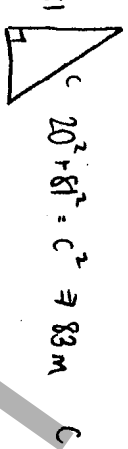


$$(2m)^2 = 16m^4 n^8$$

$$0.008636$$



$$20^2 + 81^2 = c^2 \Rightarrow 83m$$

Median

$$\frac{10}{2000} \times \frac{9}{1999} \times \frac{5}{1998}$$

$$960 = P \times 0.05 \times 8$$

$$\therefore P = \$12000$$

$$\bar{x} \Rightarrow \uparrow$$

$$\sigma_n \Rightarrow \downarrow$$

$$6 \times 2 \times 2 \times 2 = 48$$

$$(107.46 \times 12 \times 20) = \$25390.40$$

$$Int = \$16790.40$$

$$\frac{3}{8}$$

$$\frac{16}{365} = 0.04384\%$$

$$y = \frac{x+3}{4}$$

$$\sigma_n = 14.37$$

try, smaller s.d. are consistent

15 $\frac{1}{2} \times 5 = 2.5g$

15 $\frac{2.5}{345} \times 100 = 0.66\%$

15 $\frac{2}{20} \times 100 = 15\%$

15 $\frac{15}{17} = 1.66\%$

13 6 parts = 180°

1 part = 30°

3 parts = 90°

$\therefore 90 - 30 = 60°$

18 $V^2 = u^2 + 2as$

$u^2 = \frac{V^2 - 2as}{2}$

$u = \sqrt{\frac{V^2 - 2as}{2}}$

19 170 - 100 = \$70

20 $C = 14n + 5$

a) $\sqrt{2x-1} = 3$

$2x-1 = 9$

$2x = 10$

$x = 5$

b) $\frac{15}{100} \times 1450 = 217.50$

1 ml

2 mls

i) Int = $1232.50 \times 0.095 \times 2$

= \$234.175

= \$234.18

P = \$1450 - 217.50

= \$1232.50

Total = 1450 + 238.14

= \$1684.18

2 mls

AMT left to pay = \$1466.675

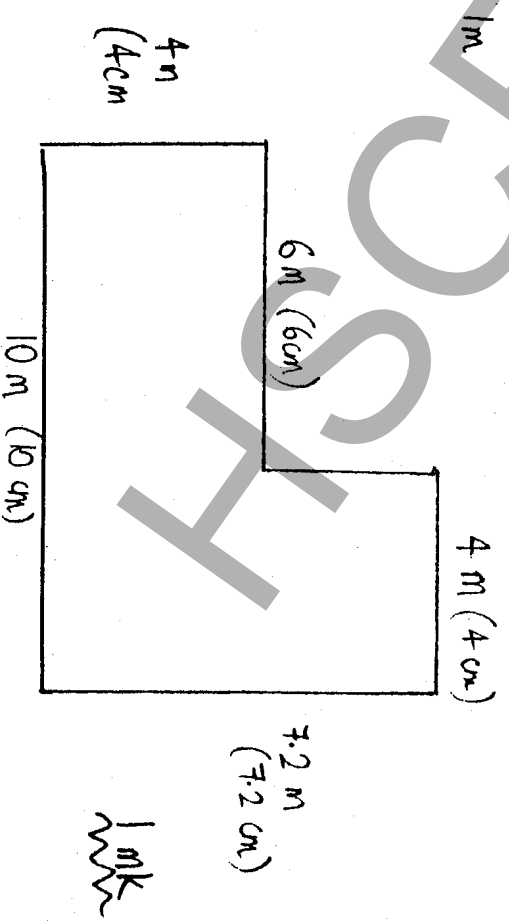
\therefore fort. repay = $\frac{1466.675}{26 \times 2}$

= \$28.205...

= \$28.21

2 mls

c) 1cm = 1m



7.2 m (7.2 cm)

1 ml

i) Area tiles = $0.4 \times 0.4 = 0.16 \text{ m}^2$

Area room = $4 \times 6 + 4 \times 7.2 = 52.8 \text{ m}^2$

$\therefore n^\circ \text{ tiles} = \frac{52.8}{0.16} = 330 \text{ tiles}$

i) 120

ii) $\frac{36}{120} \times 100 = 30\%$

iii) $\frac{12}{120} = \frac{1}{10}$

iv) $\frac{93}{120} = \frac{31}{40}$

2) $\frac{6 \times 5}{2 \times 1} = 15 \text{ combinations}$

Question 22

a) i) $\frac{5.2}{0.65} = 8$

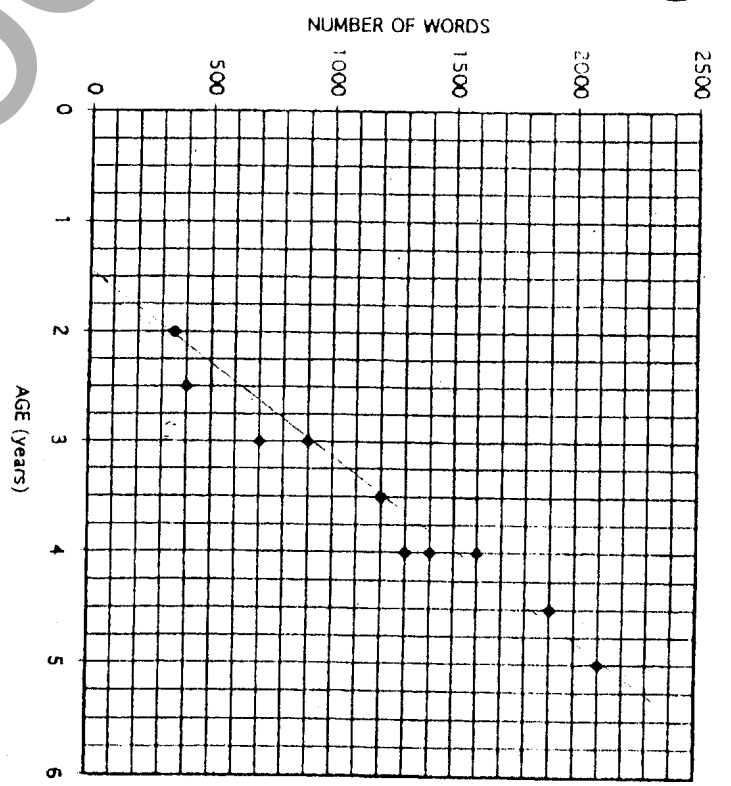
ii) $8 \times 1 = 8 \text{ m}$
 $n = \frac{x}{1} = \frac{5.2}{0.65}$

b) i) $\sim \$170,000$ (only repay)

- ii) $\sim 17 \text{ yrs}$
- iii)
 - pay loan off quicker
 - save by paying less interest over term of loan

2 mks
 1 mks
 1 mks
 1 mks
 1 mks
 1 mks
 1 mks
 2 mks

c)



ii) $\sim 1200 \text{ words}$

iii) $\sim 1\frac{1}{2} \text{ yrs}$

iv) av. rate \Rightarrow (gradient) $\sim 600 \text{ words/yr}$
 (accept $\frac{1}{1} 500 \leq 700$)

v) justify
 - as age increases, so does n° of words ~ 600 per year (or other justification)

1 mks
 1 mks
 1 mks
 2 mks

$$D = \frac{kA}{70}$$

$$D = \frac{22.5 \times 12}{70}$$

$$= 3.857 \text{ ml morning} + 3.857 \text{ ml at night}$$

$$\therefore \text{total per day} = 7.714 \dots$$

$$\text{bottle} = \frac{375}{7.714 \dots}$$

$$= 48.6 \text{ days}$$

$$\therefore n^\circ \text{ days} = 48 \text{ days}$$

$$\left(\frac{375}{7.7} = 48.7 \text{ days} \right)$$

3 mks

Question 23

i) $4 \times 3 \times 2 \times 1 = 24$

ii) $\frac{1}{24} / \frac{1}{6} \quad (3 \times 2 \times 1)$

Look
Look

MB
should be 1mk
not 2mk

ii) $1.08^N = 3$

i) $1.08^{11} = 2.01444 \dots$

$$= 2.01 \quad (2 \text{ dp})$$

1mk

ii) $N = 14.3 \quad (1 \text{ dp})$

Guess	Check
$N = 14$	2.93
$N = 14.5$	3.05
$N = 14.3$	3.005...

* need a few guesses
for full marks
→ must use method asked.

2 mks

c) Balance = \$490

$$\text{Int} = 490 \times \frac{0.0437}{100} \times 8$$

$$= \$1.71304$$

$$= \$1.71$$

2 mks

d) i) \$79183.17 owed at end of 6mths

$$\therefore \text{amt paid off} = 80000 - \frac{79183.17}{100}$$

$$= \$816.83$$

1 mks

ii) \$665.56

iii) $B = \frac{0.10 \times 79732.23 \times 1}{12}$

$$= \$664.43525$$

$$= \$664.44$$

1 mks

(Mk interest
rate = 0.83...%)

1 mks

$$C = 79732.23 + 664.44$$

$$= \$80396.66525$$

$$= \$80396.67$$

1 mks

3 mks

$$D = 80396.67 - 800 \quad (\text{or look at mtl 4})$$

$$= \$79596.67$$

1 mks

e) $T = 2\pi \sqrt{\frac{L}{g}}$

$$8.3 = 2\pi \sqrt{\frac{L}{9.8}}$$

$$\frac{8.3}{2\pi} = \sqrt{\frac{L}{9.8}}$$

$$\therefore L = \left(\frac{8.3}{2\pi} \right)^2 \times 9.8$$

$$= 17.1010 \dots$$

$L = 17.1$
(3 sig. figures)

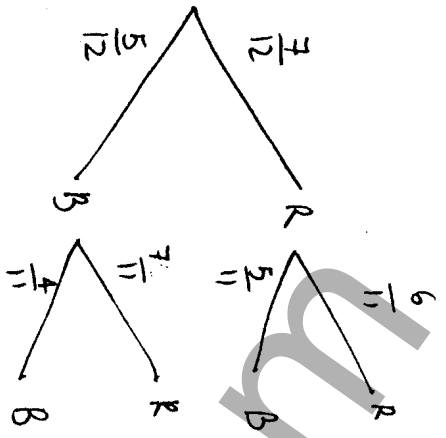
3 mks

(-1 for not
having 3 sig. figures)

Question 24

a) outlier will influence mean

b) i.)



* need all n's correct for 2 mls (-1 for each mistake)

ii) $P(BB) = \frac{5}{12} \times \frac{4}{11}$
 $= \frac{5}{33}$

1 mlk

iii) $P(BB) \text{ or } P(RR)$
 $= \left(\frac{5}{12} \times \frac{4}{11} \right) + \left(\frac{3}{12} \times \frac{6}{11} \right)$
 $= \frac{5}{33} + \frac{3}{22}$
 $= \frac{31}{66}$

2 mls

iv) $P(\text{at least one}) = 1 - P(\text{none})$
 $= 1 - P(RR)$
 $= 1 - \left(\frac{3}{12} \times \frac{6}{11} \right)$
 $= 1 - \frac{3}{22} \Rightarrow \frac{19}{22}$

2 mls

ii) 1.1) look for numbers = 11

1 mlk

	Best Actor	Best Actress
• shape/skew	positively skewed	positively skewed
• location - median mode	42 40 - 49 yrs	33 30 - 39 yrs
• spread - IQR - range	48 - 38 = 10 77 - 30 = 47	38 - 27 = 11 74 - 21 = 53

- similar overall shape (\Rightarrow positive skew) \Rightarrow range \neq IQR
- similar spread - measures of location
- difference - median age for Best Actor is significantly higher than for Best Actress

• For 4 mls - need to look at each of the categories \Rightarrow cannot use words "spread" - must use IQR / range etc
 3 mls for a table + 1 mlk explaining similarities / differences.

* NB Must use numbers to support statements (no numbers, no marks! \rightarrow need to justify your reasoning!)