

2024 2E EOY P1 Marking Scheme

Every 3 Presentation or Accuracy errors deduct one mark.

Question	Solution	Marks awarded /Remarks
1a	$c - 2 < 4(5 - c)$ $c - 2 < 20 - 4c$ $5c < 22$ $c < 4\frac{2}{5}$ or $c < 4.4$	M1 A1
1b	4	B1
2a	$\frac{3}{20}$	B1
2b	$\frac{8}{20} = \frac{2}{5}$	B1
3a	$\frac{5}{x} = \frac{4}{3}$ $x = 5 \times \frac{3}{4}$ $x = 3\frac{3}{4}$ or 3.75	B1
3b	$\frac{x-1}{3} + \frac{x+3}{2} = 8$ $2(x-1) + 3(x+3) = 8 \times 6$ $2x - 2 + 3x + 9 = 48$ $5x = 41$ $x = 8\frac{1}{5}$ or 8.2	M1 A1
4	$y = \frac{k}{x^2}$ New value of y $= \frac{k}{(4x)^2}$ $= \frac{k}{16x^2}$ $= \frac{1}{16}y$ Percentage change	M1

	$\frac{1}{16} \frac{y - y}{y} \times 100\%$ $= -\frac{15}{16} \times 100\%$ $= -93.75\%$	M1 A1
5	<u>By Elimination Method</u> $(1) \times 2: 6x + 10y = 6 \text{ ____}(3)$ $(2) \times 3: 9y - 6x = 51 \text{ ____}(4)$ $(3) + (4): (6x + 10y) + (9y - 6x) = 6 + 51$ $19y = 57$ $y = 3$ Substitute $y = 3$ into $3x + 5y = 3$ $3x + 5(3) = 3$ $3x = -12$ $x = -4$ <u>By Substitution Method</u> $3x + 5y = 3$ $3x = 3 - 5y$ $x = \frac{3 - 5y}{3}$ Substituting $x = \frac{3 - 5y}{3}$ into $3y - 2x = 17$ $3y - 2\left(\frac{3 - 5y}{3}\right) = 17$ $9y - 2(3 - 5y) = 51$ $19y = 57$ $y = 3$ Substituting $y = 3$ into $3x + 5y = 3$ $3x + 5(3) = 3$ $3x = -12$ $x = -4$	M1 for showing the elimination A1 A1 M1: Substitution A1 A1

6a	$AB^2 = 35^2$ $= 1225$ $BC^2 + CA^2 = (28)^2 + (21)^2$ $= 1225$ Since <u>$AB^2 = BC^2 + CA^2 = 1225$</u>, by the converse of Pythagoras Theorem, triangle ABC is a right-angled triangle.	$\left. \begin{array}{l} \} \\ \} \\ \} \end{array} \right\} \text{ M1}$ A1 for conclusion including underlined part.
6b	Let the shortest distance be x cm. $\frac{1}{2} \times 35 \times x = \frac{1}{2} \times 28 \times 21$ $17.5x = 294$ $x = 16.8$ Shortest distance is 16.8 cm.	M1 A1
7a	$a^2 - 2ab + b^2$	B1
7b	$(a - b)^2 = a^2 - 2ab + b^2$ $(3)^2 = a^2 - 2(40) + b^2$ $a^2 + b^2 = 80 + 9$ $a^2 + b^2 = 89$	M1 A1
8a	53.1°	B1
8b	$\frac{CB}{CD} = \frac{AC}{EC}$ $\frac{BC}{24} = \frac{66 + 24}{30}$ $BC = 3 \times 24$ $= 72 \text{ cm}$	M1 A1
8c	By using similar triangles $\frac{AB}{ED} = \frac{AC}{EC}$ $\frac{AB}{18} = \frac{66 + 24}{30}$ $AB = 54 \text{ cm}$ Alternatively, by using Pythagoras theorem, $AB^2 + BC^2 = AC^2$ $AB = \sqrt{90^2 - 72^2}$	M1

	$AB = 54 \text{ cm}$ Therefore, perimeter of quadrilateral $ABDE$ $= 66 + 18 + (72 - 30) + 54$ $= 180 \text{ cm}$	M1 A1
9a	90°	B1
9b	Equilateral Triangle	B1
9c	$\angle BAD = 180^\circ - 30^\circ - 44^\circ$ $\angle BAD = 106^\circ$ $\angle ADE = \angle BAD$ (Alternate angles) Therefore $\angle ADE = 106^\circ$	M1 A1 Note: Marks will not be awarded if working is not clear to the marker (eg angles not labelled).
10a	Speed $= \frac{72 \times 1000}{60 \times 60}$ $= 20 \text{ m/s}$	B1
10b	Total distance $= 1.5 \times 72 + 40$ $= 148 \text{ km}$ Total time taken $= 1.5 + 0.75$ $= 2.25 \text{ h}$ Average speed $= \frac{148}{2.25}$ $= 65.8 \text{ km/h}$ (to 3 sig fig)	M1 M1 A1
11a	Common difference $= \frac{-19 - 14}{3}$ $= -11$ $p = 25$	M1 A1
11b	$T_n = 36 - 11n$	B1
11c	$36 - 11n = -101$ $-11n = -137$ $n = \frac{-137}{-11}$ $= 12 \frac{5}{11}$ Since n is not an integer, -101 is not a term in this sequence.	M1 ecf

		A1 for conclusion and only if n is $12\frac{5}{11}$
12a	736 hours	B1
12b	$\frac{723+724}{2}$ $= 723.5 \text{ hours}$	B1
12c	30% of batteries $= \frac{30}{100} \times 30$ $= 9$ $t = 716 \text{ hours}$	M1 A1
12d	$\frac{7}{30}$	B1
13a	Exterior angle $= 180^\circ - 160^\circ$ $= 20^\circ$ Number of sides $= \frac{360^\circ}{20^\circ}$ $= 18$	M1 A1
13b	$x = 160 - 90$ $= 70$	B1
13c	$\angle CBQ = \frac{180^\circ - 70^\circ}{2}$ $= 55^\circ$ $y = 160 - 55$ $= 105$	M1 A1
14a	Total surface area $= 2\left(\frac{1}{2} \times 18 \times 12.5\right) + 2\left(\frac{1}{2} \times 7 \times 15\right) + 18 \times 7$ $= 456 \text{ cm}^2$	M2 for all 3 correct area computed. Deduct 1 mark for any 1 area wrongly computed. A1
14b	Height of pyramid $= \sqrt{15^2 - 9^2}$ $= 12 \text{ cm}$	M1

	Volume $= \frac{1}{3} \times (18 \times 7) \times 12$ $= 504 \text{ cm}^3$	M1 A1
15a	$\$4x + \$10(x - 0.3) + 2[4(x - 0.3)]$ $= 4x + 10x - 3 + 8x - 2.4$ $= 22x - 5.4(\text{shown})$	B1 for $(x - 0.3)$ B1 for $4(x - 0.3)$ or $(4x - 1.2)$
15b	$22x - 5.4 = 22.1$ $22x = 27.5$ $x = 1.25$	B1
15c	Percentage of price dropped $= \frac{13.95 - 11.25}{13.95} \times 100 \%$ $= 19.4\%$ < 20% Disagree with durian seller.	M1 A1 [Must mention percentage decrease is less than 20%] or “< 20%” seen.