

Name:	School:	Target Grade:
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**HEADSTART QUIZ TO
SECONDARY 3 MATH****READ THESE INSTRUCTIONS FIRST****INSTRUCTIONS TO CANDIDATES**

1. This is a 30 marks quiz.
2. Many students start to struggle in Sec 3 because of weak Algebra Foundation in Sec 2.
3. Majority of the questions are testing your Algebra Knowledge from Expansion, Factorisation, Fractions & Solving.

Word of Encouragement:

No matter your Sec 2 grades, let Secondary 3 be a fresh new chapter!

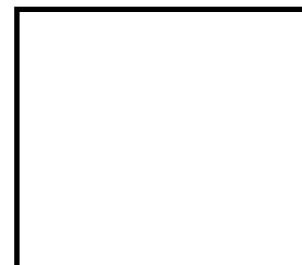
Make sure your Sec 2 Algebra Concept is Strong!

Start early, and you'll find Secondary 3 Math much easier to tackle.

You've got this—believe in yourself!

I believe in you.

Team Paradigm

**PARADIGM**

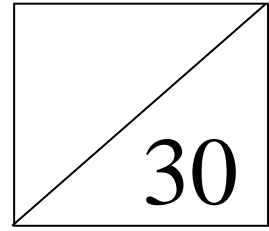
[Turn Over]

Name: _____

Class: _____

Date: _____

Secondary 3 Mathematics
HEADSTART



1 Expand and simplify the following.

(a) $(3p - 7q)(2p + 5q)$

[1]

(b) $2(3m - 4)^2$

[1]

(c) $(x - 2)(x + 2)(x^2 + 4)$

[1]

2 Factorise the following completely.

(a) $2m^2 + 5mn - 3n^2$

[1]

(b) $px - py + qy - qx$

[1]

3 (a) Expand and simplify the expression $(2p - 3q^2) - (p + q)^2$. [1]

(b) Factorise the expression completely $2x^3 - 50x$. [1]

(c) If $4(x - y)^2 = 328$ and $xy = 24$, find the value of $3x^2 + 3y^2$. [2]

4 (a) Make b the subject of the formula $a = \sqrt{\frac{2b+1}{b}}$. [2]

(b) Solve the equation $\frac{5}{x-4} = \frac{5x-3}{x^2-2}$. [2]

- 5 Solve the simultaneous equations. [3]

$$2x - 3y = 12$$

$$4x + 5y = -9$$

- 6 Express as a single fraction $\frac{5x+6}{2x^2-x-6} - \frac{2}{x-2}$. [2]

- 7 Simplify

(a) $\frac{2a^2}{5bc} \div \frac{14a}{15c}$ [1]

(b) $\frac{36}{2p-14q} \times \frac{p^2-49q^2}{3}$ [1]

- 8** Dylan is planning a cycling expedition. He explores two possible routes.
- (a) If he travels on route A, which is 120 km long, he expects to cover x km per hour. Route B, which is 5 km shorter than route A, has more challenging terrain and he would only be able to cover $(x - 2)$ km per hour.
Write down an expression, in terms of x , for the time he expects to take on
- (i) route A, [1]
- (ii) route B. [1]
- (b) He estimates that route A will take 40 minutes less than route B.
Form an equation in x and show that it reduces to $2x^2 + 11x - 720 = 0$. [3]
- (c) Solve the equation $2x^2 + 11x - 720 = 0$, give your answers correct to 3 decimal places. [2]
- (d) Calculate the time, in hours and minutes, that he expects to take on route B. [1]

9 One of the solutions of $x^2 + kx - 28 = 0$ is $x = 4$. Find

(a) the value of k ,

[1]

(b) the other solution of the equation.

[1]