## Supplementary Exercise 13 (P. 230)

### ASSIGNMENT GUIDE

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### HKCEE Ques. OBJECTIVE

| 34–36 | Help students to familiarize with the style, trend and level of difficulty of HKCEE questions related to the topics learnt in this chapter. |

### 1.

\[
\begin{align*}
\frac{x}{3} + \frac{3}{x} &= \frac{5}{2} \\
2x^2 + 18 &= 15x \\
2x^2 - 15x + 18 &= 0 \\
(x - 6)(2x - 3) &= 0 \\
\therefore \quad x &= 6 \quad \text{or} \quad \frac{3}{2} \\
\end{align*}
\]

### 2.

\[
\begin{align*}
x + \frac{1}{4} &= \frac{1}{x} \\
x^2 + 4 &= 4x \\
x^2 - 4x + 4 &= 0 \\
(x - 2)^2 &= 0 \\
\therefore \quad x &= 2 \quad \text{(repeated)}
\end{align*}
\]

### 3.

\[
\begin{align*}
x + 2(x + 1) &= 3x(x + 1) \\
x + 2x + 2 &= 3x^2 + 3x \\
3x^2 &= 2 \\
x &= \pm \frac{2}{\sqrt{3}} \\
\therefore \quad x &= 0.816, \text{ cor. to 3 sig. fig.} \quad \text{or} \quad x = -0.816, \text{ cor. to 3 sig. fig.}
\end{align*}
\]

### 4.

\[
\begin{align*}
x^3 - 28x &= 3x^2 \\
x(x^2 - 3x - 28) &= 0 \\
x(x + 4)(x - 7) &= 0 \\
\therefore \quad x &= 0 \quad \text{or} \quad -4 \quad \text{or} \quad 7
\end{align*}
\]

### 5.

Let \( y = \sqrt{x} \), then \( y^2 = (\sqrt{x})^2 = x \).

The original equation becomes
\[
\begin{align*}
y^2 - 5y + 4 &= 0 \\
(y - 1)(y - 4) &= 0 \\
\therefore \quad y &= 1 \quad \text{or} \quad 4
\end{align*}
\]

Since \( y = \sqrt{x} \), we have
\[
\begin{align*}
\sqrt{x} &= 1 \quad \text{or} \quad \sqrt{x} = 4 \\
\therefore \quad x &= 1 \quad \text{or} \quad x = 16
\end{align*}
\]
6. Let \( u = x^2 \), then \( x^4 = (x^2)^2 = u^2 \).

The original equation becomes
\[
u^2 - 29u + 100 = 0
\]
\[
(u - 25)(u - 4) = 0
\]
\[
\therefore \frac{u}{u} = 25 \text{ or } 4
\]
Since \( u = x^2 \), we have
\[
x^2 = 25 \text{ or } x^2 = 4
\]
\[
\therefore x = \pm 5 \text{ or } x = \pm 2
\]

7. \((5x - 125)^2 = 0\)
\[
5x = 125
\]
\[
5x = 5^3
\]
\[
x = \frac{3}{2}
\]

8. \(2^{x^2 - 4} = 8^x\)
\[
2^{x^2 - 4} = 2^{3x}
\]
\[
x^2 - 4 = 3x
\]
\[
(x + 1)(x - 4) = 0
\]
\[
\therefore x = -1 \text{ or } 4
\]

9. \(\begin{cases}
y = x^2 \\
y = 2x
\end{cases}\)

Substitute (i) into (ii):
\[
x(x - 2) = 0
\]
\[
\therefore x = 0 \text{ or } 2
\]
Substitute the values of \( x \) into (ii):
When \( x = 0 \), \( y = 2(0) = 0 \)
When \( x = 2 \), \( y = 2(2) = 4 \)
\[
\therefore \text{The solutions of the simultaneous equations are } x = 0, y = 0 \text{ and } x = 2, y = 4.
\]

10. \(\begin{cases}
y = x(x + 2) \\
y = 3x + 2
\end{cases}\)

Substitute (ii) into (i):
\[
3x + 2 = x(x + 2)
\]
\[
x^2 + 2x - x - 2 = 0
\]
\[
(x - 2)(x + 1) = 0
\]
\[
\therefore x = 2 \text{ or } -1
\]
Substitute the values of \( x \) into (ii):
When \( x = 2 \), \( y = 3(2) + 2 = 8 \)
When \( x = -1 \), \( y = 3(-1) + 2 = -1 \)
\[
\therefore \text{The solutions of the simultaneous equations are } x = 2, y = 8 \text{ and } x = -1, y = -1.
\]

11. \(\begin{cases}
xy = 12 \\
y = x + 4
\end{cases}\)

Substitute (ii) into (i):
\[
x(x + 4) = 12
\]
\[
x^2 + 4x = 12
\]
\[
(x + 6)(x - 2) = 0
\]
\[
\therefore x = -6 \text{ or } 2
\]
Substitute the values of \( x \) into (ii):
When \( x = -6 \), \( y = -6 + 4 = -2 \)
When \( x = 2 \), \( y = 2 + 4 = 6 \)
\[
\therefore \text{The solutions of the simultaneous equations are } x = -6, y = -2 \text{ and } x = 2, y = 6.
\]

12. \(\begin{cases}
y = -x^2 + x + 1 \\
y = 5 - 3x
\end{cases}\)

Substitute (i) into (ii):
\[
x^2 - 4x + 4 = 0
\]
\[
(x - 2)^2 = 0
\]
\[
\therefore x = 2 \text{ (repeated)}
\]
Substitute \( x = 2 \) into (ii), \( y = 5 - 3(2) = -1 \).
\[
\therefore \text{The solution of the simultaneous equations is } x = 2, y = -1.
\]

13. According to the question,
\[
\begin{cases}
y = x^2 + 1 \quad \text{(i)}
\end{cases}
\]
\[
\begin{cases}
y = x + 3 \quad \text{(ii)}
\end{cases}
\]
Substitute (i) into (ii):
\[
x + 3 = x^2 + 1
\]
\[
x^2 - 3x = 2
\]
\[
(x + 6)(x - 2) = 0
\]
\[
\therefore x = -6 \text{ or } 2
\]
Substitute the values of \( x \) into (i):
When \( x = 2 \), \( y = 2^2 + 1 = 5 \)
When \( x = -6 \), \( y = (-6)^2 + 1 = 37 \)
\[
\therefore \text{The solutions of the simultaneous equations are } x = 2, y = 5 \text{ and } x = -6, y = 37.
\]

14. Let \( BC = x \), \( y = x^2 + y^2 \)
\[
\begin{cases}
y = x + 4
\end{cases}
\]
Substitute (ii) into (i):
\[
x(x + 4) = 12
\]
\[
x^2 + 4x = 12
\]
\[
(x + 6)(x - 2) = 0
\]
\[
\therefore x = -6 \text{ or } 2
\]
Substitute the values of \( x \) into (ii):
When \( x = -6 \), \( y = -6 + 4 = -2 \)
When \( x = 2 \), \( y = 2 + 4 = 6 \)
\[
\therefore \text{The solutions of the simultaneous equations are } x = -6, y = -2 \text{ and } x = 2, y = 6.
\]

15. Let the two equations be
\[
\begin{cases}
x + y = 2 \\
\frac{1}{x} - \frac{1}{y} = 2
\end{cases}
\]
From (i),
\[
\begin{cases}
x + y = 2 \\
\frac{1}{y} = \frac{1}{x} + 2
\end{cases}
\]
Substitute \( \frac{1}{y} = \frac{1}{x} + 2 \) into (i),
\[
x + 2 = 2 \
\therefore \text{The solution of the simultaneous equations is } x = 2.
\]
13. According to the question, we have
\[
\begin{align*}
\{(y = x^2 + 4x) & \quad \text{(i)} \\
\quad y = x + 18 & \quad \text{(ii)}
\end{align*}
\]
Substitute (ii) into (i):
\[
\begin{align*}
x + 18 &= x^2 + 4x \\
x^2 + 3x - 18 &= 0 \\
(x + 6)(x - 3) &= 0
\end{align*}
\]
\[\therefore x = -6 \text{ or } 3\]
Substitute the values of \(x\) into (ii):
When \(x = -6\), \(y = -6 + 18 = 12\)
When \(x = 3\), \(y = 3 + 18 = 21\)
\[\therefore \text{The solutions of the simultaneous equations are } x = -6, \ y = 12 \text{ and } x = 3, \ y = 21.\]

14. Let \(BC = x\ \text{cm}\) and \(AC = y\ \text{cm}\).
\[
\begin{align*}
\{x^2 + y^2 = 13^2\} & \quad \text{(i)} \\
\quad y = x + 7 & \quad \text{(ii)}
\end{align*}
\]
Substitute (ii) into (i):
\[
\begin{align*}
x^2 + (x + 7)^2 &= 13^2 \\
x^2 + x^2 + 14x + 49 &= 169 \\
2x^2 + 14x - 120 &= 0 \\
x^2 + 7x - 60 &= 0 \\
(x - 5)(x + 12) &= 0
\end{align*}
\]
\[\therefore x = 5 \text{ or } -12 \text{ (rejected)}\]
Substitute \(x = 5\) into (ii), \(y = 5 + 7 = 12\).
\[\therefore \text{The lengths of } AC \text{ and } BC \text{ are 12 cm and 5 cm respectively.}\]

15. Let the two numbers be \(x\) and \(y\) respectively.
According to the question, we have
\[
\begin{align*}
\{x + y = 1\} & \quad \text{(i)} \\
\{1 - \frac{1}{x} = \frac{3}{2}\} & \quad \text{(ii)}
\end{align*}
\]
From (i), \(y = 1 - x\) \(\text{(iii)}\)
Substitute (iii) into (ii):
\[
\begin{align*}
\frac{1}{1 - x} &= \frac{3}{2} \\
2x - 2(1 - x) &= 3x(1 - x) \\
2x - 2 + 2x &= 3x - 3x^2 \\
3x^2 + x - 2 &= 0 \\
(3x - 2)(x + 1) &= 0
\end{align*}
\]
\[\therefore x = \frac{2}{3} \text{ or } -1\]

16. \[
\begin{align*}
\frac{5}{5 - x} + \frac{8}{8 - x} &= 3 \\
5(8 - x) + 8(5 - x) &= 3(5 - x)(8 - x) \\
40 - 5x + 40 - 8x &= 3(40 - 13x + x^2) \\
80 - 13x &= 120 - 39x + 3x^2 \\
3x^2 - 26x + 40 &= 0 \\
(x - 2)(3x - 20) &= 0
\end{align*}
\]
\[\therefore x = 2 \text{ or } \frac{20}{3}\]

17. \[
\begin{align*}
\frac{x + 3}{x - 2} & = \frac{1 - x}{4} \\
4x(x + 3) - 4(1 - x)(x - 2) &= 17x(x - 2) \\
4x^2 + 12x - 4(-x^2 + 3x - 2) &= 17x^2 - 34x \\
4x^2 + 12x + 4x^2 - 12x + 8 &= 17x^2 - 34x \\
9x^2 - 34x - 8 &= 0 \\
(x - 4)(9x + 2) &= 0
\end{align*}
\]
\[\therefore x = 4 \text{ or } -\frac{2}{9}\]

18. \[
\begin{align*}
\frac{1}{2x + 1} \left(\frac{1}{2x + 1} + 3\right) &= 10 \\
1 + 3(2x + 1) &= 10(2x + 1)^2 \\
10(2x + 1)^2 - 3(2x + 1) - 1 &= 0
\end{align*}
\]
Let \(u = 2x + 1\), then the original equation can be written as
\[10u^2 - 3u - 1 = 0\]
\[(5u + 1)(2u - 1) = 0\]
\[\therefore u = \frac{1}{5} \text{ or } \frac{1}{2}\]
Since \(u = 2x + 1\), we have
\[2x + 1 = \frac{1}{5} \text{ or } 2x + 1 = \frac{1}{2}\]
\[\therefore x = \frac{3}{5} \text{ or } x = -\frac{1}{4}\]
19. Let \( u = \sqrt{x^2 + 27} \), then \( u^2 = x^2 + 27 \), 
\[ x^2 - 3 = u^2 - 30 \]
The equation can be written as 
\[ u = u^2 - 30 \]
\[ u^2 - u - 30 = 0 \]
\[ (u - 6)(u + 5) = 0 \]
\[ \therefore \ u = 6 \text{ or } -5 \text{ (rejected)} \]
i.e. \( \sqrt{x^2 + 27} = 6 \)
\[ x^2 + 27 = 36 \]
\[ x^2 = 9 \]
\[ \therefore \ x = \pm 3 \]

20. 
\[ x = 2\sqrt{x - 3} + 6 \]
\[ (x - 6)^2 = (2\sqrt{x - 3})^2 \]
\[ x^2 - 12x + 36 = 4x - 12 \]
\[ x^2 - 16x + 48 = 0 \]
\[ (x - 12)(x - 4) = 0 \]
\[ \therefore \ x = 12 \text{ or } 4 \text{ (rejected)} \]

21. 
\[ \left( x + \frac{1}{x} \right)^2 = 4 \]
\[ x^2 + 2 + \frac{1}{x^2} = 4 \]
\[ x^2 - 2 + \frac{1}{x^2} = 0 \]
\[ \left( x - \frac{1}{x} \right)^2 = 0 \]
\[ x - \frac{1}{x} = 0 \]
\[ x = \frac{1}{x} \]
\[ x^2 = 1 \]
\[ \therefore \ x = 1 \text{ or } -1 \]

22. Let \( y = 5^x \), then \( y^2 = (5^x)^2 = 5^{2x} \).
The equation can be written as
\[ y^2 - 5y = -4 \]
\[ y^2 - 5y + 4 = 0 \]
\[ (y - 1)(y - 4) = 0 \]
\[ \therefore \ y = 1 \text{ or } 4 \]
Since \( y = 5^x \), we have
\[ 5^x = 1 \text{ or } 5^x = 4 \]
\[ 5^x = 5 \text{ or } x \log 5 = \log 4 \]
\[ \therefore \ x = 0 \text{ or } x = \frac{\log 4}{\log 5} = 0.861, \text{ cor. to 3 sig. fig.} \]

23. Let \( y = 5^x \), then \( y^2 = (5^x)^2 = 5^{2x} \).
The equation can be written as
\[ y^2 + 30y + 125 = 0 \]
\[ (y + 5)(y + 25) = 0 \]
\[ \therefore \ y = -5 \text{ or } -25 \]
\[ \therefore \ y = 5^x > 0 \]
\[ \therefore \ 5^{2x} + 30(5^x) + 125 = 0 \text{ has no real roots.} \]

24. 
\[ \begin{cases} y = 2x^2 - 5x & \text{(i)} \\ 2y = 3x - 16 & \text{(ii)} \end{cases} \]
Substitute (i) into (ii):
\[ 2(2x^2 - 5x) = 3x - 16 \]
\[ 4x^2 - 10x = 3x - 16 \]
\[ 4x^2 - 13x + 16 = 0 \]
The discriminant of the equation is:
\[ \Delta = (-13)^2 - 4(4)(16) \]
\[ = -87 < 0 \]
\[ \therefore \text{ There are no real solutions for } x. \]
\[ \therefore \text{ The simultaneous equations above have no real solutions.} \]

25. 
\[ \begin{cases} (x + 6)(y - 4) = 0 & \text{(i)} \\ x - 2y = -8 & \text{(ii)} \end{cases} \]
From (ii), \( x = 2y - 8 \) \text{(iii)}.
Substitute (iii) into (i):
\[ (2y - 8 + 6)(y - 4) = 0 \]
\[ (2y - 2)(y - 4) = 0 \]
\[ 2(y - 1)(y - 4) = 0 \]
\[ \therefore \ y = 1 \text{ or } 4 \]
Substitute the values of \( y \) into (iii):
When \( y = 1 \), \( x = 2(1) - 8 = -6 \)
When \( y = 4 \), \( x = 2(4) - 8 = 0 \)
\[ \therefore \text{ The solutions of the simultaneous equations are } x = -6, y = 1 \text{ and } x = 0, y = 4. \]

26. \[ \begin{cases} 2x^2 + y^3 = 4 \\ y + 3 = \frac{3}{4} \end{cases} \]
From (ii), \( y = -\frac{9}{4} \).
Substitute the equations into (i):
\[ 2x^2 + \left(-\frac{9}{4}\right)^3 = 4 \]
\[ 2x^2 + 36 = 11x \]
\[ 11x = (11x - 36) \]
\[ \therefore \text{ No solution.} \]

27. 
\[ \begin{cases} 9x^2 + y^3 = 36 \\ x + 3y = 2 \end{cases} \]
From (iii), \( x = -\frac{3}{2} \).
Substitute the equations into (i):
\[ 18x^2 + \left(-\frac{3}{2}\right)^3 = 36 \]
\[ 18x^2 + 9\frac{1}{8} = 36 \]
\[ (3x - 1)(3x + 9) \]
\[ \therefore \text{ No solution.} \]
26. \[
\begin{align*}
2x^2 + y^2 &= 11 \quad \text{(i)} \\
y + 3 &= \frac{y - x}{2} \quad \text{(ii)}
\end{align*}
\]
From (ii), \(y = 6 + 3x\) \(\text{.................................................................. (iii)}\)

Substitute (iii) into (i):
\[
\begin{align*}
2x^2 + (6 + 3x)^2 &= 11 \\
2x^2 + 36 + 36x + 9x^2 &= 11 \\
11x^2 + 36x + 25 &= 0 \\
(11x + 25)(x + 1) &= 0
\end{align*}
\]
\[x = -\frac{25}{11} \text{ or } -1\]

Substitute the values of \(x\) into (iii):
When \(x = -\frac{25}{11}\), \(y = 6 + 3\left(-\frac{25}{11}\right) = -\frac{9}{11}\)
When \(x = -1\), \(y = 6 + 3(-1) = 3\)

\[\because \quad \text{The solutions of the simultaneous equations are } x = -\frac{25}{11}, y = -\frac{9}{11} \quad \text{and} \quad x = -1, y = 3.\]

27. \[
\begin{align*}
9x^2 + 2 &= 9xy + 6y^2 \quad \text{(i)} \\
3x + 2y &= 2 \quad \text{(ii)}
\end{align*}
\]
From (ii), \(y = \frac{2 - 3x}{2} \quad \text{.................................................................. (iii)}\)

Substitute (iii) into (i):
\[
\begin{align*}
9x^2 + 2 &= 9x\left(\frac{2 - 3x}{2}\right) + 6\left(\frac{2 - 3x}{2}\right)^2 \\
18x^2 + 4 &= 18x - 27x^2 + 12 - 36x + 27x^2 \\
18x^2 + 18x - 8 &= 0 \\
9x^2 + 9x - 4 &= 0 \\
(3x - 1)(3x + 4) &= 0
\end{align*}
\]
\[x = \frac{1}{3} \text{ or } -\frac{4}{3}\]

Substitute the values of \(x\) into (iii):
When \(x = \frac{1}{3}\), \(y = \frac{2 - 3\left(\frac{1}{3}\right)}{2} = \frac{1}{2}\)
When \(x = -\frac{4}{3}\), \(y = \frac{2 - 3\left(-\frac{4}{3}\right)}{2} = 3\)

\[\because \quad \text{The solutions of the simultaneous equations are } x = \frac{1}{3}, y = \frac{1}{2} \text{ and } x = -\frac{4}{3}, \quad y = 3.\]

28. Rewrite the given equation as:
\[
\begin{align*}
2x^2 - y^2 &= 8 \quad \text{(i)} \\
y - 4x &= 8 \quad \text{(ii)}
\end{align*}
\]
From (ii), \(y = 4x + 8 \quad \text{.................................................................. (iii)}\)

Substitute (iii) into (i):
\[
\begin{align*}
2x^2 - (4x + 8)^2 &= 8 \\
2x^2 - 16x^2 - 64x - 64 &= 8 \\
14x^2 + 64x + 72 &= 0 \\
2(7x^2 + 32x + 36) &= 0 \\
2(x + 2)(7x + 18) &= 0
\end{align*}
\]
\[x = -2 \text{ or } -\frac{18}{7}\]

Substitute the values of \(x\) into (iii):
When \(x = -2\), \(y = 4(-2) + 8 = 0\)
When \(x = -\frac{18}{7}\), \(y = 4\left(-\frac{18}{7}\right) + 8 = -\frac{16}{7}\)

\[\because \quad \text{The solutions of the simultaneous equations are } x = -2, y = 0 \text{ and } x = -\frac{18}{7}, \quad y = -\frac{16}{7}.\]

29. Rewrite the given equation as:
\[
\begin{align*}
y - x^2 + 3x &= 1 \quad \text{(i)} \\
3x - 2y - 4 &= 1 \quad \text{(ii)}
\end{align*}
\]
From (i), \(y = x^2 - 3x + 1 \quad \text{.................................................................. (iii)}\)

Substitute (iii) into (ii):
\[
\begin{align*}
3x - 2(x^2 - 3x + 1) - 4 &= 1 \\
3x - 2x^2 + 6x - 2 - 4 &= 1 \\
2x^2 - 9x + 7 &= 0 \\
(x - 1)(2x - 7) &= 0
\end{align*}
\]
\[x = 1 \text{ or } \frac{7}{2}\]

Substitute the values of \(x\) into (iii):
When \(x = 1\), \(y = 1^2 - 3(1) + 1 = -1\)
When \(x = \frac{7}{2}\), \(y = 2\left(\frac{7}{2}\right)^2 - 3\left(\frac{7}{2}\right) + 1 = \frac{11}{3}\)

\[\because \quad \text{The solutions of the simultaneous equations are } x = 1, y = -1 \text{ and } x = \frac{7}{2}, \quad y = \frac{11}{3}.\]
30. (a) According to the question, we have
\[ q - p = 3 \]
\[ q = p + 3 \]
\[ \therefore \quad \frac{b + 2}{q + 2} = \frac{2p}{q} \quad \text{(i)} \]
\[ p^2 + 2q = 2pq + 4p \]
\[ 2q = pq + 4p \quad \text{(ii)} \]
(b) Substitute (i) into (ii):
\[ 2(p + 3) = p(p + 3) + 4p \]
\[ 2p + 6 = p^2 + 3p + 4p \]
\[ p^2 + 5p - 6 = 0 \]
\[ (p + 6)(p - 1) = 0 \]
\[ \therefore \quad p = -6 \quad (\text{rejected}) \quad \text{or} \quad 1 \]
Substitute \( p = 1 \) into (i),
\[ q = 1 + 3 = 4, \]
\[ \therefore \quad \text{The fraction is} \quad \frac{1}{4}. \]
31. (a) According to the given conditions,
\[(10x + y) - (10y + x) = 18 \]
\[9x - 9y = 18 \]
\[\therefore \quad x - y = 2 \quad \text{(i)} \]
Since the product of the two digits is 35, we have
\[xy = 35\quad \text{(ii)} \]
(b) From (i), \( y = x - 2 \quad \text{(iii)} \)
Substitute (iii) into (ii):
\[ x(x - 2) = 35 \]
\[ x^2 - 2x - 35 = 0 \]
\[ (x - 7)(x + 5) = 0 \]
\[ \therefore \quad x = 7 \quad \text{or} \quad -5 \quad (\text{rejected}) \]
Substitute \( x = 7 \) into (iii),
\[ y = 7 - 2 = 5. \]
\[ \therefore \quad \text{The original two-digit number is} \quad 75. \]
32. Let the time taken for the cyclist to finish the journey by the longer route be \( x \) h.

<table>
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<tr>
<th>Distance ( (\text{km}) )</th>
<th>Time ( (\text{h}) )</th>
<th>Speed ( (\text{km/h}) )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Longer route</td>
<td>24</td>
<td>( x )</td>
</tr>
<tr>
<td>Shorter route</td>
<td>20</td>
<td>( \frac{x + 30}{60} )</td>
</tr>
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When he chooses the longer route, the cycling speed is 4 km/h faster than what it is in the other route.
\[ \frac{24}{x} - \frac{20}{x + \frac{1}{2}} = 4 \]
\[ 24x + 12 - 20x = 4x^2 + 2x \]
\[ 4x^2 - 2x - 12 = 0 \]
\[ 2(x - 2)(x + 3) = 0 \]
\[ \therefore \quad x = 2 \quad \text{or} \quad \frac{3}{2} \quad (\text{rejected}) \]
\[ \therefore \quad \text{The time taken for him to finish the journey by the longer route is} \quad 2 \text{ h}. \]
33. (a) \[ 10x^2 + 19x - 33 = 0 \]
\[ (x + 3)(10x - 11) = 0 \]
\[ \therefore \quad x = -3 \quad \text{or} \quad \frac{11}{10} \]
(b) According to the question, we have
\[ [1000(1 + r\%) + 1900](1 + r\%) = 3300 \]
\[ 10(1 + r\%)^2 + 19(1 + r\%) - 33 = 0 \]
Let \( x = 1 + r\% \),
\[ 10x^2 + 19x - 33 = 0 \]
Using the result in (a), \( x = -3 \quad \text{or} \quad \frac{11}{10} \)
\[ 1 + r\% = -3 \quad (\text{rejected}) \quad \text{or} \quad 1 + r\% = \frac{11}{10} \]
\[ 1 + r\% = \frac{11}{10} \]
\[ \therefore \quad r = 10 \]

HKCEE Questions
(Paper 2 Questions)
34. D  35. D  36. B