0.750\right]+\frac{26}{2}\left[2(10)+(26-1)10\right]$

$= 13(2+18.75) + 13(20+250)$

$= 269.75 + 3510.$

$= \$3779.75$ pm.

b, $\int_1^2 e^{2x}\,dx - \int_0^1 e^{-x}$

$\left[\frac{1}{2}e^{2x}\right]_1^2 - \left[-e^{-x}\right]_0^1$

$\left(\frac{1}{2}e^{2(2)} - \frac{1}{2}e^{2(1)}\right) - \left(-e^{-1} + e^{-0}\right)$

$\left(\frac{1}{2}e^4 - \frac{1}{2}e^2\right) - (0.63)$

Additional writing space on back page.

c, 4 mint, 4 car, 4 straw. = 12.

i, $P(2) = \frac{4}{12} \times 2 = \frac{2}{3}$.

ii, $\frac{1}{4}$

iii, $\frac{1}{2}$

mc
ms
mm
cs
cm
cc
sm
sc
ss

d, $f(x) = 1 + e^x$ $f(x) \times f(-x) = f(x) + f(-x)$.

$(1+e^x) \times (1-e^x) = (1+e^x) - (1+e^x)$

$(1+e^x) \times (1-e^x) = (1+e^x) - (1-e^x)$

You may ask for an extra Writing Booklet if you need more space to answer question 4.