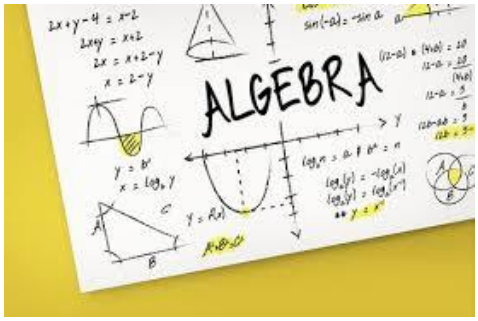
Week 1
Term 1
2024

HAWKER COLLEGE
Engage | Inspire | Achieve

Learning Brief
SMM1



Goals

This week we are going to:

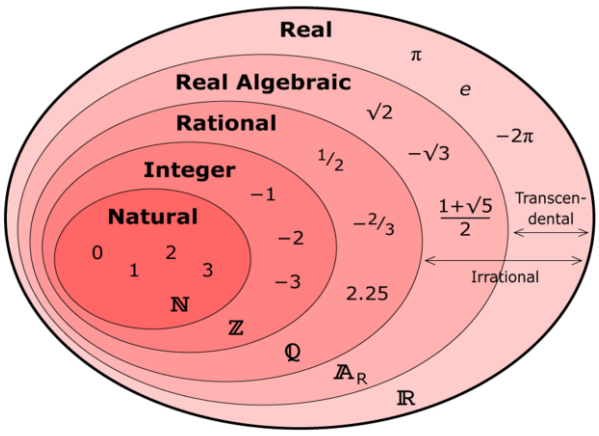
- Review algebra
- Join Google Classroom
- Complete and submit for checking the Investigation task

Theoretical Components

Knowledge Checklist:

- Expanding
- Simplifying
- Collecting like terms
- Rearranging
- Algebraic fractions

Next week we will be starting our first topic for the semester on Counting and Probability and we will also be reviewing numbers and notation.



Practical Components

Do the following questions:
Organise your solutions neatly in your exercise book.

Cambridge Unit 3 textbook (Chapter 1 pdf on GC)

- 1A, 1B, 1D – every second or third question (1a, 1c, 2a, 2c, …etc)

Organise your solutions neatly in your exercise book.

Investigation

See next page

Other

Make sure you have joined the Google Classroom. If you have not, see your teacher for the code.

Fun fact: Why do we use the letter x to represent an unknown variable? No-one knows. One theory is that it is the result of Europeans attempting to translate Arabic mathematical texts into Spanish - they borrowed the Greek symbol χ to represent an unknown, undefined quantity. Over time and further translations, this simply evolved to

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Investigation (Part 1)

Complete every question. Organise your solutions neatly in your exercise book. Show working.

Perform the indicated operations.

1. $(2x^2 - 6x + 11) + (-3x^2 + 7x - 2)$
2. $(-4y^2 - 3y + 8) - (2y^2 - 6y - 2)$
3. $-6(2q^2 + 4q - 3) + 4(-q^2 + 7q - 3)$
4. $2(3r^2 + 4r + 2) - 3(-r^2 + 4r - 5)$
5. $(0.613x^2 - 4.215x + 0.892) - 0.47(2x^2 - 3x + 5)$
6. $0.5(5r^2 + 3.2r - 6) - (1.7r^2 - 2r - 1.5)$
7. $-9m(2m^2 + 3m - 1)$
8. $6x(-2x^3 + 5x + 6)$
9. $(3t - 2y)(3t + 5y)$
10. $(9k + q)(2k - q)$
11. $(2 - 3x)(2 + 3x)$
12. $(6m + 5)(6m - 5)$
13. $\left(\frac{2}{5}y + \frac{1}{8}z\right)\left(\frac{3}{5}y + \frac{1}{2}z\right)$
14. $\left(\frac{3}{4}r - \frac{2}{3}s\right)\left(\frac{5}{4}r + \frac{1}{3}s\right)$
15. $(3p - 1)(9p^2 + 3p + 1)$
16. $(3p + 2)(5p^2 + p - 4)$
17. $(2m + 1)(4m^2 - 2m + 1)$
18. $(k + 2)(12k^3 - 3k^2 + k + 1)$
19. $(x + y + z)(3x - 2y - z)$
20. $(r + 2s - 3t)(2r - 2s + t)$
21. $(x + 1)(x + 2)(x + 3)$
22. $(x - 1)(x + 2)(x - 3)$
23. $(x + 2)^2$
24. $(2a - 4b)^2$
25. $(x - 2y)^3$
26. $(3x + y)^3$

Investigation (Part 2)

Juan's age is a prime number. Amina's age has 8 factors, and she is one year older than Juan.

Q1. Of the following numbers, which could be the sum of their ages?

Show your working in your book.

A) 27 **B)** 39 **C)** 75 **D)** 87 **E)** 107

Hints: Write each of the multiple-choice answers as a sum of two consecutive numbers. Is the smaller number prime? How many factors does the larger number have?

Q2. What is the youngest age that Juan could be?