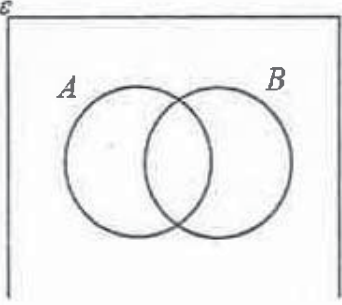
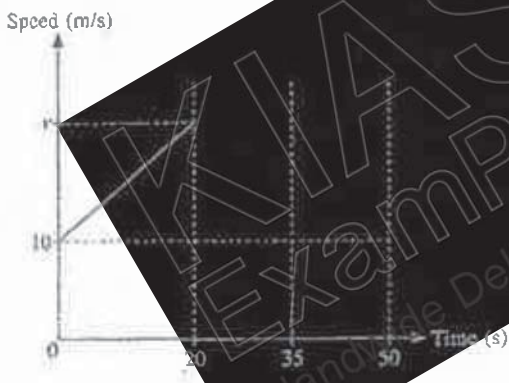


Q	Solution
1	$x = -12$
2	$k = \frac{1}{2}$
3a	7
3b	5
5	$(4a - 3b)(x - 5y)$
6	9 : 1
7a	Diagram 1
7b	
7c	10%
8	1.95×10^6
9	It is more expensive to rent after 5 years 11 months
10a	$\frac{7}{16}$
10b	$9\frac{3}{8}$ litres
11a	$(x - 4)^2 + 3$
12a	$\frac{p}{2}$
13	Construction
14a	Misleading feature: the percentage is not proportional to the number of books drawn. How it is misleading: gives the impression there is huge increase in the percentage of students passing Chemistry.
14b	No, Sam cannot claim that the number of students passing has increased. This is because the number of students taking the subject may not be the same over the years
15	Method 1 (AAS) Let $\angle DAY = \theta$. $\angle AXB = \angle DYA = 90^\circ$ (given) $\angle BAX = 90^\circ - \theta$ (complementary angles) $= 90^\circ - (180^\circ - 90^\circ - \angle ADY)$ ($\angle$sum of Δ) $= \angle ADY$ $AB = DA$ (sides of a square are equal) $\triangle ABX$ and $\triangle DAY$ are congruent (AAS)
16ai	Mean = 29.6 min (3sf)
16aii	SD = 8.98 min (3 sf)
16b	Two comments:

- 1) Boys' time is shorter.
2) Girls' timing are more consistent as their SD is smaller.

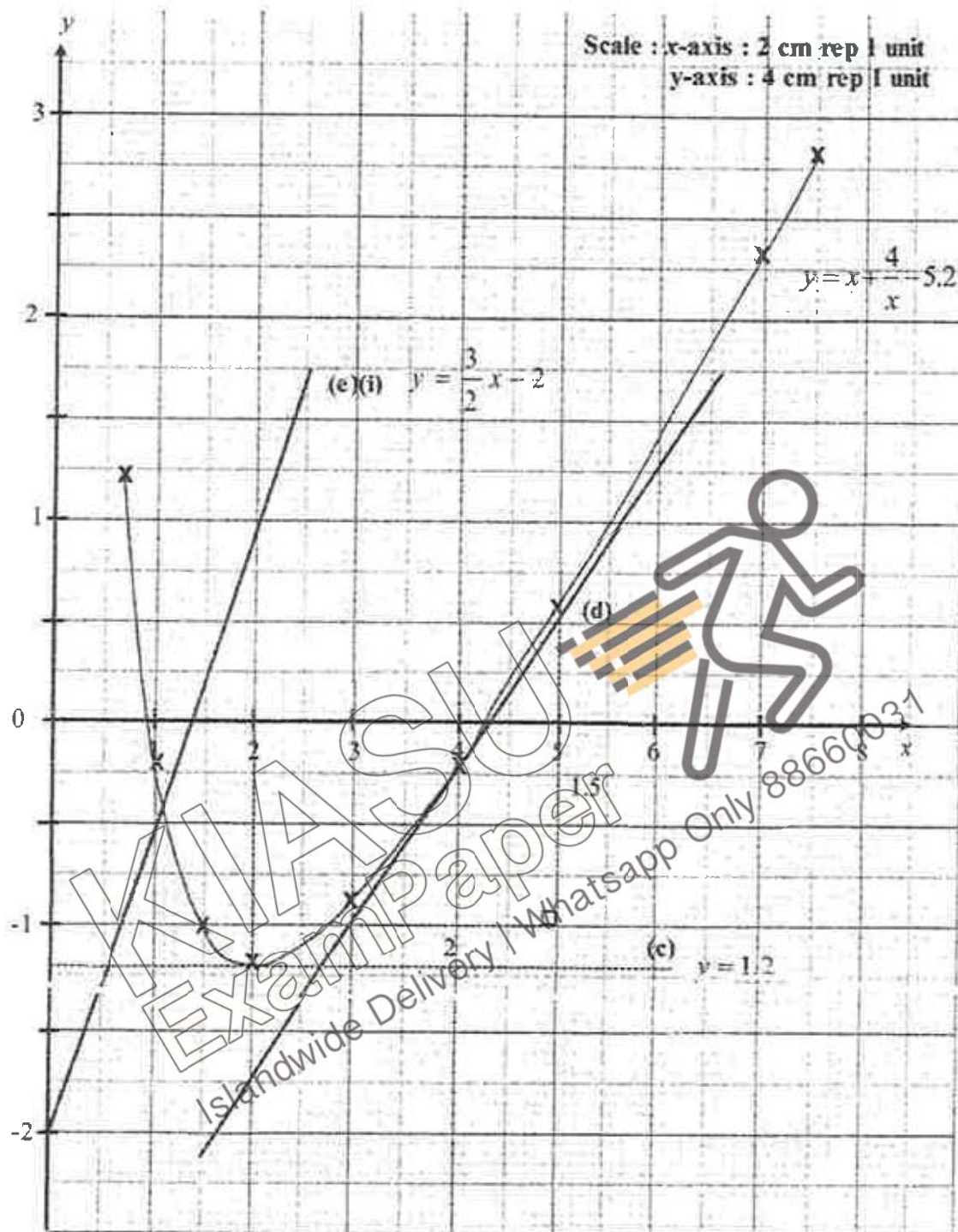
17a	540°
17b	1620°
18a	$a = 18$ $b = 11$
18bi	1951
18bii	Speed 44.1 km/h
19a	$2^3 \times 3 \times 5^2$
19b	45
19c	980
20a	$P = \begin{pmatrix} 8 & 9 & 3 \\ x & 2 & 1 \end{pmatrix}$
20b	$P \begin{pmatrix} 10 \\ 20 \\ 4 \end{pmatrix} = \begin{pmatrix} 8 & 9 & 3 \\ x & 2 & 1 \end{pmatrix} \begin{pmatrix} 10 \\ 20 \\ 4 \end{pmatrix}$ $= \begin{pmatrix} 272 \\ 10x + 44 \end{pmatrix}$
20c	The cost of making a table and a chair respectively.
20d	$x = 2.4$
21a	$v = 35$
21b	Acceleration $= \frac{35 - 10}{20} = 1.25 \text{ m/s}^2$
21c	Diagram 
22	350 cm^2
23a	Since the ratio of cost/volume are not the same, the cost is not directly proportional to the volume.
23b	$h_1 = 29.3 \text{ cm}$
24a	$\begin{pmatrix} 6 \\ 2 \end{pmatrix}$
24b	4.12
24c	Parallelogram

2019 Prelim 4E5N Math West Spring Secondary P2 Answer Key

Qns	Solution
1a	$\frac{9}{5ab^2}$
1b	$\frac{8p-19}{(p+2)(2p-3)}$
1c	$x \leq 3$
1d	$b = \pm \sqrt{\frac{4a^2c + 6\pi}{\pi}}$
2a	$v = 121, x = 72$
2bi	$T = (2n-1)^2$
2bii	Column (T) consists of perfect squares only but 226 is not a perfect square.
2c	$T = G + W$
2d	200
3a	$N = 32.7$ litres
3bi	Interest = \$195
3bii	\$1210
3biii	\$1211.68
3biv	One possible reason – interest earned is comparable but SSB pays interest twice every year compared to the bank, which pays the interest after 3 years.
3c	Din should choose Option B.
4ai	7.21
4aii	$C\left(\frac{12}{5}, \frac{12}{5}\right)$
4aiii	$x = \frac{12}{5}$
4bi	D, F and G lie on a straight line
4biia	$\frac{1}{9}$
4biib	$\frac{1}{12}$
5aia	60°
5aib	15°
5aic	45°
5b	7.92 cm
6a	25.4°
6b	034.6°
6c	115m
6d	39.8 m
6e	50.8 m
7a	$p = 3 + \frac{4}{3} - 5.2 = -0.37$
7b	(see graph below)

All points plotted correctly

Right scale, axes labelled and graphs labelled correctly
Smooth curve through all the points



8b

$$\frac{1}{3}\pi R^2 \frac{(h-2)^3}{h^2}$$

8d

$$h = 10.21954446 = 10.2 \quad \text{or} \quad h = -8.22$$

8e

$$2790 \text{ cm}^3$$

9aia

Median = 34 marks

9aib

$$\text{IQR} = 39 - 29 = 10 \text{ marks}$$

9aii

Percentage with distinction 11.7%

9aiii

2 comments:

- 1) On average, students scored higher in Physics than in Chemistry, as Physics median of 34 is higher than Chemistry median of 30.
- 2) Students' marks in Physics more consistent than Chemistry as Physics IQR of 10 is lower than Chemistry IQR of 15.

9bi

$$\frac{23}{120}$$

9biia

$$\frac{65}{1428}$$

9biib

$$\frac{57}{170}$$

10a

$$1400 \text{ sqf}$$

10b

$$44800$$

10ci

As amount is less than \$7000, Zander will not be able to meet his repayment.

10cii

Any sensible operating hours with relevant workings to prove that profit earned is more than \$7000

Operating hours must be at least 12 hours

Operating hours must be till 1 am

Calculations for Food Raw Materials and Utilities must be based on hours of operation

One possible solution of operating hours: 8 am to 1 am

