NEW CENTURY MATHS 11
MATHEMATICS STANDARD (PATHWAY 2)

FULLY WORKED SOLUTIONS

Practice paper 2

Section 1

Question 1

Out of the three cards left, the 8 and 10 are even. $\therefore \frac{2}{3}$

$\therefore$ C

Question 2

$$\text{P(TTT)} = \frac{1}{2} \times \frac{1}{2} \times \frac{1}{2} = \frac{1}{8}$$

$\therefore$ C

Question 3

$$\begin{aligned} \%\ \text{error} &= \frac{0.05}{35.6} \times 100\% \\ &= 0.1404...\% \end{aligned}$$

$\therefore$ A

Question 4

$$\begin{aligned} \frac{2194}{2170} \times 60 &= 60.66\ \text{min} \\ &= 1\ \text{hour and 1 min} \end{aligned}$$

$\therefore$ B

Question 5

$$\begin{aligned} \text{Energy used} &= 18 \times 6 \times 365 \\ &= 39\ 420 \\ &= 39.42\ \text{kWh} \end{aligned}$$

$\therefore$ C

Question 6

$$\begin{aligned}\text{Cost} &= 780 \times 24.25 \text{ c} \\ &= 18\,915 \text{ c} \\ &= \$189.15\end{aligned}$$

$\therefore$ B

Question 7

$$\begin{aligned}\text{Number of days} &= 7 + 31 + 30 + 24 \\ &= 92\end{aligned}$$

$$\begin{aligned}\text{Daily water usage} &= \frac{42.7 \text{ kL}}{92 \text{ days}} \\ &= \frac{42\,700 \text{ L}}{92 \text{ days}} \\ &= 464.13...\end{aligned}$$

$\therefore$ C

Question 8

$$100\% - 30\% = 70\%$$

$\therefore$ B

Question 9

$$\begin{aligned}(4.2 \times 10^5) \times (3.5 \times 10^{-2}) &= 1.47 \times 10^4 \\ &\approx 1.5 \times 10^4\end{aligned}$$

$\therefore$ D

Question 10

$$\begin{aligned}\text{Expected no. green} &= \frac{1}{6} \times 100 \\ &= 16.66...\end{aligned}$$

$\therefore$ B

Question 11

a **i** $\text{Water usage} = \$37.86 \div \$2.115$

$= 17.90...$

$\approx 17.9 \text{ kL}$

ii $\text{Total of Jeremy's water bill} = \$37.86 + \$41.39 + \$162.88 + \$11.58 + 21 \times \$1.70$

$= \$289.41$

b $A \approx \frac{h}{2}(d_f + d_l)$

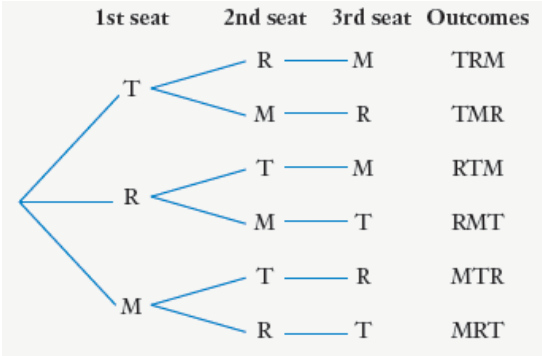
$= \frac{24}{2}(16.7 + 32.6) + \frac{24}{2}(32.6 + 12.3)$

$= 1130.4$

$\approx 1130 \text{ m}^2$

$\therefore$ The approximate area is 1130 m^2.

c **i**



ii P(Max in middle) = P(TMR and RMT)

$= \frac{2}{6}$

$= \frac{1}{3}$

iii $\text{P(Rose left of Tiffany)} = \text{P}(\text{RTM, RMT, MRT})$

$= \frac{3}{6}$

$= \frac{1}{2}$

Question 12

a **i** Last 2 rows:

5	1 + 5 = 6	2 + 5 = 7	3 + 5 = 8	3 + 5 = 8	5 + 5 = 10	6 + 5 = 11
6	1 + 6 = 7	2 + 6 = 8	3 + 6 = 9	3 + 6 = 9	5 + 6 = 11	6 + 6 = 12

ii There are 36 possible outcomes.

iii Of the possible outcomes six of them are 6.

$$\therefore \text{P}(6) = \frac{6}{36}$$
$$= \frac{1}{6}$$

iv Of the possible outcomes 20 of them are even.

$$\therefore \text{P(even)} = \frac{20}{36}$$
$$= \frac{5}{9}$$

b Need same units: 15 mm = 0.015 m.

$V = Ah$

$= 300 \text{ m}^2 \times 0.015 \text{ m}$

$= 4.5 \text{ m}^3$

$= 4500 \text{ L}$

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

c $\text{Radius} = \frac{12\,104}{2} = 6052$

$\text{Volume} = \frac{4}{3}\pi \times 6052^3 \approx 9.285 \times 10^{11} \text{ km}^3$

$\text{Surface area} = 4\pi \times 6052^2$

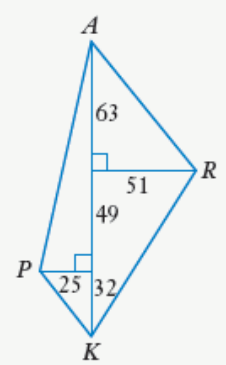
$= 4.60264... \times 10^8 \text{ km}^2$

$= 4.60264 \times 10^{10} \text{ ha}$

$\approx 4.603 \times 10^{10} \text{ ha}$

Question 13

a **i**



ii AK is the base for both triangles.

$AK = 63 + 49 + 32 = 144$

$$A = \frac{1}{2}bh$$
$$= \frac{1}{2} \times 144 \times 25 + \frac{1}{2} \times 144 \times 51$$
$$= 5472 \text{ m}^2$$

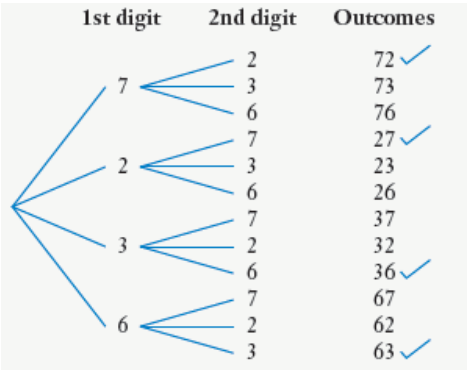
b **i**

$$A = \frac{\theta}{360} \times \pi r^2$$
$$= \frac{150}{360} \times \pi \times 18^2$$
$$= 424.115... \text{ m}^2$$
$$\approx 424 \text{ m}^2$$

ii

$$P = r + r + \frac{\theta}{360} \times 2\pi r$$
$$= 18 + 18 + \frac{150}{360} \times 2 \times \pi \times 18$$
$$= 36 + 47.12...$$
$$= 83.12... \text{ cm}$$
$$\approx 83 \text{ cm}$$

c **i**



ii P(divisible by 3) = P(72, 27, 36, 63)

$$= \frac{4}{12}$$
$$= \frac{1}{3}$$

