

Rachel
un 5

$$\frac{44\frac{1}{2}}{48}$$

$$= 93\%$$

Congratulations on completing your year 11 work!
Your results have been terrific!!
Well done, Rachel!!

Regards, Kris

①

2mm Squares

Section A: Driving Safely

Q1)

$$a) \text{BAC (male)} = \frac{10N - 7.5H}{6.8M}$$

$$= \frac{(10 \times 6) - (7.5 \times 3)}{(6.8 \times 60)}$$

$$= \frac{60 - 22.5}{408}$$

$$= \frac{37.5}{408}$$

$$= 0.09191176471$$

$$\approx 0.092$$

$$b) \text{BAC (female)} = \frac{10N - 7.5H}{5.5M}$$

$$= \frac{(10 \times 6) - (7.5 \times 3)}{(5.5 \times 60)}$$

$$= \frac{60 - 22.5}{330}$$

$$= \frac{37.5}{330}$$

$$= 0.114$$

(2)

2mm Square:

Q1) (continued)

$$c) \frac{0.114}{0.015}$$

$$= 7.6$$

= 7 hours and 36 minutes ✓

Q2)

a)

Time after drinking (H)	0	1	2	3	4
Blood alcohol Content (B)	0.085	0.068	0.051	0.034	0.017

1 hour: $B = 0.085 - 0.017H$

$$= 0.085 - (0.017 \times 1)$$

$$= 0.085 - 0.017$$

$$= 0.068$$

3 hours: $B = 0.085 - 0.017H$

$$= 0.085 - (0.017 \times 3)$$

$$= 0.085 - 0.051$$

$$= 0.034$$

4 hours: $B = 0.085 - 0.017H$ ✓

$$= 0.085 - (0.017 \times 4)$$

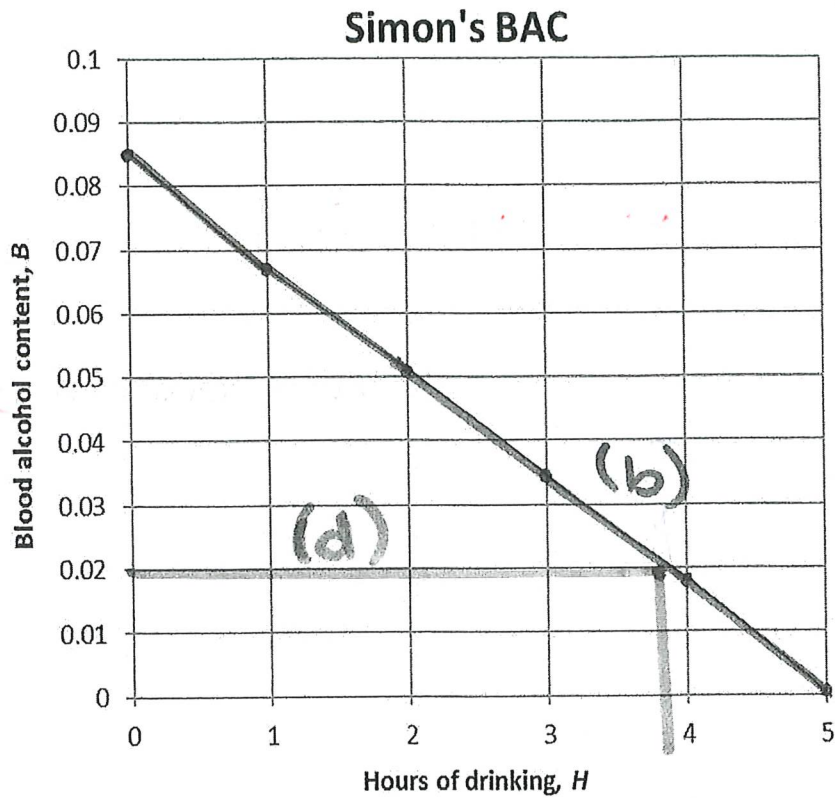
$$= 0.085 - 0.068$$

$$= 0.017$$

(3)

Grid for question 2b) / Section A (ATTACH TO YOUR ANSWER SHEET) Name: RACHEL LOVEDAI

Q2) b)



✓
good!

Q2) (continued)

c) (0, 0.085) (4, 0.017)

$$\frac{0.085 - 0.017}{4 - 0}$$

$$= \frac{0.068}{4}$$

← swap these.

$$= 0.017$$

$$= -0.017$$

note gradient is negative

The gradient is the rate at which Simon's BAC is decreasing per hour.

d) 3.8 ✓

≈ 3 hours and 48 minutes

(Also see graph)

e) When $B = 0$

$$0 = 0.085 - 0.017H$$

$$+0.017H$$

$$+0.017H$$

~~$$0.017H = 0.085$$~~

$$0.017H = 0.085$$

$$\frac{0.017H}{0.017} = \frac{0.085}{0.017}$$

$$H = 5$$

$$H = \frac{0.085}{0.017} = 5$$

Q2) (continued)

e) Simon's BAC will reach zero after 5 hours. ✓

Q3)

a) 2010 ✓

b)

$$i) 97 \over 364 \times 100 = 26.64835165 \\ = 26.6\% \quad \checkmark$$

$$ii) 283 \over 380 \times 100 = 74.47368421 \\ = 74.5\% \quad \checkmark$$

c)

$$i) \frac{296 + 267 + 267 + 243 + 211 + 242 + 28}{7}$$

$$= \frac{1809}{7} \quad \checkmark$$

$$= 258.4285714$$

$$= 258.43 \quad \checkmark$$

$$ii) \frac{109 + 97 + 102 + 90 + 96 + 108 + 97}{7}$$

$$= \frac{699}{7}$$

Q3) (continued)

c)

$$\begin{aligned} \text{ii)} &= 99.85714286 \\ &= 99.86 \end{aligned}$$

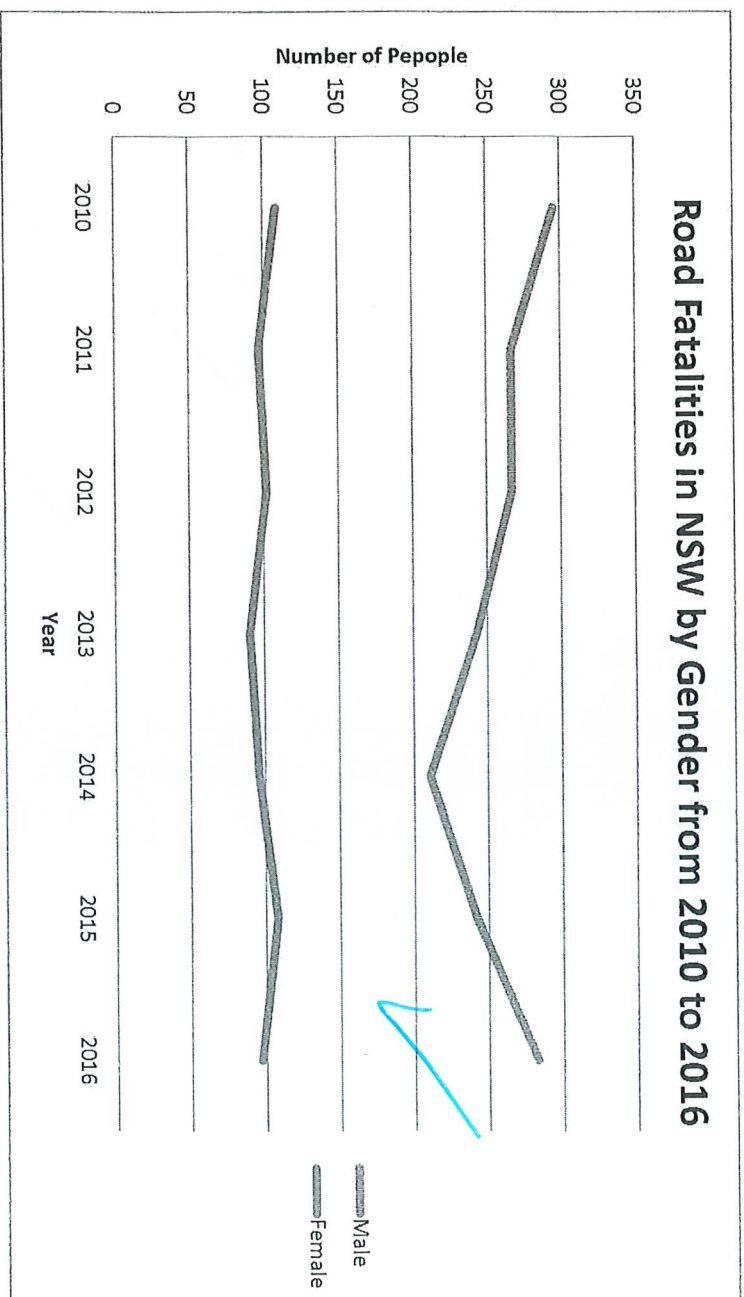
10 d) Males generally drive more than females and are also known to be more aggressive and risk taking than female drivers.

True, unfortunately.

$$\begin{aligned} \text{e)} &405 - 307 \\ &= 98 \end{aligned}$$

Q3F

Year	Male	Female
2010	296	109
2011	267	97
2012	267	102
2013	243	90
2014	211	96
2015	242	108
2016	283	97



I completed this graph / Question (3F) in Excel as the question stated I could use a spreadsheet to draw the graph

Use excel (check!)

Q4) $D = ST$

$S = 72 \text{ km/h}$, $T = 40 \text{ mins}$

$T = 40 \text{ mins} = \frac{40}{60} \text{ h} = \frac{4}{6} = \frac{2}{3} \text{ h}$

$D = S \times T$

$D = 72 \times \frac{2}{3}$

$D = 48 \text{ km}$

Q5)

a) 81.4 m

b) 52.7 m

c) $81.4 - 52.7$
 $= 28.7 \text{ m}$

Q6)

a)

i) Reaction distance is the distance the car travels in 1.6 seconds at 75 km/h

Convert 75 km/h to m/s .

$75 \text{ km/h} = 75,000 \text{ m/h}$

seconds in one hour $= 60 \text{ secs} \times 60 \text{ m}$

$= 60 \times 60$

$= 3600$

Q6) (continued)

a)

i)

$$\frac{75,000}{3,600}$$

$$= 20.83333333$$

~~20.83333333~~~~20.83333333~~

$$= 20.833 \text{ m/s}$$

$$d = s \times t$$

$$d = 1.6 \times 20.833$$

$$d = 33.33$$

$$\approx 33.3$$

Troy's reaction distance is 33.3m.

~~ii)~~

ii) Stopping distance = reaction distance + braking distance

$$= 33.3 + 23$$

$$= 56.3 \text{ m}$$

Excellent work, Rachel!

Q6)

b)

i) $d = kv^2$

$d = 23, v = 75 \text{ km/h}$

$23 = k \times 75^2$

$$\frac{23}{5625} = \frac{5625k}{5625}$$

$$k = \frac{23}{5625}$$

$k = 0.004088888888$

$k = 0.004$

ii) $d = kv^2$

$d = 0.004 \times 89^2$

$d = 0.004 \times 7921$

$d = 31.684$

$d = 31.7 \text{ m}$

Q1) Data collected on income level (low, medium or high) is classified as ordinal. ~~data~~

a) ~~7m~~ $7(m+2)$
 $= 7 \times m + 7 \times 2$
 $= 7m + 14$

b) $m(3m+2) - 4m(m-2)$ neg x neg
-2

$m \times 3m + m \times 2 - 4m \times m - 4m \times 2$

$= 3m^2 + 2m - 4m^2 - 8m$

$= 3m^2 - 4m^2 + 2m - 8m$

$= -m^2 - 6m$

$$\begin{aligned} & 3m^2 + 2m - 4m^2 + 8m \\ &= 3m^2 - 4m^2 + 2m + 8m \\ &= -m^2 + 10m \end{aligned}$$

a) 12

$$b) \quad 91,2 \times 100 = 75^\circ$$

Q3) (Continued)

c)

i) 3, 7, 15, 22, 22, 23, 29, 35, 36, 37, 40, 41

$$\text{Median} = \frac{23 + 29}{2}$$

$$= \frac{52}{2}$$

$$= 26$$

ii) 3, 7, 15, 22, 22, 23, 26 (Q2), 29, 35, 36, 37, 40, 41

$$Q2 = 26$$

$$Q1 = \frac{15 + 22}{2}$$

$$= \frac{37}{2}$$

$$= 18.5$$

~~Q3 = 36 + 37~~

$$Q3 = \frac{36 + 37}{2}$$

$$= \frac{73}{2}$$

$$= 36.5$$

Read on screen
↓

to in

on

on

on

→

= 18

Q4) Percentage error = $\frac{\text{absolute error}}{\text{measurement}} \times 100\%$

$$= \frac{\pm 0.5}{15.3} \times 100$$

$$= 3.267973856$$

$$= 3.27$$

$$\approx 3.3\%$$

$$0.3\%$$

Q5) Area of roof = 49 m^2

Volume of rainfall = $49 \text{ m}^2 \times 12 \text{ mm}$

↓
change 12 mm to m

$$= 49 \text{ m}^2 \times 0.12 \text{ m}$$

$$= 5.88 \text{ m}^3$$

$$= 5.88 \times 1000 \text{ L} \quad (1 \text{ m}^3 = 1000 \text{ L})$$

$$= 5880 \text{ L}$$

$$588 \text{ L}$$

(4)

2mm Squares

Q6) Surface area of a sphere: $A = 4\pi r^2$

$$\text{Diameter} = 30.4 \text{ cm}$$

$$\text{Radius} = \frac{30.4}{2}$$

$$= 15.2 \text{ cm}$$

$$A = 4\pi r^2$$

$$= 4 \times \pi \times 15.2^2$$

$$= 4 \times \pi \times 231.04$$

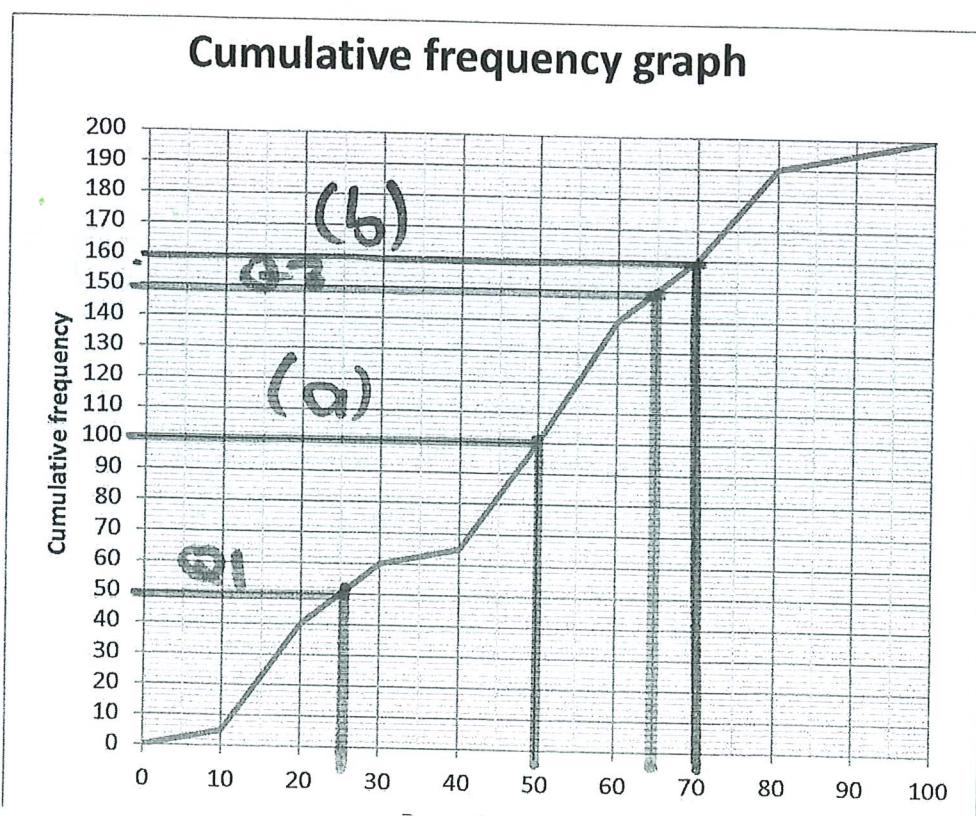
$$= 2903.334267$$

$$= 2903 \text{ cm}^2$$

Great!

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The cumulative frequency graph shown below is for the percentage scores obtained by 200 students in a particular exam.



Q7) (Continued)

a) Median is the halfway point on the cumulative frequency axis = 100
Median = 50 ✓

b) The 8th decile is the 80% point on the cumulative frequency axis.
 $= 0.8 \times 200$
 $= 160$
The 8th decile = 70 ✓

c) Quarter point on the cumulative frequency axis = $\frac{1}{4} \times 200$
 $= 50$

~~Three-quarter point on the cumulative frequency axis = $\frac{3}{4} \times 200$~~
 ~~$= 150$~~
~~Q1 = 25~~ ✓

Three-quarter point on the cumulative frequency axis = $\frac{3}{4} \times 200$
 $= 150$

Q3 = 65 ✓

IQR = Q3 - Q1
 $65 - 25 = 40$ ✓

good!



2mm Squares

Q8)

a) $1 \text{ calorie (cal)} = 4.184 \text{ kJ}$

$$= 74 \times 4.184$$

$$= 309.616$$

$$= 309.62 \text{ kJ}$$

b) $30 \text{ minutes} = 530 \text{ kJ}$

$$1 \text{ minute} = \frac{530}{30}$$

$$= 17.66666667 \text{ kJ}$$

$$\frac{309.62}{17.66666667}$$

$$= 17.52566037$$

$$= 17.52566037$$

$$= 17 \text{ mins, } 32-38 \text{ secs}$$

$$= 18 \text{ minutes}$$

2

Q9)

a) - 2020 Abarth 595 (\$30,787) ✓

- 2020 Abarth 695 (70 Anniversario)
(\$49,327) ✓

b) We chosen the 2020 Abarth 595

Total Cost = \$30,787

Deposit = \$5,000

 $30,787 - 5,000$ $= \$25,787$ ✓ $= \$26,000$

c)

i) $\$22.24 \times 26 = \$578.24 / \text{month}$ ii) $22.24 \times 60 \times 26$

↑
60 months
in 5
years

↖
26 \$1000s in
\$26,000

 $= \$34,694.40$ ✓iii) $\$34,694.40 - \$26,000$ $= \$8,694.40$ ✓

good!

 $4\frac{2}{5}$

Monday 12-21-31

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