

2025 June Paper 1

1) $2x + 5y = 18$

$2x + y = 6$

subtract

$4y = 12$

$y = 3$

$x = \frac{18 - 15}{2}$

$= \frac{3}{2}$

$x = \frac{3}{2} \quad y = 3$

2)

$1.07 < \frac{x}{9} < 1.17$

x integer

$9.63 < x < 10.53$

$x = 10$

3)

density = $\frac{\text{mass}}{\text{volume}}$

mass = density $\times$ volume

$= 8.5 \times 11$

$= 93.5 \text{ gm/cm}^3$

4)

2 8 10 12 12 14 15 23 26 31 33

IQR = $26 - 10$

$= 16$

5)

Mean Range

School A 61 14

School B 56 21

School A higher marks TRUE

More students School B MAYBE

School B greater spread TRUE

6) a) $0.6 \div 100 = 0.006$

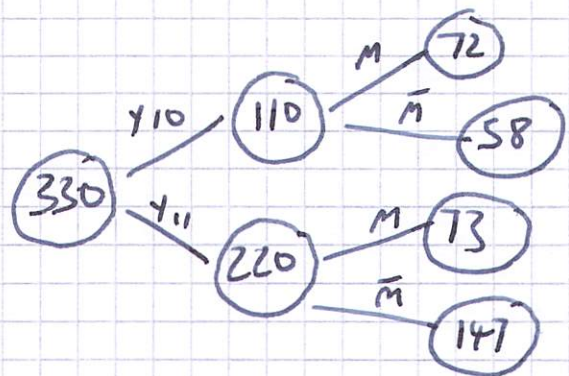
$= 6 \times 10^{-3}$

b) $40 \times 30 \times 10^5$

$= 12 \times 10^7$

$= 1.2 \times 10^8$

7)



8)

$\frac{4}{15} + \frac{1}{5} \div \frac{1}{2}$

$= \frac{4}{15} + \frac{3}{15} \times 2$

$= \frac{4}{15} + \frac{6}{15}$

$= \frac{10}{15}$

$= \frac{2}{3}$

$$9) \quad y = \frac{1}{x}$$

for y large x small

$$x = \frac{2}{5}$$

$$10) \quad (x+2)(x-5) = 120$$

$$x^2 - 3x - 10 = 120$$

$$x^2 - 3x - 130 = 0$$

$$(x - 13)(x + 10) = 0$$

$$\text{so } x = 13$$

and we discard $x = -10$

11) Translation question

$$A \rightarrow B \text{ is } \begin{bmatrix} 6 \\ -2 \end{bmatrix}$$

b) Rotation $A \rightarrow B$

is 180° about $(0, 3)$

12) Oscar Nikita

$$8 : 5$$

$$3 \rightarrow 27 \text{ is } \times 9$$

$$72 : 45$$

Total is £117

$$13) \quad c < 4 \cdot 5^3 < d$$

$$4^3 < 4 \cdot 5^3 < 5^3$$

$$\begin{aligned} d - c &= 5^3 - 4^3 \\ &= 125 - 64 \\ &= \underline{61} \end{aligned}$$

$$14) a) \quad y = 2^x$$

x	-1	0	1	2	3
y	$\frac{1}{2}$	1	2	4	8

b) Draw graph.

15)

$$\angle CAB = 20^\circ$$

$$\angle ACB = 140^\circ$$

$$\angle DCA = 40^\circ$$

$$\angle DAC = \underline{50^\circ}$$

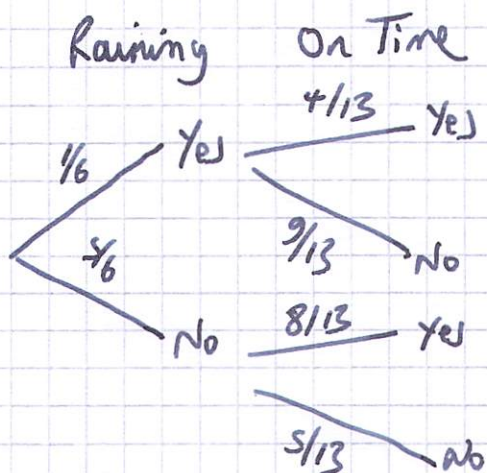
16) 1st venn is $A \cup B$

2nd venn is $A \cap B$

3rd venn is $A' \cap B'$

4th venn is $A' \cup B'$

17)



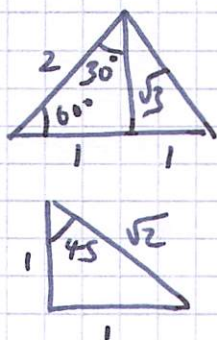
$P(\text{raining AND not on time})$

$$= \frac{1}{6} \times \frac{9}{13}$$

$$= \frac{9}{78}$$

$$= \frac{3}{26}$$

18)
$$\frac{\sin 30^\circ \times \cos 45^\circ}{\tan 60^\circ}$$



$$\sin 30^\circ = \frac{1}{2}$$

$$\cos 45^\circ = \frac{1}{\sqrt{2}}$$

$$\tan 60^\circ = \frac{\sqrt{3}}{1}$$

$$\begin{aligned} \text{Expression} &= \frac{\frac{1}{2} \times \frac{1}{\sqrt{2}} \frac{\sqrt{2}}{\sqrt{2}}}{\sqrt{3}} \\ &= \frac{\frac{\sqrt{2}}{4\sqrt{3}}}{1} = \frac{\sqrt{6}}{12} \end{aligned}$$

19 a)
$$\left(\frac{9}{16}\right)^{-\frac{3}{2}}$$

$$= \left(\frac{16}{9}\right)^{\frac{3}{2}}$$

$$= \left(\frac{4}{3}\right)^3$$

$$= \frac{64}{27}$$

b)
$$\sqrt{125} = 5^n$$

$$(5^3)^{\frac{1}{2}} = 5^n$$

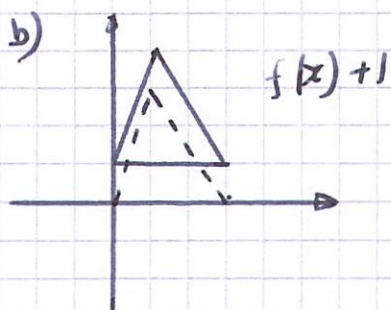
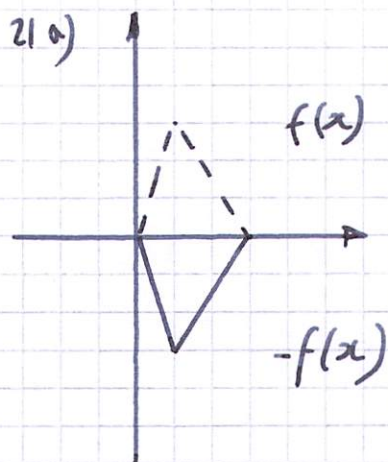
$$n = \frac{3}{2}$$

20)
$$\sqrt{44} + \sqrt{99} + \sqrt{275}$$

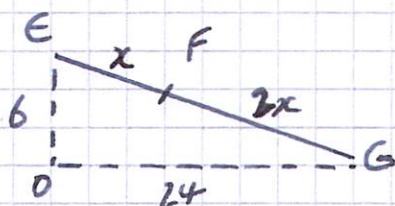
$$= \sqrt{4 \times 11} + \sqrt{9 \times 11} + \sqrt{11 \times 25}$$

$$= 2\sqrt{11} + 3\sqrt{11} + 5\sqrt{11}$$

$$= 10\sqrt{11}$$



22) EG is $(-18, 9)$
to $(6, 3)$



$$EG = 2x + 23$$

so EO splits ratio 2:4

OG splits ratio 8:16

so x-coord is $-18 + 8 = -10$

y-coord is $9 - 2 = 7$

$(-10, 7)$

23)

$$\begin{aligned} x^2 + 12x + 50 \\ &= (x+6)^2 - 36 + 50 \\ &= (x+6)^2 + 14 \end{aligned}$$

b) curve is $y = (x-3)^2 - 8$
coordinates turning point
 $(3, -8)$

24)

$$\begin{aligned} &\frac{60x^4 - 15x^2}{(-2x-1)} \times \frac{1}{6x-3} \\ &= \frac{15x^2(4x^2-1)}{- (2x+1) 3(2x-1)} \\ &= \frac{15x^2(4x^2-1)}{-3(4x^2-1)} \\ &= -5x^2 \end{aligned}$$

Now x^2 is always positive
or zero

$-5x^2$ is always negative
or zero

25)

$$\frac{6}{n} \times \frac{5}{n-1} = \frac{1}{8}$$

$$240 = n^2 - n$$

$$n^2 - n - 240 = 0$$

$$(n-16)(n+15) = 0$$

$$n = 16$$

and we discard
 $n = 15$

$$\underline{n = 16}$$