

$\frac{35}{42} = 83\%$ Well done, Rachel! You did very well in Sections B & C. Your setting out is excellent. Be sure to go over my answers particularly to Q4 in Section A & revise the pages in your textbook that I have marked. 1mm Squares

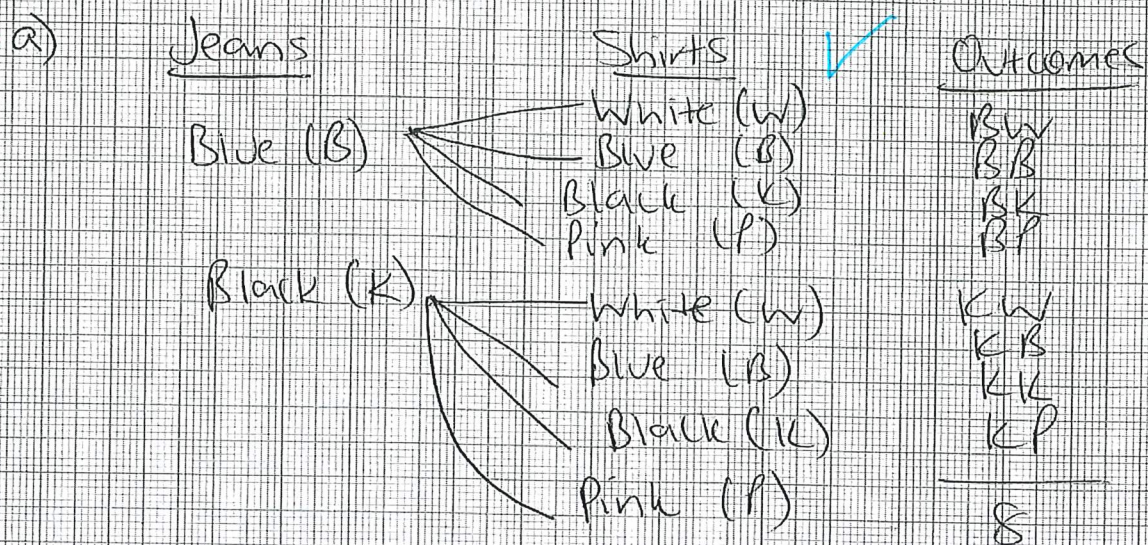
Section A: Probability given. Regards, Kris

Q1) PROBABILITY = 11 letters in total

a) 2 Bs in PROBABILITY
 $P = \frac{2}{11}$ ✓

b) Vowels = A, E, I, O, U
 Vowels in PROBABILITY = O, A, I, I
 $P = \frac{4}{11}$ ✓

Q2) 4 shirts = White, Blue, Black, Pink
 2 Jeans = Blue, Black



b) BW, BB, BK, BP, KB = 5
 $P = \frac{5}{8}$ ✓

c) KW, KK, KP = 3
 $P = \frac{3}{8}$ ✓

good!

$$\frac{2}{3}$$

$6 = 10 \text{ tosses}$

$$\frac{10}{30} = \frac{1}{3}$$

$$\frac{1}{3} \times 100 = 33.3\%$$

$$1\frac{1}{3} \times 30 = 10$$

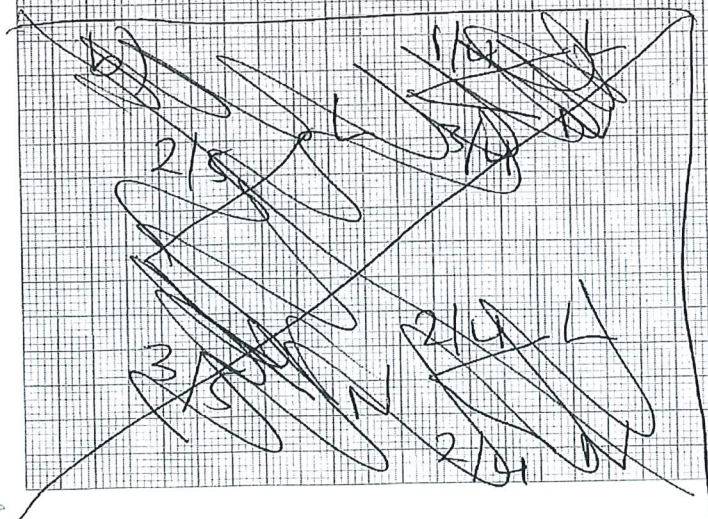
$\therefore$ Expected time = $\frac{1}{6} \times 30 = 5$ time

c) Yes, ^{Maybe} it is biased towards 6 as it landed on a 6 ten times, whereas the amount of tosses that landed on the numbers between 1-5 were more consistent. ^{Twice as many sixes than expected}

Three as many sixes than expected have occurred (10 instead of 5) so 'she is justifi-
cably thinking the die maybe biased.

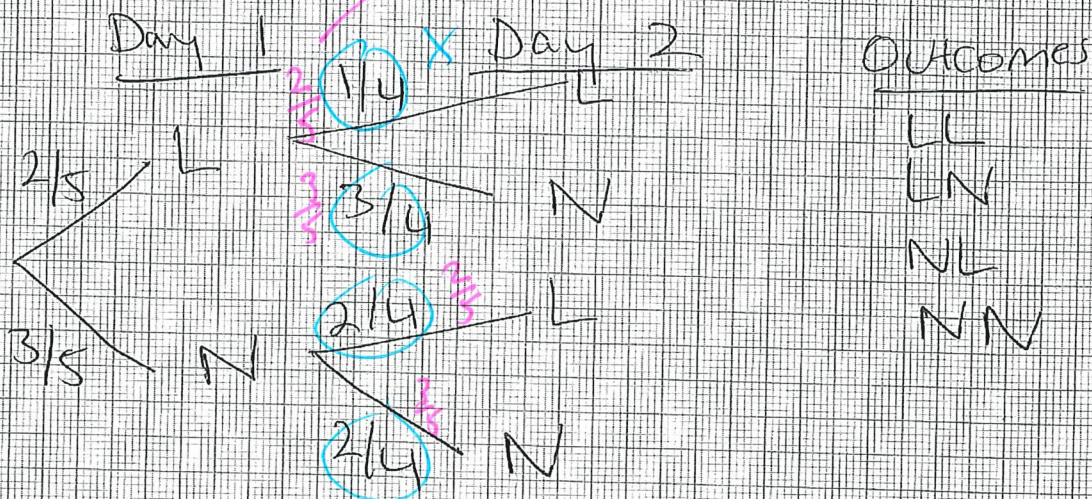
(Q4)

a) $1 - \frac{2}{5} = \frac{3}{5}$



Q4)

b)



i) LL out of 4 outcomes

$$P = 1/4 \times P(LL) = \frac{2}{5} \times \frac{2}{5} = \frac{4}{25} \quad (\text{multiplying along the branches})$$

ii) LN, NL = 2 out of 4 outcomes

$$P = 2/4 = 1/2 \times P(LN \text{ or } NL) = \left(\frac{2}{5} \times \frac{2}{5}\right) + \left(\frac{2}{5} \times \frac{2}{5}\right) = \frac{12}{25}$$

Rachel, see p 165-172
in your textbook for
more on this

①

1mm Squares

Section B: Measurement

Q1) $1 \text{ KL} = 1000 \text{ L}$
 $210 \text{ KL} = 210 \times 1000$
 $= 210,000 \text{ L}$
 $= \text{D}$ ✓

Q2) Nearest Kg
 $\pm \frac{1}{2} \times 1 \text{ Kg} = \pm 0.5 \text{ Kg}$
 $= \text{B}$ ✓

~~Q3) $3,000,000 \text{ m}^2$~~

~~Q3) $3,000,000 \text{ m}^2$~~
 ~~$3,000,000$~~

Q3) $3,000,000 \text{ m}^2$
 $= 3.0 \times 10^8$
 $= \text{D}$ ✓

Exceller work
 Kachit!

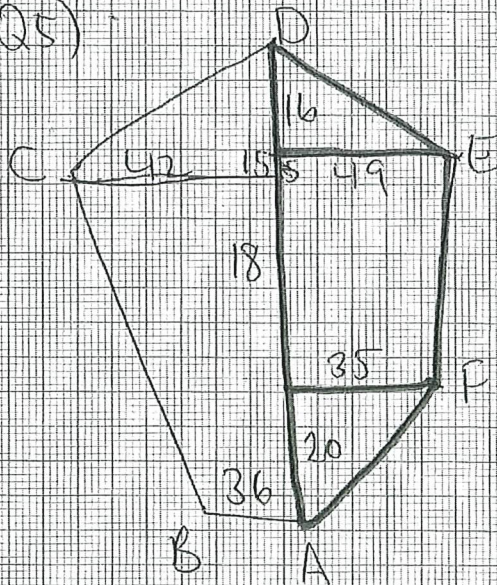
Q4) $1 \text{ m}^2 = 100 \text{ cm} \times 100 \text{ cm}$
 $(1000 \text{ mm}) (1000 \text{ mm})$
 $50,000 \text{ mm}^2 \text{ to } \text{m}^2$
 $50,000 \div 1000 \div 1000$
 $= 0.05 \text{ m}^2$
 $= \text{A}$ ✓

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1mm Squares

Q5)



$$\begin{aligned} \text{Area of } \triangle CDE &= \frac{1}{2} \times 42 \times 16 \\ &= 336 \text{ m}^2 \end{aligned}$$

$$\begin{aligned} \text{Area of Trapezium DEFB} &= \frac{33}{2} \times (49 + 35) \\ &= 16.5 \times 84 \\ &= 1386 \text{ m}^2 \end{aligned}$$

$$\begin{aligned} \text{Area of } \triangle AFB &= \frac{1}{2} \times 35 \times 20 \\ &= 350 \text{ m}^2 \end{aligned}$$

$$\begin{aligned} \text{Total area of block} &= 336 + 1386 + 350 \\ &= 2072 \text{ m}^2 \end{aligned}$$

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Q6) Application 1 - Paddock & river as one trapezium

$$A = \frac{h}{2} (d_g + d_l)$$

This was not asked for

$$A = \frac{252}{2} \times (100 + 83)$$

$$A = 23,058 \text{ m}^2$$

Application 2 - Paddock & river as two trapeziums side by side.

$$A \text{ of } T1 = \frac{h}{2} (d_g + d_l)$$

$$A \text{ of } T1 = \frac{126}{2} \times (100 + 86)$$

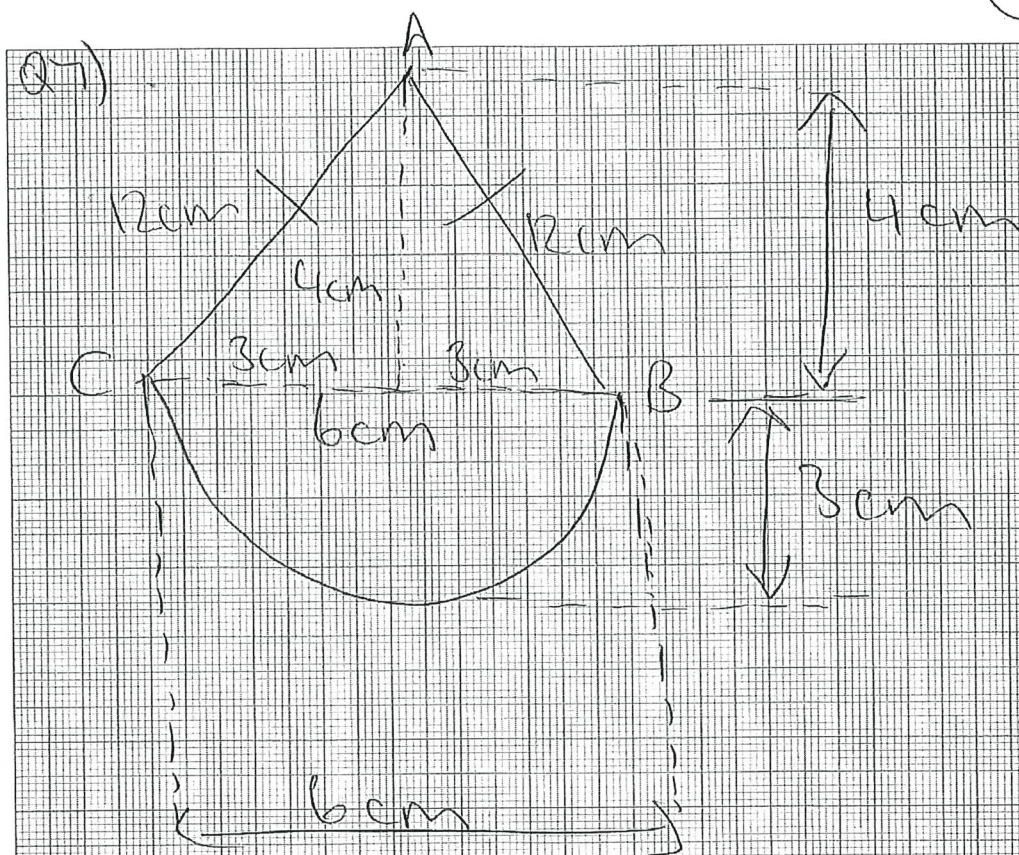
$$A \text{ of } T1 = 11,718 \text{ m}^2$$

$$A \text{ of } T2 = \frac{h}{2} (d_g + d_l)$$

$$A \text{ of } T2 = \frac{126}{2} (86 + 83)$$

$$A \text{ of } T2 = 10,647 \text{ m}^2$$

$$\begin{aligned} \text{Total Area} &= 11,718 + 10,647 \\ &= 22,365 \text{ m}^2 \end{aligned}$$



a) $A = \frac{1}{2}bh$
 $A = \frac{1}{2} \times 6 \times 4$
 $A = 12 \text{ cm}^2$

Use Pythagoras: $AD^2 = 4^2 + 3^2$
 $= 25$
 $= AD = \sqrt{25}$
 $= 5 \text{ cm}$

b) Perimeter of a semi-circle
 $= (\frac{1}{2} \times \text{circumference}) + \text{diameter}$
 $= (\frac{1}{2} \times \pi \times 6) + 6$
 $= 9.42 + 6$
 ~~$= 15.42 \text{ cm}$~~
 $= 15.42 \text{ cm}$

← not included in the perimeter as this is "inside" the shape.

Perimeter of triangle = sum of its sides
 $= 6 + 12 + 12$
 $= 30 \text{ cm}$

Total = $15.42 + 30$
 $= 45.42 \text{ cm}$

$9.42 + 5 + 5 = 19.42 \text{ cm}$ (check this Rachel!)



Q8) $V = \pi r^2 h$

$$V = \pi \times 1.3^2 \times 2 \quad \checkmark$$

$$V = 10.61858317 \text{ m}$$

$$= 10.62 \text{ m}^3 \quad \checkmark$$

$$1 \text{ m}^3 = 1 \text{ KL} = 1000 \text{ L}$$

$$10.62 \text{ m}^3 = 10.62 \text{ KL} = (10.62 \times 1000) \text{ L}$$

$$= 10,620 \text{ L}$$

$$10,619 \text{ L} \quad (\text{check rounding})$$

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Section C: Managing A Home

Q1)

$$a) 5 \times 110L = 550L \text{ / day}$$

$$1000L = 1 \text{ KL}$$

$$KL = 550 \div 1000$$

$$= 0.55 \text{ KL} \quad \checkmark$$

$$\text{Year costs} = 0.55 \times 2.57 \times 365$$

$$= 515.9275 \quad \checkmark$$

$$= \$515.93$$

$$b) \frac{60}{100} \times 515.93$$

$$= 309.55$$

$$= \$309.56 \quad \leftarrow \text{this is the (60\%) saving}$$

$$\$515.93 - \$309.56$$

$$= \$206.37 \quad \checkmark \text{ this is what they will pay.}$$

The Ambrose family will save \$206.37 on water costs each year if they install a water-efficient shower head.

$$Q2) 2,478,000 \text{ mW to KW}$$

$$1 \text{ KW} = 1000 \text{ W}$$

$$1 \text{ W} = 1000 \text{ mW} \quad \checkmark$$

$$2,478,000 \div 1000 \div 1000 \quad \checkmark$$

$$= 2.478 \text{ KW} \quad \checkmark$$

$$\frac{2\frac{1}{2}}{3}$$

$$\frac{1}{1}$$

Q3) 6 metres, 18W LED lights,
5W/m²

$$18 \div 5 = 3.6$$

$$6m \times 3.6m = 21.6m^2$$

$$\text{Maximum width} = 3.6m$$

Q4)

a) 1 star = 1009×0.2917
 $= 294.3253$
 $= \$294.33$

5 star = 416×0.2917
 $= 121.3472$
 $= \$121.35$

b) $\$294.33 - \121.35
 $= \$172.98$

Q5)

a) 1300 J to KJ
 $1KJ = 1000J$

$$1300 \div 1000$$

$$= 1.3KJ$$

3

1mm Squares

Q5)

b) 185 cal to kJ

$$1 \text{ cal} = 4.184 \text{ kJ}$$

$$185 \text{ cal} = 185 \times 4.184 \\ = 774.04 \text{ kJ}$$

c) 1.28 MJ to Cal

$$1 \text{ MJ} = 1,000,000 \text{ J} = 1000 \text{ kJ}$$

$$1.28 \text{ MJ} = 1,280,000 \text{ J} = 1280 \text{ kJ}$$

$$1 \text{ cal} = 4.184 \text{ kJ}$$

$$1280 \div 4.184$$

$$= 305.9273423$$

$$= 305.93 \text{ Cal}$$

~~Q6) 225 + 521 = 746 cal~~
~~1 cal = 4.184 kJ~~
~~746 cal~~

Q6) 255 + 521 = 776 cal

$$1 \text{ cal} = 4.184 \text{ kJ}$$

$$776 \text{ cal} = 776 \times 4.184 \\ = 3246.784$$

$$\frac{3246.784}{8400} \times 100 = 38.65219048 \\ = 39\%$$

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