



# Analysis on the HKCEE/HKDSE ques

Sample

	2003	2004	2005	2006	2007
1. Percentages	11, 12	12	12	10, 11	10, 11
2. Numbers and Estimation	9				12
3. Polynomials	2, 6, 37, 38, 39	10, 37, 38, 40	4, 10, 38, 40	3, 4, 6, 40	2, 3, 40
4. Formulas	3	2	2	2	
5. Equations	5, 7, 41	6, 7, 8, 41, 42	5, 7, 8	8, 9	4, 7, 42
6. Functions and Graphs	1, 42	3, 5	3, 6	5, 7	5, 8, 38
7. Rate, Ratio and Variations	14, 15	13, 14, 15, 16	13, 14	13, 14, 15	13, 14
8. Exponential and Logarithmic Functions	4, 13, 40	1, 4, 39	1, 37, 39	1, 37, 38, 39	1, 37, 39, 41
9. Geometry (1) – Straight Lines and Rectilinear Figures	17, 18, 27, 28, 53	17, 18, 27, 28	26, 27, 28, 29, 30, 43, 52	26, 48, 49	19, 27, 28, 50
10. Geometry (2) – Circles	25, 50, 51, 52	23, 24, 25, 26, 50, 51	24, 25, 49, 50, 51	19, 46, 47	48, 49
11. Transformation and Symmetry				25	25, 26
12. Coordinate Geometry (1)	31	31	32	27, 31	29, 30
13. Coordinate Geometry (2)	29, 30, 54	29, 30, 52, 53	31, 33, 53, 54	28, 29, 30, 50, 51	31, 32, 51, 52
14. Sequence	10	11, 44	11, 42	12, 42, 43	9, 44, 45
15. Mensuration	19, 20, 21, 44	45	16, 17, 18, 19	17, 18, 20	16, 17, 18
16. Trigonometry	22, 45, 46	20, 46, 47	20, 44, 45, 46	21, 22, 44	20, 21, 22, 46
17. Applications of Trigonometry	16, 23, 24, 26, 48, 49	19, 21, 22, 48, 49	15, 21, 22, 23, 47, 48	16, 23, 24, 45	15, 23, 24, 47
18. Inequalities and Linear Programming	8, 43	9, 43	9, 41	41	6, 43
19. Permutation and Combination					
20. Probability	34, 35	33, 34	35, 36	32, 33, 52, 53	33, 53, 54
21. Statistics	32, 33, 36	32, 35, 36, 54	34	34, 35, 36, 54	34, 35, 36

**Note:** 1. The numbers listed above refer to the question numbers in the HKCEE/HKDSE mathematics Paper II that year.

2. 'Permutation and Combination' is a new topic in the HKDSE syllabus.

2008	2009	2010	2011	HKDSE 2012	HKDSE 2013	HKDSE 2014
12	10, 11	13, 14	10, 11	8	10, 11	9, 10
16, 17	15	11, 17	14	13, 14, 35	4, 36	11, 36
3, 4, 5	3, 4, 5, 41	3, 4, 5, 41	3, 40	2, 3, 4, 31	3, 8, 9, 31	2, 3, 31
2	2	1	2		2	
8, 41	8	7, 8	6	5	6, 35	4, 8
6, 9, 10, 37	6, 37	6, 9, 37	7, 8, 37	6, 34, 38	7	5, 35, 38
13, 14, 15	13, 14	15, 16	12, 13	9, 10, 11	12, 13	13
1, 38, 39, 40	1, 38, 39, 40	2, 38, 39, 40	1, 38, 39, 41	1, 32, 33	1, 32, 33, 34	1, 32, 33, 34
21, 27, 28, 52	26, 27, 28, 51	25, 26, 27	23, 27, 28	17, 22	21	16, 22
50, 51	48, 49, 50	49, 50	48, 49	20, 41	19, 41	20, 21, 41
25, 26	29	23, 24	25, 26		15	23
29, 30, 32	30, 33, 52	30	29, 30	23	43	
31, 53	31, 32, 53	29, 31, 32, 51, 52	31, 32, 51	24, 25, 26, 42	14, 24, 25, 42	24, 25, 26, 42
11, 43, 44	12, 42, 43	12, 43, 44	9, 44, 45	12, 37	38	14, 37
7, 18, 19, 20	7, 17, 18, 19, 20	18, 19, 20	16, 17, 18, 19	15, 16, 21	16, 17, 18	15, 17
23, 24, 45, 46, 47	21, 24, 25, 45, 46	22, 45, 46	20, 21, 22, 46	18, 19, 39	22, 23, 39	18, 19, 39
22, 48, 49	16, 22, 23, 47	21, 28, 47, 48	15, 24, 47, 50	40	20, 40	40
42	9, 44	10, 42	4, 5, 42, 43	7, 36	5, 37	6, 7, 12
				43	44	43
33	34	33, 53	33, 52	27, 28, 44	26	27
34, 35, 36, 54	35, 36, 54	34, 35, 36, 54	34, 35, 36, 53, 54	29, 30, 45	27, 28, 29, 30, 45	28, 29, 30, 44, 45



# Multiple-choice question tackling strategies

Sample

Paper II of the HKDSE mathematics examination consists of two sections: Sections A and B. There are 30 questions in Section A and 15 questions in Section B. As the time allowed is 75 minutes, students are required to answer one question in about 1.5 minutes on average. In order to spend time in the most effective way, it is essential for candidates to learn some useful strategies in answering multiple-choice questions.

## Strategy 1 Direct computation

In questions such as finding interest, area of plane figures or solving equations with quadratic formulas, candidates can apply the related formulas and calculate the answers directly. However, as not all the formulas are provided in the examination paper, candidates should be familiar with some useful formulas.

### Example 1

Reference: HKDSE 13 Q11

A sum of \$30 000 is deposited for 1 year at 6% p.a., compounded monthly. Find the interest correct to the nearest dollar.

- A. \$1750
- B. \$1800
- C. \$1850
- D. \$1900

#### Solution:

$$\begin{aligned}\text{Interest} &= \$30\,000 \times \left(1 + \frac{6\%}{12}\right)^{12} - \$30\,000 \quad \blacktriangleleft \text{Compound interest } I = P(1 + r\%)^n - P \\ &= \$1850 \text{ (cor. to the nearest dollar)}\end{aligned}$$

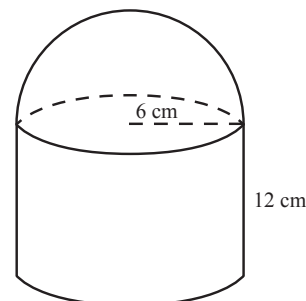
The answer is C.

### Example 2

Reference: HKDSE 13 Q17

In the figure, the solid consists of a hemisphere and a cylinder. If the base radius and the height of the cylinder are 6 cm and 5 cm respectively, find the volume of the solid.

- A.  $204\pi$
- B.  $324\pi$
- C.  $396\pi$
- D.  $468\pi$



# 1 Percentages

Sample

## Key Points

### A. Percentage Change

$$\text{Percentage change (百分增減)} = \frac{\text{New value} - \text{Original value}}{\text{Original value}}$$

$$\text{New value} = \text{Original value} \times (1 + \text{Percentage change})$$

For example, if a number is changed from 12 000 to 9000, then

$$\text{percentage change} = \frac{9000 - 12\,000}{12\,000} \times 100\% = -25\%$$

Note: A positive percentage change means a percentage increase while a negative percentage change means a percentage decrease.

### Let's Try ①

Find the new value if 130 is

- (a) increased by 20%;
- (b) decreased by 10%.

### Instant Drill 1

Peter's monthly salary is changed from \$10 000 to \$12 000. The percentage change in his salary is

- A. 5%                      B. 10%                      C. 15%                      D. 20%.

### B. Profit, Loss and Discount

1. **Profit percentage (盈利百分數)** =  $\frac{\text{Profit}}{\text{Cost}} \times 100\% = \frac{\text{Selling price} - \text{Cost}}{\text{Cost}} \times 100\%$

**Loss percentage (虧蝕百分數)** =  $\frac{\text{Loss}}{\text{Cost}} \times 100\% = \frac{\text{Cost} - \text{Selling price}}{\text{Cost}} \times 100\%$

2. Selling price = Cost  $\times$  (1 + Profit percentage) or

$$= \text{Cost} \times (1 - \text{Loss percentage})$$

For example, if Peter bought a computer for \$4000 and then sold it at a loss of 20%, then

$$\text{selling price} = \$4000(1 - 20\%) = \$3200$$

3. **Discount percentage (折扣百分數)** =  $\frac{\text{Marked price} - \text{Selling price}}{\text{Marked price}} \times 100\%$

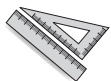
$$\text{Selling price} = \text{Marked price} \times (1 - \text{Discount percentage})$$

### Let's Try ②

John bought a phone at \$3200 and then sold it at \$3680. Find the profit or loss percentage.

### Let's Try ③

A bag of marked price \$280 is sold at a discount of 25%. Find the selling price.



# Basic Exercise

## A. Polynomials and Their Operations

1. What is the constant term of  $2x^3 + 4x^2 - 5x + 7$ ?

- A. 2
- B. 4
- C. 5
- D. 7

2. What is the coefficient of  $x^2$  in  $x^3 - 3x^2 + x - 2$ ?

- A. 2
- B. 3
- C. -2
- D. -3

3. What is the degree of the polynomial

$$2m - 3n + 3mn^2 + 2m^2?$$

- A. 1
- B. 2
- C. 3
- D. 4

4.  $(6x^3 - 2x^2 + x - 3) + (1 - x - x^2) =$

- A.  $6x^3 - 3x^2 - 2$
- B.  $6x^3 - x^2 + 2x - 2$
- C.  $6x^3 - 3x^2 + 2x - 2$
- D.  $6x^3 + x^2 + 2x - 2$

5.  $(x^2 - 1) - (2x^3 - 3x^2 + 2) =$

- A.  $-2x^3 - 2x^2 + 1$
- B.  $2x^3 - 2x^2 + 1$
- C.  $-2x^3 + 4x^2 - 3$
- D.  $-2x^3 + 4x^2 - 1$

Reference:  
HKCEE 08Q4

6. Find the coefficient of  $x^3$  in the result of

$$(x^3 + 3x^2 + 2x + 1) - (x^3 - 2x + 1).$$

- A. 0
- B. 1
- C. 2
- D. 3

7.  $(2a - b)(2a + b - 1) =$

- A.  $2a^2 - b^2 - a - b$
- B.  $2a^2 - b^2 - a + b$
- C.  $4a^2 - b^2 - 2a - b$
- D.  $4a^2 - b^2 - 2a + b$

Reference:  
HKCEE 11Q3

8.  $(3x - 1)(x^2 - 2x + 1) =$

- A.  $3x^3 - 7x^2 + 5x - 1$
- B.  $3x^3 - 7x^2 + 5x + 1$
- C.  $3x^3 - 7x^2 + x - 1$
- D.  $3x^3 - 7x^2 + x + 1$

Reference:  
HKCEE 05Q4

9.  $(2x^2 + 4x - 1)(2 - x) =$

- A.  $2x^3 - 9x + 2$
- B.  $-2x^3 + 9x - 2$
- C.  $x^3 + 9x^2 - 2$
- D.  $x^3 - 9x^2 - 2$

10.  $(3x - 2y)^2 - (3x + 2y)^2 =$

- A.  $-4xy$
- B.  $-24xy$
- C.  $-32xy$
- D.  $-64y$

Reference:  
HKDSE 12Q2

11. Find the quotient when  $2x^3 + 7x^2 + 7x + 2$  is divided by  $x + 1$ .

- A.  $2x^2 + 5x + 2$
- B.  $2x^2 + 9x + 2$
- C.  $2x^2 + 5x + 12$
- D.  $2x^2 + 9x + 12$



# Revision Test

## Level 1

1.  $(-3^{2017})\left(\frac{1}{3}\right)^{2018} =$

- A.  $-\frac{1}{3}$   
 B.  $-3$   
 C.  $\frac{1}{3}$   
 D.  $3$

Reference:  
HKCEE 11Q1

2.  $\frac{(3a^3)^3}{3a^4} =$

- A.  $3a^2$   
 B.  $3a^5$   
 C.  $9a^2$   
 D.  $9a^5$

Reference:  
HKDSE 12Q1

3.  $(4^{n+1} \cdot 8^{2n})^2 =$

- A.  $2^{8n+1}$   
 B.  $2^{8n+2}$   
 C.  $2^{16n+4}$   
 D.  $2^{16n+6}$

Reference:  
HKDSE 14Q1

Reference:  
HKDSE 13Q1

4.  $\frac{x^{\frac{3}{2}}y^{\frac{1}{2}}}{(x^3y^{-2})^{\frac{2}{5}}} =$

- A.  $(xy)^{\frac{2}{10}}$   
 B.  $(xy)^{\frac{3}{10}}$   
 C.  $x^{\frac{19}{10}}y^{\frac{11}{10}}$   
 D.  $x^{\frac{3}{2}}y^{\frac{3}{2}}$

5. If  $\left(\frac{1}{49}\right)^{2x} = \left(\frac{1}{343}\right)^{3y}$  and  $x, y$  are non-zero integers,

- then  $x : y =$   
 A.  $1 : 2$ .  
 B.  $4 : 3$ .  
 C.  $9 : 4$ .  
 D.  $16 : 9$ .

6. If  $a > 0$ , then  $\sqrt{81a} - \sqrt{49a} - \sqrt{4a} =$

- NF**  
 A.  $0$ .  
 B.  $2\sqrt{a}$ .  
 C.  $14\sqrt{a}$ .  
 D.  $28\sqrt{a}$ .

7. If  $a > 0$ , then  $\frac{2a}{\sqrt{16a}} + \frac{a}{2\sqrt{a}} =$

- NF**  
 A.  $a$ .  
 B.  $\sqrt{a}$ .  
 C.  $2\sqrt{a}$ .  
 D.  $3\sqrt{a}$ .

Reference:  
HKCEE 07Q37

8.  $1110111_{(2)} =$

- NF**  
 A.  $2^5 + 2^4 + 2^3 + 2^2 + 2 + 1$   
 B.  $2^5 + 2^4 + 2^3 + 2^3 + 2^2 + 2$   
 C.  $2^6 + 2^5 + 2^4 + 2^2 + 2 + 1$   
 D.  $2^6 + 2^5 + 2^4 + 2^3 + 2^2 + 2$

Reference:  
HKCEE 11Q41

9.  $11_{(16)} \times A3_{(16)} =$

- NF**  
 A.  $B4_{(16)}$   
 B.  $F5_{(16)}$   
 C.  $62B_{(16)}$   
 D.  $AD3_{(16)}$

10. Convert  $2010_{(10)}$  into a hexadecimal number.

- NF**  
 A.  $5F8_{(16)}$   
 B.  $7DA_{(16)}$   
 C.  $D50_{(16)}$   
 D.  $10B6_{(16)}$

Sample

Pan Lloyds Publishers Ltd

**MATHEMATICS Compulsory Part  
MOCK EXAM 1  
PAPER 2**

(1¼ hours)

**INSTRUCTIONS**

1. Read carefully the instructions on the Answer Sheet. After the announcement of the start of the examination, you should first stick a barcode label and insert the information required in the spaces provided. No extra time will be given for sticking on the barcode label after the ‘Time is up’ announcement.
2. When told to open this book, you should check that all the questions are there. Look for the words ‘**END OF PAPER**’ after the last question.
3. All questions carry equal marks.
4. **ANSWER ALL QUESTIONS.** You are advised to use an HB pencil to mark all the answers on the Answer Sheet, so that wrong marks can be completely erased with a clean rubber. You must mark the answers clearly; otherwise you will lose marks if the answers cannot be captured.
5. You should mark only **ONE** answer for each question. If you mark more than one answer, you will receive **NO MARKS** for that question.
6. No marks will be deducted for wrong answers.

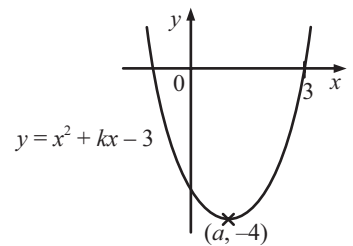
There are 30 questions in Section A and 15 questions in Section B.

The diagrams in this paper are not necessarily drawn to scale.

Choose the best answer for each question.

### Section A

- $(16 \cdot 8^{n-1})^2 =$ 
  - $2^{6n-1}$
  - $2^{6n+2}$
  - $2^{6n+3}$
  - $2^{7n+1}$
- If  $2x - \frac{y}{3} = 4$ , then  $y =$ 
  - $2x - 3$ .
  - $2 - 3x$ .
  - $3(x + 4)$ .
  - $6(x - 2)$ .
- If  $x + 3y + 2 = y - x = -3$ , then  $y =$ 
  - 2.
  - 1.
  - 0.
  - 2.
- $ru + 2su - rv - 2sv + rt + 2st =$ 
  - $(r + 2s)(u - v + t)$
  - $(r - 2s)(u - v + t)$
  - $(r + 2s)(u + v + t)$
  - $(r - 2s)(u - v - t)$
- Let  $f(x) = 2x^3 - 3x^2 - x + 1$ . When  $f(x)$  is divided by  $x + 1$ , the remainder is
  - 6.
  - 3.
  - 4.
  - 7.
- Solve  $(x + 2a)^2 = 9a^2$ , where  $a$  is a constant.
  - $x = a$
  - $x = -3a$  or  $x = 3a$
  - $x = -5a$  or  $x = a$
  - $x = -5a$  or  $x = 3a$
- Find the range of values of  $k$  such that the quadratic equation  $2x^2 + x + 2k = k - x$  has real roots.
  - $k \leq \frac{1}{4}$
  - $k \leq \frac{1}{2}$
  - $k \geq \frac{1}{4}$
  - $k \geq \frac{1}{2}$
- In the figure, the graph of  $y = x^2 + kx - 3$  passes through the vertex  $(a, -4)$ . Find the equation of the axis of symmetry of the graph.
  - $x = -2$
  - $x = -1$
  - $x = 1$
  - $x = 2$





# 1 Percentages

## Instant Drill

1. D

$$\begin{aligned}\text{Percentage change} &= \frac{\$(12\,000 - 10\,000)}{\$10\,000} \times 100\% \\ &= 20\%\end{aligned}$$

2. A

$$\begin{aligned}\text{Selling price} &= \$200 \times (1 - 10\%) \\ &= \$200 \times 0.9 \\ &= \$180\end{aligned}$$

3. D

$$\begin{aligned}\text{Amount} &= \$500 \times (1 + 4\%)^2 \\ &= \$500 \times 1.04^2 \\ &= \$540.8\end{aligned}$$

$$\begin{aligned}\text{Compound interest} &= \$540.8 - \$500 \\ &= \$40.8\end{aligned}$$

4. A

$$\begin{aligned}\text{Value} &= \$2\,000\,000 \times (1 + 3\%)^4 \\ &= \$2\,000\,000 \times 1.03^4 \\ &= \$2\,250\,000 \quad (\text{cor. to 3 sig. fig.})\end{aligned}$$

5. C

$$\begin{aligned}\text{Annual rent of the flat} &= \$8000 \times 12 \\ &= \$96\,000\end{aligned}$$

$$\begin{aligned}\text{Property tax} &= \$96\,000 \times 0.8 \times 15\% \\ &= \$11\,520\end{aligned}$$

## Basic Exercise

1. D

$$\begin{aligned}\text{Number of candies in bag B} \\ &= 500 \times (1 + 20\%) \\ &= 600\end{aligned}$$

Let  $x$  be the number of candies in bag C.

$$\begin{aligned}x \times (1 + 25\%) &= 600 \\ x &= 600 \div 1.25 \\ &= 480\end{aligned}$$

The number of candies in bag C is 480.

2. D

$$\begin{aligned}\text{Percentage of candidates who passed in both tests} \\ &= 70\% \times 80\% \\ &= 56\%\end{aligned}$$

3. A

$$\begin{aligned}\text{Percentage increase} &= \frac{(110 - 100) \text{ cm}^3}{100 \text{ cm}^3} \times 100\% \\ &= 10\%\end{aligned}$$

4. B

$$\begin{aligned}\text{Percentage change} &= \frac{(40 - 50) \text{ kg}}{50 \text{ kg}} \times 100\% \\ &= -20\%\end{aligned}$$

### Common mistakes

Remember that the new value is 40 kg instead of 50 kg.

5. A

6. B

Let  $x$  be the sales amount last month.

$$\begin{aligned}x(1 + 10\%) &= 60\,500 \\ 1.1x &= 60\,500 \\ x &= 55\,000\end{aligned}$$

The sales amount last month was \$55 000.

7. A

Let  $l$  and  $w$  be the original length and width of the rectangle respectively.Original area =  $lw$ 

$$\begin{aligned}\text{New area} &= (1 + 10\%)l \times (1 - 15\%)w \\ &= 0.935lw\end{aligned}$$

$$\begin{aligned}\text{Percentage change} &= \frac{0.935lw - lw}{lw} \times 100\% \\ &= -6.5\%\end{aligned}$$

### Guidelines

Express the new value in terms of the original value. Then we can find the percentage change with the formula.

8. B

Let  $r$  be the original radius of the circle.

$$\begin{aligned}\text{New radius of the circle} &= (1 - 20\%)r \\ &= 0.8r\end{aligned}$$

Percentage change

$$\begin{aligned}&= \frac{\pi(0.8r)^2 - \pi r^2}{\pi r^2} \times 100\% \\ &= \frac{-0.36\pi r^2}{\pi r^2} \times 100\% \\ &= -36\%\end{aligned}$$

9. B

$$\begin{aligned} & (2x^2 + 4x - 1)(2 - x) \\ &= 4x^2 + 8x - 2 - 2x^3 - 4x^2 + x \\ &= -2x^3 + 9x - 2 \end{aligned}$$

10. B

$$\begin{aligned} & (3x - 2y)^2 - (3x + 2y)^2 \\ &= [(3x - 2y) - (3x + 2y)][(3x - 2y) + (3x + 2y)] \\ &= (-4y)(6x) \\ &= -24xy \end{aligned}$$

11. A

$$\begin{array}{r} 2x^2 + 5x + 2 \\ x+1 \overline{) 2x^3 + 7x^2 + 7x + 2} \\ \underline{2x^3 + 2x^2} \phantom{+ 2} \\ 5x^2 + 7x \phantom{+ 2} \\ \underline{5x^2 + 5x} \phantom{+ 2} \\ 2x + 2 \\ \underline{2x + 2} \\ 0 \end{array}$$

12. C

$$\begin{array}{r} -x^2 - x + 1 \\ x-1 \overline{) -x^3 + 0x^2 + 2x + 1} \\ \underline{-x^3 + x^2} \phantom{+ 1} \\ -x^2 + 2x \phantom{+ 1} \\ \underline{-x^2 + x} \phantom{+ 1} \\ x + 1 \\ \underline{x - 1} \\ 2 \end{array}$$

**Guidelines**

When performing long division of polynomials, add '0's to the missing terms of the dividend can avoid mistakes.

13. B

$$\text{For A: } (x + 3)^2 = x^2 + 6x + 9 \neq x^2 + 9$$

$$\text{For B: } 4x(x + 5) = 4x^2 + 20x$$

$$\text{For C: } -(x + 1)(3x - 2) = -3x^2 - x + 2 \neq 3x^2 + x - 2$$

$$\text{For D: } x^2 - 4 = (x - 2)(x + 2) \neq (x - 4)(x + 4)$$

14. C

$$\text{For A: } (x + y)^3 = x^3 + 3x^2y + 3xy^2 + y^3 \neq x^3 + y^3$$

For B:

$$\begin{aligned} (4x + 1)(4x^2 - 4x + 1) &= 16x^3 - 16x^2 + 4x + 4x^2 - 4x + 1 \\ &= 16x^3 - 12x^2 + 1 \\ &\neq 4x^3 + 1 \end{aligned}$$

$$\text{For C: } 27x^3 - y^3 = (3x)^3 - y^3 = (3x - y)(9x^2 + 3xy + y^2)$$

$$\begin{aligned} \text{For D: } 8x^3 - 1 &= (2x)^3 - 1^3 \\ &= (2x - 1)(4x^2 + 2x + 1) \\ &\neq (2x - 1)(4x^2 + 4x + 1) \end{aligned}$$

**Guidelines**

The difference of squares and the sum and difference of cubes are very common in public examination. Candidates should familiarize with these identities.

15. A

$$(x - 3)^2 = x^2 - 6x + 9 \neq x^2 - 9$$

16. D

$$\begin{aligned} \text{L.H.S.} &= x^2 - 4ax + 2 \\ \text{R.H.S.} &= (x - 2a)^2 + 2b \\ &= x^2 - 4ax + 4a^2 + 2b \end{aligned}$$

By comparing the like terms, we have

$$\begin{aligned} 4a^2 + 2b &= 2 \\ b &= 1 - 2a^2 \end{aligned}$$

17. C

$$\begin{aligned} \text{L.H.S.} &= x^2 + 2a^2 - b^2 \\ \text{R.H.S.} &= 2(x - a)^2 - (x + b)^2 \\ &= 2x^2 - 4ax + 2a^2 - x^2 - 2bx - b^2 \\ &= x^2 - (4a + 2b)x + 2a^2 - b^2 \end{aligned}$$

By comparing the like terms, we have

$$\begin{aligned} 4a + 2b &= 0 \\ b &= -2a \end{aligned}$$

18. A

$$\begin{aligned} \text{L.H.S.} &= (ax + b)(x - 1) \\ &= ax^2 - (a - b)x - b \\ \text{R.H.S.} &= 3x^2 - x - 2 \end{aligned}$$

By comparing the like terms, we have  $a = 3$ ,  $b = 2$ .

19. C

$$\begin{aligned} \text{L.H.S.} &= Ax^3 + Bx^2 - 3x - 2 \\ \text{R.H.S.} &= (2x^2 + 1)(-3x - 2) \\ &= -6x^3 - 4x^2 - 3x - 2 \end{aligned}$$

By comparing the like terms, we have  $A = -6$ ,  $B = -4$ .