Grade 10 – Book A

(Revised edition – CAPS)

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Chapter A1

Number systems

NO CALCULATOR MAY BE USED IN THIS CHAPTER!

A1.1 Number systems:

Exercise 1: Date: _____

Complete:
* Natural numbers: $\mathbb{N}$ = {_____}
* Whole numbers: $\mathbb{N}_0$ = {_____}
* Integers: $\mathbb{Z}$ = {_____}
* Rational numbers: $\mathbb{Q}$ = {_____}

A1.2 Rational numbers:

A1.2.1 Equivalent fractions:

E.g.1 Write down two equivalent fractions for $\frac{2}{3}$:

$\frac{2\times3}{3\times3} = \frac{6}{9}$ **or** $\frac{2\times5}{3\times5} = \frac{10}{15}$

Exercise 2: Date: _____

(1) Write down three equivalent fractions for each of the following rational numbers:

(a) $\frac{-1}{4}$ = _____ = _____ = _____ (b) $\frac{3}{7}$ = _____ = _____ = _____

(c) $\frac{1}{6}$ = _____ = _____ = _____ (d) $\frac{2}{3}$ = _____ = _____ = _____

(e) $\frac{12}{14}$ = _____ = _____ = _____ (f) $\frac{-36}{-9}$ = _____ = _____ = _____

(g) $2\frac{6}{11}$ = _____ = _____ = _____ (h) 5 = _____ = _____ = _____

(2) Are the following equivalent fractions or not? (Answer yes or no only.)

(a) $\frac{12}{5} = \frac{24}{10}$? : _____ (b) $\frac{7}{3} = \frac{3}{7}$? : _____ (c) $\frac{3}{-2} = \frac{6}{4}$? : _____

(d) $\frac{3}{-5} = \frac{-9}{15}$? : _____ (e) $\frac{2}{3} = \frac{4}{9}$? : _____ (f) $\frac{3}{1} = \frac{48}{16}$? : _____

(g) $\frac{4}{3} = \frac{-12}{-9}$? : _____ (h) $\frac{25}{10} = \frac{5}{2}$? : _____ (i) $\frac{5}{4} = \frac{4}{3}$? : _____

A1.2.2 Order of rational numbers:

E.g.2 (a) Arrange the following fractions in ascending order: $\frac{1}{2}$; $\frac{3}{4}$ and $\frac{2}{3}$:

$\frac{1}{2} = \frac{6}{12}$; $\frac{3}{4} = \frac{9}{12}$ and $\frac{2}{3} = \frac{8}{12}$

$\therefore \frac{1}{2} < \frac{2}{3} < \frac{3}{4}$

(b) Write down a rational number between $\frac{3}{4}$ and $\frac{1}{3}$:

$\frac{3}{4} = \frac{9}{12}$ and $\frac{1}{3} = \frac{4}{12}$

$\therefore \frac{1}{3} < \frac{5}{12}$ or $\frac{6}{12}$ or $\frac{7}{12}$ or $\frac{8}{12} < \frac{3}{4}$

Exercise 3: Date: _____

(1) Arrange the following fractions in ascending order:

(a) $\frac{3}{4}$; $\frac{2}{3}$ and $\frac{4}{5}$: _____

(b) $\frac{2}{3}$; $\frac{5}{7}$ and $\frac{4}{6}$: _____

(2) Arrange the following fractions in descending order:

(a) $\frac{5}{8}$; $\frac{2}{3}$ and $\frac{3}{4}$: _____

(b) $-1\frac{1}{2}$; $-1\frac{2}{3}$ and $\frac{-7}{5}$: _____

(3) Place a rational number between each of the following numbers:

(a) $\frac{-1}{3}$ and $\frac{-3}{5}$: _____

(b) $\frac{3}{4}$ and $\frac{7}{10}$: _____

A1.2.3 Conversion of common fractions to decimal fractions:

E.g.3 Express the following as decimal fractions, without using a calculator:

(a) $\frac{3}{8} = \frac{3,000\ldots}{8} = \frac{3,^{3}0^{6}0^{4}0}{8} = 0,375$ **(b)** $1\frac{2}{3} = 1\frac{2,000\ldots}{3} = 1\frac{2,^{2}0^{2}0^{2}0\ldots}{3} = 1,66\ldots = 1,\dot{6}$

Exercise 4: Date: _____

Express the following as decimal fractions, without using a calculator:

(1) $\frac{22}{7}$ = _____ (2) $4\frac{2}{3}$ = _____

(3) $\frac{1}{8}$ = _____ (4) $\frac{7}{9}$ = _____

(5) $\frac{17}{25}$ = _____ (6) $\frac{5}{100}$ = _____

(7) $\frac{4}{11}$ = _____ (8) $-2\frac{6}{7}$ = _____

(9) $-5\frac{5}{6}$ = _____ (10) $\frac{33}{8}$ = _____

A1.2.4 Rounding off decimal fractions:

E.g.4 Round off the following fractions correct to the number of decimals indicated in brackets:

(a) $4,34712$ (to 3 dec)
$= 4,34712$ **Consider the underlined number**
$\approx 4,347$

(b) $290,09832$ (to 2 dec)
$= 290,09832$
$\approx 290,10$

Exercise 5: Date: _____

(1) Round off the following fractions correct to the number of decimals indicated in brackets:

(a) 3,573 (to 2 dec) _____

(b) 12,00873 (to 3 dec) _____

(c) 0,00384 (to 5 dec) _____

(d) 7,3226 (to 1 dec) _____

(e) 8,39999 (to 1 dec) _____

(f) 90,9023 (to the nearest integer) _____

(g) 0,433218 (to 4 dec) _____

(h) 1 456,6799 (to 3 dec) _____

(i) 66,666 (to 2 dec) _____

(j) 13,00034 (to 3 dec) _____

(2) Consider the following and choose the correct way of rounding off in brackets:

(a) $3,47653 \approx 3,477$ correct to the nearest (tenth, hundredth or thousandth)

(b) $96\,995,31956 \approx 96\,995,32$ correct to the nearest (tenth, hundredth or thousandth)

A1.2.5 Conversion of decimal fractions to common fractions:

E.g.5 Express the following as common fractions in its simplest form:

(a) $4,5 = 4\frac{5}{10}\left(\div\frac{5}{5}\right) = 4\frac{1}{2}$ **(b)** $-0,12 = -\frac{12}{100}\left(\div\frac{4}{4}\right) = -\frac{3}{25}$

Exercise 6: Date: _____

Express the following as common fractions in its simplest form:

(1) 0,125 = _____ (2) 1,25 = _____

(3) 14,6 = _____ (4) −0,5 = _____

(5) −1,2 = _____ (6) 23,5 = _____

(7) 3,04 = _____ (8) 7,3 = _____

(9) 100,75 = _____ (10) 0,00005 = _____

A1.2.6 Conversion of recurring fractions to common fractions:

E.g.6 Convert the following to common fraction in its simplest form:

(a) $0,\dot{1} = \frac{1}{9}$; $0,\dot{3} = \frac{3}{9} = \frac{1}{3}$; $0,\dot{5} = \frac{5}{9}$; $0,\dot{8} = \frac{8}{9}$

(b) $3,\dot{2}\dot{4} = 3\frac{24}{99} = 3\frac{8}{33}$; $0,\dot{4}\dot{2}\dot{1} = \frac{421}{999}$; $15,\dot{1}\dot{6}\dot{5}\dot{3} = 15\frac{1653}{9999} = 15\frac{551}{3333}$

(c) $0,0\dot{3} = 0,\dot{3} \div 10 = \frac{3}{9} \div \frac{10}{1} = \frac{3}{9} \times \frac{1}{10} = \frac{3}{90} = \frac{1}{30}$

(d) $0,00\dot{4}\dot{6} = 0,\dot{4}\dot{6} \div 100 = \frac{46}{99} \div \frac{100}{1} = \frac{46}{99} \times \frac{1}{100} = \frac{46}{9900} = \frac{23}{4950}$

(e) $0,5\dot{7} = 0,5 + 0,0\dot{7} = 0,5 + 0,\dot{7} \div 10 = \frac{5}{10} + \frac{7}{9} \times \frac{1}{10} = \frac{5 \times 9}{10 \times 9} + \frac{7}{90} = \frac{45+7}{90} = \frac{52}{90} = \frac{26}{45}$

Exercise 7: Date: _____

Convert the following to common fractions in its simplest form: (Without a calculator.)

(1) $3,\dot{6}$

(2) $0,\dot{1}\dot{3}$

(3) $22{,}3\dot{9}$

(4) $-1,\dot{1}\dot{3}\dot{5}$ or $-1,\overline{135}$

(5) $0,\dot{7}$

(6) $0{,}00\dot{3}$

(7) $1,\overline{214}$

(8) $3{,}2\dot{5}\dot{8}$

☺ **Calculate the following without using a calculator:** $0,\dot{4} + \frac{2}{3}$

_____

_____

_____

_____

A1.3 Irrational and Real numbers:

Irrational numbers cannot be expressed as a ratio between two integers. These numbers are non-terminating and non-recurring decimals.

E.g. 7 Irrational numbers:

- $\sqrt{2}$ or $\sqrt{7}$ or $\sqrt{\frac{3}{4}}$ etc. because 2 ; 7 and 3 are not perfect squares!
- $\sqrt[3]{12}$ or $\sqrt[3]{100}$ etc. because 12 and 100 are not perfect cubes!

Whereas the following numbers are rational numbers:

- $\sqrt{4}$ or $\sqrt{0,01}$ or $\sqrt{\frac{25}{9}}$ etc. because 4 ; $0,01$; 25 and 9 are perfect squares!
- $\sqrt[3]{27}$ or $\sqrt[3]{125}$ etc. because 27 and 125 are perfect cubes!

The real numbers, $\mathbb{R}$ consist of the rational numbers, $\mathbb{Q}$ and the irrational numbers, $\mathbb{Q}'$. Remember that all terminating and recurring decimals are rational numbers.

E.g.8 Determine the two integers between which the irrational number $\sqrt{7}$ lies.

****

Choose the two perfect squares on either side of 7:

$$\sqrt{4} < \sqrt{7} < \sqrt{9}$$

$$\therefore 2 < \sqrt{7} < 3$$

Exercise 8: Date: _____

(1) Which of the numbers are Rational numbers ($\mathbb{Q}$) and which are Irrational numbers ($\mathbb{Q}'$)?

(a)	14	: _____	(b)	$\frac{1}{5}$	: _____	(c)	$\sqrt{81}$	: _____
(d)	0,12	: _____	(e)	$\sqrt{18}$	: _____	(f)	$12,\dot{2}\dot{3}$	: _____
(g)	$-\sqrt{\frac{12}{3}}$	: _____	(h)	0,2945 ...	: _____	(i)	$\sqrt[3]{64}$	: _____
(j)	π	: _____	(k)	$\sqrt[5]{32}$	: _____	(l)	$\frac{11}{7}$	: _____

(2) Between which two integers do the following irrational numbers lie?

(a) $-\sqrt{12}$

_____

_____

_____

(b) $\sqrt{66}$

_____

_____

_____

(c) $\sqrt[3]{5}$

_____

_____

_____

(d) $\sqrt[5]{2}$

_____

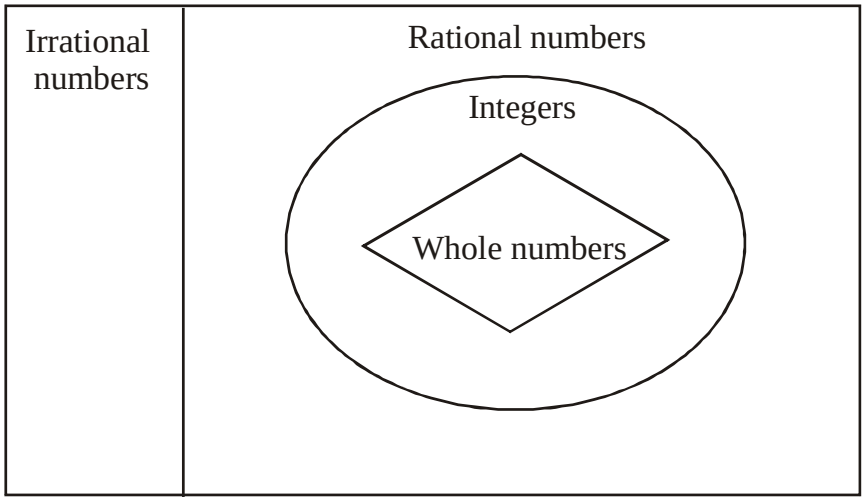
_____

_____

(3) The diagram below is a summary of all the numbers that are used on school level.
Place the following numbers in the right place on the table; simplify the number if necessary:

$4\frac{1}{2}$; $\sqrt[3]{8}$; $\sqrt{8}$; -16 ; $0{,}45$; $0{,}\dot{3}$; $\frac{18}{6}$; $0{,}2387\ldots$; $\frac{0}{17}$; $6{,}88$

Real numbers:



☺ **(1) Except for the real numbers we also have the non-real numbers.**
Give an example of a non-real number. _____

(2) What is the set called that contain all real and non-real numbers?

_____

A1.4 Representation of sets of numbers:

Sets of numbers can be represented or written in the following ways:

A1.4.1 Set builder notation:

E.g. 9 Write the following sets of numbers in set builder notation:

(a) All natural numbers greater than 6: $\{x \,/\, x > 6\,; x \in \mathbb{N}\}$

(b) All real numbers between -2 and 5: $\{m : -2 < m < 5\ ;\ m \in \mathbb{R}\}$

A1.4.2 Interval notation:

Only sets that form part of real numbers can be represented using interval notation!

E.g. 10 Write the following in interval notation:

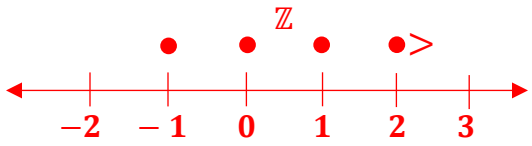
(a) The real numbers between -2 and 4, including 4: $x \in (-2\,; 4]$ **Open, closed interval!**

(b) $\{m \,/\, m > 7;\ m \in \mathbb{R}\}$: $m \in (7\,; \infty)$ **Open interval!**

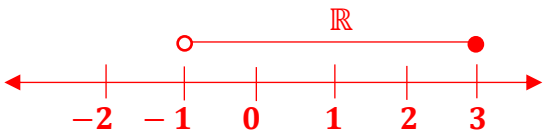
A1.4.3 Number lines:

E.g. 11 Represent the following on a number line:

(a) $\{-1\,;\ 0\,;\ 1\,;\ 2\,;\ \ldots\ldots\ldots\}$



(b) $\{x : -1 < x \leq 3\ ;\ x \in \mathbb{R}\}$



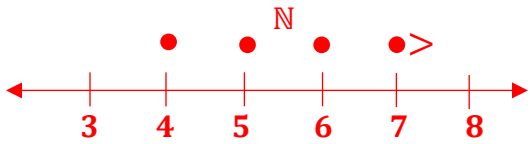
A1.4.4 Solving of linear inequalities:

E.g. 12 Solve for x in each of the following and represent the solution on a number line:

(a) $x - 2 \geq 2$ **if** $x \in \mathbb{N}$

$x \geq 2 + 2$

$x \geq 4$



(b) $-3 < x + 1 \leq 1$ **if** $x \in \mathbb{R}$

$-3 - 1 < x \leq 1 - 1$

$-4 < x \leq 0$

Exercise 9: Date: _____

(1) Write the following in interval notation (if applicable) and represent it on a number line:

(a) $\{x : x < -1;\ x \in \mathbb{R}\}$

(b) $\{x : -3 < x < 3;\ x \in \mathbb{Z}\}$

(c) $\{y : y < 2;\ y \in \mathbb{N}\}$

(d) $\{x : x \geq -3;\ x \in \mathbb{R}\}$

(e) $\{x / x < 3;\ x \in \mathbb{Z}\}$

(f) $\{p / p \geq \frac{-5}{2};\ p \in \mathbb{R}\}$

(g) $\{m : -2 \leq m < 5;\ m \in \mathbb{R}\}$

(h) $\{x : x \leq 5;\ x \in \mathbb{N}_0\}$

(2) Solve for x in each of the following and represent the solution on a number line:

(a) $x + 1 \leq 3;\quad x \in \mathbb{N}_0$

(b) $2x \geq -8;\quad x \in \mathbb{R}$

(c) $x - 4 \leq 0; \quad x \in \mathbb{Z}$

(d) $2x + 3 > 7; \quad x \in \mathbb{N}$

(e) $-6 < x - 1 \leq 6; \quad x \in \mathbb{R}$

(f) $x + 7 \geq -1; \quad x \in \mathbb{Z}$

A1.5 REVISION EXERCISE:

Date: _____

(1) Convert the following to common fractions in its simplest form: (Without a calculator.)

(a) $14{,}1\dot{7}$

(b) $0, \overline{1234}$

(c) $4{,}68$

(d) $5, \dot{1}$

(2) Indicate, by using a ✓, all the rational numbers between 0 and 10:

(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)
$\sqrt{9}$	-1	$\sqrt{8}$	$\frac{6}{3}$	$\sqrt[3]{16}$	π	$\frac{0}{3}$	$\sqrt{144}$	$4{,}124\ldots$	$\sqrt{\frac{24}{6}}$

(3) Round off the following fractions correct to the number of decimals indicated in brackets:

(a) $7{,}199$ (to 1 dec)

_____

_____

(b) $0{,}048561$ (to 4 dec)

_____

_____

(c) $234{,}34$ (to 1 dec)

_____

_____

(d) $1\ 001{,}1989$ (to the nearest integer)

_____

_____

(e) $3{,}997$ (to 2 dec)

_____

_____

(f) $23{,}712$ (to the nearest integer)

_____

_____

(4) Place any two irrational numbers between 2 and 3.

_____

_____

_____

_____

(5) Between which two integers do the following irrational numbers lie?

(a) $\sqrt{\frac{1}{2}}$

_____

_____

_____

_____

(b) $\sqrt[3]{57}$

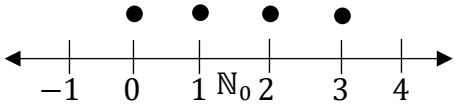
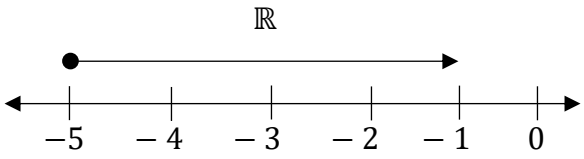
_____

_____

_____

_____

(6) Complete the missing representations in the table below:

	Set builder notation:	Interval notation:	Number line:
(a)	$\{x \,/\, -1 < x \leq 2;\ x \in \mathbb{R}\}$		
(b)		$x \in [-2\,;5]$	
(c)		$y \in (-\infty\,;3]$	
(d)			
(e)	$\{y \,/\ y \geq 3;\ y \in \mathbb{N}\}$		
(f)		$m \in (0\,;4]$	
(g)			
(h)	$\{m : m \leq 6;\ m \in \mathbb{R}\}$		
(i)	$\{x \,/ -1 < x < 2;\ x \in \mathbb{Z}\}$		
(j)		$x \in (-1;\ \infty)$	

****

Chapter A2

Algebraic expressions

A2.1 Products:

A2.1.1 The law of distribution:

E.g. 1 Determine the following products by using the law of distribution:

(a) $(x - 2)(x + 2)$ **(b)** $(3m + n)(2m + 5n)$

****

(a) $x(x + 2) - 2(x + 2)$

$= x^2 + 2x - 2x - 4$

$= x^2 - 4$

(b) $(3m + 1n)(2m + 5n)$

$= 6m^2 + 15mn + 2mn + 5n^2$

$= 6m^2 + 17mn + 5n^2$

Exercise 1: Date: _____

Determine the following products:

(1) $(y - 4)(y + 3)$

(2) $(p - 2)(p - 7)$

(3) $(2x + 1)(x - 5)$

(4) $(x - 2y)(2x - y)$

(5) $(4ab + 1)(2ab - 3)$

(6) $(5 - 7m)(2 - 3m)$

(7) $(2a - 4b)(3a + 2b)$

(8) $(m + n)(2m - 1)$

(9) $(d - 12)(12 + d)$

(10) $(a^2 + 4)(a^2 + 2)$

(11) $\left(\frac{1}{2}m - 6\right)(8m - 3)$

(12) $(-2k - 5)(5 + 3k)$

(13) $\left(p + \frac{1}{p}\right)\left(8p - \frac{4}{p}\right)$

(14) $(abc - 2ac)(abc + 3bc)$

(15) $(3r^3 + 2)(2r^2 - 5)$

(16) $2x(x - 5y)(3x + 2y)$

(17) $\left(\frac{1}{p^3q^2} - \frac{2}{p^2q}\right)\left(\frac{1}{p} + \frac{2}{q}\right)$

(18) $\left(\frac{m^2n}{3} - \frac{6}{mn}\right)\left(\frac{mn}{2} - \frac{3}{mn^2}\right)$

E.g. 2 Simplify:

(a) $(2a + 1)(2a - 1) = 4a^2 - 2a + 2a - 1 = 4a^2 - 1$

(b) $(m^2 - 5n)(m^2 + 5n) = m^4 + 5m^2n - 5m^2n - 25n^2 = m^4 - 25n^2$

Or shorter

(c) $(xy + 3)(xy - 3) = x^2y^2 - 9$

(d) $\left(\frac{ab}{4} - \frac{1}{7}\right)\left(\frac{ab}{4} + \frac{1}{7}\right) = \frac{a^2b^2}{16} - \frac{1}{49}$

Exercise 2: Date: _____

Simplify:

(1) $(abc - 2)(abc + 2)$

(2) $\left(\frac{1}{3} + 5t\right)\left(\frac{1}{3} - 5t\right)$

(3) $(p - 9q)(9q + p)$

(4) $(n + 7k)(7n - k)$

(5) $(-a + 4b)(-a - 4b)$

(6) $-x\left(\frac{1}{x} - x\right)\left(\frac{1}{x} + x\right)$

(7) $(x^{2m} - 8)(x^{2m} + 8)$

(8) $(0{,}3 + 3q)(0{,}3 - 3q)$

(9) $(b^6c^3 + 6)(b^6c^3 + 6)$

(10) $(4xk^5 - 7)(7 + 4xk^5)$

(11) $(m - 2n)^2(m + 2n)^2$

(12) $\left(\frac{m}{n} + 2\right)\left(\frac{m^2}{n^2} + 4\right)\left(\frac{m}{n} - 2\right)$

A2.1.2 Squaring of a binomial:

E.g. 3 Determine the following products:

(a) $(2x + 1)^2$

****

$= (2x + 1)(2x + 1)$

$= 4x^2 + 2x + 2x + 1$

$= 4x^2 + 4x + 1$

(b) $\left(m - \frac{1}{m}\right)^2$

$= \left(m - \frac{1}{m}\right)\left(m - \frac{1}{m}\right)$

$= m^2 - \frac{m}{m} - \frac{m}{m} + \frac{1}{m^2}$

$= m^2 - 2 + \frac{1}{m^2}$

Exercise 3: Date: _____

Determine the following squares:

(1) $(y - 11)^2$

(2) $(3p + 2q)^2$

(3) $(-4 + 5c)^2$

(4) $(mn + 3)^2$

(5) $(k^2 + 1)^2$

(6) $(8 - 3b)^2$

(7) $\left(x - \frac{1}{2}\right)^2$

(8) $\left(\frac{y}{5} - 3\right)^2$

(9) $(5p - 2p^2)^2$

(10) $\left(4 + \frac{3}{n}\right)^2$

(11) $(0{,}2 + 6y)^2$

(12) $\left(\frac{2m}{p} + \frac{p^2}{3m}\right)^2$

E.g. 4 Simplify the following: (Shorter method!)

(a) $(m + 5n)^2 = (m)^2 + 2(m)(5n) + (5n)^2 = m^2 + 10mn + 25n^2$

(b) $(pq - 2)^2 = p^2q^2 - 4pq + 4$

(c) $\left(\frac{1}{3} + 3x\right)^2 = \frac{1}{9} + 2x + 9x^2$

Exercise 4: Date: _____

Simplify (Use the shorter method!)

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

(2) $(6m - 1)^2$

(3) $(3y + 7)^2$

(4) $(3 + pq)^2$

(5) $(5t^2 + 8)^2$

(6) $\left(\frac{2}{3} - 6y\right)^2$

(7) $(-2k - 5)^2$

(8) $\left(\frac{3p - 2q}{5m}\right)^2$

(9) $(4x^2 + 10y^2)^2$

(10) $(2mn + 7)(7 + 2mn)$

(11) $(8 - 3y)(8 + 3y)$

(12) $-2(abc - 11)^2$

A2.1.3 Binomials and trinomials:

E.g. 5 Simplify the following products: $(4y + 1)(y^2 - y + 5)$

$= 4y^3 - 4y^2 + 20y + 1y^2 - 1y + 5$

$= 4y^3 - 3y^2 + 19y + 5$

Exercise 5: Date: _____

Simplify the following products:

(1) $(2a - 3)(a^2 + 5a - 4)$

(2) $(m + 7)(2m^2 + 3m + 3)$

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

(4) $(3y - 2)(9y^2 + 6y + 4)$

(5) $\left(2m + \frac{1}{2}\right)\left(\frac{m^2}{4} + 4 - 4m\right)$

(6) $(m^2n^2 - 5)(25 + 5m^2n^2 + m^4n^4)$

A2.1.4 The sum and difference of two cubes:

E.g. 6 Consider the following:

Product:

(a) $(x - 3)(x^2 + 3x \oplus 9) = x^3 + 3x^2 + 9x - 3x^2 - 9x - 27 = x^3 - 27$

(b) $(y + 5)(y^2 - 5y \oplus 25) = y^3 - 5y^2 + 25y + 5y^2 - 25y + 125 = y^3 + 125$

Pattern:

(c) $(4m - 1)(16m^2 + 4m \oplus 1) = (4m - 1)[(4m)^2 + (4m)(1) + (1)^2] = 64m^3 - 1$

Pattern:

(d) $(n^2 + 2)(n^4 - 2n^2 \oplus 4) = (n^2 + 2)[(n^2)^2 - (2)(n^2) + (2)^2] = n^6 + 8$

Exercise 6: Date: _____

Write down the following products directly, if possible:

(1) $(a + 3)(a^2 - 3a + 9)$

(2) $(2y^3 + 4)(4y^6 - 8y^3 + 16)$

(3) $\left(\frac{x}{3} - 1\right)\left(\frac{1}{9}x^2 + \frac{1}{3}x + 1\right)$

(4) $\left(6a^2 - \frac{1}{2}\right)\left(36a^4 + 3a^2 + \frac{1}{4}\right)$

(5) $(5q + 7)(25q^2 - 35q + 49)$

(6) $(8 - 3m)(9m^2 + 24m + 64)$

(7) $(x - 5)(x^2 - 5x + 25)$

(8) $(0{,}1 + 0{,}2y)(0{,}01 - 0{,}02y + 0{,}04y^2)$

(9) $(9a^4 + 6a^2b + 4b^2)(3a^2 - 2b)$

(10) $2(-1 + 5m)(25m^2 + 5m + 1)$