N5 2024 Paper 1

① $3\frac{2}{3} - 1\frac{1}{4}$

$= \frac{11}{3} - \frac{5}{4}$

$= \frac{44}{12} - \frac{15}{12}$

$= \frac{29}{12}$

$\begin{array}{r} {}^{3}\cancel{4}{}^{1}4 \\ -\,15 \\ \hline 29 \end{array}$

2

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② $f(x) = (5x+3)^2$

$f(7) = (7+3)^2$

$= 10^2$

$= 100$

2

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③

	x^2	$-4x$	$+5$
x	x^3	$-4x^2$	$5x$
$+1$	x^2	$-4x$	5

$= x^3 - 3x^2 + x + 5$

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④ $3\underset{\sim}{a} + \underset{\sim}{b}$

$= 3\begin{pmatrix} 3 \\ 4 \\ -1 \end{pmatrix} + \begin{pmatrix} 5 \\ 3 \\ 2 \end{pmatrix}$

$= \begin{pmatrix} 9 \\ 12 \\ -3 \end{pmatrix} + \begin{pmatrix} 5 \\ 3 \\ 2 \end{pmatrix}$

$= \begin{pmatrix} 14 \\ 15 \\ -1 \end{pmatrix}$

2

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⑤ 155 (160) 190 | 210 (230) 240

(a) $Q_1 = 160$ median $= \frac{190+210}{2} = \frac{400}{2} = 200$ $Q_3 = 230$

$\begin{array}{r} {}^{1}\cancel{2}30 \\ -\,160 \\ \hline 70 \end{array}$ IQR

(b)

	Ave	Spread
Shop	200	70
Web	195	73

On average, the price of cameras from the shop is higher.

The price of cameras from the website are more widely spread.

5

⑥ $\sqrt{75} - \sqrt{3}$

$= \sqrt{25}\sqrt{3} - \sqrt{3}$

$= 5\sqrt{3} - \sqrt{3}$

$= \underline{\underline{4\sqrt{3}}}$

2

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⑦ $2p - 7r = 11$ ①

$3p + 2r = 4$ ②

① × 2 : $4p - 14r = 22$ ③

② × 7 : $21p + 14r = 28$ ④

③ + ④ : $25p = 50$

$\underline{\underline{p = 2}}$

Sub $p = 2$ into ②

$3p + 2r = 4$

$3(2) + 2r = 4$

$6 + 2r = 4$

$2r = -2$

$\underline{\underline{r = -1}}$

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⑧ $\underline{\underline{a = 7}}$ $\underline{\underline{b = 2}}$

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⑨ (a) (3, 26) (10, 12)

$m = \frac{y_2 - y_1}{x_2 - x_1}$

$= \frac{26 - 12}{3 - 10}$

$= \frac{14}{-7}$

$= -2$

$y = mx + c$

$12 = (-2)(10) + c$

$12 = -20 + c$

$c = 32$

$y = -2x + 32$

$\underline{\underline{D = -2T + 32}}$

(b) $D = -2(7) + 32$

$= -14 + 32$

$= \underline{\underline{18 \text{ Km}}}$

4

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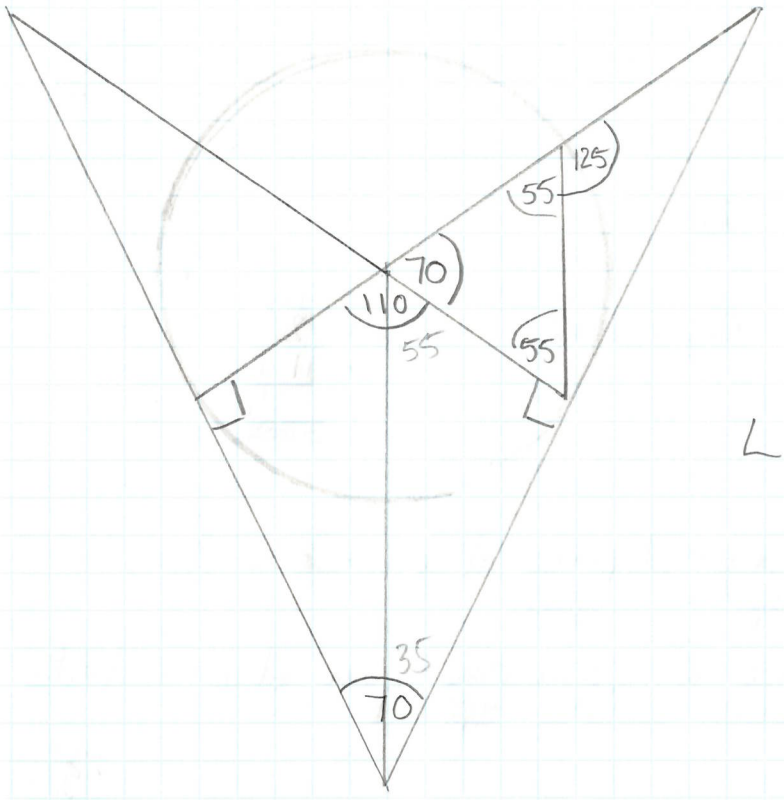
⑩



$180 - 125 = 55$

$55 \times 2 = 110$

$180 - 110 = 70$

$\angle BCD = \underline{\underline{70°}}$

3

(11) $x + 4y - 24 = 0$

$4y = -x + 24$

$y = -\frac{1}{4}x + 6$ $\quad m = -\frac{1}{4}$

2

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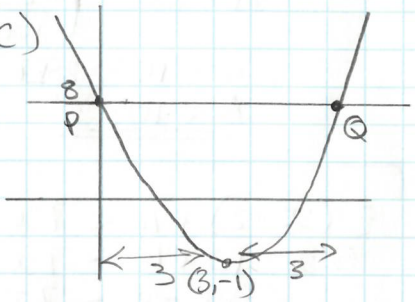
(12)(a) $x^2 - 6x + 8$

$= (x-3)^2 - 9 + 8$

$= \underline{(x-3)^2 - 1}$

(b) TP @ $\underline{(3, -1)}$

(c)



P(0,8) $\quad$ Q $\underline{(6,8)}$

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(13) $x\left(x^{1/2} + x^{-1}\right)$

$= x^{3/2} + x^0$

$= \underline{x^{3/2} + 1}$

2

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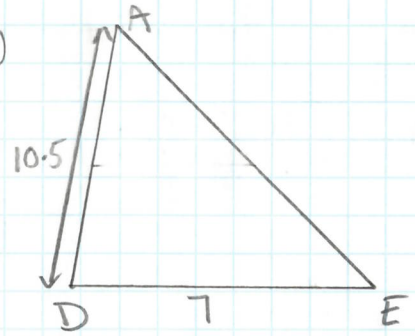
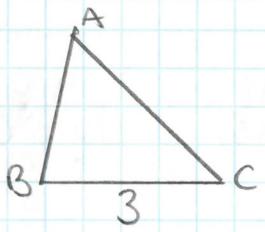
(14)





LSF $= \frac{3}{7}$

$AB = \frac{3}{7} \times 10.5$

$= \frac{31.5}{7}$

$= 4.5$

$$\begin{array}{r} 10.5 \\ \times\ 3 \\ \hline 31.5 \end{array}$$

$$\begin{array}{r} 4.5 \\ 7\overline{)31.5} \end{array}$$

$BD = 10.5 - 4.5$

$= \underline{6\text{cm}}$

3

Paper 2

(1) $100\% - 26\%$

$= 74\%$

$= 0.74$

460×0.74^3

$= £186.403\ldots$

$\approx \underline{£186.40}$

3

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(2) $250 \times (1.22 \times 10^6)$

$= 305\,000\,000$

$= \underline{3.05 \times 10^8}$

2

③ $\cos A = \dfrac{18^2 + 25^2 - 34^2}{2 \times 18 \times 25}$

$\cos A = \dfrac{-23}{100}$

$A = \cos^{-1}\left(\dfrac{-23}{100}\right)$

$A = 103.297$

$A \approx 103.3°$

3

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④ $5(x-2) + 4 < 7x + 8$

$5x - 10 + 4 < 7x + 8$

$5x - 6 < 7x + 8$

$-14 < 2x$

$-7 < x$

$x > -7$

3

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⑤ $116\% = 278.40$ (÷116 ↓)

$1\% = 2.4$ (×100 ↓)

$100\% = £240$

3

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⑥ (a) $y^2 - 6y = y(y-6)$

(b) $y^2 - 3y - 18 = (y-6)(y+3)$

$\dfrac{y(y-6)}{(y-6)(y+3)} = \dfrac{y}{y+3}$

3

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⑦ $V_{cuboid} = lbh = 7 \times 7 \times 4 = 196$

$V_{hemisphere} = \frac{1}{2} \times \frac{4}{3}\pi r^3 = \frac{1}{2} \times \frac{4}{3} \times \pi \times 3^3 = 18\pi$

$V_{glass} = 196 - 18\pi = 139.45 \approx 140\ cm^3$

4

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⑧ $3x^2 + 8x + 1 = 0$

$a = 3$, $b = 8$, $c = 1$

$\Delta = b^2 - 4ac = 8^2 - 4(3)(1) = 52$

$x = \dfrac{-8 \pm \sqrt{52}}{6}$

$x = -2.535\ldots \approx -2.54$

$x = -0.131\ldots \approx -0.13$

3

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⑨ $f = \dfrac{2d + 3}{e}$ (×e)

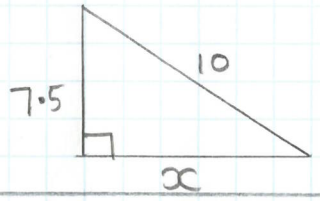
$fe = 2d + 3$ (−3)

$fe - 3 = 2d$ (÷2)

$d = \dfrac{fe - 3}{2}$

3

(10)



$x^2 = 10^2 - 7.5^2$

$x^2 = 43.75$

$x = \sqrt{43.75}$

$x = 6.614...$

Width $= 2 \times 6.614 + 2 \times 10$

$= 33.2287...$

$\approx \underline{33.2\text{cm}}$

4

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(11) $17\sin x + 1 = 9$

$17\sin x = 8$

$\sin x = \frac{8}{17}$

R.A. $= \sin^{-1}\frac{8}{17}$

$= 28.1$

S ✓	A ✓
T	C

1st Quad: 28.1

2nd Quad: $180 - 28.1 = 151.9$

$\underline{x = 28.1°, 151.9°}$

3

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(12) $\frac{2}{x+5} + \frac{3}{x-4}$

$= \frac{2(x-4)}{(x+5)(x-4)} + \frac{3(x+5)}{(x+5)(x-4)}$

$= \frac{2x-8+3x+15}{(x+5)(x-4)}$

$= \underline{\frac{5x+7}{(x+5)(x-4)}}$

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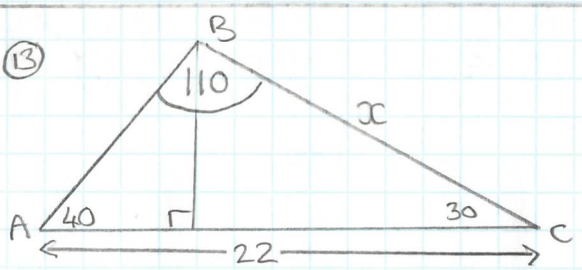
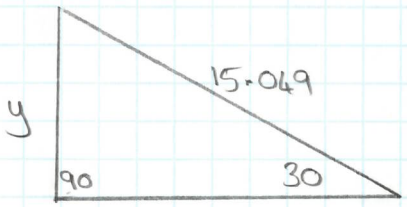
(13)



$\frac{x}{\sin 40} = \frac{22}{\sin 110}$

$x = \frac{22\sin 40}{\sin 110}$

$= 15.049$



$\frac{y}{\sin 30} = \frac{15.049}{\sin 90}$

$y = \frac{15.049\sin 30}{\sin 90}$

$y = 7.52...$

$y = \underline{7.5\text{cm}}$

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(14) (a) $\overrightarrow{WX} = \underline{-\underset{\sim}{a} + \underset{\sim}{b}}$

(b) $\overrightarrow{WM} = -\underset{\sim}{a} + \underset{\sim}{b} - \frac{1}{2}\underset{\sim}{a}$

$= \underline{\underset{\sim}{b} - \frac{3}{2}\underset{\sim}{a}}$

3

(15) $\frac{\theta}{360} = \frac{l}{\pi d} = \frac{a}{\pi r^2}$

$\frac{15}{24\pi} = \frac{a}{\pi \times 12^2}$

$a = \frac{15 \times \pi \times 12^2}{24\pi}$

$a = \underline{\underline{90\,cm^2}}$

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(16) $3\cos^2 x - 1$

$= 3(1 - \sin^2 x) - 1$

$= 3 - 3\sin^2 x - 1$

$= \underline{\underline{2 - 3\sin^2 x}}$

$\sin^2 x + \cos^2 x = 1$

$\cos^2 x = 1 - \sin^2 x$

2
