Pre-Public A – June 2014 Answer Key

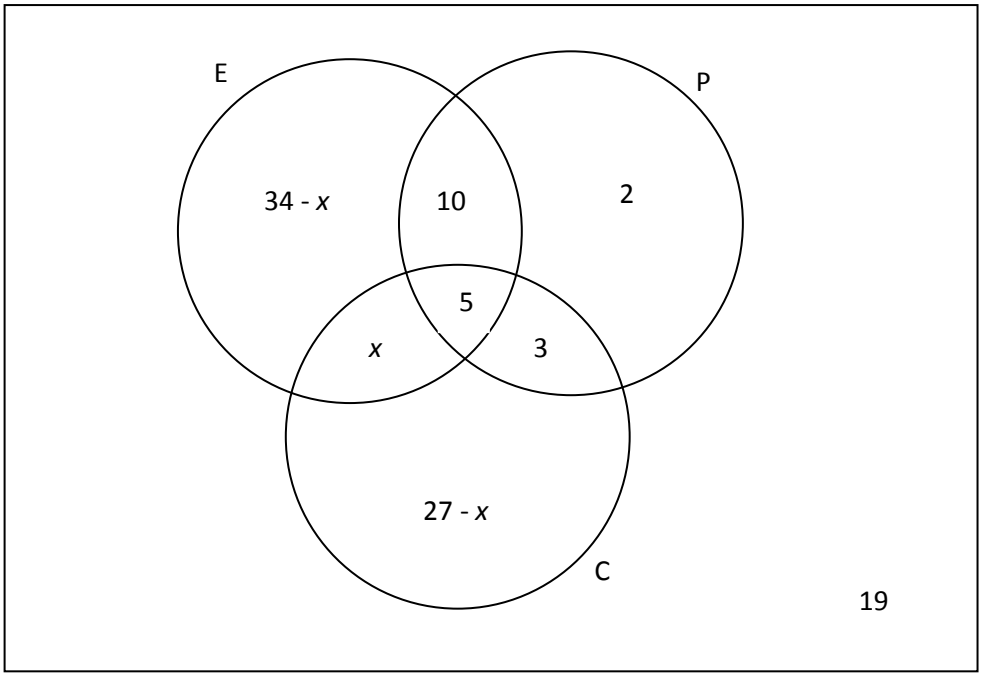
Part A: Multiple Choice

Question	Answer
1	D
2	C
3	D
4	C
5	D
6	C
7	B
8	B
9	A
10	B
11	A
12	A
13	D
14	C
15	D
16	D
17	D
18	C
19	B
20	A
21	B
22	D
23	B
24	B
25	C

Question	Answer
26	C
27	B
28	B
29	C
30	D
31	D
32	C
33	B
34	B
35	A
36	D
37	B
38	A
39	C
40	D
41	C
42	C
43	A
44	C
45	B
46	C
47	D
48	B
49	B
50	B

Part B: Constructed Response.

51.



$34 - x + 10 + 2 + x + 5 + 3 + 27 - x + 19 = 95$

$100 - x = 95$

$x = 5$

$5 + 5 = 10$ students took English & chemistry.

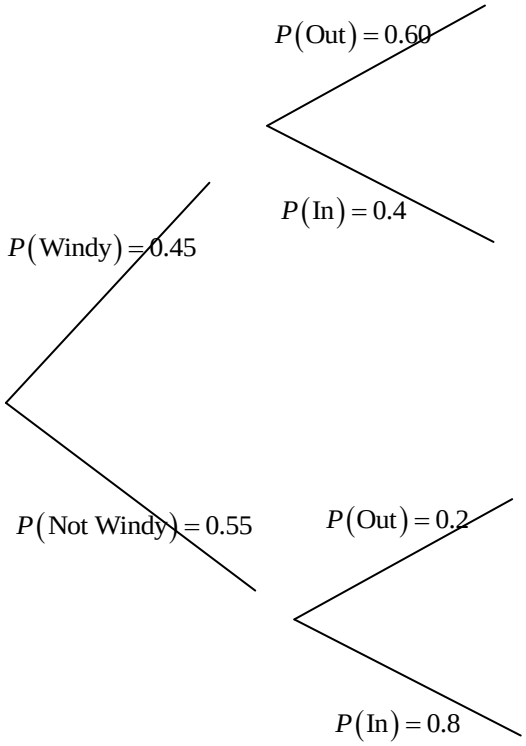
52. (a) ${}_8P_2 \cdot {}_8P_8 = 2,257,920$

(b) $\frac{n!}{(n-2)!\,2!} = 45$; $n^2 - n - 90 = 0$; $n = 10$ *or* $n = -9$; $n = 10$

(c) ${}_5P_2 \cdot {}_4P_2 \cdot {}_3P_2 = 1440$

53. (a)

$0.45\times0.60+0.55\times0.20$
$=0.27+0.1$
$=0.36$



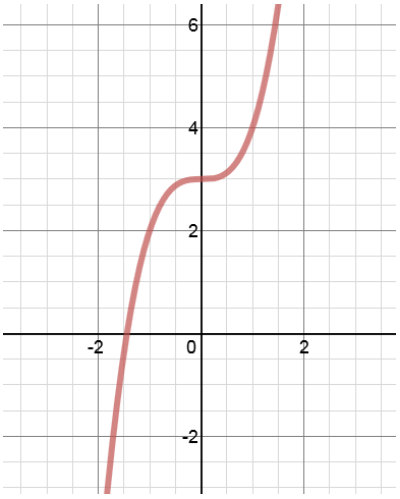
(b) $P(loonie\ and\ loonie)=\frac{5}{13}\times\frac{4}{12}=\frac{20}{156}=\frac{5}{59}\approx 0.13=13\%$

54. (a) $\frac{-2(x-5)}{7(x+2)}$, $x\neq 0,\pm2,5$

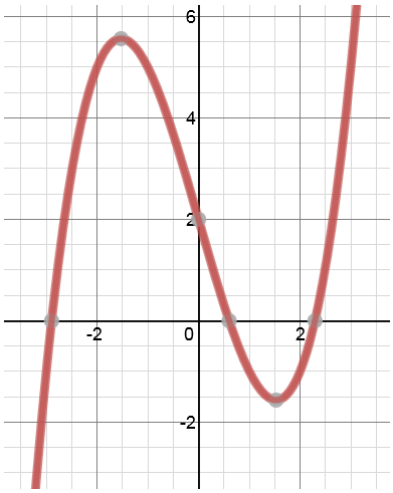
(b) $\frac{1}{2}+\frac{1}{3}=\frac{1}{t}$; $t=1.2\ hours$

55. (a) answers will vary

Graph 1



Graph 2



Difference: 1 x-intercept, 0 turning points

3 x-intercepts, 2 turning points

(b) Degree: 3

Sign of leading coefficient: Negative

End Behaviour: QII to QIV

Y-intercept = 1 or (0, 1)

Domain: $\{x \mid x \in R\}$

Range: $\{y \mid y \in R\}$

56. (a) $4^{-2x+1} = \sqrt{8}$

$(2^2)^{-2x+1} = 8^{\frac{1}{2}}$

$2^{-4x+2} = (2^3)^{\frac{1}{2}}$

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

$-4x = -\frac{1}{2}$

$x = \frac{1}{8}$

(b) Investment #1: $A \approx 500(1.006667)^{120} = \$1110.26$

Investment #2: $A = 250(1.2)^{10} = \$1547.93$

Investment #2 will be worth more in the year 2022.

57. (a) $3^{x+2} = 5^{x-1}$

$\log 3^{x+2} = \log 5^{x-1}$

$(x + 2)\log 3 = (x - 1)\log 5$

$x \log 3 + 2 \log 3 = x \log 5 - \log 5$

$x \log 3 - x \log 5 = -2 \log 3 - \log 5$

$x(\log 3 - \log 5) = -2 \log 3 - \log 5$

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

$x \approx 7.5$

(b) i) $p(x) = -\log x$

$p(1.2 \times 10^{-4}) = -\log(1.2 \times 10^{-4}) = -(-3.9) = 3.9$

ii)

$2.1 = -\log x$	$2.9 = -\log x$	$\frac{10^{-2.1}}{10^{-2.9}} = 10^{-2.1-2.9} = 10^{0.8}$
$-2.1 = \log x$	$-2.9 = \log x$	$\approx 6.3\ times\ as\ acidic$
$x = 10^{-2.1}$	$x = 10^{-2.9}$	

58. i) amplitude = 3, period = 720°, y = −1, $\{y \mid -4 \leq y \leq 2,\ y \in R\}$

ii) $y = 3sin\frac{1}{2}x - 1$

59. Option A: Total Paid = 45 + 195 + 54.61 × 36 = $2205.96

Option B: Total Paid = 48 × 43.34 = $2080.32

Option B is least expensive.